Appendices
Appendix I

In the "Minute Logic" written shortly before the 1903 Harvard lectures, that is, about 1902, Peirce writes:

The science which Berkeley, Kant, and others have developed, and which goes by the name of the theory of cognition, is an experiential, or positive science. It learns and teaches that certain things exist. It even makes special observations. But the experiential element in logic is all but nil. No doubt it is an observational science, in some sense; every science is that. Even pure mathematics observes its diagrams. But logic contents itself almost entirely, like mathematics, with considering what would be the case in hypothetical states of things. Unlike the special sciences, it is not obliged to resort to experience for the support of the laws it discovers and enunciates, for the reason that those laws are merely conditional, not categorical. The normative character of the science consists, precisely, in that condition attached to its laws. (2.65, emphasis added)

It certainly seems that here Peirce contradicts what he said about normative science in 5.39 (quoted in Part I, Chapter 2), namely, that its truth is categorical. In any case it is difficult to reconcile these passages. In conversations with colleagues, however, a number of things have been suggested to diminish the conflict. (1) In the passage quoted in this note Peirce is interested in distinguishing logic from any Erkenntnislehre which makes psychology its basis. Psychology might tell us how we must think—what are the uncontrollable processes therein involved, but logic as a normative science must deal with reasoning precisely from the point where it can be controlled. Logic, then, is not a positive science in the same way that psychology is, and in this respect is closer to mathematics. (2) When Peirce says that the conditional character of logic's laws is precisely what makes logic normative, he means to stress that logic lays down rules for right thinking, and
rules, since they refer to ends to be achieved, are most appropriately expressed in conditional, not categorical, propositions. He certainly has in mind formal rules of thinking which would be valid in any universe of rational creatures, but does not necessarily restrict normative logic to formal considerations. Thus he admits that logic does need at least that experience necessary to motivate its research, and in another place tells us that all true laws, true generals, formal as well as material, are characterized by conditional necessity only. While logic is like mathematics, it is still distinguished from it in that it also must take into consideration the processes of thinking and the nature of the object thought as they actually are, not just as they might be. (3) Peirce makes the laws of logic the laws of being. Normative logic looked at in this way might conceivably be thought of as making categorical statements of positive fact about reality, and still one could hold that the norms, rules, or laws which it enunciates are to be put in the form of conditional, not categorical propositions. Considered precisely as norms or laws for right thinking they ought to take the form, "If you want X, do Y." Considered as laws of being, general facts about reality, they might be expressed in categorical form, perhaps something like this: "It is a general fact or law of nature that if you want X, do Y." These suggestions are offered for what they are worth. At least we are working on the principle that before a man's thinking is pronounced inconsistent every effort to save it ought to be made. Cf. R. S. Robin, "Peirce's Doctrine of the Normative Sciences," Studies in the Philosophy of Charles Sanders Peirce, ed., by E. C. Moore and R. S. Robin (Amherst: University of Massachusetts Press, 1964), pp. 275 ff. for a perceptive discussion of this difficulty.
IN A LONG FRAGMENT (ca. 1906) Peirce expounds in some detail his doctrine of “interpretants” (5.475–493). He tells us that the “meaning” of an intellectual concept requires a study of interpretants, that is, of the “proper significate effects” of signs. There are three general classes of interpretants (corresponding to the three universal categories): (1) the emotional interpretant, or feeling produced by a sign, (2) the energetic interpretant, or effort, physical or mental, elicited by a sign, and (3) the logical interpretant, or rational purport of a sign (5.475–476). Peirce sets himself the difficult task of explicating the logical interpretant. The first logical interpretant is a conjecture or hypothesis suggested by involuntary experience (5.480). Such a conjecture stimulates voluntary performances or “experiments” in the “inner world,” that is, one considers the consequences of the conjecture and weighs alternatives. The logical interpretant, then, is seen to refer to the future, not to the future which as a matter of fact “will be,” but to what “would be” on certain assumptions. The logical interpretant, therefore, has the character of a general (5.481–483). But what categories of mental facts are of general reference? Peirce lists only four possibilities: (1) conceptions, (2) desires, (3) expectations, and (4) habits.

Now it is no explanation of the nature of the logical interpretant (which, we already know, is a concept) to say that it is a concept. This objection applies also to desire and expectation . . . since neither of these is general otherwise than through connection with a concept. Besides, as to desire, it would be easy to show . . . , that the logical interpretant is an effect of the energetic interpretant, in the sense in which the latter is an effect of the emotional interpretant. Desire, however, is cause, not effect, of effort. As to expectation, it is excluded by the fact that it is not conditional. For that which might be mistaken for a conditional expectation is nothing but a judgment that, under certain conditions, there
would be an expectation: there is no conditionality in the expectation itself, such as there is in the logical interpretant after it is actually produced. (5.486)

By elimination, therefore, Peirce concludes that the essence of the logical interpretant is habit.

In every case, after some preliminaries, the activity takes the form of experimentation in the inner world; and the conclusion (if it comes to a definite conclusion), is that under given conditions, 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. (5.491)

Peirce, of course, admits that another concept, or proposition, or argument can be a logical interpretant of a concept, but it cannot be the final logical interpretant, "for the reason that it is itself a sign of that very kind that has itself a logical interpretant." Only the habit can be the final logical interpretant because, although it too is a sign, it is not a sign like the concept of which it is the logical interpretant is a sign. What interprets habit considered as a sign (together with motive and circumstances) is action. But action is an energetic not a logical interpretant precisely because it lacks generality.

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. Consequently, the most perfect account of a concept that words can convey will consist in a description of the habit which that concept is calculated to produce. (5.491)

Peirce concluded this important paragraph with a rhetorical question.

But how otherwise can a habit be described than by a description of the kind of action to which it gives rise, with the specification of the conditions and of the motive?

This is but another expression of the scholastic maxima "agere sequitur esse," the medieval counterpart of the pragmatic maxim. To know

Immediate interpretant = the interpretant as revealed in the right understanding of the sign itself, and it is ordinarily called sign's *meaning*.

Dynamical interpretant = actual effect which sign determines.

Final interpretant = refers to the manner in which sign tends to represent itself to be related to its object.
Bibliography