

Peirce's Theory of Signs¹

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The lifetime of Charles Sanders Peirce spanned a period of tremendous change and development in human knowledge, in the sciences in general. He was a young man of twenty in the year that *Origin of Species* was published; he approached the end of his life just before Albert Einstein presented us with General Relativity. His lifetime saw the emergence of psychology as a discipline separate from philosophy, a birth attended by philosopher-psychologists such as his good friend William James. The work of Peirce, like that of the other American Pragmatists, reflects the ferment of the times. His thought bears the imprint of science, not the science of that Nineteenth Century which as Loren Eiseley has remarked, "regarded the 'laws' of nature as imbued with a kind of structural finality, an integral determinism, which it was the scientists' duty to describe," (Eiseley, 1971) but rather, of science as open, as intrinsically revisable, as radically empirical. Working from the model of science in this latter sense, Peirce held that philosophy, and indeed logic itself, must ultimately return to experience for validation (2.227).²

As a man of science in the open sense and as a logician, Peirce concentrated heavily on what science had to teach philosophy; he emphasized the intellectual aspect of human experience; he examined habit and law; he devoted much energy to the study of logic itself, logic in the narrower sense of deductive symbolic logic as well as in the broader sense of the general theory of signs, or semiotic.

Peirce's semiotic is not a detached, independent element of his philosophy, but interpenetrates and is interpenetrated by his thought as a whole. Peirce held that all thought--indeed, I would say, all experience--is by signs; his theory of signs is, then, a theory of experience, a theory of consciousness. The examination of so central an aspect of Peirce's thought requires a preliminary view of the structure of that thought. Peirce held that logic--along with ethics and esthetics--is a normative science (5.36), and

before we can attack any normative science, any science which proposes to separate the sheep from the goats, it is plain that there must be a preliminary inquiry which shall justify the attempt to establish such dualism (5.37).

What he proposes is a

science of phenomenology [which] must be taken as the basis upon which normative science is to be erected and [which] accordingly must claim our first attention (5.39).

The heart of the Peircean phenomenology is Peirce's system of categories; the categories are basic to the understanding not only of Peirce's concept of normative science, but of his theory of signs and indeed of his thought as a whole.

The *List of categories* . . . is a table of conceptions drawn from the logical analysis of thought and regarded as applicable to being. This description applies not merely to the list published by me . . . but also to the categories of Aristotle and to those of Kant (1.300).

Aristotle listed ten categories and Kant twelve; Peirce employs three. Their names are, simply enough, *first*, *second*, and *third*, or *firstness*, *secondness*, and *thirdness*.

By far the most difficult of the categories to discuss is firstness. Firstness is, among other things, the category of *feeling*, by which Peirce means

an instance of that kind of consciousness which involves no analysis, comparison or any process whatsoever, nor consists in whole or in part of any act by which one stretch of consciousness is distinguished from another, which has its own positive quality which consists in nothing else, and which is of itself all that it is, however it may have been brought about; so that if this feeling is present during a lapse of time, it is wholly and equally present at every moment of that time A feeling, then, is not an event, a happening, a coming to pass, . . . a feeling is a *state*, which is in its entirety in every moment of time as long as it endures (1.306).

Firstness, the category of feeling in this sense, is preeminently the category of the *prereflexive*. The difficult thing about talking about firsts is that when we recognize that something is grasped as a first, its firstness as firstness effectively evanesces. I cannot give you a first, I can merely point to where you might find one and subsequently recognize that you *had* found it. Significantly, the places where firsts may most easily be located and recognized have strong esthetic connections. Sitting back and enjoying a piece of music (without reflecting on the enjoyment) is close to experiencing a first.

Firstness is immediacy, firstness is the prereflexive. When reflection does occur, however, we enter the realm of secondness. Secondness is the category of the

actual existent, and as such is the easiest of the Peircean categories to discuss. This is the category of the other recognized as other; it is the knock on the door which interrupts the musical reverie; it is the unexpected rear-end collision; it is the sudden confrontation with a person you'd rather not confront. Something is a second insofar as it is, and in particular, insofar as it is an object to a subject. Seconds are unique existences, unique in space and time. For example, specific observations as recorded in a laboratory, whether physics or psychology, are seconds. While firstness is essentially atemporal, secondness provides the discrete, distinguishable points which we order by the time sequence.

The brute thereness, the unquestionable existence of seconds might lead us to think of secondness as the category of the "really real." Peirce would consider this to be an inadequate analysis. Reality, he held, is more than a matter of discrete events occurring at given points in space-time. Reality is also a matter of the *relations between* events, and here is where his category of thirdness enters. Thirdness is the category of law, of habit, of continuity, of relatedness. Tycho Brahe's recorded observations of the positions of the planet Mars at given times are seconds. Kepler's laws, worked out to unify that body of data, are thirds. If we look back to that musical performance we earlier gave as a place to hunt for firsts, we may comment that the performance in its unreflected immediacy is firstness; in the actual space-time thereness of its individual notes it is secondness; and in the identifiable structurings relating its notes, rhythms, harmonies, it is thirdness. We shall now move away from remarks specifically about Peirce's categories; we shall see many examples of their application in what follows, which has to do with Peirce's theory of signs.

