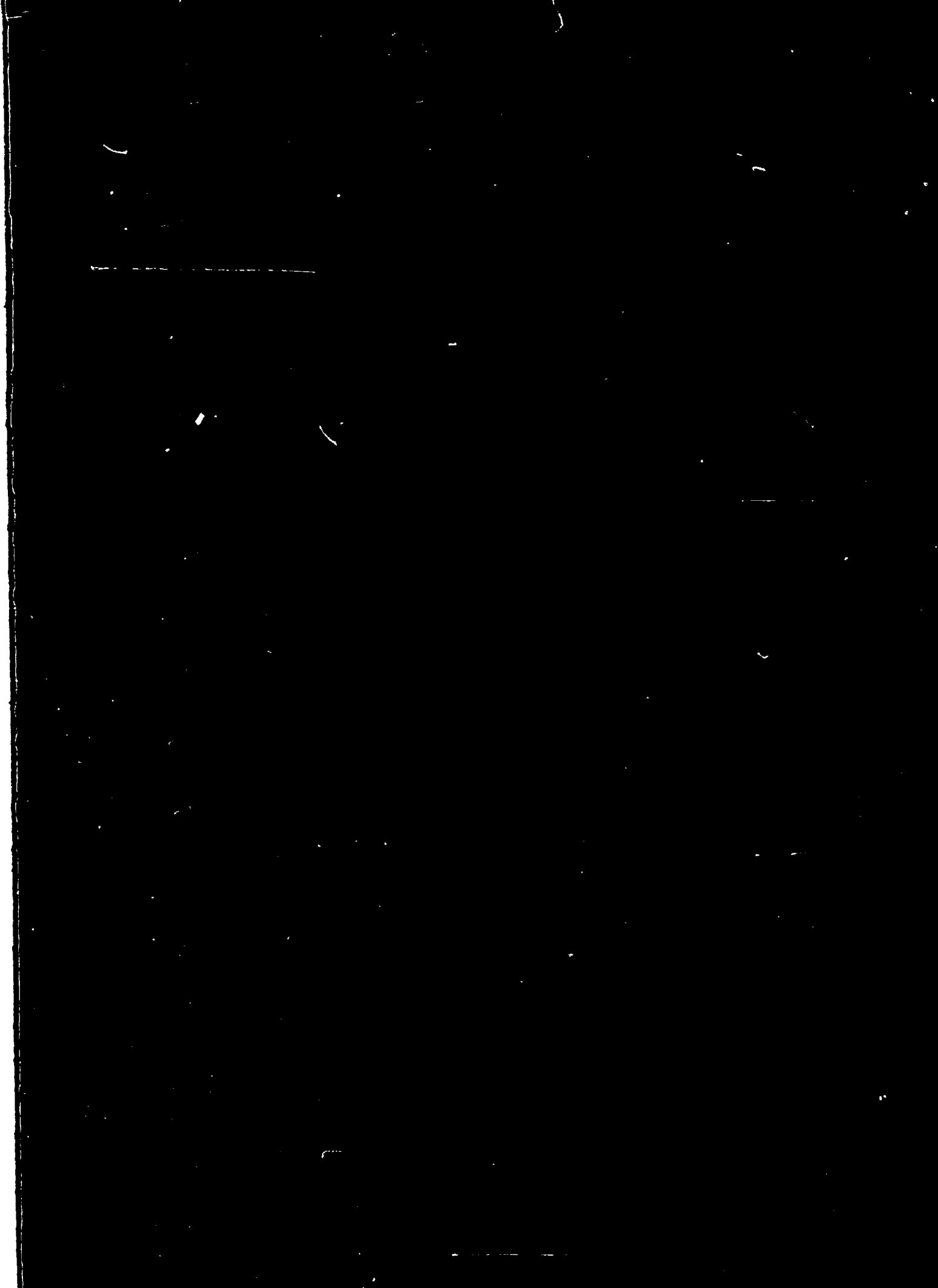




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C. S. PEIRCE ON INTUITION AND INSTINCT.

The University of Oklahoma, Ph.D., 1972
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Norman, Oklahoma

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C. S. PEIRCE ON INTUITION AND INSTINCT

CHAPTER I

INTRODUCTION

Charles Sanders Peirce's critique of Cartesian intuitionism and his understanding of instinct are the foci of this dissertation. In these pages his concept of instinct will be placed in the context of Peirce's attempt to avoid the weaknesses he felt were inherent in the Cartesian theory of intuition. It will be asked if his instinctive theory of insight, as well as his theories of mental action and inquiry, were consistently non-Cartesian.

Peirce, who lived from 1839-1914, is undoubtedly one of the most colorful figures in American philosophy. His life was marked by financial insolvency, great difficulty in personal relationships, incredible solitude, and astounding intellectual achievement. He made remarkable and lasting contributions in science, logic, mathematics, and philosophy. His achievements in astronomy and geodesy, his brilliant modifications of Boolean algebra, his influence on the mathematician Ernst Schroder, his pioneer work in the development of symbolic logic, and his role as the father of Pragmatism are now generally recognized. This recognition was, however, slow in coming. During his lifetime Peirce could not even secure a permanent teaching position. He earned his living as a government employee and an infrequent lecturer.¹

In 1868 Peirce published an article in the Journal of Speculative Philosophy entitled "Questions Concerning Certain Faculties Claimed For Man." This was followed in the same year by "Some Consequences of Four Incapacities."² In reference to these essays Gallie has remarked:

. . . if Peirce had died in the year in which he completed them--he was then less than thirty years of age--they would have been sufficient to establish him as a philosopher of genius.³

Peirce's peers, if they had studied these essays in any detail, might not have rated them as highly as Gallie. By the time they were published, however, Peirce had already earned a rather good reputation as a scholar. At Harvard he had completed his Sc.B. degree in chemistry summa cum laude, and one year later, during the 1864-65 academic term, he had lectured at his alma mater in the philosophy of science. Then, in 1866-67, he had given the Lowell Lectures. This was quite an honor for such a youthful scholar. Peirce, it seemed, was a man of some promise, and was maturing nicely.

The curious titles of Peirce's articles give little indication of their content. One has at least to skim over them in order to find that Peirce's general concern is with philosophical methodology, and that his specific intent is to expose and undercut the foundations of Cartesianism. Peirce considered that the concept of intuition was the basis of Cartesianism in all of its forms, and so it is against that concept that his energies are directed. In his opinion the concept was of fundamental import in modern philosophy, and was as important for the empirical tradition in modern philosophy as it was for the rationalistic tradition. Thus Peirce's critique is directed not only against Descartes, but against Cartesianism. It is not just Descartes' thought, but the tradition

it inspired, that Peirce is battling; and the concept of intuition is the key to this tradition. (Every thinker whose thought rests on an intuitive base is, in Peirce's understanding, a Cartesian.) In the second of his articles the spirit of Cartesianism is distilled by Peirce in four propositions:

1. It teaches that philosophy must begin with universal doubt; whereas scholasticism had never questioned fundamentals.
2. It teaches that the ultimate test of certainty is to be found in the individual consciousness; whereas scholasticism had rested on the testimony of sages and of the Catholic Church.
3. The multiform argumentation of the middle ages is replaced by a single thread of inference depending often upon inconspicuous premisses.
4. Scholasticism had its mysteries of faith, but undertook to explain all created things. But there are many facts which Cartesianism not only does not explain but renders absolutely inexplicable, unless to say that "God makes them so" is to be regarded as an explanation (5.264).

"In some, or all of these respects," he writes in comment upon the four propositions, "most modern philosophers have been, in effect, Cartesians" (5.265). This indicates the inclusiveness of his concern.

So far-ranging is Peirce's attack that it must, if it is successful, have wide implications for the philosophic tradition it criticizes. At the same time, however, Peirce's critique was replete with implications for his own position. Just as it helped to clarify and define an important cluster of epistemological problems, and just as it served to focus those methods and positions which, in Peirce's opinion, must be considered inadequate, so his critique of Cartesianism also served to mark off an approach to cognition which Peirce himself could never follow. In his exposé of the inadequacies of Cartesianism Peirce was, in effect, declaring

his intention to search for another, and more adequate, approach to the problem of epistemic foundations. The critique of Cartesianism served to establish the intellectual boundary lines which he must observe in his attempt to establish a new position.

We may suppose that Peirce expended much energy in his attempt to bypass the pitfalls of Cartesianism. "Questions Concerning Certain Faculties Claimed For Man" had established, to his satisfaction at least, that intuition was a myth. The result was that some new means of accounting for phenomena which had been considered intuitive must be found. This was no small task. Cartesianism, at least as Peirce had understood it, had supposed that mental action was intuitive. This in turn had provided a persuasive and powerful theory as to the nature of human intellectual insight. If mental action is intuitive it may be supposed that those situations in which we gain some new understanding, or in which we see "in a flash" that something is the case, are simply striking instances of this form of mental action. Not only this, the intuitive theory had brought with it a theory of the nature of inquiry. This is seen quite clearly in Descartes' Rules For The Direction of The Mind. The goal of inquiry is to clear the way for an intellectual insight, and this could be done, Descartes felt, by following his rules. All of this meant that Peirce, if he was to fill in the theoretical gap left by intuition, must develop non-Cartesian theories of mental action, insight, and inquiry.

Peirce's general approach to the first and last of these problems was already evident in 1868. The second of Peirce's 1868 articles, "Some Consequences of Four Incapacities," detailed an inferential theory of mental action, or theory of thought-signs. At the same time, Peirce spoke

out strongly against the famous and influential method of doubt. A new method of inquiry, he insisted, must be substituted for it. Complete doubt is impossible. ". . . no one who follows the Cartesian method will ever be satisfied until he has formally recovered all those beliefs which in form he has given up. It is, therefore, as useless a preliminary as going to the North Pole would be in order to get to Constantinople by coming down regularly upon a meridian" (5.265). In 1877, nearly a decade later, Peirce published "The Fixation of Belief" in the Popular Science Monthly. This was followed the next year by another article in the same journal. Its title was "How To Make Our Ideas Clear." In these articles Peirce set forth his theory of inquiry in more detail. In the process, Pragmatism was born, and his attempt to fill the lacuna left by intuition was almost complete.

Whether in 1878 Peirce had intentions of ever developing a non-Cartesian theory of insight is unknown. Judging from his 1868 critique it would seem that he did not even consider intuition as a theory of insight. All his energies were devoted to intuition as a theory of mental action, and to its attendant theory of inquiry. Late in his career, however, Peirce came to consider the phenomenon of human insight. Working in retirement at a country home in Milford, Pennsylvania he began to speculate on the source of scientific knowledge. He came to say that ". . . instinct is the great internal source of all wisdom and of all knowledge. . ." (6.500), and that man has an instinctive insight into nature's ways (5.173). As he developed this understanding of the role of instinct, it is natural that the problem of its relation to the intuitive theory of insight should come up. Does the instinctive theory

constitute an alternative to the Cartesian intuitive theory or did Peirce lapse into Cartesianism in the later days of his philosophical activity? That is the problem toward which this dissertation tends, and the result is that Peirce's critique of Cartesian intuitionism and his understanding of instinct are, for purposes of critical scrutiny, brought into close relationship with each other.

Peirce's critique of Cartesianism has been the subject of several fine studies, but until recently his view of instinct has received relatively little attention. When the theory of instinct has been considered, Peirce's religious views and his lectures on vitally important matters have usually provided the context. This is only natural, as some of Peirce's fuller treatments of instinct occur in connection with these issues. The purpose of this dissertation, however, is not only to clarify the meaning of instinct for Peirce's thought, but to view it in relation to his critique of the intuitive tradition. This has never been done. If it be granted, however, that intuition is a theory of insight as well as a theory of mental action which carries with it a theory of inquiry, this project is seen to be far from pointless. The question at issue is this: Does Peirce's theory of instinct succeed in filling, so far as human insight is concerned, the gap left by the rejection of intuition? If the answer to this question is affirmative, then Peirce was successful in stating an alternative to every aspect of Cartesian intuitionism, but if the question must be answered negatively, then Peirce's project was a failure.

Even this statement of the ultimate problem to which this dissertation tends is, however, an oversimplification. Thus far it has been

assumed, for the purpose of clarifying the issues at stake, that intuition did encompass a theory of mental action, a theory of insight, and a theory of inquiry; that Peirce's critique of the Cartesian tradition did constitute a sort of clarion call to the formulation of alternative theories; that Peirce did develop theories of mental action and inquiry that are essentially non-Cartesian; and finally, that it is possible to compare intuition and instinct as theories of insight. That this is a legitimate understanding of Peirce's critique of Cartesianism and subsequent philosophical activity remains to be seen. The following chapters consist in a detailed attempt to secure each of these points. In Chapter Two there is an explication of the meaning of intuition in the Cartesian tradition in which it is argued that intuition provided an answer to the problems of mental action, insight, and inquiry. In addition, Peirce's major arguments against intuition are considered with some care. Chapter Three consists in an analysis of Peirce's attempt in "Some Consequences of Four Incapacities" to develop an inferential, as opposed to an intuitive, theory of mental action. In this analysis it becomes evident that Peirce is consciously striving for an understanding of mental action which avoids intuition's claims to immediacy, primacy, and indubitability. In Chapter Four the thesis that Peirce's philosophical efforts include an attempt to avoid Cartesianism is again pursued. This time the argument is extended to Peirce's theory of inquiry as that theory is set forth in "The Fixation of Belief" and "How To Make Our Ideas Clear." It is shown that Peirce consciously distinguished his method (which came to be known as "Pragmatism") from that of Cartesianism, and that in later years he came to see a connection between it and his theory of signs. In sub-

stance, then, Chapters Two, Three, and Four consist in an analysis of the claims of intuition and of the effort by Peirce to discredit them and state alternative theories of mental action and inquiry.

In Chapter Five the process of detailing Peirce's alternatives to Cartesianism is continued. First of all it is suggested that the theory of instinct is in effect a theory of insight. Both to illustrate and to defend this interpretation of instinct, its role in vitally important matters, in the development of scientific hypotheses, and in the knowledge of God is considered. In the course of these discussions it is learned that Peirce thought of instincts as inherited habits or dispositions (2.170). Finally, it is asked if the theory of instinctive insight provided Peirce with a genuine alternative to Cartesianism. As this is a particularly important issue its resolution may be summarily anticipated here.

An answer to the problem is made possible by the analyses of preceding chapters. The examination of "Some Consequences of Four Incapacities" in Chapter Three shows that thought, for Peirce, is a process of sign translation. Every sign in the process is interpreted by another; every sign is the "interpretant" of another sign. In "How To Make Our Ideas Clear," however, Peirce is interested in the process of establishing belief. As is related in Chapter Four, he held that the goal of thought is the alleviation of doubt and the establishment of a belief, or habit of action. The goal of thought in action is thought at rest. In effect, then, Peirce describes thought in more than one terminology.⁴ In the theory of inquiry he uses the language of doubt and belief, while in the theory of mental action he describes thought in the language peculiar to sign theory.

Section Two of Chapter Four is concerned with Peirce's attempt to synthesize these two theories. This attempt was not made until many years after their original statement. Peirce came to argue that a belief-habit is the ultimate interpretant of a sign. Thus, at one stroke he connected the rather psychological statement offered in the theory of inquiry with the theory of signs. When these two of Peirce's alternatives to Cartesianism are related in this way, the theoretical status of instinct in his thought ceases to be a mystery. Habits, as Peirce stated in his analysis of belief, are ultimate interpretants in a sign process; but, as is noted in Chapter Five, Peirce describes instincts as habits. Instincts, therefore, are also interpretants. Since they may be interpreted in accordance with a sign process, and since the theory of thought-signs is an alternative to Cartesian intuitionism, it may be concluded that Peirce has developed a theoretical basis for an original alternative to the Cartesian theory of insight.

Even if there is a theoretical alternative to the Cartesian theory of insight in Peirce's writings, Peirce may still have fallen into Cartesianism by claiming that instinct is immediate and apodictically certain. These were some of the characters of intuition that Peirce rejected in his 1868 analyses. For this reason, in Chapter Five there is an intensive examination of Peirce's claims for instinct. The result is that Peirce's theory is found, with one possible exception, to be consistently non-Cartesian.

NOTES

1. A complete biography of Peirce will not be found in what follows. Those interested in reconstructing Peirce's life may want to consult Paul Weiss, "Biography of Charles S. Peirce," in Perspectives on Peirce: Critical Essays on Charles Sanders Peirce, Richard J. Bernstein, ed. (New Haven: Yale University Press, 1965), 1-12. This article was originally printed in the Dictionary of American Biography, Volume 14, 398-403. Peirce's correspondence with William James is of special interest. See Ralph Barton Perry, The Thought and Character of William James: Briefer Version (Cambridge, Massachusetts: Harvard University Press, 1948), passim. Cited hereafter as Perry. For Peirce's correspondence with one of his students, see Christine Ladd-Franklin, "Charles S. Peirce at the Johns Hopkins," The Journal of Philosophy, Psychology, and Scientific Method, 13 (1916), 715-722. These three sources are of primary importance. They are cited in every other account of Peirce's life which I have found.

2. Most of Peirce's writings have been collected into eight volumes. Volumes 1 through 6 of the Collected Papers of Charles Sanders Peirce (Cambridge, Massachusetts: Harvard University Press, 1931-35) were edited by Charles Hartshorne and Paul Weiss. The seventh and eighth volumes of the Collected Papers (Cambridge, Massachusetts: Harvard University Press, 1958) were edited by Arthur W. Burks. In referring to Peirce's works most writers indicate the appropriate volume and paragraph number. 8.169 would mean that the reference was to paragraph 169 of the eighth volume of the Collected Papers. This system will be followed in the following pages.

The Collected Papers does not contain all of Peirce's writings. For extensive bibliographies the reader may consult Volume 8 of the Collected Papers and Max H. Fisch, "A First Supplement To Arthur W. Burks' Bibliography of the Works of Charles Sanders Peirce," in Studies in the Philosophy of Charles Sanders Peirce: Second Series, Edward C. Moore and Richard S. Robin, eds., (Amherst: The University of Massachusetts Press, 1964), 477-485.

3. W. B. Gallie, Peirce and Pragmatism, (New York: Dover Publications, Inc., 1966), 62. Cited hereafter as Gallie.

4. On Peirce's use of more than one terminology in describing his theory of knowledge, see Gallie, 84. Gallie finds that Peirce's theory of knowledge is stated in three terminologies. I concur with him on this point.

CHAPTER II

PEIRCE'S CRITIQUE OF CARTESIANISM

Peirce's attack on the foundations of Cartesianism was the first stage of an attempt to develop and clarify a tough-minded philosophical methodology. Cartesianism's weaknesses, as exposed by his critical onslaughts, was his license for developing new approaches to philosophic issues. Our aim in this dissertation is to determine whether or not Peirce succeeded in avoiding Cartesianism's defects, as he saw them, in the development of certain of his own theories. For this reason, it is essential to have an adequate understanding both of the meaning of intuition in the Cartesian tradition and of Peirce's attempt to prove that intuition is an empty concept. It is the aim of this chapter to provide this understanding. In succeeding chapters the theories Peirce proposed in the stead of intuition will be examined.

The 1868 critique of Cartesianism may be viewed as one phase of an attempt to develop an adequate understanding of the given in experience. The problem of the given has of course received an extensive treatment in this century. It has been of central importance in twentieth-century epistemological discussions. Peirce's essays are quite relevant to these discussions, but it must not be forgotten that they are nineteenth-century products. Twentieth-century views of intuition have been influenced quite

heavily by such men as Bergson, Russell, and Husserl. When Peirce's articles were published, however, Russell had not been born, and Bergson and Husserl were only nine years old. In his references to "modern philosophers" in the 1868 essays Peirce meant to indicate the British empiricists, the Scottish Common Sense School, Kant, and of course, Descartes and his successors. In any attempt to understand the tradition Peirce was reacting against, these thinkers, and not those who are closest to us in time, are of primary importance.

In his 1868 essays it is of course evident that Peirce has Descartes in mind. Other and more contemporary forms of Cartesianism were, however, available for his study. Sir William Hamilton's notes to The Works of Thomas Reid, D.D. contain an elaborate and knowledgeable defense of the kind of position Peirce is reacting against,¹ and Peirce tells us: "I am to a certain extent an admirer of Hamilton. I have learned much from his notes to Reid and some of his other writings" (2.533). In another place (6.590) Peirce states that Hamilton's method, as it is set forth in the Notes on Reid, is "especially worthy of attention," and in the first of his 1868 essays Peirce refers his readers to Hamilton's "enumeration of six meanings of intuition" (5.213n). Hamilton's notes, it would seem, helped Peirce understand the nature and meaning of Cartesianism. In attempting to understand the position Peirce is attacking it will be helpful to refer on occasion to these notes.

Peirce begins his analysis of Cartesianism with a carefully formulated definition of intuition. That he was aware of a long and venerable tradition lying behind Hamilton, and even Descartes, is immediately evident. He writes:

In the middle ages, the term "intuitive cognition" had two principle senses; 1st, as opposed to abstractive cognition, it meant the knowledge of the present as present, and this is its meaning in Anselm; but 2d, as no intuitive cognition was allowed to be determined by a previous cognition, it came to be used as the opposite of discursive cognition (see Scotus, In sentent., lib. 2, dist. 3, qu. 9), and this is nearly the sense in which I employ it (5.213n).

For Peirce an intuition is "a cognition not determined by a previous cognition of the same object, and therefore so determined by something out of the consciousness" (5.213).

Peirce's definition is intended to suggest intuition's relation to the inferential process. "Intuition here will be nearly the same as 'premiss not itself a conclusion'; the only difference being that premisses and conclusions are judgments, whereas an intuition may, as far as its definition states, be any kind of cognition whatever" (5.213). It may be assumed that intuitions are analogous to the major premisses in an argument. Just as major premisses constitute the original step in an argument, so intuitions are original cognitions. The major premiss of an argument, however, may at the same time be the conclusion to another prior argument, and in this respect the analogy does not hold. An intuitive cognition has no predecessors. An intuitive cognition may determine another cognition, as the premisses in an argument determine its conclusion. Some previous proposition may have determined the major premiss in an argument, but the intuitive cognition is by definition not determined by another cognition.

The roots of intuition, when it is defined in this way, go back at least as far as Plato, and are an expression of a desire for an absolutely certain epistemic foundation. It was Aristotle's contention that "we . . . possess unqualified scientific knowledge of a thing . . . when . . . we

know the cause on which the fact depends, as the cause of that fact and of no other, and, further, that the fact could not be other than it is."²

Scientific knowledge is a knowledge of causes. Whatever the process by which it is grasped, scientific knowledge, when it is grasped, takes the form of a demonstrative syllogism whose premisses "must be true, primary, immediate, better known than and prior to the conclusion, which is further related to them as effect to cause."³

Already in this passage our interest is drawn to the premisses of Aristotle's demonstrative syllogism. An intuition, as Peirce has defined it, satisfies Aristotle's requirements for the premiss in a demonstrative syllogism in every way. Aristotle even rejects the possibility that the premiss of a demonstrative syllogism might be the conclusion of a previous syllogism, for an immediate premiss, as he understands it, is one having no other premiss prior to it.⁴ That is to say, it is not determined by any previous premiss. For Aristotle this point was crucial. To be determined by a previous premiss is to be qualified by it, and Aristotle's goal is unqualified knowledge. Demonstration, then, is always founded on an immediate premiss.

Immediacy, as it turns out, is closely connected with indemonstrability. Aristotle held that the premiss in any demonstration must itself be indemonstrable. Any premiss preceded by another may form the conclusion in some prior demonstration. Any premiss which may follow from another is, however, demonstrable. It follows that only those premisses not determined by prior premisses are indemonstrable, and hence primary.

Aristotle's formulation of the essential characteristics of demonstration has been of primary importance. One philosopher after another has

assumed that demonstrative (certain) knowledge is possible, and has echoed the Aristotelian demand for immediacy and primacy. In philosophy such unanimity is remarkable. Now it is to be noted that demonstration, understood in the manner just described, requires a complementary theory of cognition. The tradition following Aristotle found it necessary to assume the existence of a mode of apprehension which satisfied the twin criteria of immediacy and primacy. The ultimate premisses of demonstration must have their source in cognition; and if immediacy and indemonstrability are their essential characteristics, the cognitions supplying them must also be immediate and indemonstrable. In modern philosophy "intuition" is the technical term for these cognitions. Thus Descartes and Locke, whose works stand at the dawn of modern philosophy, agree in stating that intuition is the source of those propositions or axioms which form the starting-point of deduction, and further, is the guarantor of the certainty of each step in the deductive process.

It would be difficult to overestimate the power of the intuitive approach to the foundations of knowledge. To Peirce's predecessors no other theory seemed possible. The prevailing sentiment in modern philosophy was well stated by Hamilton:

. . . how, it is asked, do these primary propositions--these cognitions at first hand---these fundamental facts, feelings, beliefs, certify us of their own veracity? To this the only possible answer is--that as elements of our mental constitution--as the essential conditions of our knowledge--they must by us be accepted as true. To suppose their falsehood, is to suppose that we are created capable of intelligence, in order to be made the victims of delusion; that God is a deceiver, and the root of our nature a lie.⁵

An attempt to understand intuition in more detail is now in order. It will be convenient to begin with Descartes' characterization of

intuition.

By intuition I understand, not the fluctuating testimony of the senses, nor the misleading judgment that proceeds from the blundering constructions of imagination, but the conception which an unclouded and attentive mind gives us so readily and distinctly that we are wholly freed from doubt about that which we understand. Or, what comes to the same thing, intuition is the undoubting conception of an unclouded and attentive mind, and springs from the light of reason alone; it is more certain than deduction itself, in that it is simpler, though deduction, as we have noted above, cannot by us be erroneously conducted.⁶

Several important themes are intertwined in this passage. First, it may be observed that Descartes' use of such terms as "unclouded" and "distinct" suggests that intuitions are analogous to physical sight. In Locke, who followed Descartes rather closely in this matter, the analogy is quite explicit. He held that in intuition:

. . . the mind is at no pains of proving or examining, but perceives the truth as the eye doth light, only by being directed towards it. This part of knowledge is irresistible, and, like bright sunshine, forces itself immediately to be perceived, as soon as ever the mind turns its view that way; and leaves no room for hesitation, doubt, or examination, but the mind is presently filled with the clear light of it.⁷

An intuition is an "in-sight," an internal mental vision. It is a concept or proposition which is simply "seen." This imagery may be traced back at least as far as Plato.

An intuition, although it is a kind of vision, and is analogous to physical sight, is not, however, to be confused with sensory experience. Intuition is non-sensory. It may even be characterized as a non-sensory experience. It is important to bear this in mind, for since the time of Kant the term has been applied to sense experience. Stocks⁸ has pointed out that "intuition" was used to translate Kant's "Anschauung," so that

when Kant says "Anschauungen ohne Begriffe sind blind" intuition refers to what is given in sensory experience. Intuitions in this usage are opposed to what is supplied by the mind. This is an extension in meaning which is quite foreign to the Aristotelian/Cartesian tradition, and which neither Descartes nor Locke anticipated. In their thought an intuition is a primary mental act, while in Kant it provides the experiential given. Intuitions are percepts for Kant, while in Descartes and Locke, they are the source of concepts. In order to avoid confusion in what follows, Kant's meaning must not be read into Descartes or Locke.

The second point of interest in Descartes' analysis is his emphasis on the certainty of intuitive cognitions. No one in the Aristotelian/Cartesian tradition has stated this point with greater emphasis or clarity than Locke: "It is on this intuition that depends all the certainty and evidence of all our knowledge; which certainty every one finds to be so great, that he cannot imagine, and therefore not require a greater . . ."9

With respect to what is intuited, an intuition is supposed to free us from doubt. This is a third element in Descartes' characterization of intuition. We may imagine him saying that intuitive conceptions are those to which we assent without hesitancy. They are, as Locke said, "irresistible," and there is no need to prove or examine them. This claim raises an important issue. Let us call it "the problem of disagreement." An intuition, as we have seen, is supposed to provide an indubitable and certain foundation for demonstration. Intuitions must be free from error if they are to fulfill this function. It follows from this that if an intuition is free of error it cannot contradict any other intuition, for only one of two contradictory propositions can be true. In other words,

if any conception whose truth I or any one else who has an unclouded and unprejudiced mind does not doubt is intuitive, and if all intuitions are errorless, then no conception which I hold without doubt can contradict any undoubted conception held by another unprejudiced and clear-minded individual.

Descartes seems never to have felt the full force of this difficulty. It may be assumed that if he had he would have attempted to overcome it. No such attempt is evident in his writings. On this problem Locke is also silent. His attitude seems simply to have been that intuitions are unquestionable. Referring to intuition, he writes: "He that demands a greater certainty than this, demands he knows not what, and shows only that he has a mind to be a sceptic, without being able to be so."¹⁰ This is little more than an argumentum ad hominem, and bypasses the problem entirely.

One possible answer to the problem of disagreement is that intuitions by definition never contradict each other. Locke never explicitly took this approach, but there is some warrant for it in the Essay. An intuition for Locke is an immediate perception of the agreement or disagreement of any two of our ideas, and of course it has all of the characteristics we have already enumerated. The knowledge given in such an intuition is the most certain man can have. Now there are cases, Locke recognizes, when the mind, in combining and separating its ideas, is not able to perceive (intuit) their agreement or disagreement. In such a case it may be presumed that ideas agree or disagree, though this is not known with certainty. Locke refers to this presumption as a judgement.¹¹ If this is applied to the problem of disagreement it can be said that any proposition whose truth is affirmed by one individual and disputed by another is judge-

ment and not an intuition.

This approach would, of course, enable Locke to account for some, if not all, disagreements. If two individuals are affirming contradictory propositions, then one of them has simply made a wrong judgement. The greatest difficulty, however, is left untouched. If two individuals affirming contradictory propositions do not simply presume that their propositions are true, but find them irresistible and indubitable, then, without redefining intuition, one cannot be said to have wrong judgement. This solution of the problem, while promising at first, ends in failure. To maintain the intuitive position, Descartes and Locke must simply say that in fact the problem never arises. Peirce, as will be seen, disputes this contention.

To the reader this state of affairs may seem highly unsatisfactory. The contention that intuitions free us from doubt, or that they are irresistible, may not have satisfied his desire for an adequate criterion. Yet it is difficult to see how Descartes or Locke could have proceeded any differently. It has been noted that the major premisses in a demonstration must themselves be indemonstrable. If the certainty of proposition X could be proved, it would not be intuitive. Hamilton is quite clear on this point:

Demonstration, if proof be possible, behoves to repose at last on propositions, which, carrying their own evidence, necessitate their own admission; and which being, as primary, inexplicable, as inexplicable, incomprehensible, must consequently manifest themselves less in the character of cognitions than of facts, of which consciousness assures us under the simple form of feeling or belief.¹²

Again he writes:

As the ultimate grounds of knowledge, these convictions cannot be redargued [sic] from any higher knowledge; and

as original beliefs, they are paramount in certainty to every derivative assurance. . . . it will argue nothing against the trustworthiness of consciousness, that all or any of its deliverances are inexplicable--are incomprehensible; that is, that we are unable to conceive through a higher notion, how that is possible, which the deliverance avouches actually to be. For the primary data of consciousness, as themselves the conditions under which all else is comprehended, are necessarily themselves incomprehensible.¹³

Let us pause to consider where our analysis has led us thus far. It has been suggested that in the Aristotelian/Cartesian tradition knowledge is given an intuitive foundation. An intuition is an act in which certain propositions are given to the mind. Each proposition resulting from such an act is self-evident. It needs no proof, and is even incapable of proof. In intuition the mind is in direct contact with an object. The requirements for apodictic knowledge, then, are satisfied by intuition.

In the Aristotelian/Cartesian tradition, intuition is supplemented by a second way of knowing. Knowledge consists of what is known in intuition, and also of what may be deduced from an intuitively known proposition in accordance with the laws of formal logic. In this way the scope of human knowledge is greatly extended. Thus indirect or mediate knowledge, in addition to the immediate knowledge given in intuition, is also possible. It is intuition, however, which ensures the certainty of the deductive process. This occurs in two ways. In the first place, intuition provides, as was seen above, the apodictically certain major premisses with which the process of deduction begins. Then, secondly, each proposition in any chain of reasoning is seen, by intuition, to follow from its predecessor. A chain of reasoning might be quite long. It may be beyond the power of a human mind to take in every step of the reasoning process in one intellectual act, but each step may be seen in its turn to be intuitively

certain. Thus intuition not only supplies the major premisses of deductive reasoning, but it also ensures the certainty of the whole reasoning process. If Peirce's critique shows that there are intuitions, then the whole Aristotelian/Cartesian edifice crumbles.

"Intuition" has other meanings besides those indicated thus far. One at least is the product of popular imagination. No philanderer, going home to his wife after an evening of fun, is apodictically certain that women cannot divine the most carefully guarded secrets. Fortunately, the philanderer's problem, whatever its practical relevance, may be bypassed here. It played no crucial role in the Aristotelian/Cartesian tradition. In that tradition, however, intuition does do more than supply self-evident propositions. It also serves as an explanation of human originaive powers. The visual metaphors used to describe intuition make this evident. It is an insight, or discovery, or vision of some new connection. Intuition in this tradition, then, is akin to sagacity.

In practice it may be impossible to separate a theory of cognition from a theory of discovery. The latter, surely, will always be grounded in the former. This, however, is the source of a difficulty which must be overcome in the course of this dissertation. The difficulty is this: All the terms used to describe an act of intellectual discovery seem to be wedded to the Cartesian theory of cognition. Relevant terms here are "insight," "seeing," and "intuiting." If the Cartesian theory is rejected, must any or all of these terms be given up? If there are no intuitions, is it legitimate to speak of an "insight," or to say that we "see" that something is the case? It will be seen that the Cartesian vocabulary is very closely related to popular usage, and that it thereby has a tremendous psychological advantage over any alternative theory.

The close connection between the Cartesian/Lockean theories of cognition and discovery necessitated a reinterpretation of immediacy. It has been shown that the immediate, in Aristotle's use of the term, is a premiss of absolute priority. In other words, it cannot itself be deduced from any other premiss. This meaning is retained in the Cartesian/Lockean tradition. There, however, immediacy is attributed not simply to the ultimate premisses in demonstration, but also to intuitive cognitions. Since intuition was a theory of cognition formulated in the first instance to satisfy the demands of demonstration, this is not surprising. Once immediacy was attributed to a mental act, however, an extension of the meaning of the term became necessary. The shift involved is quite subtle, but it exists nevertheless. If it is granted that in demonstration the ultimate premiss is not preceded by any other, then it is natural to suppose that the mental act in which such propositions are apprehended is not determined by any previous mental act. This must mean that an intuition is not qualified by any other mental act. An intuition stands on its own. Once this is said, however, it may also be possible to maintain that both ultimate and derivative propositions can be apprehended in such an act. In other words, intuitive cognitions, being unqualified by other propositions, conform to the model of ultimate premisses in demonstration, but once their existence is supposed there is no need to limit them to the apprehension of premisses unpreceded by any other. That one derivative proposition follows from another which is also derivative might also be seen in an intuitive act. This was the course actually taken by Descartes and Locke when they said that each step in a certain chain of reasoning is seen intuitively to be true.

In addition to meaning "unqualified" "immediate" must also mean "instantaneous." An act of immediate or direct knowledge must be one in which something is known "in a flash," or instantly. One must be having an intuitive cognition when he is "suddenly struck" by something. This meaning is certainly implied when Locke says that an intuition ". . . forces itself immediately to be perceived, as soon as ever the mind turns its view that way; and leaves no room for hesitation, doubt, or examination, but the mind is presently filled with the clear light of it."¹⁴ It is once more evident when Locke suggests the following:

. . . the mind being willing to know the agreement or disagreement in bigness between the three angles of a triangle and two right ones cannot by an immediate view and comparing them do it: because the three angles of a triangle cannot be brought at once, and be compared with any other one, or two, angles; and so of this the mind has no immediate, no intuitive knowledge. In this case the mind is fain to find out some other angles, to which the three angles of a triangle have an equality; and, finding those equal to two right ones, comes to know their equality to two right ones.¹⁵

This is another illustration of the close connection between the Cartesian theory and popular usage. In describing what we feel in making a discovery, most of us are quite Cartesian. We would all be willing to say that we saw such-and-such to be the case "in a flash," or immediately. Whether or not this usage may be taken as evidence for the Cartesian theory of cognition is, however, another question. The psychological and philosophical aspects of the problem must be kept separate. As Peirce points out, our feeling that we have an intuitive faculty in the Cartesian sense is no evidence that we do in fact have it (See 5.214).

Immediacy, in so far as it relates to the intuitive theory, is absolutely prior, unqualified, and instantaneous. In the Cartesian/Lockean

tradition immediacy was attributed to intellectual cognitions, but when Kant broadened the sense of the term it became possible, and was quite natural, to say that sensory intuitions are also immediate. "Immediate," when it was referred to sensory intuitions, continued to have the characteristics noted above. It is worth noting, however, that in Peirce's philosophy the term has a different significance. Peirce affirms (in Whitehead's phrase) presentational immediacy, but when he does immediacy has ceased to denote an absolute priority, and instead is used to refer to the feeling of direct presentness which, when we analyze it, seems to be an accompanying circumstance of all our experience (5.441). Given that that is the case, Peirce's use of immediacy is descriptive only, and need not be taken as a lapse into Cartesianism.

The nature and significance of intuitive cognitions should now be reasonably clear. Before proceeding to Peirce's critique, we must note those things which were supposed to be known in intuition. These may be briefly stated as follows. Intuition was used to account for self-consciousness, and for our knowledge of certain (analytic) propositions. "Thus each individual can mentally have intuition of the fact that he exists, and that he thinks; that the triangle is bounded by three lines only, the sphere by a single superficies, and so on."¹⁶ Certain discriminative capacities are also given an intuitive foundation. Locke says that one knows intuitively ". . . that white is not black, that a circle is not a triangle, that three are more than two and equal to one and two."¹⁷ Finally, it would seem that those logical principles we use in deducing one proposition from another are known intuitively. At least this would seem to be the point in this passage from Descartes: ". . . consider this consequence: 2 and 2 amount

to the same as 3 and 1. Now we need to see intuitively not only that 2 and 2 make 4, and that likewise 3 and 1 make 4, but further that the third of the above statements is a necessary conclusion from these two."¹⁸ In the Cartesian/Lockean tradition there is a general agreement on each of these points.

With this explication of the meaning of intuition in the tradition Peirce is criticizing we are prepared for an examination of his critique. In "Questions Concerning Certain Faulties Claimed For Man" Peirce first asks:

Whether by the simple contemplation of a cognition, independently of any previous knowledge and without reasoning from signs, we are enabled rightly to judge whether that cognition has been determined by a previous cognition or whether it refers immediately to its object.

Peirce suggests that, in thought at least, there is a difference between having an intuition and knowing that it is intuitive (5.214). Supposing that there are intuitive cognitions, is it possible for us to tell that we are having one? This is the problem raised by Peirce's first question.

Our feelings are the only evidence in favor of the supposition that we can distinguish intuitive from derivative cognitions, says Peirce. The point at question, however, is whether our feelings can be accepted as apodictically certain. Is it possible for us to distinguish an intuitive cognition from some feeling we have picked up along the way? Is there any certain mark by which we can distinguish intuitions from feelings which are the result of a process of education, for instance? The man who can maintain this belief is, according to Peirce, "evidence-proof." In the language of Peirce's "The Fixation of Belief," it might be said that such an individual has succeeded in fixing his beliefs according to the method

of tenacity. What evidence, it must be asked, has this man insulated himself against?

Of all of Peirce's arguments against intuition, the first is perhaps the most difficult to assess. It is an attempt to discredit intuition theory by means of the problem of disagreement. The argument proceeds in two stages. First, Peirce tries to show that philosophers have disagreed as to which cognitions are intuitive. Then in the second stage he draws some conclusions from the fact of disagreement.

Peirce holds that the history of philosophy is full of disputes as to which propositions are intuitive. In any given epoch this may not be true. Descartes and Locke were in close agreement with each other as to what could be known intuitively. The strength of Peirce's argument depends upon taking the long view. If philosophic thought in the middle ages is taken into account, it will be seen, Peirce says, that the credibility of authorities was taken as a first premiss in argument. In the modern period external authorities are no longer considered ultimate. Instead, the deliverances of an internal authority (intuition) are believed to have this status. This is evidence that what is considered primary in one epoch may be called in question in another.

This disagreement is used as the basis for two conclusions. Each is stated by Peirce in a single sentence. They will be considered separately here, for they are of unequal value. Suppose it is agreed that the credibility of an authority is not to be taken as an ultimate premiss, but that such premisses are given in intuition. If this is the case, our medieval philosophers should have been able to tell, simply by contemplating their authority's credibility, that they were not ultimate premisses. They

did not arrive at this conclusion. Thus the fact that they did accept credible authority as ultimate is strong evidence that there is no power of distinguishing ultimate from derivative premisses. This is the first of Peirce's conclusions. The second may now be considered.

Noting that credible authorities are now not generally accepted as ultimate premisses, Peirce asks: "Now, what if our internal authority should meet the same fate, in the history of opinions, as that external authority has met? Can that be said to be absolutely certain which many sane, well-informed, and thoughtful men already doubt (5.215)? The second of these questions might well have been directed against Locke's statement that whoever doubts intuitive certainty has it in mind to be a doubter without really knowing how. Peirce will not allow this contention to stand. One cannot say, even if he has examined every existing argument against intuition, that some further argument, or group of arguments, may not be found to tell against the intuitive theory. One must not block the road to inquiry. It is always possible that some valid reason for rejecting the theory may be found.

All of Peirce's arguments in answer to the first question are directed against the proposition that it is possible to distinguish ultimate from derivative premisses simply by contemplating them. Peirce is denying that man has the discriminative capacity claimed for him by Descartes and Locke. In one argument he suggests that man is not always able to distinguish what he has seen from what he has inferred. The testimony of witnesses to a magician's act is a case in point. One often is unable to distinguish what he has seen from what he thinks has taken place (5.216). Another argument suggests that in no case is it possible

to distinguish intuitive data from data modified by the intellect. Since there is a blind spot on the retina we must suppose that what is immediately seen with one eye closed is a ring, and not a continuous oval. An act of intellect is required to fill in the center of the ring (5.220). An immediate awareness of our first hand experience, it would seem, is impossible. The mediated and the unmediated cannot be distinguished infallibly and in every case.

Other of Peirce's arguments suggest that we are unable, without some sign(s), to distinguish intuitive from derivative perceptions. Dreams are sometimes so vivid that one mistakes his dream for a waking experience. He must wake up and infer that he is dreaming from some sign(s), such as the fragmentariness of the dream (5.217). Neither can a man distinguish different textures of cloth without comparing the sensation of one moment with that of another (5.221).

With these and other arguments Peirce hopes to build an impressive case against the proposition that we are able, through intuition, to distinguish intuitive from derivative cognitions. In accordance with his practice he places his trust not in any single argument, but in the cumulative effect of several. Just as a cable gains its strength from the joint action of many fibres, so a position in philosophy gains plausibility when an array of arguments in its favor can be displayed (5.265).

Peirce's second question is: "Whether we have an intuitive self-consciousness." The existence of a private self, or an "I" as opposed to "the I," is the topic of concern here. Here Peirce uses an approach somewhat different from the one he adopted in the first question. If our consciousness of our selves can be explained through some alternative

theory, then it will not be necessary to postulate the existence of an intuitive self-consciousness (5.226). Notice that this argument in itself will not serve to prove that there is no intuitive self-consciousness. It only shows that there is no need to suppose the existence of one in order to explain our consciousness of our selves. Once it is shown that intuition is an unnecessary hypothesis, however, it is difficult to see why anyone would want to hold on to it.

Self-consciousness, Peirce wants to say, is inferential. Not long after a child has learned to use language he begins to realize that what other people tell him is often quite accurate. We will suppose that someone has told him the stove is hot. He disbelieves this testimony, and touches the stove. He is burned. The testimony he has heard is thereby verified. In just such an experience, Peirce says, the child is made aware of ignorance, and in order to account for it, he must assume that there is a self which possesses this ignorance.

Consider another situation. The baby has found that the objects he contacts will move when touched by him. His rattle or his ball will go flying away when he hits them. It is natural for him to suppose that all objects will move at his pleasure. One day, when crawling around over the floor he finds that the couch is in his way. Obviously, it must be moved, and so he strikes it sharply. When he sees that the couch will not move, the baby is made aware of error; and in order to understand this he must suppose that there is a self which is in error.

Peirce is not suggesting that the infant's inferences are laid out in syllogistic form, or that he has any conception of what it is like to take a premiss and draw some conclusions from it; but he does suppose that

something comparable to formal deductive reasoning must take place when the baby is confronted with situations like those just described (cf. 5.268). If Peirce's arguments are correct, it must be supposed that our private selves are marked off from the rest of the world by ignorance and error, and it may be assumed that we come to know our private selves through ignorance and error. In this case, however, it is unnecessary to suppose that an intuition is the source of our self-consciousness.

Having suggested that our knowledge of our private selves may be the result of an inference, Peirce leaves the problem of self-consciousness. His next two problems are interrelated. The third question is preparation for the fourth. It is Peirce's contention that we have no intuitive introspective power. Lest it be contended that such a power is simply self-evident, he must secure a negative answer to this, his third, question: "Whether we have an intuitive power of distinguishing between the subjective elements of different kinds of cognitions."

The subjective element of a cognition Peirce defines as that action or passion whereby the objective element, or what is in consciousness, is represented (5.238). The negative answer to question one is enough to establish that such elements cannot be known intuitively (5.240). It may be said that we have such a power only if its supposition is necessary in order to explain certain distinctions that we are capable of making. We are able to distinguish between beliefs and conceptions, and between the imagined and the actually experienced. It is not necessary, in order to explain these distinctions, to suppose that we have an intuitive faculty?

Peirce answers that these distinctions are distinctions in the objects of consciousness. In other words, they are distinctions in the objects

represented, and not among the actions or passions whereby these objects are represented. These distinctions between the various objects represented by the mind, says Peirce, account for our differentiating them. That there are distinctions among the objects of our consciousness, and that we recognize them, is no proof that we are able to distinguish subjective aspects of consciousness. In fact, Peirce wants to say, when the objective aspects of consciousness have been described and accounted for, there is nothing left over to be described. Our ability to distinguish beliefs from concepts, and the imagined from the actual, has, it would seem by Peirce's account, been taken as evidence that we have an intuitive faculty. This supposition seems viable, however, only when the distinction between the subjective and objective aspects of a cognition are blurred. When this distinction is appreciated, the supposition loses its force. With this point secured, Peirce is ready to take on the problem of introspection.

The fourth question is: "Whether we have any power of introspection, or whether our whole knowledge of the internal world is derived from the observation of external facts." Peirce develops an answer to this question by considering two senses in which a sensation might be of something internal. He recognizes that certain conditions of an internal sort are necessary for the having of sensations, and that the sensations had are due to the character of these conditions. "Thus, the sensation of redness is as it is, owing to the constitution of the mind; and in this sense it is a sensation of something internal" (5.245). Here, it would seem that "a sensation of something internal" is equivalent to "a sensation by, or resulting from, some internal condition." Peirce's question, on the other hand, is this: "Given that every sensation is dependent upon internal

conditions, is direct, or intuitive, knowledge of the mental world possible?"