"A sign," Peirce tells us,

. . . 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* (2.228).

Peirce here is discussing the sign as it participates in semiosis, the sign relation. There are a number of ways of subdividing the matter of Peirce's semiotic; one of them is based on the fact that we may identify three *relata* in the semiosical relation as understood by Peirce: these are the sign itself, and the above-mentioned object and interpretant. The interpretant itself is a sign (2.228) which Peirce calls the "proper significate effect" of the original sign (5.475). As Charles Morris has pointed out, "Semiotic . . . is not concerned with the study of a particular kind of object, but with ordinary objects in so far (and only in so far) as

they participate in semiosis" (Morris 1938, p. 4). I would suggest that the participation of an object in semiosis as a sign implies a dual nature for that object. On the one hand, the sign--and this includes interpretants--is an object "in the world"; it is empirically describable in terms of its effects in a variety of ways as is any object in the world--it exists, so to speak, in a "public forum." Insofar as it is in this forum, it is accessible to you in the same way that it is accessible to me. But as a sign, it also stands in a "private forum." It is accessible to me in a way which by its very nature is cut off from you--it is an "element of my consciousness" (of course, I infer that it is accessible to you too in this unique way--unique in this case to you). The interpretant as a sign shares this dual nature. It is an event in my body in principle observable by a variety of means, means that vary from the poker player's experienced eye to such devices as the polygraph and electroencephalograph. But in the private forum, it is my consciousness. Morris speaks of the *interpreter* as a fourth component of semiosis, (Ibid, p. 3) and Peirce speaks of the interpretant as being produced "in a mind." I would like to suggest that the interpretant is not "in" a mind or an interpreter the way that peanut butter is in a jar, but rather that interpretants, or proper significate effects of signs, *constitute* the interpreter or mind; the interpreter, then, is a historically existing continuum of interpretants, and the interpretant, correlatively, is a cross section or snapshot of the interpreter--the cross section may, but need not be, at an instant of time. Incidentally, this view of the interpreter as a continuum of interpretants (which are signs) throws some light, I think, on Peirce's at first curious-appearing view that *man is a sign* (5.310 ff.). There is an interesting connection here from a perhaps unexpected direction. The concept of the interpreter as historical continuum of interpretants is closely akin to the concept of ego developed in Sartre 1957. The Sartrean ego emerges in the process of reflection on consciousness. In such reflection present consciousness becomes consciousness of (previous) consciousness, which (previous) consciousness is then *reflected* consciousness; the ego emerges as an object which is the unity of "consciousnesses of . . ." the multitude of "things"--material and abstract--states, qualities, and activities of which we can be conscious. The "consciousness of . . ." which can be reflected upon I see as a Sartrean analog of the interpretant; the ego which emerges in the process of reflection would then be the interpreter.

At this point we may note something of a difficulty in Peirce's discussion of the sign. 2.228, quoted above, continues:

[A sign] stands for [its] object, not in all respects, but in reference to a sort of idea, which I have sometimes called the *ground* of the [sign].

The "sometimes" in this assertion would seem to have reference chiefly to Peirce's "On a New List of Categories" (1.551). Unfortunately, the "New List" was published in 1867, some thirty years before the passage in 2.228 was written. One suspects that we may be seeing here what Murray Murphey calls "a typically Peircean procedure: having set forth a doctrine with appropriate terminology, Peirce revises and refines the content of the doctrine while retaining the form and terminology unchanged. Thus, extensive revisions of position pass unnoticed under a shell of changeless terminology, to the utter confusion of the reader" (Murphey 1961, pp. 88-9). Peirce's thought underwent considerable development in those thirty years, and there is a legitimate question as to whether the 'ground' of 1897 is the same as that of 1867. A fair assumption is that Peirce himself saw a continuity between the two, because of his using the same term and his explicit reference to earlier uses of it.

Although Peirce devotes a fair amount of attention to the ground in the "New List," he discusses it hardly at all in his later years, although he uses it in the perplexing fashion of 2.228; it is perhaps best to seek understanding of his later use of 'ground' by examining its employment in this passage. First of all, we note that ground, when added to object and interpretant, makes a triad; this is typically Peircean, and involves a classification by his categories, with ground, object, and interpretant as first, second, and third respectively. Peirce states:

In consequence of every [sign] being thus connected with three things, the ground, the object, and the interpretant, the science of semiotic has three branches. The first is called by Duns Scotus *grammatica speculativa*. We may term it pure grammar. It has for its task to ascertain what must be true of the [signs] used by every scientific intelligence in order that they may embody any meaning (2.229).