"Sensation of something internal" here means knowledge of the mental world. Taken in this sense, a sensation of something internal is a sensation of the subjective aspects of cognition.

Now Peirce's argument in the question preceding this one was intended to show that the subjective aspects of consciousness cannot be distinguished. Therefore, the existence of an introspective capacity cannot be taken as self-evident. It can be assumed that there is such a faculty, Peirce says, only if the supposition is necessary to explain the facts. It will be seen that Peirce's method here is the one he pursued in the second and third of his problems. Peirce wants to say that just as we know our private selves through inference from external facts, so we come to know the inner, or mental, world through inference from the outer. If this is a defensible hypothesis, Peirce can say that the intuitive theory, if not thereby disproved, is at least rendered dispensable.

In his attempt to show that our knowledge of the mental world is inferential, Peirce considers our perceptions of external objects and of our own emotions. For the inferential theory the first of these cases presents few difficulties. In the case of a sensation of redness, for instance, it may be said that our knowledge of the interior world is derived from contemplation of the sensation. Something external (redness) is the basis for an inference. Nothing external seems to be involved in an emotion, however. There would seem to be no material for an inference, and yet we are able to have knowledge of our emotions.

Even in this case, Peirce says, some external object, contrary to first appearance, does provide material for an inference. A hypothetical

situation may expedite the statement of his position. An individual, entering a darkened room, stumbles over a chair. Anger, let us say, is his response. Some choice and colorful adjectives, which are meant to indicate how despicable it is, are flung at the chair. Peirce would say that the anger of the individual in question consists in his attributing these characteristics to the chair. Only when he becomes aware of his response to the situation does the man realize that he is angry. The knowledge that he is angry, then, is inferred from his predication of unwholesome characteristics to the chair. This illustrates Peirce's contention that even our knowledge of our emotions is the result of an inference from something external.

In order to complete his case against intuition Peirce introduces a theory of signs. In the fifth of his questions he asks: "Whether we can think without signs." Once again, his answer is negative, and once again he appeals to "the light of external facts" (5.251) for support of his position. He assumes, on the strength of previous arguments, that we come to know all our thoughts through inference from something external. The theory of signs is a natural consequence of this, for the simple reason that all inference requires signs. Peirce concludes that all knowable thought is thought in signs.

In asserting that all thought is in signs Peirce denies that an immediate, or instantaneous, cognition is possible. If thoughts are signs, every thought determines another.

That, since any thought, there must have been a thought, has its analogue in the fact that, since any past time, there must have been an infinite series of times. To say, therefore, that thought cannot happen in an instant, but requires a time,

is but another way of saying that every thought must be interpreted in another, or that all thought is in signs (5.253).

This would seem to mean that no thought can occur "in a flash." With this contention, immediacy as meaning "instantaneous" is denied by Peirce. It will be necessary to recall this point at a later stage.

Now it might still be urged by the intuitionist that our thoughts, or signs, are determined by something out of consciousness. It might be said, in other words, that there is something which cannot be cognized which nevertheless determines our cognitions. This "something" would be absolutely incognizable. In the answers to his sixth and seventh questions Peirce argues against this possibility. First, he contends that no meaningful term can indicate something incognizable.

. . . all our conceptions are obtained by abstractions and combinations of cognitions first occurring in judgments of experience. Accordingly, there can be no conception of the absolutely incognizable, since nothing of that sort occurs in experience. But the meaning of a term is the conception which it conveys. Hence, a term can have no such meaning (5.255).

Secondly, he declares that the supposition of an absolutely incognizable something out of consciousness, which yet determines consciousness, is gratuitous. This "something"

. . . can, as such, only be known and only adduced in the determinate cognition in question. So, that to suppose that a cognition is determined solely by something absolutely external, is to suppose its determinations incapable of explanation (5.260).

It will be seen that this is an attack upon the Aristotelian/Cartesian contention that the ultimate premisses in demonstration are indemonstrable. In order to maintain this point consistently Peirce had to hold that all of our cognitions are determined by some previous cognition. This

contention led to problems which, in "Questions Concerning Certain Faculties Claimed For Man," are not taken up in any detail. The positive elaboration of his own position was saved for later essays. In this place Peirce is satisfied with showing the deficiencies in the Cartesian position.

The major points in Peirce's critique of the Cartesian theory of cognition have now been stated. In summary form, his major theses are as follows: (1) It is impossible to distinguish an intuitive from a derivative cognition, as is shown by a consideration of historical fact, and by certain situations which illustrate the fallibility of our ability to distinguish between what is given in experience and what is the result of an act of intellect. (2) The intuitive theory is a dispensable hypothesis, since self-consciousness and our knowledge of the interior world may be explained on an alternative, inferential, theory. (3) Since it presumes that our cognitions are determined by something absolutely incognizable, the intuitive theory reduces to the assumption that cognition is inexplicable. Its explanation of cognition is, then, that it is inexplicable, and this is an unacceptable thesis.

Let us now consider the philosophical implications of Peirce's critique. In the period in which Descartes and Locke were writing, no distinction was drawn between the psychological and philosophical aspects of a problem. In that time, psychology, as a field of inquiry distinct from philosophy, did not exist. In the nineteenth century, and during Peirce's lifetime, the psychologist and the philosopher began to go their separate ways. No one of man's intellectual endeavors exists in strict isolation from another, however, and it may never be possible to lock up philosophy and psychology

in air-tight and separate compartments. No more than "science" or "knowledge" is "philosophy" or "psychology" a precise concept. For this reason, in considering the Cartesian theory of cognition, and Peirce's reaction to it, only loose distinctions between psychological and philosophical emphases ought to be expected.

An inquiry into the causes of a belief, as opposed to a consideration of its rational justification, is usually considered psychological. Given this criterion, it would seem that Peirce's interest in cognition is not primarily psychological. He even says, in reference to intuition: "There is no evidence that we have this faculty, except that we seem to feel that we have it" (5.214), and this might be taken as meaning that we have only a psychological, and not a rational, justification for a belief in intuition. Peirce's investigation of Cartesianism was evidently intended as a logical and not a psychological inquiry.

The distinction just made is between the psychological and the philosophical, or logical, approaches to a problem. This distinction will be of crucial significance at a later stage in this inquiry. It should now be noted, however, that intuition, in its concern with mental action, or what takes place within the organism when thinking is going on, is a psychological theory. Cartesianism, in so far as it presupposes an intuitive theory of mental action, rests on a psychological base. What is interesting to note here is that in the Cartesian theory of knowledge certain philosophical claims are made on behalf of the psychological theory. Peirce does attack the Cartesian intuitive psychology, and he does oppose it with his own theory of mental action, but his purpose in doing so was to refute the philosophical claims the Cartesians made on behalf of the psychological theory. In the Cartesian tradition intuitions are supposed to be apodictic.

Not only that, they guarantee the certainty of the whole process of demonstration. These are philosophical claims concerning the extent and certainty of human knowledge. Peirce recognized that they would be thrown in serious doubt if intuitive mental action is not more than a myth. Thus, in refuting the psychological theory Peirce destroyed the foundation of the philosophical claim.

In one respect this approach drives a wedge between philosophy and psychology. For Peirce a theory of mental action is viable only if it is required by external fact. Peirce stresses external fact to an extent that would have delighted even the strictest behaviorist, but for philosophical inquiry this meant that a theory of mental action would be less and less relevant for an account of the foundations of knowledge. It is true that Peirce himself propounds a theory of mental action, but this fact is irrelevant to the present thesis. Even if Peirce had not done this the result would have been the same. What process the mind goes through in having a perception is tangential to those external facts which must henceforth serve as philosophy's basic data. Peirce's message and method in the essay just considered is "look to external fact." In Descartes' method an attempt is made to find some secure, apodictic proposition which may serve as the starting point for deduction. It is assumed that there must be such a starting point or else it would be impossible to have apodictic knowledge. It may be presumed that Descartes vigorously pursued the method of doubt, but one thing he never questioned. He never seriously entertained the possibility that apodictic knowledge cannot be achieved. Peirce's method requires a critical questioning of even this supposition; that is, it requires that the presupposition of the possibility of apodicticity be brought out into the open and tested in the

light of external fact. Is it supposed that apodictically certain knowledge is possible? Then instead of making this belief a basic datum and calling in a theory of mental action (such as intuition) to support it, we must ask whether the belief accords with the facts of the situation as we know them. How, for instance, is this belief to be squared with the fact that in successive ages men have disagreed as to which propositions must be considered ultimate? If Peirce is correct in his analysis, this fact counts against the belief in intuition. The result of this is not simply that certainty is called into question, or that a theory of mental action is cast aside. All this is true enough, but it is also true that in the process philosophy picks up a new methodology. The psychological theory is replaced by the external fact. In this respect philosophy and psychology are driven apart in Peirce's critique.

Peirce was quite aware of the fact that his critique called for a new method, and in the second of his 1868 articles ("Some Consequences Of Four Incapacities") he went a long way towards clarifying the method's essential ingredients. He emphasized that no problem is solved by saying that it is inexplicable. The only excuse for a hypothesis is that it explains the facts (5.265). This, of course, is a strike against the Aristotelian/Cartesian assumption that some propositions are indemonstrable, and must be simply accepted as self-evidently true, or intuitive. Peirce sensed and appreciated the danger of placing any proposition beyond question. How easy it is to make inexplicability the excuse for a belief, or to refuse to search for an answer to a problem because it seems to be insoluble! Not only this, Peirce held that no proposition is absolutely certain simply because it is undubitable. In other words, the proposition "that the ultimate test of certainty is to be found in the individual conscious-

ness" (5.264) must be given up. It cannot be said that something is true simply because someone is convinced that it is true. "We individually cannot reasonably hope to attain the ultimate philosophy which we pursue; we can only seek it, therefore, for the community of philosophers" (5.265).

Peirce's rejection of the individual consciousness as a criterion for truth involved a re-appraisal of the role of doubt in inquiry. Since Descartes held that indubitability is a criterion for apodicticity, it became the philosopher's task to call into question everything which could be questioned. Each doubtable belief was to be peeled away until, finally, a core of beliefs which could not be doubted were exposed to consciousness. Peirce's critique was intended to reveal the futility of this procedure. Since it is not a function of indubitability, truth is not found at the end of even the most rigorous process of doubt. Thus, says Peirce:

We cannot begin with complete doubt. We must begin with all the prejudices which we actually have when we enter upon the study of philosophy. These prejudices are not to be dispelled by a maxim, for they are things which it does not occur to us can be questioned. Hence this initial skepticism will be a mere self-deception, and not real doubt. . . . A person may, it is true, in the course of his studies, find reason to doubt what he began by believing; but in that case he doubts because he has a positive reason for it, and not on account of the Cartesian maxim. Let us not pretend to doubt in philosophy what we do not doubt in our hearts (5.265).

Peirce's critique of the Cartesian notion of indemonstrability, and his re-appraisal of the role of doubt in philosophical inquiry, also requires a new understanding of philosophical argumentation. In the Aristotelian/Cartesian theory, certain indubitable beliefs form the first links in a certain chain of reasoning. In philosophy, Peirce urges, we must not trust to any one argument to settle an issue, but to a cluster of arguments. These are likened unto "a cable whose fibers may be ever so

slender, provided they are sufficiently numerous and intimately connected" (5.265).

As an integral part of his Cartesian critique Peirce outlined an alternative theory of cognition. Now the plausibility of the critique of Descartes does not depend upon the adequacy of the alternative theory. In order to accept Peirce's theory it is only necessary to agree with him that the inferential theory explains the facts as well as the theory of intuition. It is not necessary to affirm that there are no difficulties with the Peircean inferential theory. The point is that the intuitive is neither the only possible theory nor the only theory worth serious consideration. Peirce's critique, then, independently of the adequacy of his own theory, renders the intuitive theory of cognition most doubtful. This result, because it demonstrates the need for an alternative account of the foundations of knowledge, is of tremendous importance for philosophy.

NOTES

1. See Sir William Hamilton, "Note A," in The Works of Thomas Reid, D.D., Sir William Hamilton, ed., Vol. 2, Sixth Edition (Edinburgh: MacLachlan and Stewart, 1863), 742-803. Cited hereafter as Hamilton.

2. Aristotle, Posterior Analytics, I, 2, in The Basic Works of Aristotle, Richard McKeon, ed. (New York: Random House, 1968), 111. This edition of Aristotle's works will be cited hereafter as McKeon.

3. Aristotle, Posterior Analytics, I, 2; McKeon, 112.

4. Aristotle, Posterior Analytics, I, 2; McKeon, 112.

5. Hamilton, 743.

6. René Descartes, Rules for the Direction of the Mind, in The Philosophical Works of Descartes, Elizabeth S. Haldane and G. R. T. Ross, trs., Vol. 1 (New York: Dover Publications, 1955), 7. This edition of the Rules will be cited hereafter as Rules.

7. John Locke, An Essay Concerning Human Understanding, IV, 2, 1, in An Essay Concerning Human Understanding, Alexander Campbell Fraser, col., Vol. 2 (New York: Dover Publications, Inc., 1959), 176-77. This edition and volume of the Essay will be cited hereafter as Fraser.

8. J. L. Stocks, Reason and Intuition: and Other Essays, (London: Oxford University Press, 1939), 4. Cited hereafter as Stocks.

9. Locke, Essay, IV, 2, 1; Fraser, 177.

10. Locke, Essay, IV, 2, 1; Fraser, 178.

11. Locke, Essay, IV, 14, 4; Fraser, 362.

12. Hamilton, 743.

13. Hamilton, 745.

14. Locke, Essay, IV, 2, 1; Fraser, 177.

15. Locke, Essay, IV, 2, 2; Fraser, 178-79.

16. Descartes, Rules, 7.
17. Locke, Essay, IV, 2, 1; Fraser, 177.
18. Descartes, Rules, 7-8.

CHAPTER III

THE INFERENTIAL THEORY OF COGNITION

One of the goals of Descartes and his followers was certain knowledge. Given any proposition, Descartes was of the opinion that it was either ultimate, unqualified, and immediate, or derivative. If the latter, then it must follow from some other proposition. Every chain of reasoning must have a starting point, however, and so Descartes felt that one must at last come to a proposition which could not be deduced from any other. If this proposition was indubitably certain it could be known as such in an intuitive mental act. Propositions intuitively and immediately known were incapable of demonstration and in need of no demonstration. They satisfied all of the requirements for certain knowledge.

Perceiving that Cartesianism pinned its hopes for certain knowledge on intuition, Peirce subjected it to careful scrutiny. He found that so long as the reality of intuition is maintained, the hope of philosophical certainty lies in the individual consciousness. He was convinced that this was an inadequate theoretical foundation. In Chapter Two his efforts to demonstrate this point were our concern. We found that Peirce endeavored to show by a cluster of arguments that intuitive cognitions, if they exist, cannot be identified with unerring accuracy; that our knowledge of our private selves and of the mental world may be explained without invoking

intuition; and that the intuitive position, by supposing that our cognitions are determined by something out of consciousness and incognizable, reduces to the proposition that cognition is inexplicable. In "Questions Concerning Certain Faculties Claimed For Man," the first of his 1868 articles, Peirce assumed that the only justification for a theory was that it explained the facts of the situation. In the second of his 1868 articles, "Some Consequences of Four Incapacities," the same principle is affirmed. "We can admit no statement concerning what passes within us except as a hypothesis necessary to explain what takes place in what we commonly call the external world" (5.266). In accordance with this principle he denied the reality of introspection, intuition, signless thought, and the absolutely incognizable, and affirmed that mental action must be understood as an inferential process.

Peirce's attempt to avoid intuition by establishing an inferential theory of mental action will be examined in this chapter. That it was Peirce's aim to extend the inferential model to all forms of mental action is evident. In the second of his 1868 articles he declared that ". . . we must, as far as we can do so without additional hypotheses, reduce all kinds of mental action to one general type" (5.266). Peirce does not contend that the mind actually goes through the inferential process, but he says that something equivalent to it must take place within the organism. No attempt is made to describe what occurs within the organism, and given the distinction between the psychological and the philosophical problems involved in cognition (as discussed in the last chapter, above), this is quite proper. In keeping with his principle that external fact must be the guide in cognition theory, he notes, in an interesting anticipation of his pragmatic theory, that ". . . it is a matter of constant experience, that if a man is made to believe in the premisses, in the

sense that he will act from them and will say that they are true, under favorable conditions he will also be ready to act from the conclusion and to say that that is true" (5.268). Thus Peirce, as an alternative to Cartesianism, and in conformity with "constant experience," proposes an inferential theory of cognition.

In such a theory the forms of valid inference must be considered. Peirce recognized three such forms (deduction, induction, and hypothesis, or abduction), and felt that all mental action would conform to one or the other of them. Deduction he treats in traditional fashion; that is, he says that a deductive syllogism is apodictic, as opposed to probable, and that its validity depends upon the relationship between its premisses and its conclusion (5.270). If the premisses in such a syllogism are true, its conclusion will also be true (5.271). The situation is otherwise in the case of induction and hypothesis. Inductive and hypothetical syllogisms are probable rather than apodictic; their validity does not depend simply upon the relationship between premisses and conclusion, but ". . . partly upon the non-existence of some other knowledge . . ." (5.270). Peirce's meaning is that an inductive or hypothetical inference is valid only if "the premisses represent our whole knowledge of the matter" (5.271). Suppose, Peirce asks us, that a victim of Asiatic cholera is bled, and that while he is being bled he recovers. The next day he is able to walk about. From this it might be concluded that bleeding is a significant factor in the cure of cholera. This inference would be valid, Peirce says, only if we do not know of the results of other cases in which cholera victims were bled, and only if we do not know that cholera victims usually recover from their malady suddenly.

Contemporary logicians characterize deductive arguments as "valid" or "invalid," but they do not use these terms in reference to inductions or hypotheses. If they are dropped from his account of probable arguments, none of Peirce's meaning is lost. His point is that the probability or "force" of these arguments is relative to the completeness of their premisses. This is a contention no contemporary logician would find objectionable. Some difficulties may arise, however, over Peirce's use of "hypothesis" and "induction." Murphey characterizes the Peircean usage as "something of a historical tragedy"; for, he says, we do not use these terms in Peirce's sense today.¹ Peirce's account of hypothesis and induction may now be considered.

Peirce says that in induction a major premiss is inferred from a minor premiss and conclusion (5.275; cf. 5.276). An inductive argument, he states, affirms that certain characteristics possessed by some members of a class are possessed by every member of the class, and this in spite of the fact that not every member of the class has been examined. Thus if there is a bag of black and white beans, and if several handfuls of beans from it are examined, the percentage of beans in the bag which are white (or black) can be approximated. Suppose it is inferred in this way that 41% of the beans in the bag are white. Then, taking this conclusion as the major premiss in a syllogism, and taking as a minor premiss the proposition that a, b, c, d, and e are handfuls of beans from the bag in question, it may be inferred that, on the average, 41% of the beans in these handfuls are white. This adaptation of one of Peirce's own examples should make clear his statement that in induction a major premiss is inferred from a minor premiss and a conclusion. Of course he is not speaking of a temporal relationship; he does not mean that in induction

we begin with a conclusion and work backwards. His view is adequately and accurately represented if it is said that the inductive conclusion "corresponds" in some sense to the major premiss in a deductive argument.

In defining induction as the inference of a major premiss from a minor premiss and a conclusion, Peirce was consciously following Aristotle (5.275). This is highly significant, because Aristotle saw a close connection between induction and intuition. The last question he asks in the Posterior Analytics is how the ultimate premisses of demonstration come to be known, and his answer is that they are known by induction. The intuitive process, he says, is inductive. It is compared to a rout in battle. One man makes a stand, and soon others gather about him. The men are analogous to remembered sense-impressions, and their result is an experience, or intuition. Aristotle holds: ". . . out of sense-perception comes to be what we call memory, and out of frequently repeated memories of the same thing develops experience; for a number of memories constitute a single experience."² Aristotle's imagery was intended to suggest those situations in which one comes to "see" the truth of a general proposition. If instead of men in battle one considers experiences in which it is seen that two objects, and two more objects, make four objects, and if the final result of these separate experiences is the realization that every collection of two objects, and two more objects, make four objects, then the importance of Aristotle's imagery becomes evident. His men in battle provide one with an imaginative picture of what takes place in intuition. Just as important as this, however, is the fact that intuition thus conceived is an inductive process. On the basis of a limited number of experiences one arrives at a general proposition. Aristotle puts it in this way: ". . . it is clear that we must get to know the primary premisses by induction;

for the method by which even sense-perception implants the universal is inductive."³

In the previous chapter it was argued that the theory of intuition formulated by Descartes and his successors was calculated to meet all the requirements of the major premisses of demonstration. Aristotle had held that these premisses must be true, primary, immediate, and indemonstrable; and these were the characters assigned to intuition in the Cartesian tradition. It now appears that in the Cartesian tradition all the essentials of the Aristotelian theory of demonstration were retained, while Aristotle's inferential theory of intuition was rejected in favor of the non-inferential view which has been so influential in modern philosophy. Peirce, as already seen, rejects that view of intuition, and at the same time argues that demonstration, conceived as a chain of inferences, must in philosophy be replaced by a more sophisticated view of proof. In his own theory of cognition, however, he seems to have adopted a view quite similar to Aristotle's. His theory, because it asserts that cognition is inferential, is much closer to the Aristotelian view of intuition than is the intuitive theory taken up in the Cartesian/Lockean tradition. It can hardly be said that Peirce's view is a recapitulation of Aristotle's, and it is impossible to say whether or not Aristotle's view of inductive intuition was the original inspiration for his view. Even if the derivation of Peirce's view is obscure, however, its similarity to Aristotle's is noteworthy.

The nature of hypothetical inference is considered next. When such an inference is stated in the form of a syllogism, the hypothesis itself will be the minor premiss. It may be said that an hypothesis consists in the inference of a minor premiss from a major premiss and a conclusion. If my

major premiss is that 41% of the beans in a bag are white, and if my conclusion is that 41% of the beans in handfuls a, b, c, d, and e are white, then I may infer, as a hypothesis, that these handfuls of beans have one further characteristic in common; that is, I may infer that these handfuls of beans are from the bag in question. From this example, perhaps it may be seen that an hypothesis substitutes one predicate for a series of predicates. Here the predicate "being from the bag in question" is substituted for the predicate "having 41% white beans." For this reason Peirce states that hypothesis, like induction, is a species of reduction of a manifold to unity. In hypothesis several predicates are united in a single predicate, while in induction several subjects are united in a single subject (5.275, 5.276).

Peirce felt that the existence of fallacious reasoning might be urged as an objection to his position. His next move, accordingly, is to cut off this line of attack. In effect his procedure is to argue that mental action is inferential in spite of the fact that some reasoning is fallacious. An illegitimate inference is, nevertheless, an inference. To secure his point Peirce considers both logical and psychological fallacies. Those who are bothered by the term "psychological fallacy" may substitute "psychological error" without losing Peirce's meaning.

Logical fallacies are treated in short order:

. . . to the formal logician . . . the only fallacies should be such as are simply absurd and contradictory, either because their conclusions are absolutely inconsistent with their premisses, or because they connect propositions by a species of illative conjunction by which they cannot under any circumstances be validly connected (5.281).

All arguments whose premisses, for some psychological reason, are insufficient to establish their conclusions fall into four classes. Peirce's own

enumeration of these classes is as clear and precise as could be desired.

He lists:

1. Those whose premisses are false; 2. Those which have some little force, though only a little; 3. Those which result from confusion of one proposition with another; 4. Those which result from the indistinct apprehension, wrong application, or falsity, of a rule of inference (5.282).

Peirce's response to the first of these classes is that the falsity of an argument's premisses has nothing to do with the legitimacy of the inference involved. The same attack is taken in regard to the second class. He notes that an inductive or hypothetical probable argument may have little force (that is, it may not be a very "strong" argument), but that this is no reason to suppose that an error in reasoning is involved. Inductive and hypothetical arguments at best are never more than probable. In errors of the third class one proposition is mistaken for another. When one concludes (even though mistakenly) that one proposition is equivalent to another, he does so by means of a hypothetical inference. He supposes that, since two propositions have some characters in common, they have all characters in common. Even though an error is made in this case the action of the mind is inferential. When, as in the fourth class of errors, a rule of inference is misapprehended, misapplied, or false, that rule, Peirce says, is taken as a premiss. Since that premiss is false, this class of errors reduces to the first and is thereby solved.

The main features of Peirce's theory of mental action have now been stated. Immediacy, it should be evident, has been replaced by a process of cognition. Cognition does not originate in an intuition, but in an inference (5.267). All inference, considered generically, is of one general type. It is of the form of a standard syllogism (5.278). It is of considerable significance that, of the three species of syllogistic

inference, two (induction and hypothesis) are originaive. Instead of saying that cognition arises inferentially one might just as accurately say that an inference or hypothesis is the source of a cognition. As will be seen when Peirce's theory of signs is considered, this has important consequences for Peirce's analysis of the given in experience.

Peirce's position may be clarified at this point through comparison with Russell's. In The Problems of Philosophy Russell adopts the traditional distinction between intuitive and derivative knowledge. General logical and mathematical principles, and (perhaps) certain a priori ethical propositions are said to be known intuitively. In addition to these, there are some truths "which merely state what is given in sense. . ."⁴ Russell calls these "truths of perception," and says that the judgements which express them assert (a) the bare existence of a sense-datum, or (b) the relation which the constituents of the sense-datum may have to each other. Finally, Russell holds that there are intuitive judgements of memory.⁵ All of these truths are self-evident, though in the case of memory there are degrees of self-evidence.

For Russell, "Our derivative knowledge of truths consists of everything that we can deduce from self-evident truths by the use of self-evident principles of deduction."⁶ He does not say that all of our beliefs must be deduced from self-evident truths in order to be called knowledge. It is enough, he thinks, that beliefs which are known to be true could be so deduced. Russell allows for "psychological inference," an instance of which is our realization of the meaning of the letters on a printed page. Given sense-data of the letters one could deduce their meaning, but this logical process is not in fact carried out by anyone who knows how to read. Russell's conclusion, then, is that if a logical inference could parallel the

psychological inference, the belief which could be so inferred may be said to be known. It is obvious that for Russell logical inference is a conscious affair, while an inference made psychologically is not.⁷

Russell's theory stands squarely in the Cartesian/Lockean tradition, though in its distinction between psychological and logical inference it achieves a measure of clarity not found in either Descartes or Locke. Peirce's position, in contrast to Russell's, eliminates intuitive knowledge. The Peircean theory of cognition, stated in the traditional terminology, is a theory of derivative knowledge. Instead of there being two sorts of knowing, the intuitive and the derivative, the former is done away with and all knowledge is said to be derivative. This is the first and most obvious contrast between the positions of Russell and Peirce. The second is in their differing views of inference. Both distinguish psychological and logical inference, but here their agreement ends. Russell holds that in psychological inference one "does not in fact perform any operation which can be called logical inference."⁸ For Peirce, on the other hand, even psychological inference conforms to the pattern of logical inference. An explication of this contrast will make it easier to understand Peirce's position.

Russell does not explain his contrast between logical and psychological inference in much detail. He simply asserts, as seen above, that in the latter case nothing which could be called logical inference actually takes place. In reading, for instance, there is no conscious inference from the letters perceived to their meaning. One passes from letter to meaning "immediately." In Peirce's theory this distinction between "conscious" and "unconscious" inference has no very important place. In drawing a conclusion from a given premiss, he would say, one may not in fact be aware of the

logical or "leading" principle presupposed, though on later reflection he might become aware of it. The point for Peirce is that mental action, whether we are aware of it or not, conforms to the inferential pattern. Thus, Peirce is in agreement with Russell on one point, while disagreeing with him on another. He agrees with Russell that an inference not consciously made could at least in principle be brought into consciousness and explicitly stated, but disagrees with the contention that in the so-called psychological inference nothing approaching logical inference takes place. All mental action whether conscious or not, conforms to the "formulae of valid inference" (5.279).

In his critique of Cartesianism Peirce implies that intuitive cognition is non-symbolic. On this point he is in agreement with Bergson, the famous twentieth century exponent of intuition:

If there exists any means of possessing a reality absolutely instead of knowing it relatively, of placing oneself within it instead of looking at it from outside points of view, of having the intuition instead of making the analysis: in short, of seizing it without any expression, translation, or symbolic representation--metaphysics is that means. Metaphysics, then, is the science which claims to dispense with symbols.

Peirce, however, denies that cognition is non-symbolic, intuitive, and immediate (or instantaneous): "To say . . . that thought cannot happen in an instant, but requires a time, is but another way of saying that every thought must be interpreted in another, or that all thought is in signs" (5.253). The suggestion that cognition is mediate, then, requires the view that thought is a process of sign translation. One passes from one thought to another by means of signs, while, as just seen, thoughts are introduced through an inductive or abductive process. The thesis that thought is in signs forms, then, an important part of Peirce's theory of

cognition.

The statement of a theory general enough to apply to anything which might serve as a sign was Peirce's goal in "Some Consequences." He notes that representations such as feelings, images, or conceptions may, as they are present to consciousness, so serve. His specific interest is not in the analysis of what may be present to consciousness; he is only interested in the sign character of the contents of consciousness. This may account for, even if it does not excuse, whatever ambiguity there is in Peirce's use of such terms as "feeling."¹⁰

According to Peirce, whatever is a sign signifies something to someone in some respect. Let us consider each of these three functions in turn. First, what is a sign a sign to? When we think, in other words, what do our thought-signs address? They may address the thought of another person through some form of outward expression. Even if no other person is involved, however, our thought will still address itself to another one of our thoughts. In either case, the situation is that one thought is interpreted in another. So, if a sign addresses itself to someone, that someone may be either ourselves or another person. The situation is that one thought serves as a sign to another.

Thought-signs are introduced in consciousness, as we have seen, through an inferential process. Peirce again takes the opportunity to emphasize that sign introduction is a process. This is an important point. It might be urged against Peirce's theory that it cannot account for those situations in which, as we would say, one thought is suddenly interrupted by another. It might even be said that the theory cannot account for any situation in which the mind passes from one train of thought to another. Is not the mind locked into a situation in which its every thought is determined by some

previous thought? Peirce does want to say that every cognition is determined by some previous cognition, but the difficulty just raised is easily handled. In the process of sign translation one thought may have prominence over another in consciousness, but there is no need to suppose that when this has occurred the thought displaced is entirely absent from the mind. As a line of thought dies out ". . . there is no moment at which there is a thought belonging to this series, subsequently to which there is not a thought which interprets or repeats it" (5.284).

For what does the sign stand? The answer, of course, is that it stands for its object. The interesting point, however, is that the sign stands for the object by referring to the sign previous to it in the series. This must be the case if the thesis that there is no cognition not preceded by another is to be maintained. If this thesis causes uneasiness in the reader that is because he is still working with a model of cognition which has been rejected by Peirce. It is the theory of intuition which supposes that there is an ultimate cognition which is in direct contact with the object in question. If Peirce's arguments have convinced the reader that there are no intuitions, however, he is obligated to at least consider the supposition offered here.

What is it, it may be asked, that Peirce intends in stating that there are no cognitions not preceded by previous cognitions? If one tries to form a mental image of this sort of situation he will never achieve satisfaction. The image is one of a train of cognitions passing off into a linear past as far as one can see. "Is there no first cognition?" one asks. That there should not be a first cognition is impossible; for there was a time when I was born, and I am not bound to accept a theory which supposes that I was having cognitions before I was born. The origin and termination

of cognition presents no real difficulties. My cognition of an object begins when I am presented with it, and ends when it is taken away. Thus, I see John when he steps from behind the tree, but no longer see him when he gets behind it again.

If this objection is crudely stated, it is still one which would tempt some. If there is anything wrong with the objection it is its assumption that our common-sense descriptions of ordinary perceptual situations should provide the model for a theory of cognition. A simple one-to-one relation between a percipient individual and a cognition is assumed. It is also assumed on this model that there are no difficulties concerning a cognition's origin or termination. Neither assumption is self-evidently justified as is shown by Peirce's critique of Cartesianism.

Perhaps the point of view brought in by Peirce may be set in a more favorable light if a situation is considered in which the individual holding the model of cognition just described is not required to give up his view. The view just considered looks upon thought in a manner analogous to the situation in which the motion of a cue ball is caused by the action of a cue stick. Consider, however, how one becomes aware of a new thought. Suppose that he is asked to specify the moment at which he became aware of the thought he is having. Even in those situations in which an individual feels that he has had a flash of insight, or is "suddenly struck" by a thought, he cannot, even if he is pressed, specify the exact moment at which the thought occurred. Given any moment, he cannot be certain that there was not a moment prior to that one in which he had the thought. Consider in the next place that situation in which the individual is experiencing a pain. If he is asked to pinpoint the time at which he first became aware of the pain he will find that, if he is pressed, he cannot

answer with certainty.

If these examples are seriously considered, then something of what Peirce is trying to say may be clarified. The situation in which one experiences a thought or pain shows that it is not as odd as it may first appear to suppose that cognition is a process. Now it may be the characteristic of a process, as opposed to the sort of situation which is commonly supposed by the "billiards" model which Peirce rejects, that the first member of the process cannot be specified. It is this sort of situation which the inferential model is best equipped to explain. In its behalf, then, it may be argued that it is actually more in conformity with the actual experiential situation than the older model which it is intended to displace. Secondly, it may be added that the concept of a process in which one cognition is always preceded by another is replete with difficulties only when it is viewed in the context of the older model of the cognitive situation.

In the third place, a thought-sign stands for its object (another thought-sign, as just seen) in some respect. He says: "The thought-sign stands for its object in the respect which is thought; that is to say, this respect is the immediate object of consciousness in the thought, or, in other words, it is the thought itself, or at least what the thought is thought to be in the subsequent thought to which it is a sign" (5.286).

One implication of this point is that it postulates a distinction between the sign and its object. Peirce observes that some characters of a sign are peculiar to it. These he calls its material qualities. "As examples of such qualities, take in the word "man," its consisting of three letters--in a picture, its being flat and without relief" (5.287). Next, Peirce says that a sign must be capable of a real connection, either with

another sign, or with its object. Of these two points, the latter may prove the most difficult. A weathercock, Peirce notes, is a sign having a real connection with its object. That other signs have such a connection may be difficult to see. A picture, for instance, would seem to have no real connection with what it depicts. The real connection between a picture and its object "exists in the power of association which connects the picture with the brain-sign which labels it" (5.287). This real connection of a sign with its object may be either immediate or mediate. If it is mediate, the sign is connected with its object through the action of another sign. Peirce's generic name for all such connections is "pure demonstrative application."

A sign functions as a representation not in virtue of its material quality or its pure demonstrative application, but by reason of its relation to a thought. A sign is not a sign until it is so related. Whatever may serve as a sign has a material quality and a pure demonstrative application, but these are not sufficient by themselves to insure that it is a sign. Signs, then are relative to thoughts. A tree falling in the forest unheard may be said to make a sound, but this sound does not serve as a sign to some thought.

The next of Peirce's tasks is to analyze the nature of thought. The critical scrutiny of a spatial metaphor is the first item on his agenda. We often say that one thought is "contained" in another. This cannot be taken literally; all that it means is that we represent one thought as being contained in another. Now this is a kind of comparison; that is, it is one way in which two thoughts are brought together in a judgement (5.288). "No thought in itself, . . ., no feeling in itself, contains any others, but is absolutely simple and unanalyzable; and to say that it is composed of

other thoughts and feelings, . . . is to say . . . a metaphor, or fiction, parallel to the truth" (5.289).

The unanalyzability of thoughts and feelings is one of the most significant resultants of Peirce's theory of signs. It is at the center of his analysis of immediacy (as will be seen below). The doctrine plunges him at once, however, into an issue fraught with potential danger. He maintains that what is unanalyzable and incomparable is inexplicable. Thoughts and feelings are "ultimate inexplicable facts." This would seem to conflict with his thesis (argued in the first of his 1868 essays as well as in this one) that the only excuse for a theory is that it explains the facts. No theory can be adequate, he has said, which begins by supposing that a fact is inexplicable. Peirce recognized that this kind of objection would be brought against his theory, and he chose to meet it directly. An examination of the introductory section of "Some Consequences" shows that in that place he was already laying the groundwork for his defense. The critical paragraph is as follows:

Every unidealistic philosophy supposes some absolutely inexplicable, unanalyzable ultimate; in short, something resulting from mediation itself not susceptible of mediation. Now that anything is thus inexplicable can only be known by reasoning from signs. But the only justification of an inference from signs is that the conclusion explains the fact. To suppose the fact absolutely inexplicable, is not to explain it, and hence this supposition is never allowable (5.265).

A careful comparison of this passage with Peirce's own doctrine of inexplicability (if that is a proper name for it) illuminates his position. The fault of the unidealistic philosophies to which Peirce refers is that they postulate an unanalyzable result of mediation. Since the immediate is the unanalyzable for Peirce, the contradiction to which he is referring is clear. It is to say that that which can be reflectively known (the

immediate) is inexplicable and unanalyzable. Such a position confounds the mediate and the immediate.

Even granted that it can be distinguished from its unidealistic counterparts, the reader may still feel some uneasiness concerning the presence of inexplicability in Peirce's theory. Peirce's earlier statements concerning inexplicability did not seem to imply merely that some forms of inexplicability were inadmissible in a theory which purported to explain the facts, but that all forms of inexplicability were to be avoided. Peirce's answer to this objection is quite simple. It is that the thought in itself, or feeling in itself, which is present to consciousness, does not need to be explained. Of course the reader will not be satisfied with this unless he knows why no explanation is necessary. Peirce held that ". . . explanation consists in bringing things under general laws or under natural classes" (5.289). This of course is what takes place in the inferential cognitive process. To speak of a thought or feeling in itself, then, is to speak of something which is by definition out of relation to anything else. That is why Peirce says that such thoughts or feelings are "without similarity to any other," and "incomparable." A thought or feeling can be brought under a law or placed in a class only in so far as it is in relation to some other thought or feeling. To do that, however, is to explain it. Therefore, in so far as there are thoughts or feelings out of relation to other thoughts or feelings, these are simply present and inexplicable. The immediate for Peirce is simply the present; that is, it is that which is present. Peirce refers to it as "the sum total of consciousness" (5.289).

This view of immediacy is quite unlike the one which prevailed in the Aristotelian-Cartesian tradition. An immediate proposition in that tradition was one which was not preceded by any other. In Cartesian

immediacy the mind is in direct contact with an object, and the immediate cognition has the character of indubitability and apodicticity. For Peirce the immediate is simply the unanalyzable and inexplicable thought in itself or feeling in itself. It is that which is present. There is no hint in Peirce that immediacy means directness, or that it is a guarantor of certainty. Its inexplicability and unanalyzability precluded its ever having these characteristics. The thought in itself or feeling in itself cannot be directly known. To affirm that it can be would be to deny the inferential nature of the cognitive process. It would, in fact, even constitute a denial that cognition is a process at all. Instead, the inferential theory must say that the immediate is never known as such; the best that we can do is to form a hypothesis concerning what it must have been like.

. . . we never can think, "This is present to me," since, before we have time to make the reflection, the sensation is past, and, on the other hand, when once past, we can never bring back the quality of the feeling as it was in and for itself, or know what it was like in itself, or even discover the existence of this quality except by a corollary from our general theory of ourselves, and then not in its idiosyncrasy, but only as something present (5.289).

No thought or feeling which is known as present has any meaning by itself. Thoughts have meaning only in relationship to other thoughts. "At no one instant in my state of mind is there cognition or representation, but in the relation of my states of mind at different instants there is" (5.289). A thought has meaning in so far as it is represented by some subsequent thought. A thought, Peirce will say, has meaning when it serves as a sign to another and is interpreted by that other.

It is now possible to state the sense in which, for Peirce, thoughts are signs. If thoughts are signs they must have a material quality, a pure denotative application, and a representative function. The material

quality of a sign is that aspect it has independently of its role as a representation. Since the immediate cannot be known in itself, but only in so far as it is present, it qualifies for this role. A thought's pure demonstrative application is its ability to be connected with other thoughts. The object of a thought for Peirce is always some other thought, since Cartesian immediacy, or the doctrine that in cognition a mind is in direct contact with an object, has been rejected. Finally, a thought functions representatively in so far as it is related to another thought. Since no thought is directly related to an object (as was supposed by the intuitive theory), there is no first thought in the thought series; and since this is the case, each thought represents another. Thus, thought is of the nature of a sign.

To this point we have discovered that for Peirce thought is in signs, that the movement from one thought to another is a process of sign translation, and that all such translation is inferential. All of these doctrines are important results of Peirce's critique of Cartesianism. Taken together, they suggest a new and highly original theory of cognition. As one attempts to enter into the details of the theory, however, he runs into textual unclarities which are quite difficult to resolve. In the 1868 presentation, for instance, the relation between thoughts, feelings, and sensations is quite difficult to ascertain. Peirce's theory might have been greatly clarified (and simplified as well) through adoption of some terminological conventions aimed at making such relationships explicit. The need for such refinements should become evident as we proceed.

First, let us consider Peirce's analysis of sensations. In "Some Consequences" Peirce was concerned to show that sensations are not intuitions,

or impressions not preceded by any other impressions. In addition, since sensations are a type of cognition, he felt it necessary to discuss their character as signs. A sensation Peirce characterizes as a "natural mental sign" (5.291). Now as a sign, of course, it must be a representation of something; but if it is a representation it must also be connected with some previous cognition, which connection constitutes its pure demonstrative application. As its third sign component the sensation must have a material quality; this is its feeling. Peirce writes: ". . . so far as the sensation is a mere feeling of a particular sort, it is determined only by an inexplicable, occult power; and so far, it is not a representation, but only the material quality of a representation" (5.291). We are to understand, then, that each sensation has a feeling.

After sensations Peirce considers feelings. They are analyzed in much the same way as sensations. A feeling, Peirce tells us, is "a representation, a predicate of something determined logically by the feelings which precede it" (5.292). To describe a feeling in this way is, of course, to say that it is a sign. If a feeling is determined by some previous feeling, it has a pure demonstrative application. And if it is a predicate of something it has a representative function. Finally, these signs, since they are feeling-signs, have a material quality. A feeling, in fact, would seem to be a sign in which this quality is dominant. The greatest interest, however, attaches to the representative function of feeling-signs. One wonders how Peirce's analysis of the material quality of sensations is to be related to his analysis of feelings as such. Peirce has said that a sensation, in so far as it is a feeling, is not a representation of something. On the other hand, Peirce's analysis of feeling-signs would seem to commit him to the proposition that a feeling, in so far as it

is a feeling, must serve a representative function. Given this, it is to be wondered why a sensation is not a representation in so far as it is a feeling.

Now it might seem that to raise this issue is to do no more than to commit a logical error. When Peirce says that a sensation is not a representation in so far as it is a feeling, he is discussing sensations as such. When he says that feelings are representations, on the other hand, his subject is feelings as such. When this is taken into account, it may be said, Peirce does not contradict himself. Lest the wonder just expressed be misunderstood, then, it should be granted immediately that there may be no contradiction in Peirce's analysis. The force of the observation is this: the relation between feelings and sensations is not prima facie clear, and is in need of further explication. Peirce would seem to be saying that the material quality of sensation-signs is susceptible of further analysis. In that case, his treatment of feelings-signs would constitute that analysis. At any rate, there is some kind of order of relationship between feelings and sensations, and this relationship is vague in Peirce's 1868 treatment of signs.

In considering thoughts in their relation to feelings and sensations the student of "Some Consequences" is apt to become embroiled in terminological difficulties. A sensation, as already seen, is characterized as a "natural mental sign" (5.291). It is also said that sensations are thoughts, but not thoughts which have much influence upon the current of thought (5.293). Then, sensations are described as "constituents" of thought (5.295). These passages seem to indicate that there is an order among thoughts and that sensations are one kind of thought. Could sensations be related to other thoughts in a manner analogous to the relationship between feelings and

sensations? Just as a sensation is a feeling to the extent that it has a material quality, so it would seem that a sensation might constitute the material quality, or feeling of a thought. Some such theory as that would explain why Peirce could say both that a sensation was a thought and that it was a thought constituent. This would, however, seem to be an unacceptable interpretation of Peirce's meaning, for he says: "That which distinguishes both sensations proper and emotions from the feeling of a thought, is that in the case of the two former the material quality is made prominent, because the thought has no relation of reason to the thoughts which determine it, which exists in the last case and detracts from the attention given to the mere feeling" (5.294). A sensation, as Peirce goes on to say, is an "incomplex thought" (5.294). It is a thought which does not follow logically from the thought which determined it. This is what is meant by saying that it has no "relation of reason" to its determining thoughts. Here, as in the former two cases, Peirce's meaning depends upon an understanding of the relation between such primitive notions as thought, feeling, and sensation. The analysis of thought does much, in fact, to clarify the nature and status of sensations and feelings. As an added consequence, this analysis is relevant (as will be evident at a later point) to an understanding of Peirce's theory of instinct. Now, however, Peirce's analysis of attention must occupy us.

Peirce distinguishes three sorts of modifications of consciousness. Simple and complex thoughts, or sensation and understanding, are two of these. The third is attention (5.298). ". . . we gather that attention is the power by which thought at one time is connected with and made to relate to thought at another time; or, to apply the conception of thought as a sign, that it is the pure demonstrative application of a thought-sign"

(5.295). Peirce felt that this analysis was justified because the length of time a thought is remembered, the accuracy with which it is remembered, and the ease with which it may be recovered when forgotten vary concomitantly with the amount of attention accorded it (5.295). Our attention is triggered by the repetition of a phenomenon. Noticing that several things have a common character is an act of attention. For this reason, attention is an induction by simple enumeration (5.296). Attention is thus an inference, and the explanation of it as such is one more demonstration of the power of Peirce's thesis that mental action is inferential. At the same time, the analysis of attention foreshadows lines of inquiry which Peirce pursued in later years. He says, quite significantly, that habits, or nervous associations, are the effects of attention. This is to say that habits are inductions. Then, in the final statement in his analysis of habit, he suggests that : "Voluntary actions result from the sensations produced by habits, as instinctive actions result from our original nature" (5.297). This is the first of Peirce's references to instinct in connection with his theory of mental action. It is quite interesting that Peirce mentions instinct in connection with habit, but does not say that our instinctive actions are habitual. It will be seen at a later point that Peirce's theories of habit and instinct developed in close connection with each other. Peirce developed and refined his concept of habit, so that at a later point he came to say that instincts are habits, but habits of unknown parentage.