So the ground of a sign is intimately associated with pure grammar, which is the study of interrelationships between signs themselves; it would appear that the ground of the sign, then, has a close connection with the sign itself. And we note that elsewhere (and elsewhere--1885) Peirce asserts that "a sign is in a conjoint relation to the thing denoted and to the mind" (3.360). In this passage Peirce explicitly makes the sign the first *relatum* in semiosis. In the analysis of Morris, the *relata* in the semiosical relation are "sign vehicle," "*denotatum*," and "interpretant." On the basis of this analysis of semiosis, Morris distinguishes respectively three "dimensions" of semiotic--the syntactic, the semantic, and the pragmatic--the syntactic dimension corresponds to Peirce's *pure grammar*.

It is worthwhile taking a look at Peirce's assertion that pure grammar "has for its task to ascertain what must be true of the [signs] used by every scientific

intelligence in order that they may embody any meaning" (2.229). it may seem peculiar for Peirce to speak of meaning in this context, since Peircean "meaning" has at its very center the concept of *possible effect*--the meaning of something in a definite sense is, for Peirce, its possible effects; note Peirce's "pragmatic maxim ":

Consider what effects that might conceivably have practical bearing we conceive the object of our conception to have. Then our conception of these effects is the whole of our conception of the object (5.401).

indeed, we find Murray Murphey discussing a passage very similar to 2.229, but from the much earlier New List:

Peirce describes speculative grammar as treating "of the formal conditions of symbols having meaning, that is of the reference of symbols in general to their grounds or imputed characters. . ." (1.559), thereby indicating how far he was from the idea of pragmatism in 1867 [which is the theory of meaning summarized in the "pragmatic maxim" (5.402) quoted above] (Ibid, pp. 91-2).

the Peirce of the New List, of 1867, may have been far from the idea of pragmatism, but in 2.229, written about 1897 when he was well into pragmatism, he speaks of speculative (pure) grammar and meaning in almost the same terms as thirty years previously. How does the asserted relationship between pure grammar and meaning mesh with the pragmatic concept of meaning as possible effects? About 1903, Peirce answers this:

A word has meaning for us in so far as we are able to make use of it in communicating our knowledge to others and in getting at the knowledge that others seek to communicate to us. That is the lowest grade of meaning (8.176).

a sign does not communicate *in vacuo*, but in a context, in relationship to other signs; a paradigm of such relationship is the grammatical structure of language. That there be such a grammatical structure is a necessary condition or the signs of language to be able to communicate, and so by the above passage, to have meaning (in the sense of the lowest grade of meaning). It could be in this sense of meaning that pure grammar "has as its task to ascertain what must be true of . . . [signs] . . . in order that they may embody meaning" (2.229). The passage from 8.176 goes on to indicate that there is more to meaning than this "lowest grade":

The meaning of a word is more fully the sum total of all the conditional predictions which the person who uses it *intends* to make himself responsible for or intends to deny.

The full meaning of meaning does indeed involve possible consequences. But insofar as relatedness to other signs is a necessary condition of a sign's communicating, speculative (or pure) grammar is the study of what must be true of signs "in order that they may embody *any meaning*" (2.229).

Speculative, or pure, grammar (of which we shall see more anon) is the first branch of Peirce's semiotic, corresponding to the "ground" of the Sign--or to what Morris called the "sign vehicle."

The second [branch] is logic proper. It is the science of what is necessarily true of the [signs] of any scientific intelligence in order that they hold of any *object*, that is, may be true. Or say, logic proper is the formal science of the truth of representations (2.229).

Peirce clearly sees logic proper here from the semantic point of view; note that Morris's "dimension of semiotic" corresponding to the *denotatum* or object of the sign is the semantic dimension.

Considerable study has been devoted to what Peirce calls "logic proper" which is a subject, or group of subjects, warranting special attention in itself. Much of the material in this area is involved and specialized, and so we shall not discuss this topic in technical detail in this paper; however, a few general remarks about his accomplishments here are in order, since he clearly considered "logic proper" to be an integral part of his theory of signs.

For Peirce, logic proper is "the formal science of the truth of representations." Another way to characterize it would be to follow Dewey, and call logic in this sense "The Theory of Inquiry." Peirce divides logic from this point of view into deductive, inductive, and abductive, or retroductive logic (hypothesis formation). The division is by the Peircean categories (though it is not completely, in this case, clear how the division works). Peirce tells us that

Retroduction and Induction face opposite ways . . . The order of the march of suggestion in retroduction is from experience to hypothesis. A great many people who may be admirably trained in divinity, or in the humanities, or in law and equity, but who are clearly not well trained in scientific reasoning imagine that Induction should follow the same course. On the contrary, the only sound procedure for induction, whose business consists in testing a hypothesis already recommended by the retroductive procedure, is to take up the predictions of experience which it conditionally makes, and then try the experiment and see whether it turns out as it was virtually predicted in the hypothesis that it would (2.755).

Note that the concept of induction to which Peirce objects here is the same as that embodied in that essentially worthless distinction between inductive and deductive logic that continues to be perpetrated upon countless undergraduates in introductory logic, speech, and writing courses: "Inductive logic argues from particulars to generals, while deductive logic argues from generals to particulars."

An extended discussion of "logic proper," including inductive and abductive logic, would necessarily take us far afield from what is generally considered semiotic. We note that Peirce's best-known philosophical writings, the essays on the "Fixation of Belief" (5.358ff.) and "How to Make Our Ideas Clear" (5.388ff.) are studies of logic as the general theory of inquiry. This fact is illustrative of the central position of semiotic in Peirce's thought. As we have remarked, Peirce's semiotic is not an isolated, separate part of that thought, but is integral to his philosophy as a whole. In preparing a paper of so limited a scope as the present one must be, however, we must choose carefully the paths to be followed in detail. We shall not pursue inductive and abductive logic further, then, and shall take a brief look at Peirce's deductive logic, which he set out in great detail and with great skill.

First of all, Peirce saw formal deductive logic as an analytic tool; the purpose of a system of symbolic logic is "simply and solely the investigation of the theory of logic, and not at all the construction of a calculus to aid the drawing of inferences" (4.373). A calculus for Peirce is a computing aid of some kind, designed to shorten, say, the drawing of inferences; a logic, on the other hand, is supposed to break inferences down into their most basic steps and so to exhibit the deductive process involved. In a number of places, Peirce gives us what may be considered postulate sets for symbolic logic; examples are the "icons of the algebra of logic" of his 1885 "Contribution to the philosophy of notation" (3.359ff.), and the "Rules of illative transformation" of his "Existential graphs" (4.372-584). The 1885 "icons" include a complete axiomatization of the classical propositional calculus (Prior 1958, 135-6) as well as a considerable chunk of material on quantification and the logic of relatives. The later (1897 and after) transformation rules for Peirce's existential graphs are postulates for a successful and ingenious logic in a non-standard notation. The rules of transformation for the graphs include a complete formulation not only of the classical propositional calculus, but of the full quantification theory with identity (see Zeman 1964) as well. In addition, this later work of Peirce is loaded with suggestions that Peirce himself was unable to exploit fully, but which anticipated by decades contemporary developments in symbolic logic; notable here is a beginning development of what is effectively a "possible worlds" semantics for modal logic (4.512ff.).³

Although Peirce presents sets of axioms (the 1885 "icons") or rules of inference for his logics, a little examination shows that his basic orientation toward deductive logic is a *semantical* one, as we might be led to expect from his association of "logic proper" with the *object* of a sign. The icons of the algebra of logic are justified by him on what we recognize as truth-functional, and so semantic, grounds (see 3.38 f., for example) and the most basic sign of the systems of existential graphs, the "Sheet of assertion" on which logical transformations are carried out, is "considered as representing the universe discourse" (4.396); such representation is a semantical matter. But contemporary logic makes a distinction that Peirce did not make. It is necessary to study logic not only from a radically semantical point of view, in which propositions are thought of as being true or false, but also from a *syntactic* or *proof theoretical* point of view, in which the deducibility of propositions from each other is studied without reference to interpretations in universes of any sort and so without reference to truth and falsity.

Peirce failed to distinguish between logic as proof-theoretical and logic as semantical, but he can hardly be faulted for that; Gottlob Frege, who with Peirce must be considered a co-founder of contemporary logic, also failed to make the distinction, (Frege 1967, 13) and even Whitehead and Russell are fuzzy about it. Indeed, a clear recognition of the necessity for distinguishing between logical syntax and semantics does not arise until later, with the developments in logic and the foundations of math which culminated in Gödel's celebrated completeness and incompleteness results of 1930 and 1931 respectively.

We have mentioned Peirce's first and second branches of semiotic. The first, pure grammar, is associated with the "ground" of the sign, or with the sign itself. The second, "logic proper," is associated with the object of the sign, for Peirce. The third branch arises because of the role of the interpretant in semiosis, and is called by Peirce

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).

Peirce also calls this branch of semiotic "speculative rhetoric" and sometimes "methodeutic"; this science

would treat of the formal condition of the force of symbols, or their power of appealing to a mind, that is, of their reference in general to interpretants (8.342).

Peirce calls speculative rhetoric "the highest and most living branch of logic" (2.332). (Note that here he is using the word "logic" to refer to semiotic as a whole, rather than to deductive logic; this is a usage explicitly adopted by him in 2.227.) From Peirce's remarks on speculative rhetoric, it is clear that he considered it an important science; it also seems clear that he devoted considerable thought to it. Unfortunately, he presents no systematic study of it. About 1902, he remarks that "The practical want of a good treatment of this subject is acute" (2.105). And further,

although the number of works upon Methodetic since Bacon's *Novum Organum* has been large, none has been greatly illuminative . . . THE book on the subject remains to be written, and what I am chiefly concerned to do is to make the writing of it more possible. I do not claim that the part of the present volume [never completed] which deals with Speculative Rhetoric will approach that ideal (2.109-10).