As a final exercise in understanding Peirce's theory of mental action, it will be useful to determine what model of perception is required if mental action is inferential. This is the case for two reasons. First, sensation and thought proper are both, in Peirce's theory, considered to

be inferential; and secondly, the problem of perception is quite closely related to the problem of sign introduction. It was supposed by some ancient thinkers (Plotinus, for instance) that the problem of perception was: how does an object larger than the eye get into the eye in order to be known? Not only this, but: how can an object be in the eye and "out there" at the same time? We may find this primitive statement of the perceptual puzzle amusing, but it took a tremendous amount of mental effort to overcome this sort of imagism. From the beginning of modern philosophy to the time of Peirce (and even beyond) the philosopher characterized sensations as "ideas" or "impressions," and this in itself was enough, even when he did not conceive of an idea or an impression as an image, to indicate the ancestry of his view. Do I have an impression of a sound? Of course this impression is not a pictorial image, but in some sense or other it "copies" or "corresponds" to the sound which, an instant ago, was outside my body. Is the impression not an image, but some sort of motion (as Hobbes declared)? Then still there is a relation or correspondence between this motion and that which caused the motion.

It is in the context of this model of perception that the intuitive theory came into its own. An intuition would be that impression which was in perfect correspondence with its object, or else it could not be considered apodictic. It is a chief contention of Peirce's theory, however, that the perceptual situation is not to be understood in this way. Peirce would say that the sort of view just described misconstrues the perceptual situation. It assumes, to begin with, that the relation between percipient and perceived is a simple one in which the former is in direct relation to the latter. This could not be further from the truth. In the first of his 1868 essays Peirce grappled with this perceptual problem. The perception

of neither space nor time, he said there, is a simple intuition. Referring to space he wrote,

. . . if we were to see immediately an extended surface, our retinas must be spread out in an extended surface. Instead of that, the retina consists of innumerable needles pointing towards the light, and whose distances from one another are decidedly greater than the minimum visibile. Suppose each of those nerve-points conveys the sensation of a little colored surface. Still, what we immediately see must even then be, not a continuous surface, but a collection of spots. Who could discover this by mere intuition (5.223)?

If this situation is difficult to explain on the intuitive thesis, the inferential theory has a ready explanation for it. If sensation were a simple response to neurological stimuli, our perception would be of "a collection of spots." Instead, it must be assumed that our sensations are hypotheses which reduce the stimuli to unity. Sensations are combinations of stimuli, or if the older term is preferred, "impressions."

Sensations, then, arise as predicates. Suppose that one has a sensation of a whistle. Then "sound of a whistle" is a predicate which reduces certain neurological stimuli to unity, and the stimuli in question are various excitations of nerves in the ear. This analysis, Peirce felt, may be applied to every sensation. The paradigm pattern for touch (to mention only one example) he had considered in the first of his 1868 essays. One determines the texture of a cloth by moving his fingers over it and comparing the stimuli thus acquired. A predicate such as "rough" or "smooth" will reduce all the stimuli obtained by rubbing the cloth to unity.

The theory of thought-signs has some important implications. It must be noted that it is consistent with Peirce's rejection of Cartesian infallibilism. The individual philosopher, in Peirce's view, cannot expect to attain the kind of absolute certainty presupposed by the intuitive theory.

One need not recur to Peirce's point that certainty is a community affair (5.265) in order to appreciate this point. It is sufficient to note that when Peirce gave up intuition in favor of inferences this shift was clearly made. A second consequence of Peirce's theory is the thesis that bare experiential presentness does not constitute knowledge. That which is present has, by itself, no meaning or, in Peirce's phrase, "no intellectual value." It is, as might be said, simply "there." The contents of consciousness, or that which is given to consciousness, are not known either by themselves or without mental action.

A third consequence of Peirce's theory is that there is no uninterpreted knowledge. That is to say, things are not known in their immediate purity, but always in relation to a knowing mind. In this sense, knowledge is not "objective," but is always conditioned by those factors anterior to it in the knowing process. It is interesting how relevant all this is to some recent work in epistemology. One of the great concerns in twentieth century philosophy has been with the experiential given.¹¹ I suppose that it is not too great an oversimplification to say that phenomenology's avowed purpose has been the description of the given. Its goal has been to perform this task in a rigorous and scientific manner. For the phenomenologist this has meant that the given must not be described from any particular standpoint. Husserl's rallying cry was "back to the essences." He recognized that theories modify the way in which one "sees"; and through an elaborate methodological reduction he proposed to reach a state in which the given could be described in its pre-theoretical purity. Now the question which has to be asked (and the question to which Peirce, by anticipation, had an answer) is whether or not such a reduction is possible.

The phenomenologist, however, has not been alone among twentieth century philosophers in his concern with the pre-analytical¹² given. Paul Arthur Schilpp has shown that at least one philosopher indebted to Wittgenstein's Tractatus Logico-Philosophicus has developed this theme in such a way as to claim pre-analyticity or standpointlessness for his method. Schlick is the philosopher in question. One of his concerns is with the meaningfulness of language. He claims that his own position is pre-analytic. That is, it is not a theory of meaning, but is prior to any theory. Schlick is quoted by Schilpp as follows: ". . . the meaning of a statement is determined purely and simply by its Verifikation am Gegebenen."¹³ The given then, is of fundamental importance for Schlick's position. How does one arrive at the given; or how does the given manifest itself? Schlick, no less than the phenomenologist, must face this issue. His answer, as it is condensed by Schilpp, is that terms may be clarified by other terms. That process, however, cannot go on forever, and finally the term's meaning must simply be "shown," or "immediately exhibited."¹⁴ A sentence from Schlick's Positivismus und Realismus is translated as follows: "'Whoever has once gained the insight that the meaning of every statement can only be determined by the given, cannot at all grasp any longer the possibility of any other opinion, for he sees that he has only perceived the conditions under which opinions can be formulated at all."¹⁵ Peirce's comment on this position would be that it is a throwback to Cartesianism. Schlick appears to be saying that whatever he cannot call into question must be true. This statement of Schlick's reminds one of Sir William Hamilton's contention that our intuitive cognitions simply ". . . must by us be accepted as true."¹⁶

In comment upon the standpointlessness ploy in philosophy, Schilpp writes:

It is a neat claim to assert that the human mind simply finds itself confronted by given facts in all their nudeness, crudeness, brutishness, and original nature. Moreover, it might be very nice and handy if it were so. The only trouble is that it just is not so. There are no such things as brute facts, if by this be meant something wholly uninterpreted.¹⁷

Peirce himself might have written this passage. As he said, the immediate or the given is never known in itself, but only as it might have been. To be known, for Peirce, is to be interpreted.

If, in our analysis of the foundations of knowledge, we ask, "Where do we go from here?" the answer of Peirce is clear. We must give up our longing (to state the matter psychologically) for apodictic and indubitable knowledge. That is not to say that we should give up our quest for certainty but only our quest for a certainty which is beyond all question. Peirce's essays are written in the spirit of Mill's statement that "The beliefs which we have most warrant for have no safeguard to rest on but a standing invitation to the whole world to prove them unfounded."¹⁸ This recommendation is the fruit of Peirce's Cartesian critique and of his alternative theory of cognition. To some it may seem absurdly simple. "Are we simply asked to change our attitude and remain open?" some may ask. "Is not that what philosophers have always been supposed to do?" The answer to that is, "Of course." This time, however, philosophic openness requires a whole reorientation in theory. If Peirce's critique is allowed to stand, then it is an illegitimate move in philosophy to maintain that any proposition is beyond question simply because no alternative to it can be conceived. In philosophy there still may be indubitability, but the indubitability is not absolute. It is an

indubitability-in-process. The call for absolute indubitability is nothing less than a call for the cessation of inquiry. This point was clearly seen by Peirce, but was not developed by him in any detail until the latter part of the 1870's. A consideration of that development in Peirce's thought must occupy us in the next chapter.

A fourth consequence of Peirce's theory of cognition is that it gives us a new way of understanding man. It was claimed by the intuitionist that self-consciousness was intuitive, but according to Peirce ". . . the mind is a sign developing according to the laws of inference" (5.313). This means that one does not have complete and apodictic knowledge of himself any more than he has such knowledge of external objects. One's self understanding is no better than an inference. Now one of the interesting features of this implication of Peirce's theory is that it is consistent with certain of our common-sense analyses of everyday situations. As an example of one such instance, suppose that you are called upon to order dessert in a restaurant, and that you are unable to make any reply. With some justice one might say of you that you do not know what you want. The example is trivial enough in itself, but the point it illustrates is significant. It is to be noticed that you do not lack information about what desserts are being offered you, or about whether you have the money to buy the dessert, or anything of that nature. The information lacked concerns your own preferences, and this is nothing else than to say that there is something you do not know about your self. Now that Peirce's theory is consistent with situations such as these does not prove its truth, but that it has the power to explain them must be taken into account when it is evaluated.

For the rest of his career Peirce continued to hold that one's knowledge of his own self is approximate and not intuitive. One never has absolutely certain knowledge of himself. Peirce applied this insight in a particularly interesting way to the problem of philosophical abstruseness:

Paradoxical as it may seem, it may be maintained that none of the very great philosophers understand themselves. Crystal clearness, such as we justly require in mathematics, in law, in economics, is in philosophy the characteristic of the second-rates. The reason is that the strongest men are able to seize an all-important conception long before the progress of analysis has rendered it possible to free it from obscurities and difficulties. If Kant had waited, before he wrote the 'Critique of the Pure Reason,' until the ideas with which it chiefly deals had been accurately dissected, he might, had he lived, have been pottering over it to-day. But of Spinoza this is true in a much higher degree.¹⁹

Around 1906 Peirce's thoughts returned once more to this theme. "We cannot appreciate our own powers," he wrote, "any more than a writer can appreciate his own style, or a thinker the peculiar quality of his own thought" (6.501).

The attitude Peirce expressed in these passages sets him off forever from the intuitionist. He emphasizes our lack of self-knowledge, and holds out no hope of its ever being completely overcome. The intuitionist, of course, would also recognize that there are instances in which we are deficient in our knowledge of our selves. He might say that in such instances our minds are clouded. Perhaps some truth about our selves has been obscured by some reading we have done, or by some customary way of seeing things that we have picked up along the way. For the intuitionist, however, the possibility always exists that mental clarity may be achieved, and direct and certain self-knowledge obtained. In opposition to this view Peirce would say that man, in so far as he is a sign, is in process,

and that this process, which is nothing less than sign-translation, is theoretically endless. A man-sign, so long as he is alive, has no final interpretant. Thus for Peirce the intuitionist view of self-knowledge is mistaken in two ways. First, it assumes that direct and unmediated self-knowledge is possible, and in so far as it assumes this it tends to presuppose a view of the self as static and unchanging. All of this is implicit in the 1868 essay.

In summary, in his 1868 essays Peirce rejected infallibilism, the notion that experiential presentness by itself constitutes knowledge, the thesis that uninterpreted knowledge is possible, and finally, that one's knowledge of himself is ever more than approximate. These were significant consequences of his essays. They are enough to show that Peirce's was a serious and important contribution to cognition theory. The persistent note of the 1868 essays, however, is incompleteness. The theory had rough edges which needed to be smoothed out. I have argued in particular that Peirce's treatment of sensations and feelings in the context of his theory of signs is quite vague. The terminological conventions necessary for a clear exposition of the relation between feelings and sensations are not to be found in "Some Consequences." Other students of Peirce's thought have pointed out other troublesome aspects of his theory. In a 1946 essay Gentry argued that there is an earlier and a later theory of cognition in Peirce, and that in the earlier (1868) theory there are serious difficulties with the notion of interpretant.²⁰ Referring specifically to the 1868 essays Murphey has suggested that ". . . the relation of inference to the thought process required further clarification. So, too, did the nature of habit . . ."²¹ However, there is no need to multiply authorities in an attempt to show that Peirce's 1868 theory was incomplete. As we proceed

it will become evident that Peirce himself recognized that this was the case. He set to work in the seventies to amplify his views. The result was his theory of inquiry. In the next chapter that theory will be considered. That done, the stage will have been set for an analysis of Peirce's theory of instinct.

NOTES

1. Murray G. Murphey, The Development of Peirce's Philosophy, (Cambridge, Massachusetts: Harvard University Press, 1961), 113.
2. Aristotle, Posterior Analytics, II, 19, in The Basic Works of Aristotle, Richard McKeon, ed. (New York: Random House, 1968), 185. This edition of Aristotle's works will be cited hereafter as McKeon.
3. Aristotle, Posterior Analytics, II, 19; McKeon, 185-86.
4. Bertrand Russell, The Problem of Philosophy, (London: Oxford University Press, 1970), 109. Cited hereafter as Russell.
5. Russell, 113-14.
6. Russell, 109.
7. Russell, 133-34.
8. Russell, 134.
9. Henri Bergson, An Introduction to Metaphysics, T. E. Hulme trans., Second Edition (New York: The Bobbs-Merrill Co., Inc., 1955), 24.
10. Gentry has argued that Peirce's use of "feeling" is ambiguous. See George Gentry, "Peirce's Early and Later Theory of Cognition and Meaning: Some Critical Comments," Philosophical Review, 55 (1946), 642-44. Cited hereafter as Gentry.
11. In the development of this point I have relied quite heavily on Paul Arthur Schilpp, "Is 'Standpointless Philosophy' Possible?" The Philosophical Review, 44 (1935), 227-253. Cited hereafter as Schilpp.
12. This term is consciously used in the sense given to it by J. Loewenberg. He writes: "The pre-analytical is whatever is given for analysis. . ." See J. Loewenberg, "Pre-analytical and Post-analytical Data," The Journal of Philosophy, 24 (1927), 5. Taken in this sense, the pre-analytical is that which the phenomenologist intends to describe.
13. Schilpp, 236.

14. Schilpp, 237. The terms in quotes are Schilpp's.
15. Schilpp, 238.
16. Sir William Hamilton, "Note A," in The Works of Thomas Reid, D.D., Sir William Hamilton, ed., Vol. 2, Sixth Edition (Edinburgh: MacLachlan and Steward, 1863), 743.
17. Schilpp, 251.
18. John Stuart Mill, On Liberty, Currin V. Shields, ed. (New York: The Liberal Arts Press, 1956), 26.
19. C. S. Peirce, "Spinoza's Ethic," The Nation, 59 (Nov. 8, 1894), 344.
20. Gentry, 645-46.
21. Murphey, 122.

CHAPTER IV

THE ALTERNATIVE THEORY OF INQUIRY

After the 1868 essays Peirce's next publication of philosophic importance was his 1871 review for The North American Review of Alexander Campbell Fraser's The Works of George Berkeley, D. D.¹ No other philosophic work of note was published by Peirce until 1877. In that year "The Fixation of Belief" appeared. It was followed the next year by "How To Make Our Ideas Clear." In each of these essays there is an evident concern with methodology, and Peirce's energies are directed towards an analysis of belief and an understanding of the meaningfulness of language.

Each of these essays is of vital importance for an understanding of Peirce's theory of instinct, and it will be the purpose of this chapter to explain why this is so. In Section I it will be argued that Peirce's 1871, 1877, and 1878 essays are a continuation of his attempt to state an alternative to Cartesianism, and in Section II it will be shown that the alternative to Cartesianism is the foundation for, or proof of, his pragmatism. When that is done, the groundwork will have been laid for a consideration of Peirce's theory of instinct.

SECTION I

At the time of his 1868 publishing ventures, and for a good many years thereafter, Peirce had hopes of securing a permanent academic connection.

His efforts in this direction were largely unsuccessful. As Paul Weiss reports, Peirce lectured at Harvard in 1864, 1869, and 1870, but was unable to secure another position until 1879, when he was hired to teach logic at the Johns Hopkins.² Peirce's connection with that school was to last until 1884; thereafter until his death sporadic lecture series provided his only opportunities for teaching.

When he published his now-famous essays in 1868, Peirce of course had no idea that for most of his career he would be an academic outcast. Even then, however, things must have looked bleak for him. The two essays on cognition which he had published were intellectual triumphs, but though they distinguished him as a man of some promise in philosophy, they were of little help in securing him a permanent academic position. William James, his closest friend, was, as always, sympathetic to Peirce's plight. In January, 1869, James wrote to Henry Bowditch as follows:

. . . I have just been quit by Charles S. Peirce. . . The poor cuss sees no chance of getting a professorship anywhere, and is likely to go into the Observatory for good. It seems a great pity that as original a man as he is, who is willing and able to devote the powers of his life to logic and metaphysics, should be starved out of a career, when there are lots of professorships of the sort to be given in the country, to "safe," orthodox men. He has had good reason, I know, to feel a little discouraged about the prospect. . .³

These few lines describe Peirce's situation in capsule form. The Observatory to which James refers was at Harvard. Peirce worked there as an assistant from 1869 to 1872. During this same period (as he had in fact done since 1861) Peirce worked for the United States Coast and Geodetic Survey. The latter connection he maintained until 1891. All of this means that Peirce's philosophic development throughout the seventies must be viewed as an extracurricular activity. He was, with 1870 as the only exception, not employed as a philosopher in this period.

Peirce continued to be interested in developing an alternative to Cartesianism throughout the 1870's. One of his prime concerns was with the manner in which we come to settle upon, or "fix" our beliefs. That this was a natural course for his thoughts to take will be recognized when it is remembered that Descartes' theory of intuition was not only a theory of mental action, but also a theory as to how the philosophic inquirer ought to arrive at his beliefs. Given the theory of intuition the chief issue of philosophic inquiry became, for Descartes: 'How does one clear the way for an intuition?' Descartes' answer to this question is given at length in his Rules For The Direction of The Mind and his Meditations, and forms one of the most important chapters in the history of modern philosophy. To state the method in its briefest possible form, Descartes taught that it was necessary for the individual to call in question all those beliefs which it had been his custom to hold as true, until some intuitively certain belief could be found. Intuition was, then, the cornerstone of the Cartesian theory of inquiry. Now it has been seen that in his 1868 papers Peirce directed all of his energies against the theory of intuition. His contention was that intuitive mental action is a myth. If the Cartesian psychology is rejected, however, what consequences are there for the theory of inquiry for which it is pivotal? This, Peirce found, was a question which he must answer if his alternative to Cartesianism was to be complete in every way. Thus, in "The Fixation of Belief," which Peirce published in the Popular Science Monthly in 1877, a continuing interest in the problems posed by Cartesianism is evident. "The Fixation of Belief," like "Some Consequences of Four Incapacities," was an attempt to fill the theoretical lacuna occasioned by his rejection of intuition.

The view of logic which Peirce elaborated in "The Fixation of Belief" was a natural development of his belief that one should look to external facts in formulating hypotheses, and that the individual consciousness cannot be taken as the standard of truth. ". . . the true conclusion would remain true if we had no impulse to accept it; and the false one would remain false, though we could not resist the tendency to believe in it" (5.365).

It was Peirce's contention that our beliefs are constantly modified by external fact, or in a general sense, by "experience." One's logic, he taught, is developed in 'rough and tumble' contact with the world. He observed that ". . . our power of drawing inferences. . . is not so much a natural gift as a long and difficult art" (5.359). The old scholastic view of logic assumed that all one needed to be logical was some acquaintance with the syllogism, and a host of authorities to supply the major premisses of reasoning. This view, as Peirce interpreted it, ignored the role of experience. Looking back over the historical development of scientific method, Peirce found that the scholastic view of reasoning was gradually replaced by a view which recognized the important role of experience in scientific investigation. To Roger Bacon, the thirteenth-century philosopher, he attributed the view ". . . that experience alone teaches anything . . ." (5.360), and in Francis Bacon he found the recognition that experience must not be simply private, but open to examination and verification (5.361).

For Peirce, the two Bacons each represented an advance in methodological understanding. ". . . each chief step in science," he said, "has been a lesson in logic" (5.363), and as if to prove this thesis he cited the work of Lavoisier:

Lavoisier's method was not to read and pray, but to dream that some long and complicated chemical process would have a certain effect, to put it into practice with dull patience, after its inevitable failure, to dream that with some modification it would have another result, and to end by publishing the last dream as a fact: his way was to carry his mind into his laboratory, and literally to make of his alembics and cucurbits instruments of thought, giving a new conception of reasoning as something which was to be done with one's eyes open, in manipulating real things instead of words and fancies (5.363).

Here in embryonic form, if Peirce interpreted Lavoisier's method correctly, was the famous instrumental view of inquiry. To reason is to manipulate! Scientific reasoning is something done. A hypothesis is checked by experience. But is this not true of all our beliefs, practical as well as scientific? Is it not in our clashes with the world that we develop our logic? Our hopes and dreams are constantly checked by experience, whereas otherwise they would soar too high (5.366). Must we not in the end come to hold that view which will stand the test of experience, and not that view which satisfies our impulsive longings? The 1877 essay is an extended attempt to answer these questions in the affirmative.

Peirce passes next to a more detailed analysis of belief. Doubt, as contrasted with belief, is a state of dissatisfaction. We may say that doubt, like hunger, is a state from which we seek to escape. Peirce compares it to the stimulation of a nerve and the resultant reflex action. The former represents the irritation of doubt, and the latter has its analogue in the activity through which we seek to escape from doubt. Doubt spurs us on to activity until it is destroyed in belief. By contrast, belief is a state of satisfaction which we endeavor to maintain. We go out of our way to hold onto the belief we have, and thereby to avoid the unpleasantness of doubt. A belief, unlike a doubt, is a state of rest. Beliefs do not plunge us into a round of activity, as doubts do. They simply determine

that we shall act in a certain way should the occasion arise (5.373). Thus, Peirce finds that there is a connection between action and belief. He illustrates this connection by remarking that "The Assassins, or followers of the Old Man of the Mountain, used to rush into death at his least command, because they believed that obedience to him would insure everlasting felicity. Had they doubted this, they would not have acted as they did" (5.371). He goes on to say that belief is of the nature of a habit. This was a brilliant stroke, for it enabled Peirce to draw a parallel between the strength of a belief and the degree to which an action may be said to be determined by a situation. It also enabled him to explain the manner in which our beliefs are related to matters of fact.

There is a functional relationship between belief-habits and matters of fact, for in our intercourse with the world, habits which enable us to negotiate certain situations are developed. These habits also determine what conclusions we will draw from any given premisses. Our inferences in both practical and theoretical matters are determined by habits. Valid inferences are those made in accordance with good habits. They generally lead to true conclusions. Our inferences in practical affairs are seldom, if ever, formulated in propositional form, but it was Peirce's belief that they could be so stated. When made explicit in that way they are to be referred to as "guiding principles" of inference.

With this analysis of belief, the stage was set for a discussion of the proper method of fixing belief. Peirce distinguished four such methods. The first he calls the method of tenacity. Here one settles on a belief which strikes his fancy and does everything in his power to enforce that belief. He who uses this method, says Peirce, constantly dwells on whatever is compatible with his belief, and learns to turn away with hatred and

contempt from anything which might disturb it (5.377). I have learned of a community in Kentucky whose inhabitants believe that the world is flat. In order to maintain this belief these persons seriously maintain that the pictures of the earth sent back by Apollo 8 in December, 1968 are a Communist hoax. The tenacity of such individuals is extraordinary! Peirce would say that their persistence, even if misguided, exhibits a strength of sorts. For the majority of men, however, the method of tenacity will not do.

In criticism of this method, Peirce says: "The social impulse is against it" (5.378). Whoever adopts the method of tenacity will always have to contend with the fact that there are other individuals who think differently from him. However much he may endeavor to block out this fact it will be difficult for him to go on throughout his life without considering the possibility that another's belief may be just as good as his own. The thought that other persons might be right in their beliefs, when it comes, will be something of a revelation for the man using the method of tenacity. This notation of the importance of the community in fixing beliefs leads Peirce to the consideration of a second method.

The method of authority, as Peirce calls the second approach to the fixation of belief, is somewhat more sophisticated than the method of tenacity. It is in use whenever beliefs are regulated by the community. Whether the community in question is the state, the aristocracy, the guild, the priesthood, or some other institution, the situation is one in which beliefs are arbitrarily forced on others. Peirce notes that both theological and political beliefs have in the past been upheld by this method, and that great cruelties have often accompanied its use.

Peirce's concern with this method of fixing belief may be traced back to the first of his 1868 papers. There he notes that in the middle ages external authorities were taken as premisses not preceded by any other (5.215). "The most striking characteristic of medieval reasoning, in general, is the perpetual resort to authority" (5.215n). Intuition is, in this place, characterized as an internal authority. What distinguishes these remarks from Peirce's treatment of the method of authority in the 1877 paper is his emphasis (in the latter paper) on the role of the community.

The majority of men, Peirce felt, never pass beyond the method of authority. Two of its advantages may be mentioned. First, it is a comfortable method. Those who adopt the community's beliefs are saved the trouble of working out their own beliefs. Those who use the method of tenacity must be strong-willed when their beliefs are rejected by the community at large, but this is a problem which those who utilize the method of authority obviously do not have. Second, those who fix their beliefs by "majority rule" will not often find them disturbed, for beliefs change relatively slowly. Changes in belief are hardly perceptible during the course of a lifetime (5.380).

Peirce rejects this method. His sentiments were against it, for he had the philosopher's dislike of intellectual slavery. He does not argue against the method on these grounds, however. He is perfectly willing to leave the mass of men in intellectual slavery if that is "their highest impulse" (5.380). Instead, he argues that the method of authority is practically unworkable, for "no institution can undertake to regulate opinions upon every subject" (5.381). This is the entering wedge against the method of authority: some beliefs must always be left up to the individual. In every community there will be some, Peirce felt, who will

rise above the mass of men and see that other men in other ages have believed differently. They will not fail to be struck by this. For these individuals this will be sufficient to show that popular whim or community caprice are inadequate standards for fixing belief.⁴

The third method of fixing belief, Peirce named the "a priori." It is the method of "natural preference," or "sentiment." It has been the hallmark of all those who have adopted their beliefs because they are "agreeable to reason." Beliefs adopted a priori are, for the most part, not based on experience. "Agreeable to reason" does not mean "agreeable with experience," but "agreeable with inclination." In Peirce's opinion, most great works of art, and most systems of metaphysics, have been brought to fruition through use of this method.

It was Peirce's contention that Descartes' method was a priori. By this he means that the famous method of doubt has its ultimate ground in individual preference, or sentiment. Descartes asks us to suppose that one doubts his own existence. Then he reflects that there is one thing (taking "things" in a wide sense) he cannot doubt, and that is that he is doubting. In this way, all doubt as to his own existence is eradicated, for he cannot be certain that he doubts and at the same time doubt his existence. In this way Descartes supposes that what he thinks, or cannot help thinking, is true, must be true. Descartes' proof of God's existence provides another example of his use of the a priori method. Descartes supposes that we have an idea of a Being who is absolutely intelligent, powerful, and perfect, and then argues that such a being necessarily exists. He must exist, or else he could not be absolutely intelligent, powerful, and perfect. Peirce's comment on this argument is that it "plainly supposes that belief is to be fixed by what men find in their minds." Descartes' position, he

finds, is that my believing that something is true causes it to be true (5.382n). This is nothing other than the reduction of belief to individual preference.

The treatment of Descartes in this place is merely an extension of Peirce's critique of Cartesian intuition. In the second of his 1868 essays ("Some Consequences of Four Incapacities") he had affirmed that Descartes' criterion for certainty was: "'Whatever I am clearly convinced of, is true'" (5.265). In that essay the denial of this criterion is coupled with his (a) denial of intuition and (b) affirmation that cognition is an inferential process. In the later 1877 essay Peirce has generalized his original insight. He says that any system which, like Descartes', reduces the problem of fixing belief to the problem of determining individual preference, is a priori. It should be instructive to consider Peirce's critique of the a priori method in this light.

Of the a priori method Peirce writes: "This method is far more intellectual and respectable from the point of view of reason than either of the others which we have noticed. Indeed, as long as no better method can be applied, it ought to be followed, since it is then the expression of instinct which must be the ultimate cause of belief in all cases" (5.383). This is high praise, but in spite of it Peirce rejects the method.

When the a priori method is employed, the fixing of belief becomes a matter of caprice; and this was enough, in Peirce's eyes, to condemn it. There is really little difference between the a priori method and the method of authority. In the latter, beliefs are fixed at the whim of the community, but in the a priori method the individual is left alone to fix his beliefs in accordance with his own sentiments. Peirce felt that these methods make of truth a matter of fashion or taste, and he opposed them on that ground.

What is true must be true independently of what you or I or any finite number of individuals think. It is only in the method of science, which is the fourth way of fixing belief mentioned by Peirce, that this is recognized.⁵

According to the method of science, or the pragmatic method (as Peirce later referred to it), our beliefs must be determined by something external to us and independent of us, and by something which at least in principle might affect every man. That is to say, the truths we hold must not be the product of whim, and they must be public. These two criteria, as Peirce understood them, were sufficient to distinguish the method of science from mystical inspiration. The mystic may claim that the deliverances he receives come from on high, and this would certainly seem to meet Peirce's independence criterion. If the mystic also claims a special access to the source of his knowledge, as Peirce felt he did, then he cannot meet the second of Peirce's criteria, which is that our beliefs be determined by something public. If he does not meet the second criterion, however, he does not really meet the first, for Peirce felt that only that which is capable of affecting more than one person is genuinely independent of us. The mystic's method of fixing belief is simply a form of the method of tenacity.

Peirce is not attacking any belief of any mystic, but only the mystic's claim to a unique method of establishing which beliefs are true. If any statement of a mystic is true it can be verified in the same manner as any other true belief. It is not verified by supposing that it came from on high. Peirce's interest, in fact, is not in those peculiar ways in which what is independent of us might affect us. (This is simply to generalize the point just made concerning the mystic). Each individual might conceivably

be affected by what is external to us in a different way. In the end, however, if the method of fixing belief is adequate, each man must arrive at the same conclusion. Thus, the scientific method presupposes (a) a belief in independent real objects, and (b) that there is a progress toward the truth. Now, can either of these presuppositions be justified?

Peirce's arguments for the presuppositions of the scientific method are a curious blend of the logical and the psychological, with the latter predominating. First he admits that the proposition that there are real things cannot be proved beyond doubt, but that the practice of scientific investigation does not lead one to suppose that there are no such objects. This is nothing else than to say that the practice of the method does not lead one to doubt it. This, once again, is not to prove the method, but it is to mark it off from all of the other methods Peirce has considered. Peirce has argued that each of the other methods cannot be maintained in practice. This cannot be said of the scientific method. Peirce also argues that it is impossible to doubt that there are "Reals." Whenever I attempt to fix my belief on some point, I suppose thereby that there are at least two conflicting propositions, one of which is true, and this in turn involves ". . . a vague concession that there is some one thing which a proposition should represent" (5.384). Now this argument would seem to raise a host of problems, the most obvious of them the problem of whether a proposition can represent something which is not real. Whether or not there is such a problem, and whether or not it can be solved if it exists, need not be considered here, however, for Peirce's point is apparently the psychological or quasi-psychological one that Reals are admitted by every mind. ". . . the social impulse," Peirce writes, "does not cause men to doubt it" (5.384).

The interesting point about these two arguments is that they are aimed specifically at showing that the scientific method is not subject to the difficulties inherent in the other methods. Peirce offers no proof of the method which is supposed to be apodictic, but as usual trusts to a variety of arguments which are intended to create a presumption in favor of his position. As stated, however, Peirce's arguments offer more evidence for the presupposition that there are Reals than they do for the presupposition that progress toward the truth is actually being made, and even one who is charitably inclined towards his position must admit that on this point the defense he offers is weak. He writes, "Hegel thinks there is a regular system in the succession of these tendencies [of thought], in consequence of which, after drifting one way and the other for a long time, opinion will at last go right. And it is true that metaphysicians do get the right ideas at last. . ." (5.385). This only amounts to a statement of and not a defense of his position. Perhaps sensing the weakness of his defense, in 1893 Peirce added a footnote which is relevant to the issue (5.384n). When it was recognized that heavy bodies fall no faster than lighter ones, Peirce remarks, belief was brought into conformity with nature. Peirce took this as a paradigm case of the utilization of the scientific method and went on to say: "The trial of this method of experience in natural science for these three centuries. . . encourages us to hope that we are approaching nearer and nearer to an opinion which is not destined to be broken down -- though we cannot expect ever quite to reach that ideal goal" (5.384n). Thus, the belief that there is scientific progress is in the nature of a regulative principle. It is the ideal of scientific inquiry.

"How To Make Our Ideas Clear," which Peirce published in the Popular Science Monthly in 1878, like "The Fixation of Belief," may also be

interpreted as an attempt to develop an alternative to Cartesianism. One of Descartes' concerns was with the clarity of our ideas. He thought that clearness and distinctness were the marks of those ideas known in intuition. Peirce rejected intuition, however, and so he was faced with a difficulty. If one cannot depend on gaining clear ideas through an intuition, how can clarity be achieved? The 1878 essay may be viewed as an attempt to answer this question. It forms, as will become evident, one of the most interesting chapters in Peirce's intellectual development.

Peirce begins his 1878 essay with an account of the meaning of clearness and distinctness in Cartesianism. A clear idea is one which, when apprehended, will always be recognized, and never mistaken for any other. A distinct idea is one in which there is no unclarity, and which may be precisely defined. Peirce's criticism of this view of clarity is twofold. First, it presupposes an intellectual perspicuity which few individuals possess, and secondly, it is unduly subjective. To say that an idea is clear when it can be recognized in any form it might take is to put clarity beyond the reach of all but a few; but on the other hand, to say that an idea is clear if I can recognize it under normal circumstances is to make clarity a function of my subjective consciousness. In either case, there are serious difficulties with this notion of clarity.

Peirce's criticism of the subjectivism inherent in the Cartesian notion of clarity was a corollary of his attack on intuition. Peirce's contention that the Cartesian intuitive position reduces to the view that "whatever I am clearly convinced of, is true" (See 5.265) will be recalled. To Peirce's mind, the Cartesian understanding of clarity was a piece of the same fabric. Of Descartes he said: "The distinction between an idea seeming clear and really being so, never occurred to him. Trusting to

introspection, as he did, even for a knowledge of external things, why should he question its testimony in respect to the contents of our own minds" (5.391)?

If Peirce's critique of the Cartesian notion of clarity was like his critique of the intuition theory, his alternative approach to clarity was developed in accordance with the same principles he had urged in opposition to intuitionism. In clarifying our ideas we must recur to the external fact, and how this is to be done must be stated by our method of making our ideas clear.

As early as 1871, in Peirce's review of Fraser's edition of Berkeley's works for The North American Review there was a hint as to the way in which Peirce would approach this problem. In that review he suggests: "A . . . rule for avoiding the deceits of language is this: Do things fulfil the same function practically? Then let them be signified by the same word. Do they not? Then let them be distinguished. Why use [a] term . . . in such a sense as to separate things which, for all experiential purposes, are the same" (8.33)? By 1878 Peirce had considerably developed the implications of this rule. In "How To Make Our Ideas Clear," he suggests that terms take on meaning in relation to sensible effects. If it is said that something is hard, this means that many other things will not scratch it (5.403). If something has weight, this means that it will fall when no opposing force is present (5.403). In short, Peirce's rule is: "Consider what effects, that might conceivably have practical bearings, we conceive the object of our conception to have. Then, our conception of these effects is the whole of our conception of the object" (5.402).

In Peirce's opinion, much "senseless jargon" (5.401) could be avoided

if this rule were put into practice. One instance Peirce cites in proof of this contention is particularly striking. In the Eucharist of the Catholic church it is claimed that the wine becomes Christ's blood when the priest says the appropriate words. This is known as the doctrine of transubstantiation. The claim is that the wine changes in substance and becomes blood. Peirce notes that if the sensible effects of the substance, both before and after the priest's words, are the sensible effects of wine, then to call the wine "blood" after the priest has said his part is meaningless.

Peirce's principle has had great historical importance. It may be viewed as a precursor of P. W. Bridgman's theory of operational definition. However, it passed largely unnoticed by the academic world for many years. When it was discovered it came to be known as the "pragmatic maxim." The story of pragmatism's "discovery" and the re-organization of Peirce's thought which it occasioned, will occupy our attention in Section II.

SECTION II

In 1903, in a lecture he delivered at Harvard University, Peirce described the fate of "How To Make Our Ideas Clear" in the following whimsical fashion:

I sent forth my statement in January 1878; and for about twenty years never heard from it again. I let fly my dove; and that dove has never come back to me to this very day. But of late quite a brood of young ones have been fluttering about, from the feathers of which I might fancy that mine had found a brood (5.17).

Peirce's now-famous essay attracted no attention until William James referred to it in 1898 in a lecture delivered at the University of California.⁷ Then,

however, "pragmatism,"⁸ as the doctrine espoused in the essay was called, provoked serious scholarly discussion.

The sudden popularity of the movement he had unwittingly founded must have come as something of a surprise to Peirce. He had retired from the United States Coastal Survey in 1887, and since that time had been living a life of great obscurity in Milford, Pennsylvania. He was 59 when pragmatism, in the form in which it was espoused by James, captured the fancy of the philosophic community. As a result of James' lecture, thinkers who had never heard of Peirce were made aware of his presence. For Peirce the material results of all this were quite slim. William James was able to secure him a couple of speaking engagements, but that was about the extent of it. The most important result of James' lecture was that Peirce was called upon to clarify his pragmatism and to distinguish it from other related positions which began to go under the same name. This project occupied Peirce for most of the decade following 1898. Under the rubric of pragmatism Peirce began to draw together many of the themes which had occupied him in the earlier years of his philosophical activity, and especially in the period extending from 1868 to 1878. He was moved to take his earlier analysis of belief and his theory of signs (in an improved form, incidentally) as proofs of his pragmatism. As a result, these two movements of his thought were brought into close relationship with each other, and "habit," as will be seen, was the concept which held them together.

Peirce conceived of pragmatism in the first instance as a theory of meaning. He felt that if the pragmatic maxim were rigorously and consistently applied, much useless and fruitless disputation could be avoided. Philosophical disputes arise, he said, because the disputants ". . . either

attach different meanings to words, or else one side or the other (or both) uses a word without any definite meaning. What is wanted, therefore, is a method for ascertaining the real meaning of any concept, doctrine, proposition, word, or other sign" (5.6). Peirce felt that method was implicit in the pragmatic maxim.

He did not feel that the maxim could be used to determine the meaning of every sign, but only of "the meanings of intellectual concepts, that is, of those upon which reasonings may turn" (5.8). "It is merely a method of ascertaining the meanings of hard words and of abstract concepts" (5.464). Some concepts, such as those of red and blue, are subjective and unintellectual. Peirce felt that it would be a waste of time to consider whether the sensations one labels as blue are actually sensations of red. From this kind of question no consequences follow, for the answer given, no matter what it is, will only concern subjective feelings. A feeling of redness or blueness is simply a feeling of redness or blueness, and has no bearing on anything else. This is not the case with an intellectual concept, such as hardness.

Intellectual concepts . . . essentially carry some implication concerning the general behaviour either of some conscious being or of some inanimate object, and so convey more, not merely than any feeling, but more, too, than any existential fact, namely, the "would-acts," "would-dos" of habitual behaviour; and no agglomeration of actual happenings can ever completely fill up the meaning of a "would-be" (5.467).

The pragmatic maxim states that the meaning of intellectual concepts is found in events having practical bearings. What are "practical bearings?" As Peirce understood them, the meaning of intellectual concepts ". . . consists . . . in an idea . . . predominantly of acting and being acted on" (5.7), and this view is carried over to his explanation of practical bearings. He

writes:

. . . all reasonings turn upon the idea that if one exerts certain kinds of volition, one will undergo in return certain compulsory perceptions. Now this sort of consideration, namely, that certain lines of conduct will entail certain kinds of inevitable experiences, is what is called a "practical consideration" (5.9).

If one recalls Peirce's definition of "hard" as ". . . will not be scratched by many other substances" (5.403), the meaning here intended should be relatively clear. If a knife-edge, or some other substance, is applied to a substance, the former will not scratch the latter if the latter is hard. The specific hardness of a substance is determined by how much pressure on it of some other substance is required in order to scratch it. It is seen that for Peirce meaning is manipulatory, and that his theory is a development of the method he attributed to Lavoisier in 1867 (5.363).

The pragmatic maxim, in another of Peirce's formulations (dating from around 1907), states:

In order to ascertain the meaning of an intellectual conception one should consider what practical consequences might conceivably result by necessity from the truth of that conception; and the sum of these consequences will constitute the entire meaning of the conception (5.9).

This statement of the maxim illuminates the claim that the whole meaning of a conception consists in the sum of practical consequences, but this in turn raises a question concerning the truth of the maxim. What proof is there that the entire meaning of a conception consists in practical effects? Two proofs suggested themselves to Peirce. The first he had elaborated in 1878 in his analysis of doubt and belief. How his proof follows from this analysis may now be stated.

Doubt, on Peirce's analysis, may arise from feigned or unfeigned hesitancy. Suppose that I am called upon to pay my cab fare, and I need thirty cents in change. I have a quarter, five pennies, and a nickel in my pocket. Now I may hesitate for a moment before deciding whether to give the cabbie the five pennies or the nickel. We would not ordinarily refer to my hesitancy in a matter like this one as doubt, and Peirce recognizes this fact. Nevertheless, the situation is one which is resolved only after some mental activity, and Peirce emphasizes that it is in situations like it that doubt may arise. This is an example of unfeigned hesitancy. Now if I am studying a map in an attempt to decide on the best route to Chicago, when I am not planning to go to Chicago, this would be feigned hesitancy. Peirce felt that much of scientific inquiry fits this pattern. The scientist imagines the consequences of several possible solutions to a problem in an attempt to determine the solution he should adopt. The point to be noted now is that doubt, however it arises, spurs the mind on to some activity.

Thought is the activity stimulated by doubt. It is defined as ". . . a thread of melody running through the succession of our sensations" (5.395). It is said to be one of "various systems of relationship of succession" which subsists among sensations. In the language of "Some Consequences," it is a reduction of a manifold, or relational system, which leads on to belief (5.396).

Belief was discussed in some detail above, and so its major characteristics need only be stated in summary form here. Belief is defined as the cessation of thought, or thought at rest (5.396), though Peirce is quick to point out that thought, strictly speaking, never actually comes to a stop. ". . . thought, at the same time that it is a stopping-

place, . . . is also a new starting-place for thought" (5.397). Belief is also the resolution of doubt, as we have seen. It is a state of relaxation or satisfaction (5.397 & 5.372), and because it is such, it is a state we wish to maintain. Further, our beliefs guide our actions, while doubt never has this effect (5.371). "Belief does not make us act at once, but puts us into such a condition that we shall behave in some certain way, when the occasion arises" (5.373). A belief, stated in other language, is "a rule for action. . ." (5.397). This is to say (and this is the point to which Peirce's whole discussion tends) that it is a habit. "The essence of belief is the establishment of a habit; and different beliefs are distinguished by the different modes of action to which they give rise" (5.398).

It was this analysis of belief which Peirce took as a proof of his pragmatism in 1878. It was supposed to justify the correlation between meaning and action postulated by the pragmatic maxim. According to the analysis, ". . . the whole function of thought is to produce habits of action . . .;" and in order to uncover the meaning of a thought ". . . we have, therefore, simply to determine what habits it produces, for what a thing means is simply what habits it involves. . . . there is no distinction of meaning so fine as to consist in anything but a possible difference of practice" (5.400).

In his 1903 Harvard lectures Peirce was critical of this proof of the pragmatic maxim. He said that it was unclear and too psychological. In his own words, the criticism is as follows:

But how do we know that belief is nothing but the deliberate preparedness to act according to the formula believed?

My original article carried this back to a psychological principle. The conception of truth, according to me, was developed out of an original impulse to act consistently, to have a definite intention. But in the first place, this was not very clearly made out, and in the second place, I do not think it satisfactory to reduce such fundamental things to facts of psychology. For man could alter his nature, or his environment would alter it if he did not voluntarily do so, if the impulse were not what was advantageous or fitting. Why has evolution made man's mind to be so constructed? That is the question we must nowadays ask, and all attempts to ground the fundamentals of logic on psychology are seen to be essentially shallow (5.28).

Four years later, in 1907, he had determined upon the proper logical analysis of belief, or the act of judgement. He suggested that "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" (5.475). This logical proof of the pragmatic maxim must now be examined.

In Peirce's analysis of signs in "Some Consequences of Four Incapacities" he had emphasized that one thought is interpreted by another in a sign series. At that time, however, he had not coined the term interpretant as a designation for this process, and he had not analyzed the process in much detail. In 1907 the technical term 'interpretant' has appeared, and several kinds of interpretants are distinguished. The first that Peirce mentions is the "emotional interpretant." This is the feeling produced by the sign. The interpretant of a musical performance, when that performance is taken as a sign, is some feeling. The meaning of a piece of music resides in the first instance in the feeling it produces, but the music may have another, and "energetic," interpretant as well. This is the second kind of interpretant Peirce mentions. Its main characteristic

is that it involves some effort. One of Peirce's examples of a sign is an officer's command to his troops to ground arms. The energetic interpretant here is the muscular effort involved in giving the command. Though energetic interpretants may be of this sort, more often than not the effort involved is mental rather than muscular.

Pragmatism, as our previous discussions of it might lead one to expect, will have nothing to do with the emotional or the energetic interpretant, for they are both unintellectual. Intellectual, or "logical" interpretants, as Peirce called them, will be its sole concern. In introducing logical interpretants, Peirce connected his theory of signs with his pragmatism in a masterful way. The pragmatic maxim had suggested that the meaning of intellectual concepts is operational; that is, it had said that the results of certain specifiable operations constitute the meaning of intellectual concepts.

. . . to predicate any such concept of a real or imaginary object is equivalent to declaring that a certain operation, corresponding to the concept, if performed upon that object, would (certainly, or probably, or possibly, according to the mode of predication) be followed by a result of a definite general description (5.483).

This analysis locates the meaning of intellectual concepts in a conditional future, and holds that such concepts have a general reference (i. e., relate to effects of a general description). To describe the meaning of an intellectual concept in this manner, however, is to describe a logical interpretant. This interpretant is always a conditional future, or a "would-be," and its reference is general. The inescapable conclusion is that the logical interpretant is the meaning, or proper significant effect, of an intellectual concept.

Peirce found that the emotional interpretant was some feeling, while

the energetic interpretant was some effort. The logical interpretant, because it is the interpretant of an intellectual concept, must be some mental fact. Now what fits the description of the logical interpretant? What sort of mental fact, in other words, is both a conditional future and of general reference? Peirce considered conceptions, desires, expectations, and habits. (Can the reader now guess which he chose?)

Conceptions, Peirce admits, are certainly logical interpretants. He says, however, that ". . . 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" (5.486). Another explanation of the nature of the logical interpretant must be found. The reason for this is that Peirce is searching for the ultimate nature of the logical interpretant. The 1868 analysis of signs had shown him that the interpretant of a thought-concept is simply another thought-concept, and that this process is theoretically endless (5.284). It is for this reason that Peirce stated in 1907 that a concept could not be the ultimate logical interpretant (5.476). Desires and expectations are next considered by Peirce, and their candidacy for the office of logical interpretant is rejected because neither is of a general applicability except in so far as it is connected with a concept. In addition, desires are rejected because they are said to be effects of the energetic interpretant, and expectations are rejected because they are not conditional (5.486). By this process of elimination, then, Peirce has arrived at habit as the ultimate logical interpretant. "It can be proved that the only mental effect that can be . . . produced and that is not a sign but is of a general application is a habit-change; meaning by a habit-change a modification of a person's tendencies toward action . . ." (5.476).