Speculative rhetoric was to be, for Peirce, "a method for discovering methods" (2.108) in human inquiry in general (2.110); the longing for such a science is deeply rooted in Peirce, and goes back to his earlier days--see, for example, 3.364, which is from the "Philosophy of notation" paper of 1885. The project, however, remains uncompleted. This "highest and most living branch of logic" is a matter of scattered treatments and vague content in Peirce's writing. It does, however, occupy a key place in the architectonic of Peirce's philosophy. An interesting, if somewhat difficult, task would be to reconstruct, based on the structure of Peirce's philosophy, what a Peircean speculative rhetoric might look like.

Of the three branches of Peirce's semiotic, then, the third, speculative rhetoric, is radically incomplete, and the second, "logic proper," when studied in detail, carries us into areas of Peirce's philosophy and symbolic logic not commonly thought of as belonging to the theory of signs. Much, perhaps most, of the material we commonly associate with Peirce's semiotic falls under the first branch of the theory of signs, speculative grammar. I now propose to discuss some of the major topics treated by Peirce under this heading.

A major thrust of Peirce's speculative grammar is a detailed and complex classification of signs. In a definite sense, even the most basic part of speculative grammar, the description of the semiosical relation itself, is a classification of signs. The interpretant is a sign (2. 228), and the object is, at least often, a sign. So the description of semiosis gives us a triple viewpoint from which to observe signs in action: signs functioning as signs properly so called, signs as objects of semiosis, and signs as effects of semiosis (interpretants). Peirce elaborates the

theory of sign, object, and interpretant in a variety of ways. In his "Survey of pragmatism," written about 1906, he discussed different kinds of interpretant; the classification is again by the categories. His opening remark here, by the way, illustrates the epistemological importance that he attached to this kind of classification:

Now the problem of what the "meaning" of an intellectual concept is can only be solved by the study of the interpretants, or proper significate effects, of signs. These we find to be of three general classes with some important subdivisions. The first proper significate effect of a sign is a feeling produced by it. There is almost always a feeling which we come to interpret as evidence that we comprehend the proper effect of the sign, although the foundation of truth in this is frequently very slight. This "emotional interpretant," as I call it, may amount to much more than that feeling of recognition; and in some cases, it is the only proper significate effect that the sign produces. Thus, the performance of a piece of concerted music is a sign. It conveys, and is intended to convey, the composer's musical ideas; but these usually consist merely in a series of feelings (5.475).

The emotional interpretant is a very good example of a first. It is experience "at its most immediate." As such it is unreflected upon, and is recognized only in a "later moment." John Dewey gives, in a discussion of immediate experience, an excellent description of the kind of thing involved in the emotional interpretant:

Immediacy of existence is ineffable. But there is nothing mystical about such ineffability; it expresses the fact that of direct existence it is futile to say anything to one's self and impossible to say anything to another. Discourse can but intimate conditions which if followed out may lead one to *have* an existence. Things in their immediacy are unknown and unknowable, not because they are remote or behind some impenetrable wall of sensation or ideas, but because knowledge has no concern with them. For knowledge is a memorandum of conditions of their appearance, concerned, that is, with sequences, coexistences, relations. Immediate things may be *pointed to* by words, but not described or defined (Dewey 1958, 85-6).

Note that Peirce draws his example of an emotional interpretant from esthetic experience, where we are very likely to be in significant immediate contact with the objects involved. An anecdote told of Schubert (whether apocryphal or not) illustrates the key role of the immediate, and so of the emotional interpretant, in esthetic experience. The composer had played one of his pieces on the piano, and afterwards was asked by a lady who had been listening, "Oh, Maestro, what does it *mean*?" Whereupon he sat back down at the pianoforte and played the

composition again. Any answer to her question other than the providing of the immediate experience of the music would have missed the point, for the point was found precisely in the ineffable immediacy of the experience--in the Peircean emotional interpretant which was its effect.

Esthetic experience may be the *locus* where the emotional interpretant is most easily recognized, but this interpretant is by no means restricted to experience in the arts. Rather, it is an element of experience in general; in fact, "If a sign produces any further proper significate effect [beyond the emotional interpretant], it will do so through the mediation of the emotional interpretant" (5.475).

When a sign produces an effect beyond (and with the mediation of) the emotional interpretant, Peirce tells us,

such further effect will always involve an effort. I call it [the effect, the effort] the energetic interpretant. The effort may be a muscular one, as it is in the case of the command to ground arms; but it is much more usually an exertion upon the Inner World, a mental effort (5.475).