Now if habit is to play the role of ultimate logical interpretant it must, as we have seen, be a conditional future and have general reference. To see that Peirce understood habits in this way one only needs to recall his analysis of belief-habits in 1877. To say that someone has a habit is in the first place to say that he will act in a certain way should the occasion arise (5.373). This makes of habit a conditional future, a hypothetical. At the same time, Peirce was influenced by the statistical method, which fit in with the view that habits are of a general reference. He describes the application of statistics to the theory of gases and the theory of evolution:

Though unable to say what the movements of any particular molecule of gas would be on a certain hypothesis regarding the constitution of this class of bodies, Clausius and Maxwell were yet able, . . ., by the application of the doctrine of probabilities, to predict that in the long run such and such a proportion of the molecules would, under given circumstances, acquire such and such velocities; that there would take place, every second, such and such a relative number of collisions, etc. . . . In like manner, Darwin, while unable to say what the operation of variation and natural selection in any individual case will be, demonstrates that in the long run they will, or would, adapt animals to their circumstances (5.364).

The action of habits is "statistical" in that one can never say with absolute certainty that circumstance X will lead to action in a specific case. Given the occurrence of several circumstances of the general nature of X, however, and given the existence of a habit of the appropriate sort, an action having the general nature of Y will take place. Habits have a general reference in that they do not refer to this or that particular circumstance, but only a circumstance of a general sort.

In his 1877 and 1878 essays, Peirce's analysis may, as he remarks, have been too psychological, but the result of that analysis was the same as his logical analysis of signs. Habit plays a pivotal role in both. The

relevance of the synthesis of pragmatism and sign theory to Peirce's theory of instinct will become evident in the next chapter.

NOTES

1. This review is found in the Collected Papers at 8.7-8.38.
2. See Paul Weiss, "Biography of Charles S. Peirce," in Perspectives on Peirce: Critical Essays on Charles Sanders Peirce, Richard J. Bernstein, ed. (New Haven: Yale University Press, 1965), 8-10.
3. Ralph Barton Perry, The Thought and Character of William James: Briefer Version (Cambridge, Massachusetts: Harvard University Press, 1948), 112.
4. It may be mentioned that Descartes' whole method is also set against the use of authority as a criterion for fixing belief. The first of his Meditations begins as follows: "It is now some years since I detected how many were the false beliefs that I had from my earliest youth admitted as true, and how doubtful was everything I had since constructed on this basis" See René Descartes, Meditations on the First Philosophy, in The Philosophical Works of Descartes, Elizabeth S. Haldane and G. R. T. Ross, trs., Vol. I (New York: Dover Publications, 1955), 144.
5. On the matter of fixing belief there is a striking intellectual kinship between John Stuart Mill and Peirce. It is even possible that "The Fixation of Belief" took shape under the influence of Mill's On Liberty. The author does not pretend to know definitely that Peirce had read this essay, but considers it highly probable that he did. Let us consider some of the evidence for this belief. First of all, there is no historical reason why Peirce could not have read the essay by the time he wrote "The Fixation of Belief." Mill published On Liberty in 1859, and Peirce's essay did not appear until 1877. Secondly, Mill's essay contains an attack upon what Peirce called the "method of authority." The method is attacked by Mill on two fronts, and in both cases Peirce is in full agreement with him. As a philosophical court of appeal, authority is rejected. According to Mill, "the incurable defect" of Scholastic disputations in the Middle Ages was "that the premises appealed to were taken from authority, not from reason. . . ." John Stuart Mill, On Liberty, Currin V. Shields, ed. (New York: The Liberal Arts Press, 1956), 54. Cited hereafter as Mill. The regulation of belief by the community is also rejected by Mill. Suppose a group in which every individual except one holds a certain belief; then even in that case the majority who hold the belief have no right to force the one dissenter to adopt their belief (Mill, 20-21). Mill recognized that the majority of individuals fix their beliefs in accordance with the beliefs prevailing in their culture. Most are not even disturbed by the fact that other men in

other ages held widely differing opinions. Instead, they assume that the opinions held in their own age are infallible (Mill, 22-23). The same point, of course, is made by Peirce in his discussion of the method of authority. Thirdly, Mill recognized that both authority and sentiment are powerful, though inadequate, means of fixing belief. An individual, he felt, does not clearly apprehend his own beliefs, and has no basis for holding them, unless he is able to give reasons for them and (just as important) to refute the beliefs with which they conflict. Most people, according to Mill, are unable to do this. For such an individual, "The rational position. . . would be suspension of judgment, and unless he contents himself with that, he is either led by authority or adopts, like the generality of the world, the side to which he feels most inclination" (Mill, 45). In this passage both the method of authority and the a priori method are contained in embryo. Finally, Mill and Peirce share the belief that free inquiry will lead ultimately to the truth. Mill writes: "As mankind improve, the number of doctrines which are no longer disputed or doubted will be constantly on the increase. . ." (Mill, 53). This, as will be seen, is the inspired hope expressed by Peirce in his explication of the scientific method.

6. What is perhaps Peirce's most powerful statement of the belief that there is a progress toward the truth in science did not materialize until 1898. In that year Peirce delivered a lecture series at Mrs. Ole Bull's in Cambridge. In mathematics, he told his auditors, there are certain self-correcting methods of computation, and in illustration of his point he presented a rule for extracting the cube root of 2 (5.574). Then he commented: "This calls to mind one of the most wonderful features of reasoning and one of the most important philosophemes in the doctrine of science, of which, however, you will search in vain for any mention in any book I can think of; namely, that reasoning tends to correct itself, and the more so, the more wisely its plan is laid. Nay, it not only corrects its conclusions, it even corrects its premisses" (5.575). Scientific method, as Peirce conceived it, was self-corrective. Just as the continued utilization of certain methods of computation in mathematics will lead one ultimately to the correct answer, so the continuous application of the scientific method will insure progress.

7. See William James, "Philosophical Conceptions and Practical Results," in Collected Essays and Reviews (New York: Longmans, Green and Co., 1920), 410-412.

8. Peirce, curiously enough, did not use the term pragmatism in his 1878 essay, though it is generally recognized that the term was used privately. In later years, when pragmatism had become a topic of much discussion, Peirce regretted his omission. In a writing dated 1907 he explained it as follows: "In those medieval times, I dared not in type use an English word to express an idea unrelated to its received meaning. The authority of Mr. Principal Campbell weighed too heavily upon my conscience. As late as 1893, when I might have procured the insertion of the word pragmatism in the Century Dictionary, it did not seem to me that its vogue was sufficient to warrant that step" (5.13).

CHAPTER V

PEIRCE'S THEORY OF INSTINCTIVE INSIGHT

In previous chapters Peirce's critique of the Cartesian theory of intuition, and his attempt to state an alternative to it, have been considered in some detail. It has been argued that Peirce's pragmatism and his theory of signs developed out of his critique of Cartesianism and from his answer to the Cartesian theory of mental action. In his inferential theory Peirce denies Descartes' claim that self-evident propositions are known in an immediate intuition. That the Cartesian theory was closely allied with a theory of inquiry and that Peirce proposed an alternative to it as well, has also been suggested. Peirce's critique of Cartesianism was accompanied by a revolutionary new understanding of philosophical methodology. Cartesianism's method of doubt was to be replaced by the pragmatic, scientific method. Thus it would seem that intuition and the theory of inquiry associated with it had been put to the test and found to be lacking.

Peirce's critique of Cartesianism was an important contribution to philosophical inquiry. So effective was it, in fact, that at first sight there would seem to be no reason why the term "intuition" should not be treated henceforth as a historical curiosity. In physics the once-significant aether theory has been disproved, and now the term "aether" scarcely is used outside of books in the history of science. Has the intuition theory not been exploded just as surely, and should not "intuition" have a

fate similar to that of "aether?" Whatever the proper answer to this question, the fact is that intuition is still a living term in philosophy. It is the cornerstone of Bergson's philosophy,¹ it is the name applied to a recent movement of influence in ethics,² and it occupies a prominent, though problematic, position in the thought of Husserl.³ Twentieth-century philosophers have not outgrown a need for the term intuition. It expresses, as no other term seems to, something which they wish to say. To put it poetically, "intuition" is a term dripping with philosophical significance.

Philosophic progress has been a persistent and characteristic concern of modern philosophers, and Peirce is certainly no exception to the rule. He is in that tradition which maintains that philosophy, if it is to progress, must emulate the physical sciences. First of all, he believed, philosophy is in need of a technical vocabulary. Each term in its technical tool-kit must be fixed to a single meaning. Only when some sort of terminological consensus is reached will philosophy begin to enjoy the kind of respectability which the sciences have earned. (8.169; 5.413). For his part, Peirce made an attempt to follow his own advice, and nowhere is this seen more clearly than in his use of the term intuition. He never deviates from his 1868 definition of intuition as a "'premiss not itself a conclusion'" (5.213). As a result, the term intuition rarely occurs in his papers after 1868. Convinced that intuition was a myth, Peirce had no need to refer to it again.

Now if philosophers were unanimous in their usage of the term intuition it would be a simple matter to apply Peirce's critique to Bergson, the ethical intuitionists, and Husserl, and show thereby that their positions had been refuted, antecedent to their formulation, by the critique of Cartesianism. In philosophy, however, matters are never that simple. Philosophical terms recur again and again in one guise and then another as

long as there is any doubt as to their proper usage. Should anyone now use intuition to indicate a premiss which is not also a conclusion, his position would be subject to Peirce's critique. The indications are, however, that the meaning of intuition is not exhausted by this definition. Just recently, this has been explicitly maintained. According to Robert C. Neville, Peirce's understanding of the subject matter of intuition was too narrow.⁴ Neville argues that Peirce was concerned with the immediacy theory of the relation between cognitions and objects. [That this is true enough should be evident from the analyses undertaken in chapters one and two above.] Intuition was defined, following Kant, as a cognition immediately related to its object; but while this view may be defensible, it only refers to the inner structure of intuition. "A definition of intuition more internal to the claims of the faculty would do it more justice."⁵ Rather than considering it as a knowing faculty, Peirce should have begun with a consideration of the subject matter of intuition. According to Neville, most used the term to indicate an apprehension of harmony, or unity within diversity. We all believe that some elements fit with each other while others do not. This claim is central to the intuitive thesis, and a consideration of intuition should begin with it. Thus, Neville's criticism of Peirce's critique is that it is based on too limited a rendering of intuition's meaning. There is a further meaning to "intuition" which Peirce's critique does not touch.

There is some justification for Neville's claim. Though there is no indication of it in Peirce's 1868 articles, the Cartesian theory of intuition is something more than a theory of mental action. It is, in addition, a theory of insight, or creativity. As we have seen (page 24 above), Locke claimed that we distinguish white from black, and circles from triangles,

intuitively. In the same way, he said, we are able to see the truth of simple mathematical propositions. In intuition we can, in other words, tell whether or not several elements form a unity, or "go together." In the Cartesian tradition, a perception of this sort was quite literally an "inner vision" or an "in-sight." Since the goal in philosophy is clear and evident knowledge, the knowing situation for Descartes must be analogous to the kind of vision one has on a clear and sunny day in the smogless countryside. Unlike physical vision, however, the intellectual vision ". . . is completely known and incapable of being doubted."⁶ It was Descartes' belief that men may err when their conclusions are experientially based,⁷ but that certain knowledge is had when one trusts ". . . not the fluctuating testimony of the senses, nor the misleading judgment that proceeds from the blundering constructions of imagination . . .," but intuition, or the natural light of reason.⁸ This is the perspective which undergirds the whole of the Cartesian philosophy.

When this view of intuition is understood, Descartes' goal in his Rules for the Direction of the Mind is clear. His intention is to state those rules which will enable one to avoid a clouded mind. Stated positively, his thesis is that one "ought . . . to think how to increase the natural light of reason, . . . in order that his understanding may light his will to its proper choice in all the contingencies of life."⁹ It is with this purpose in mind that he sets forth his rules of method.

But if our method rightly explains how our mental vision should be used, so as not to fall into the contrary error, and how deduction should be discovered in order that we may arrive at the knowledge of all things, I do not see what else is needed to make it complete; for I have already said that no science is acquired except by mental intuition or deduction.¹⁰

He felt that whoever followed his rules could avoid error and achieve

intellectual insight. For this reason, George J. Seidal has referred to Descartes' method as ". . . one of the first of what might be called the 'cookbook' approaches to creativity."¹¹

Descartes' recipes for guiding the natural light of reason were formulated in the belief that ". . . the human mind has in it something that we may call divine, wherein are scattered the first germs of useful modes of thought." These germs of thought often bear fruit even when they are ". . . much neglected and choked by interfering studies. . ."¹² His own rules of method, Descartes believed, must have been at least dimly perceived by the great minds of the past. Otherwise, he mused, how could they have achieved as much as they did?

Descartes was convinced that the mind has a natural tendency to seek out the truth. The light of reason manages to search out and illuminate the truth even under the most adverse circumstances; but why, if this is the case, do men disagree? If there is a natural light of reason which seeks out truth of its own accord, how can this happen? One possible answer is contained in what has already been said. There is error and disagreement because the original germs of thought are "neglected and choked by interfering studies." However, this answer by itself is inadequate. We must ask why, if there is a natural light of reason, so many erroneous things have been written. Descartes' answer is surprising: he suggests (Rule IV) that some of the ancients tried to obscure the proper road to truth! He implies that there would hardly be as many unsettled questions in the sciences today if the ancients had been more interested in passing on their methodological secrets and less interested in presenting their insights in a manner calculated not only to inspire our wonder, but to mislead us as well.¹³

This treatment of the problem of disagreement, whatever its limitations, shows that Descartes himself saw the relevance of intuition to the problem of human insight. His theory of insight is, as must be evident by now, rather elaborately articulated. Some interesting questions concerning Peirce's critique of Cartesianism are suggested by this circumstance. Did Peirce recognize intuition's character as a theory of insight? Supposing that he did recognize it as such, did he intend to state an alternative to it? In other words, does Peirce's opposition to Cartesian intuition extend to the theory of insight, or was he only concerned to refute the Cartesian theories of mental action and inquiry? These questions, interesting as they are, are difficult, if not impossible, to answer. There is no direct indication in his writings that Peirce looked on Cartesian intuition as a theory of insight. He is silent on the matter. It is true that he uses Cartesian language to describe human insight. Terms such as "lumen naturale" or "natural light," which Descartes had used in reference to intuition, occur in several places (1.80, 2.23-24, 5.604, 6.477), but this is no certain indication that Peirce had a Cartesian relapse in discussing insight. It would be, if technical philosophical terms were fixed to one meaning, as Peirce argued they ought to be. As it is, however, Peirce might have wished to use this language without invoking Cartesianism. In fact, he specifically refers the il lume naturale theory to Galileo (1.80), and he never uses the term in connection with Descartes. Whether or not Peirce recognized intuition as a theory of insight, and whether he opposed it if he did, is difficult to say.

Another question stands a better chance of being answered. It may be asked if Peirce developed a genuine alternative to the Cartesian theory of insight. An answer to this question, unlike those just considered, does

not hinge on whether or not Peirce discerned a theory of insight in Cartesian intuition, and it does not require a knowledge of his intentions regarding the theory. All it demands is proof that Peirce has a theory of insight and that this theory is consistently non-Cartesian. Let us briefly consider the second of these issues. What standards would a theory of insight have to meet in order to qualify as an alternative to Cartesianism? (1) Obviously, it must not have as its foundation an intuitive theory of mental action. That is, it must avoid the proposition that human insights are immediate premisses which are not also conclusions (and thence a form of signless thought). (2) It must not make truth a function of the individual consciousness. No one holding to the alternative theory will be able to say that whatever he is convinced of is true simply because he thinks it is true. (3) The alternative theory must refrain from attributing apodicticity to human insights. It will assume that they are fallible and subject to further development. These criteria are the main consequences of Peirce's critique of Cartesianism which are applicable to a theory of insight. If Peirce has a theory which respects these strictures it will constitute a genuine alternative to the Cartesian theory.

Peirce's interest in insight was evidently heightened by his study of the phenomenon of instinct. This may seem to the reader a curious circumstance. Instinct is a psychological theory concerning human motivation. According to one recent text, "Instincts refer to unlearned, patterned, goal-directed behavior that is species-specific."¹⁴ It may be wondered what this phenomenon has to do with insight. If Peirce's views on insight are wedded to a theory of instinct it may also be wondered if they are not outmoded, for the instinct theory of human behavior is now rejected by many psychologists.¹⁵

If these doubts cannot be laid to rest immediately, at least a proper foundation for their resolution may be built by placing Peirce's writings on instinct in their historical context.

The theory of instinct was a rather late development in Peirce's thought. There is one brief mention of it in "The Fixation of Belief" (5.383), but this, according to the editors of the Collected Papers, was an addition made around 1910. It is not until 1883, and the years following, that Peirce's writings begin to reflect a serious concern with instinct. In some papers dealing with probability, which date from 1883, he makes reference to it (2.753-54). Instinct is not discussed at length, however, until 1898, when Peirce delivered a series of lectures (which will be discussed below) on "matters of vital importance." Peirce next mentioned instinct around 1902 in some writings on logic (2.1-202). Then, in an unpublished paper dating from the period around 1905, and entitled "Consequences of Critical Common-Sensism" (5.502-537) by Peirce's editors, he expressed himself on the matter once more. Finally, instinct plays a vital role in Peirce's writing on the reality of God. These writings (6.452-485) are his last statements on instinct which are of any real consequence. They date from around 1908.

This brief chronology indicates that Peirce's period of greatest activity, as far as instinct is concerned, was from 1898 to 1908. During the earliest part of this period the bulk of his output concerns the relation between instinct and conduct. Later, Peirce made some interesting comments on instinct's role in the formation of opinion. William James provided the occasion for Peirce's first extended treatment of instinct. In 1897 he arranged for Peirce to lecture at Mrs. Ole Bull's residence in Cambridge.

Peirce, inspired by the prospect of an opportunity to air his views, and get paid for it, busily prepared a rigorous series of lectures on logic. He was not to deliver them, however, for James, who was more sensitive than Peirce to the character of the audience Peirce was to address, urged him to change his topic. Peirce was piqued. Here was a conflict between one who thought that a speaker should acclimate himself to his audience, and one who thought it an audience's task to acclimate itself to the speaker. Peirce, of course, was the latter. He had once declared, in memorable fashion, that 'there are philosophical soup-shops on every corner' (1.11). Now it looked as if he were being asked to pass out soup himself. In a letter answering James' request Peirce expressed his displeasure, but, of course, gave in to his friend's wishes. In the end, Peirce lectured on "topics of a vitally important character," and in the process he made some interesting and important comments on instinct's proper relation to conduct.

The last phrase in quotes is interesting for the effect it had on Peirce. James used it in a December 22, 1897 letter to Peirce. He suggested that ". . . the lectures need not by any means form a continuous whole. Separate topics of a vitally important character would do perfectly well."¹⁶ In his answer Peirce flung his friend's phrase back at him: ". . . I am not puritan enough to understand the pleasure of these chains on 'topics of vitally important character.' The audience had better go home and say their prayers, I am thinking."¹⁷ Peirce's letter was dated December 26, 1897. A little over a month later, on February 12, 1898,¹⁸ his first lecture was delivered. In introducing it Peirce let his audience in on something of the history of his lecture series. He told them he had planned eight lectures on logic. "But just as I was finishing one lecture word came that you would expect to be addressed on topics of vital importance, and that it

would be as well to make the lectures detached. I thereupon threw aside what I had written and began again . . ." (1.622). Then, in a later passage he said: "I shall have a good deal to say about right reasoning; and in default of better I had reckoned that as a topic of vital importance" (1.623). This by itself could be taken as a jab at James' implication that a series of lectures on logic was not vital enough. In the next sentence, however, there is indication that Peirce's own attitude had undergone a change in the month of January:

But I do not know that the theory of reasoning is quite vitally important. That it is absolutely essential in metaphysics, I am as sure as I am of any truth of philosophy. But in the conduct of life, we have to distinguish everyday affairs and great crises. In the great decisions, I do not believe it is safe to trust to individual reason (1.623).

This insight might never have blossomed if Peirce had not been so struck with James' casual reference to "topics of a vitally important character."

The thesis of Peirce's first lecture is that in matters of the greatest moment, or matters in which action is mandatory (5.636), it is unwise to follow the dictates of reason. Instead, the wise course is to heed the promptings of instinct. Here, Peirce felt, man might learn a trick or two from the lower animals, who, acting instinctively and not rationally, rarely make mistakes. Men, on the other hand, exercise their reason on a problem, form committees to investigate it, and in the end often find that they might just as well have solved it by flipping a coin (1.626; cf. 1.649). Reason is circuitous, but instinct goes directly to the heart of the matter. As Peirce wrote in another context, "Instinct is all but unerring; but reason in all vitally important matters is a treacherous guide" (6.86). For this reason, "in regard to the greatest affairs of life, the wise man follows

his heart and does not trust his head. This should be the method of every man, no matter how powerful his intellect" (1.653).

Peirce is saying that in pressing matters one should act without reflecting, and he characterized instinct as "irreflective" (2.181). In saying this he did not mean that one should act thoughtlessly or irresponsibly in a given situation. On the contrary, he felt that the safest, or most thoughtful and responsible, course of action in vital matters would be the course dictated by instinct.

Peirce's axiom is open to one serious objection -- that it is not easily applied. It is to be wondered if one can know when he is acting instinctively. Might not an action be the result of a habit which had nothing to do with an instinct, or which even counteracted an instinctive impulse in some way? In the absence of some certain criteria for determining which actions are instinctive there is really no way to follow Peirce's advice. Peirce was never very explicit about naming instincts.¹⁹ In fact, if he had done so, he would have exposed himself to a serious difficulty on another front. With wisdom born of insight, it may now be seen that psychologists were never able to agree on which actions are instinctive, and that that is the prime reason why the concept fell into disuse. No more than philosophers were able to agree on which propositions are intuitive were the psychologists able to arrive at some consensus on instinctive actions.

If it is wondered why Peirce did not see that his remarks on instinct were open to these difficulties, the answer is probably that he was much influenced by James. In The Principles of Psychology, which was the most important psychological work of the day, James had discussed the practical inerrancy of instincts in the lower animals.²⁰ Peirce probably accepted

James' treatment without giving it a second thought. In urging that men ought to follow their instincts Peirce went beyond the Principles, however, and exposed himself to the difficulties just discussed.

Granted that there are difficulties with Peirce's injunction, his discussion is not without interest. Peirce was evidently struggling toward an important point, but since he uses the language of instinct this may be overlooked if it is not specifically pointed out. Peirce distinguishes the theoretical and practical domains.²¹ The latter is the domain of vitally important matters, of situations which require some action of us. This is, in an expression not used by Peirce, the "lived world," the world of our everyday experience (1.633). To use James' language, it is the world in which we are confronted by "forced options."²² It is here, Peirce argues, that one should follow his instincts.

The theoretical domain stands in sharp contrast to the practical. It is the realm of scientific inquiry. There are no forced options for the scientist. The scientific concern is not with existential matters. Each proposition, even the best established, is held on probation (1.635). There is no room for this attitude in practical matters. A world in which we must act is not a world in which we can suspend our beliefs. Such a course of action would be foolhardy. Indecision is the luxury of the theorist, but it is a luxury which he gains only by giving up any hope of discussing vital practical matters.