Where the emotional interpretant is clearly a first, the energetic interpretant is a second. A key here is the word "effort." Secondness is the category of the other, of "struggle," of effort--the *action* of an effort implies the *reaction* of an other. In classroom work on this subject, I will commonly interrupt the lecture at this point with an injunction to one of the note-taking students to "Look here!" or some such. The student invariably does, often with some surprise. I point out that the overt action, the effort, involved in looking here is itself an interpretant, the energetic interpretant connected with the sign "Look here!" Peirce points out that the energetic interpretant need not be as overt as that; a mere shifting of attention, for example, would count as an energetic interpretant (I would suggest, however, that any energetic interpretant is in principle observable, although instrumentation [EEG, etc.] may be required to observe it).

The energetic interpretant, however, "never can be the meaning of an intellectual concept, since it is a single act [while] such a concept is of a general nature" (5.475). When we speak of interpretants in terms of *meanings* we enter the realm of what Peirce called the "logical interpretant." A quick characterization of the logical interpretant would be to say it is a "general concept." Peirce speaks of "first logical interpretants" (5.480) of the phenomena that suggest them as being the initial conjectures arising in problematic situations. He sees a second stage in the logical interpretant as arising when

these first logical interpretants stimulate us to various voluntary performances in the inner world. We imagine ourselves in various situations and animated by various motives; and we proceed to trace out the alternative lines of conduct which the conjectures would leave open to us. We are, moreover, led by the same inward activity, to remark different ways in which our conjectures could be slightly modified. The logical interpretant must, therefore, be in a relatively future tense (5.481).

We see the logical interpretant itself being classified by the categories, as having a first, a second, and--we might expect--a third stage. Indeed, after the activity referred to in this last passage has so taken

the form of experimentation in the inner world . . . the interpreter will have formed the habit of acting in a given way whenever he may desire a given kind of result. The real and living logical conclusion is that habit; the verbal formulation merely expresses it The deliberately formed, self-analyzing habit--self-analyzing because formed by the aid of analysis of the exercises that nourished it--is the living definition, the veritable and final logical interpretant (5.491).

In speaking of "logic proper," the second branch of Peirce's semiotic, we saw that an excursion of any depth into the topic would involve us in an intimate way with Peirce's philosophy; the same would doubtless be true of speculative rhetoric (that "highest and most living branch of logic"), had Peirce developed it in any detail. In our examination of the theory of the logical interpretant, we see that the same is true of speculative grammar. "The deliberately formed, self-analyzing habit . . . is . . . the veritable and final logical interpretant"; in such ways does Peirce tie this branch of semiotic in with the center of his philosophy. The concept of habit for Peirce may fairly be identified with thirdness; note that for Peirce "habit" is not restricted to our ordinary use of the word. The habits by which I deal with my environment are just one species of what Peirce calls generically "habit." Any regularity, any disposition--including, for example, the laws of physics--counts as habit, as *thirdness* for Peirce. And thirdness, habit, is preeminently the category of reality (cf. 5.93ff.). So once again do we see Peirce's semiotic as integral to his thought as a whole.

As we move into the further study of Peirce's speculative grammar, we are struck by the great wealth of material available; indeed, some wags might suggest that we would be better off a little poorer. About 1903, he tells us that

signs are divisible by three trichotomies; first, according as the sign in itself is a mere quality, is an actual existent, or is a general law; secondly, according as the relation of the sign to its object consists in the sign's having some character in

itself, or in some existential relation to that object, or in its relation to an interpretant; thirdly, according as its Interpretant represents it as a sign of possibility or as a sign of fact or as a sign of reason (2.243).

So at this point, Peirce sees the relata in the semiosical relation--sign, object, and interpretant--as defining three trichotomic divisions of signs; the first he calls the division into *Qualisigns*, *Sinsigns*, and *Legisigns* (2. 244); the second, into *Icons*, *Indexes*, and *Symbols* (2.247); and the third into *Rhemes*, *Dicisigns*, and *Arguments* (2.250). These three trichotomies he sees as giving rise to ten classes of signs (2.254ff.). Several years later, in his correspondence with Lady Welby, he expands the list of *trichotomies* to ten (8. 344 ff.), which gives rise, it would seem, to no fewer than *sixty-six classes* of signs.⁴

I do not propose to enter here into a discussion of this later classification of signs. Peirce himself did not complete work on the classification, and a fair amount of what he does say is conjecture. Speculative work in this area may be found in the papers of Weiss and Burks and of Sanders referred to in note 13. To give a taste of Peirce's classification of signs appropriate to the present paper, it seems sufficient to examine briefly the earlier classification of signs by the three trichotomies of 2.243ff. We shall, in this discussion, leave to the last the trichotomy which Peirce says is the one he most frequently uses (8.368), that of Icon, Index, and Symbol.

The first of the trichotomies is based on the sign "as it is in itself," and from this point of view,

a sign is either of the nature of an appearance, when I call it a *qualisign* or secondly, it is an individual object or event, when I call it a *sinsign* (the syllable *sin* being the first syllable of *semel*, *simul*, *singular*, etc.); or thirdly, it is of the nature of a general type, when I call it a *legisign*. As we use the term 'word' in most cases, saying that 'the' is one 'word' and 'an' is a second 'word', a 'word' is a legisign. But when we say of a page in a book that it has 250 'words' upon it, of which twenty are 'the's', the 'word' is a sinsign. A sinsign so embodying a legisign, I term a 'replica' of the legisign. The difference between a legisign and a qualisign, neither of which is an individual thing, is that a legisign has a definite identity, though usually admitting a great variety of appearances. Thus, &, and, and the sound [of the printed 'and'] are all one word. The qualisign, on the other hand, has no identity. It is the mere quality of an appearance and is not exactly the same throughout a second. Instead of identity, it has great similarity, and cannot differ much without being called another qualisign (8.334).

As we might expect, the branch of this trichotomy most difficult to understand is that associated with firstness, the qualisign. Peirce offers some help elsewhere with the kind of thing he here calls qualisigns, indicating that they are

objects which are signs so far as they are merely possible, but felt to be positively possible; as, for example, the seventh ray that passes through the three intersections of opposite sides of Pascal's hexagram (8. 347).

As we indicated, we shall turn now to what Peirce has to say about the third trichotomy of signs, which is "In regard to its relation to a signified interpretant"; here,

a sign is either a Rheme, a Dicent, or an Argument. This corresponds to the old division, Term, Proposition, and Argument, modified so as to be applicable to signs generally. A *Term* is simply a class-name or proper-name A Rheme is any sign that is not true nor false . . . (8.337).

We note that in what is probably Peirce's most extended discussion of rhemes, in his work on the existential graphs (see 4.438ff.), he uses 'rheme' virtually synonymously with the way contemporary logicians use the term 'predicate'. The predicate '*x* is red', for example, is a sign which cannot be spoken of as being true or false (until a quantifier or other such index is added to tell which or how many *x*'s we are talking about). Peirce goes on about propositions:

A proposition as I use that term, is a dicent symbol. A dicent is not an assertion, but is a sign capable of being asserted. But an assertion is a dicent. According to my present view . . . the act of assertion is not a pure act of signification. It is an exhibition of the fact that one subjects oneself to the penalties visited on a liar if the proposition asserted is not true. An act of judgment is the self-recognition of a belief; and a belief consists in the deliberate acceptance of a proposition as a basis for conduct (8.337).

Peirce goes on to comment that he thinks "this position is open to doubt." Perhaps, but the tentative assertion of it shows again how closely connected to his philosophy as a whole his semiotic is. The conjectures about propositions, judgment, belief, and conduct in this passage are very much those of Peirce the pragmatic philosopher. He goes on about the argument:

Holding, then, that a Dicent does not assert, I naturally hold that an Argument need not actually be submitted or urged. I therefore define an argument as a sign which is represented in its signified interpretant not as a Sign of that interpretant (the conclusion) [for that would be to urge or submit it]⁵ but *as if* it were a Sign

of the Interpretant. ... I define a dicent as a sign represented in its signified interpretant *as if it were* in a Real Relation to its Object. (Or as being so, if it is asserted.) A rheme is defined as a sign which is represented in its signified interpretant *as if it were* a character or mark (or as being so) (8.337).

He goes on to expand on this by holding that a sign may "appeal to its interpretant" in one of three ways, depending on whether it is rheme, dicent, or *argument*:

1st, an argument only may be *submitted* to its interpretant, as something the reasonableness of which will be acknowledged.

2nd, an argument or dicent may be *urged* upon the interpretant by an act of insistence.

3rd, an argument or dicent may be, and a rheme can only be, presented to the interpretant for contemplation (8.338).

In connection with Peirce's talking about signs "being presented to the interpretant," note that this is virtually the same as being presented to the *interpreter* in a given "moment" of consciousness.

We now turn to that trichotomy of signs which Peirce felt he used most often, which indeed he saw as the most fundamental division of signs (2. 275), and which is probably the best known to students of the theory of signs; this is the division of signs into *icons*, *indexes*, and *symbols*. Peirce tells us that

an analysis of the essence of a sign . . . leads to a proof that every sign is determined by its object, either first, by partaking in the characters of the object, when I call the sign an *Icon*; secondly, by being really and in its individual existence connected with the individual object, when I call the sign an *Index*; thirdly, by more or less approximate certainty that it will be interpreted as denoting the object, in consequence of a habit (which term I use as including a natural disposition), when I call the sign a *Symbol* (4.531).

So this division of signs comes about because signs have objects, and is based on the way that the sign represents its object.

The key feature of an icon is that it bears a resemblance of some sort to its object, "whether any such Object actually exists or not" (2.247). The resemblance may be the extreme likeness of a photograph (2.281), or it may be more subtle; under

any circumstances, "Each Icon partakes of some more or less overt character of its Object" (4.531). This partaking can be of a complex sort:

Particularly deserving of notice are icons in which the likeness is aided by conventional rules. Thus, an algebraic formula is an icon, rendered such by the rules of commutation, association, and distribution of the symbols. It may seem at first glance that it is an arbitrary classification to call an algebraic expression an icon; that it might as well, or better, be regarded as a compound conventional sign. But it is not so. For a great distinguishing property of the icon is that by the direct observation of it other truths concerning its object can be discovered than those which suffice to determine its construction (1.179).

The icon in a very definite sense partakes of the life of its object. Once it is set down, inferences about it become inferences about the object, insofar as it is iconic. A mathematical figure of speech would be to say that the icon is a mapping of its object, or a morphism of it. The mapping function may be very like an identity function, as is the case with photographs viewed as icons; on the other hand, it may be complex and conventional. We have employed a mathematical analogy in speaking of icons; the reverse of this coin is that icons are of key importance in mathematics:

The reasoning of mathematicians will be found to turn chiefly upon the use of likenesses, which are the very hinges of the gates of their science. The utility of likenesses to mathematicians consists in their suggesting in a very precise way, new aspects of supposed states of things (2.281).

An icon represents by resembling. An index, on the other hand, need bear no resemblance to its object. The key thing about an index is that it has a direct existential connection with its object. The uses of ordinary English are reliable in our discourse about indexes; the index finger is used to point to something, for example. The pointing-to is a direct existential connection with the pointed-to, and so is an index in the Peircean sense. When *tumor*, *dolor*, *rubor* and *calor* are present, inflammation is *indicated* to the physician; swelling, pain, redness, and heat are indexes of inflammation. You will find the party tomorrow night by looking for the house with the white picket fence--that fence, by its connection to the house, is an index of the house and so of the party. "Indices . . . furnish positive assurance of the reality and the nearness of their objects. But with the assurance there goes no insight into the nature of those Objects" (4.531). The fence tells you where the party is, but it does not tell you whether the party will be dull, wild, etc.

It is important, by the way, to note that signs by no means need be purely icons or indexes (or symbols, either). The sign in front of a shop is indexical by its connection with the shop. But it also may be iconic, by, say, bearing a picture of a book to indicate that the shop is a bookstore.

We have looked at icons and indexes; now,

A Symbol is a [sign] whose Representative character consists precisely in its being a rule that will determine its Interpretant. All words, sentences, books, and other conventional signs are Symbols (2.292).

The employment of icons and indexes is a necessary condition of communication but the conceptualization that is so essential a part of human interaction with the environment rests directly on symbols:

Symbols grow. They come into being by development out of other signs, particularly from icons, or from mixed signs partaking of the nature of icons and symbols. We think only in signs. These mental signs are of mixed nature; the symbol-parts of them are called concepts (2.300).

We have attempted in this paper to give a taste of Peirce's theory of signs. Obviously, as the taste is not the complete meal, so short a paper as this must omit much of the detail of so large a topic as Peirce's semiotic. Actually, this paper may be looked upon, in its incompleteness, as a kind of iconic representation of the semiotic of Peirce. For, as is the case with much of Peirce's later work, his classification of signs and the semiotic as a whole is by no means complete; it is as if the later Peirce had an overabundance of potentially fruitful insights, which would require another lifetime to exploit fully. However, it was Peirce who remarked that

the opinion which is fated to be ultimately agreed to by all who investigate is the truth, and the object represented by this opinion is the real (5.407).

The full exploitation of what any one man begins is, for Peirce, a matter for the community of investigators to complete, and that completion may be indefinitely far away (5.408). Given Peirce's view of scientific inquiry as a community effort, with the community extended in time as well as in space, it would be unreasonable to expect him to come to closure in all that he began. Certainly his semiotic is a phase of his work which he did not complete. But he began it, and pointed out a variety of possible paths to follow, paths promising both to the Peirce scholar and to the semiotician with only a passing interest in Peirce. It is to be hoped that we will ably make use of the guideposts he left us.

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Notes

1. *A Perfusion of Signs*, ed. T. Sebeok, Bloomington: Indiana, 1977, 22-39.

2. Peirce, 1931-58. Quotations from Peirce 1931-58 are referenced in the standard manner of Peirce scholarship, parenthesized within the text. The first numeral in the reference is the volume number, and the number to the right of the point is the paragraph. Thus 2.227 refers to paragraph 227 of volume 2.

3. For possible-world semantics, see, for example, Zeman 1973; on Peirce in this connection, see Zeman 1974.

4. For detailed discussions of these divisions, see Sanders 1970 and Weiss & Burks 1945.

5. The brackets are Peirce's.