As stated by someone else this distinction might be pressed against the theoretical domain. Another, that is, might glory in pointing out that no vitally important matters come up in the theoretical domain. Not Peirce; for one who boasted that his mind was trained in the laboratory, and who held to Scholastic realism as opposed to nominalism, nothing could be

farther from the case. He felt that too great a concern with the practical would be disastrous. The vital and practical is the domain of individual interests and concerns, and these, in final analysis, pale in significance beside the theoretical:

. . . vitally important facts are of all truths the veriest trifles. For the only vitally important matter is my concern, business, and duty--or yours. Now you and I--what are we? Mere cells of the social organism. Our deepest sentiment pronounces the verdict of our own insignificance. Psychological analysis shows that there is nothing which distinguishes my personal identity except my faults and my limitations. . . Not in the contemplation of 'topics of vital importance' but in those universal things with which philosophy deals, the factors of the universe, is man to find his highest occupation (1.673).

Thus, Peirce's point is that for getting along in the world man has natural, instinctive equipment, which he only need follow. Nature has taken care of those vital matters concerned with survival, and so man is freed to pursue ends which transcend his individuality. In one place Peirce asked: ". . . what is man's proper function if it be not to embody general ideas in art-creations, in utilities, and above all in theoretical cognition" (6.476)? To direct all of one's energies towards practical matters, then, constitutes an inversion of values. Whenever "practicality" or "relevance" are the watchwords of an age, progress in theoretical matters grinds to a halt. Peirce says, for example:

The point of view of utility is always a narrow point of view. How much more we should know of chemistry today if the most practically important bodies had not received excessive attention; and how much less we should know, if the rare elements and the compounds which only exist at low temperatures had received only the share of attention to which their utility entitled them (1.641).

Peirce felt that an over-concern with the practical would be disastrous for those endeavors which it was man's peculiar task to pursue. Thus, he deplored

the course which he felt education was taking at Harvard. He spoke of ". . . cultured modern Harvard, that great eleemosynary institution that Massachusetts has established to the end that the élite of her youths may be aided to earning comfortable incomes and living softly cultured lives" (1.650). It was his opinion that an unhealthy concern with vital, practical matters would either lead to Americanism and the worship of business or to monasticism, which was a "sleepwalking in this world" (1.673).

The reader will have perceived that there are some interesting thematic shifts in Peirce's treatment of vitally important matters. There is a movement from the problem of getting along in the world, even of survival in pressing matters (where Peirce's advice is that one should follow his instincts), to problems of practical utility, or success. Problems of the first sort are the concern of every man, but too great a concern with utility is practicality run amok.

Peirce's interest in instinct was not limited to its role in vitally important matters. As we will see at a later point, he applied instinct to theoretical matters as well. The only way to understand the bulk of Peirce's statements on instinct is to recognize that he took the term in a broad sense. He not only taught that certain actions characteristic of a species are instinctive, but also that, in humans at least, some beliefs are instinctive.²³ Thus he held that there are vague, undoubted beliefs which men hold from one age to the next, and that these beliefs are instinctive (5.498). It is because they are so vague that they persist for generation after generation. They survive when "all the lights of reason are against them" (2.160). Yet, even if they are not reasonable, these beliefs are important. Without them, man would not even have survived for a generation (5.603).

Evidently, not all instinctive beliefs are innate or inherited. Some are "merely traditional" (2.160). Neither are instincts invariable. They change over a long span of time, though their variation from generation to generation is very slight²⁴ (5.498).

Given this understanding, Peirce was led to affirm that instincts play a crucial role in the formation of opinion. Peirce finds in instinct an "original knowledge," or an original source of knowledge. He writes, for instance, that

. . . all that science has done is to study those relations between objects which were brought into prominence and conceiving which we had been endowed with some original knowledge in two instincts-- the instinct of feeding, which brought with it elementary knowledge of mechanical forces, space, etc., and the instinct of breeding, which brought with it elementary knowledge of psychical motives, of time, etc. (1.118; cf. 6.500 & 6.531).

Science, then, has studied the relations among phenomena, and all of these relations may be classed under two heads. Those suggested by the feeding instinct are dynamical, while the breeding instinct has given us a knowledge of social relations. Now the phenomena studied by science may be connected by other relations besides those suggested by these two instincts, but knowledge that such is the case is beyond our ken. The questions we have asked in science (and presumably the questions we will continue to ask) are those suggested by these two basic instincts (5.586). Thus, the whole of science has an instinctive origin.

It is a corollary of Peirce's emphasis on the instinct of breeding that our knowledge, or rather "virtual knowledge," of other minds is instinctive. By the same token, he urges that by virtue of his feeding instinct every man is an applied physicist (5.586). In fact, Peirce says, "It is really instinct that procures the bulk of our knowledge. . ." (2.181).

Man has thus far not attained to any knowledge that is not in a wide sense either mechanical or anthropological in its nature, and it may be reasonably presumed that he never will (2.753).

Side by side, then, with the well established proposition that all knowledge is based on experience, and that science is only advanced by the experimental verifications of theories, we have to place this other equally important truth, that all human knowledge, up to the highest flights of science, is but the development of our inborn animal instincts (2.754).

Peirce developed this thesis in two interesting and important ways. First, he argued that it is instinct which enables us to make the right choice, or form the right hypotheses, in science. (Peirce occasionally referred to hypotheses as "abductions.") It will be recalled from Chapter II that Peirce, in "Some Consequences of Four Incapacities," characterized induction as the inference of a major premiss from a minor premiss and a conclusion, and hypothesis as the inference of a minor premiss from a major premiss and a conclusion. A decade later, in 1877, Peirce still held this view, but he used the terms "rule," "case," and "result" instead of major premiss, minor premiss, and conclusion. Stated in this new language, an induction is the inference of a rule from a case and a result, and a hypothesis is the inference of a case from a rule and a result (2.620 - 2.623). Consider a syllogism in "Barbara," such as:

Rule: All current members of the Senior Class are over 25 years of age.
 Case: Tom is a current member of the Senior Class.
 Result: Tom is over 25 years of age.

It is seen that in a deductive argument a result is inferred from a rule and a case. An inductive argument would take this form:

Case: Tom is a current member of the Senior Class.
 Result: Tom is over 25 years of age.
 Rule: All current members of the Senior Class are over 25 years of age.

The corresponding hypothetical argument is:

Rule: All current members of the Senior Class are over 25 years of age.

Result: Tom is over 25 years of age.

Case: Tom is a current member of the Senior Class.

It will be seen that a hypothetical argument results if the minor premiss and the conclusion of an argument in "Barbara" are reversed, while an inductive argument results if Barbara's major premiss is made the conclusion, its minor premiss the major premiss, and its conclusion the minor premiss. The outcome of such a transformation, in the case of a hypothetical argument, is that the conclusion states a relationship between the subjects of the resultant major and minor premisses. In the inductive argument there is a stated relationship between the predicates of the resultant major and minor premisses.

From these examples it is evident that hypothetical and inductive arguments have only probable certainty.²⁵ The hypothetical argument commits the fallacy of undistributed middle. While it is certain that Tom and current members of the Senior Class are members of the same genus, it is not certain that they are members of the same species. In the inductive argument there is an illicit process of the minor term. It is evident that an inference from one member of the Senior Class to all members of the Senior Class is rather weak, though of course the strength of inductive arguments in general will vary in accordance with the subject matter under consideration.

Let us examine hypothetical arguments in a little more detail. Peirce writes:

Hypothesis is where we find some very curious circumstance, which would be explained by the supposition that it was a case of a certain general rule, and thereupon adopt that supposition. Or, where we find that in certain respects two objects have a strong resemblance, and infer that they resemble one another strongly in other respects (2.624).

As an example of the first of these cases, suppose that you enter your home and find someone in your living room with a bullet through his brain. Not being the squeamish type, you touch the body, and find that it is quite cold. This is the "curious circumstance" to which Peirce refers. You infer from the coldness of the body that it has been dead for some time. The body's coldness is an instance of the general rule that the temperature of a body gradually decreases after its death. It was Peirce's contention that all hypotheses, even the most complicated, take this general form, and further that one acts instinctively in selecting the general rule of which a circumstance is a particular instance. A hypothesis he describes as a 'spontaneous conjecture of instinctive reason' (6.475).

Man seems, for Peirce, to be the "hypothetical" animal; that is, he is that creature who forms hypotheses. Peirce notes that every creature, when it acts instinctively, performs tasks which would seem to be beyond its normal intellectual capabilities. Examples he gives are the flying and nest-building of birds. Then he remarks:

. . . and what is man's proper function if it be not to embody general ideas in art-creations, in utilities, and above all in theoretical cognition? To give the lie to his own consciousness of divining the reasons of phenomena would be as silly in a man as it would be in a fledgling bird to refuse to trust to its wings and leave the nest, because the poor little thing had read Babinet, and judged aerostation to be impossible on hydrodynamical grounds. Yes; it must be confessed that if we knew that the impulse to prefer one hypothesis to another really were analogous to the instincts of birds and wasps, it would be foolish not to give it play, within the bounds of reason; especially since we must entertain some hypothesis, or else forego all further knowledge than that which we have already gained by that very means. But is it a fact that man possesses this magical faculty? Not, I reply, to the extent of guessing right the first time, nor perhaps the second; but that the well-prepared mind has wonderfully soon guessed each secret of nature is historical truth. All the theories of science have been so obtained (6.476; cf. 6.491, 5.480).

Peirce's claim that man has an instinctive capacity for forming hypotheses

which get at nature's secrets is plainly evident in this passage. It is also clear that Peirce believes that instinct explains man's remarkable progress in science. To use the language of a previous chapter, Peirce considers that the supposition of an instinctive capacity constitutes a proper explanation of the facts of the situation. Against Peirce's thesis it might be urged that progress in science has been a matter of luck. Science has achieved many remarkable things (this argument would run), but its achievements have been fortuitous. Peirce was sensitive to this objection, and attempted to answer it. In a Lowell Lecture in 1903 he asked his auditors to imagine that a chemist has observed some surprising phenomenon. Now, how will he select the hypothesis which will explain it? There must be, Peirce suggested, over a trillion theories which he could consider. Now suppose that man had no capacity for guessing correctly. If that were the case, in the twenty to thirty thousand years in which man has been capable of thought, he probably would not have arrived at a single correct theory. Mathematically, the odds are against it. Instead of supposing that our poor chemist will founder around indefinitely in search of the correct theory, we suppose that he will gradually "home in" on the truth. He automatically rejects innumerable possible hypotheses as incorrect and irrelevant, and finds his way with an alacrity which, on the chance theory, is inexplicable (5.591).

This is by far the most powerful and most interesting of Peirce's arguments for an instinctive capacity; but another argument, alluded to in the passage from 6.476 quoted above, should not be overlooked. Peirce argues that there is, in respect of instinct, an analogy between man and lower forms of life. In his 1903 Lowell Lecture he again presses this point. A newly hatched chicken pecks by instinct and without considering

whether or not it is a good idea to pick up something and eat it. We find ludicrous the idea that the chicken sifts through all possible theories before deciding to peck. We say, on the contrary, that a chicken's pecking shows that it has ". . . an innate tendency toward a positive truth. . . ." (5.591). That man has an analogous tendency Peirce thinks should not be denied. Peirce would undoubtedly recognize that there is a vast difference between chickens and men. It is only the human mind which forms concepts. In the origination of his concepts, however, man goes to the point instinctively, just as the chicken instinctively takes up those practices which are characteristic of his species and which, incidentally, insure his survival.

In these ways Peirce argues that man has an instinctive insight. He was of the opinion that such an insight must be supposed in order to account for the progress that science has made. He never attributes infallibility to man's instinctive capacities (6.476), but feels that the more primitive an instinctive belief the more certain it was (5.445). The more novel the situation with which we must cope, the less applicable is instinct. One might suppose that there is an inverse variation at work (though Peirce does not specifically say that this is the case), so that the applicability of instinct is in inverse proportion to the novelty of the situation (2.178). ". . . we outgrow the applicability of instinct -- not altogether, by any manner of means, but in our highest activities" (5.511). Thus, the theory of instinctive insight is compatible with Peirce's fallibilism, or his famous ". . . doctrine that our knowledge is never absolute but always swims, as it were, in a continuum of uncertainty and of indeterminacy" (1.171).

The theory of instinctive insight is also compatible with the theory of doubt. Peirce argued that Cartesian doubt was bogus. We begin philosophic inquiry with a veritable plethora of prejudices, with beliefs that it does not occur to us ought to be doubted. Along the way it may occur to us that some of these beliefs must be called in question, but this does not occur to us at the outset of inquiry (5.265). Peirce characterizes instincts as "original" and "indubitable" beliefs (5.511), and this suggests that they would have a primary place in inquiry.

Thus far we have learned that Peirce assigned to instinct a crucial role in vitally important matters and in the formulation of scientific hypotheses. This is tantamount to saying that instinct is functionally significant in both practical and theoretical matters. It is instinct which suggests the right course of action in a trying circumstance, and it is instinct which suggests scientific hypotheses. Both these functions, interestingly enough, are blended in Peirce's arguments for the reality of God. On the one hand the issue of God's reality, since it is of central significance for the religious life, is a matter of vital importance, and thence a matter in which one should follow the dictates of instinct (1.633). On the other hand, Peirce argues that the hypothesis of God's reality is suggested instinctively, and thence that it possesses a particular certainty. This important application of instinct should be treated in some detail; for, as will be seen, Peirce comes closest to a return (if he does not actually return) to Cartesian infallibilism in his treatment of God's existence than in any of his other applications of instinct.

In "A Neglected Argument For The Reality of God," an essay he published in the Hibbert Journal in 1908, Peirce suggests that one method is particularly suited to handling the problem of God's reality. This method, which he

calls Musement, consists in giving the mind a free play, as one does when he casually considers this and that in the course of chance moments (6.461). Peirce tells us in one place that often, at night, he walked alone over a country road, and that certain hypotheses suggested themselves to him in the course of these ramblings (6.501). If Musement is pursued long enough, he thought, the idea of God will inevitably suggest itself (6.465). One must, however, play the game fairly. If Musement is ended prematurely some important point may be lost (6.463).

The generic name for Peirce's attempt to prove God's reality is the "Neglected Argument," but actually, he tells us, three arguments are involved. The first, which he calls the "humble argument," may be stated in Peirce's own words: ". . . entirely honest, sincere and unaffected. . . , meditation upon the Idea of God, into which the Play of Musement will inevitably sooner or later lead. . . , by developing a deep sense of the adorability of that Idea, will produce a truly religious Belief in His Reality and His nearness" (6.486). The Neglected Argument proper consists ". . . in showing that the humble argument is the natural fruit of free meditation [Peirce's Musement], since every heart will be ravished by the beauty and adorability of the Idea, when it is so pursued" (6.487). In Peirce's third argument one

. . . compares the process of thought of the Muser. . . with certain parts of the work of scientific discovery, and finds that the "Humble Argument" is nothing but an instance of the first stage of all such work, the stage of observing the facts, or variously rearranging them, and of pondering them until, by their reactions with the results of previous scientific experience, there is "evolved" . . . an explanatory hypothesis (6.488).

The first two of these arguments are not distinguished very clearly. In the first it is claimed that a contemplation of the Idea of God will

lead one to believe in his reality and nearness. The gist of the second argument is that Musement, or "free meditation," inexorably leads to contemplation of the Idea of God. As one comes to a belief in God's reality his natural course of development is through the Neglected Argument proper to the Humble Argument. In other words, in the genesis of a belief in God's reality the process described in the second of Peirce's arguments is temporally prior to that described in his first. Musement leads one to contemplate the idea of God, and this contemplation in turn leads one to a belief in God's reality.

Peirce makes no claims regarding the origin of the idea of God. He simply says that Musement will sooner or later lead one to meditation on this idea. Lines of speculation which one entertains in Musement will lead him to reflect on the idea that God is real. In Musement, he suggests, one might reflect on the awesome beauties of nature, or on the nature of pleasure and pain. These psychological speculations in turn will lead to speculations of a more metaphysical sort. The Muser, for instance, will reflect on the interconnectedness of various aspects of the universe. Sometime in the course of these intellectual ramblings the Muser will find that he has come to consider the possibility of God's reality. That God is real is a hypothesis he will begin to entertain (6.462-465). This is the claim of the Neglected Argument proper.

Once he entertains the idea of God's reality the Muser will find the idea irresistible. "The more he ponders it, the more it will find response in every part of his mind, for its beauty, for its supplying an ideal of life, and for its thoroughly satisfactory explanation of his whole threefold environment" (6.465). The Muser will, finally, want to bring his life into conformity with the hypothesis of God's reality. This is to say that he

believes in God, for preparation to act in accordance with a proposition is nothing less than to believe it (6.467). This is the claim of the Humble Argument.

At this point, Peirce's first two proofs certainly appear inconclusive. All they seem to establish, if they establish anything, is that a process of desultory reflection will lead to the hypothesis of God's reality and that this hypothesis will be both pleasing and irresistible. Does this prove that God is real, or does it simply suggest that God is a forceful idea and that one might come to believe in it through Musement? If so, then these are interesting psychological facts, but hardly proofs of God's reality. What one wants to know is not whether his belief in God's reality is irresistible, but whether God is real. The Muser, when he ceases his Musement and critically analyzes his belief, would like to know whether or not that belief corresponds with reality. That would seem to be the issue. Peirce's arguments ask the Muser to take the beauty and irresistibility of his belief as evidence that his belief is well-founded, but can the Muser-become-analyst avoid the gnawing doubt that the truth of the matter may be independent of what he or any finite number of individuals think? This is an issue which deserves further consideration. Peirce's final statement on the matter, I think, may be deduced from the third of his arguments. For that reason, let us consider it now.

The third argument was conceived of as a support for the other two. It consists in showing that Peirce's first argument (the Humble Argument), considered from the aspect of logic, consists in the formulation of the hypothesis of God's reality. As it is an instance of hypothesis formulation, it plays the same role in inquiry as any scientific insight, or discovery

(6.485; 6.488). In pressing this analogy Peirce could count on all of his arguments in favor of an instinctive insight for support. The belief in God's reality, he is saying, is just as certainly the product of our instinctive nature as are the amazing discoveries of science. If scientific discovery requires us to postulate an instinctive insight, and if we are gradually led, in following it, to a closer and closer approximation of the truth, then there will at least be a strong presumption in favor of supposing that our instinctive belief in God's reality must be taken seriously.

The matter is stated in stronger terms than this by Peirce. "Strong presumption" is not Peirce's language. I sought to intimate that God's reality, since it is a hypothesis according to this interpretation, is as provisional and as open to further testing as any other hypothesis. Peirce, however, does not agree. He contends that the hypothesis of God's reality is unique in three respects. First, as compared with other hypotheses, it has an almost unparalleled plausibility. Its plausibility is evidenced by the fact that once the possibility of God's reality is entertained, that reality is almost impossible to doubt (6.488). Secondly, most hypotheses are apprehended clearly enough that some consequences can be deduced from them. That is not the case with this particular hypothesis. The idea of God, it will be recalled, is a vague one, and it does not give rise to any clear image. Thus, ". . . in this instance the hypothesis can only be apprehended so very obscurely that in exceptional cases alone can any definite and direct deduction from its ordinary abstract interpretation be made" (6.489). Finally, this hypothesis is distinguished by ". . . its commanding influence over the whole conduct of life of its believers" (6.490). It follows from the pragmatic maxim that this circumstance is sufficient to

insure that the hypothesis has a meaning. Thus, its decided influence on conduct offsets the hypothesis' liability to vagueness. For these three reasons, then, and especially the first and third, Peirce felt that God's reality was not provisional like other hypotheses.

Though it is not thoroughly articulated, Peirce's position in this matter is informed by his distinction between the theoretical and the practical. When Peirce emphasizes the irresistibility of the God hypothesis, and its influence on conduct, he means to indicate that the hypothesis is one of practical significance. This is also implied by a rather poetic line in "A Neglected Argument For The Reality of God:" ". . . the humble argument is the first stage of a scientific inquiry into the origin of the three Universes, but of an inquiry which produces, not merely scientific belief, which is always provisional, but also a living, practical belief, logically justified in crossing the Rubicon with all the freightage of eternity" (6.485). One's belief in God, then, must have all the non-provisionality of a belief which is relevant to vital, practical affairs.

Why was Peirce so convinced that his arguments proved God's reality? The answer, I think, lies in his understanding of the nature of doubt. In "Answer To Questions Concerning My Belief In God" Peirce wrote:

If you absolutely cannot doubt a proposition--cannot bring yourself, upon deliberation, to entertain the least suspicion of the truth of it, it is plain that there is no room to desire anything more. The pragmatist knows that doubt is an art which has to be acquired with difficulty; and his genuine doubts will go much further than those of any Cartesian. What he does not doubt, about ordinary matters of everybody's life, he is apt to find that no well matured man doubts. They are part of our instincts (6.498).

This passage provides a clue to the motive power of Peirce's arguments. To show that one spontaneously comes to entertain the idea of God's reality,

and, further, that this idea is irresistible, is to show that the idea absolutely cannot be doubted. This, in turn, is to show that the hypothesis of God's reality has as great a certainty as can be attained. Peirce must have had this in mind when he formulated his arguments. Granted his thesis concerning doubt, the proof of God's reality hinges on a demonstration that the idea, once entertained, is irresistible. If the belief is natural, instinctive, and unavoidable, then it is beyond our powers to doubt it. Any doubt of an irresistible belief will be feigned, Cartesian doubt.

If Peirce's proof depends on a demonstration of the irresistibility of a belief in God, then he will have to explain why so many persons profess a disbelief of God's reality. This he attempts to do in his "Answers To Questions Concerning My Belief In God." He notes that the term "God" is vague (6.494). It is one of a number of vague concepts (the concept of an orderly universe is another) with which we operate. As long as it is not made precise, but is left with the vagueness which characterizes all instinctive beliefs, just about everyone believes that God is real. Some, however, mistakenly believe that they are atheists. "The reason they fall into this extraordinary error about their own belief is that they preclude (or render precise) the conception, and, in doing so, inevitably change it; and such precise conception is easily shown not to be warranted, even if it cannot be quite refuted" (6.496).

Why Peirce was convinced that his arguments demonstrate God's reality should now be clear. His proofs all presume that a belief in God is instinctive and hence irresistible and unavoidable for the entire species. The Humble Argument and the Neglected Argument proper are simply Peirce's attempts to express this belief in a popular form. When the proofs are understood

in this way, however, one might ask if Peirce has not fallen prey to Cartesianism. In saying that a belief in God is instinctive Peirce apparently means to indicate that it is indubitable and thence certain. Is there any difference between this claim and the Cartesian's claim that whatever he is clearly convinced of is true? Has Peirce not fallen into a trap he warned us against in 1868? Has he not assumed that there is a natural foundation for our beliefs which is beyond question? Must it not be affirmed, in other words, that Peirce's attempt to state an alternative to Cartesianism was not entirely successful? Let us consider an interpretation of Peirce which would seem to support this thesis.

W. H. Hill has argued that Peirce's attempt to transcend the a priori method of fixing belief, in favor of the scientific or pragmatic method, was a failure.²⁶ Now since the a priori method was described by Peirce in 1877 as the method of Cartesianism (5.380n), it must be affirmed, if Hill's analysis is correct, that Peirce did not succeed in stating an alternative to the Cartesian theory of inquiry. Hill's argument, therefore, bears investigation.

On Hill's interpretation, the development of Peirce's theory of instinct coincides with a decreasing confidence in the pragmatic method of fixing belief. It was the theory of instinct, in fact, which led Peirce, in the later years of his philosophical activity, to affirm the a priori method. This shift, interestingly enough, was foreshadowed in the very articles (those of 1877 and 1878) in which Peirce introduced and defended the pragmatic method. Peirce had said that to fix beliefs according to the a priori method is to adopt those most in accord with personal preference. Hill explains that

These beliefs are tested, not by their agreement with experience in an experimental sense, but by "the shock of opinions" as held by others. Out of this conflict of opinions are distilled the beliefs which seem to be natural to all men. They rest on a broad base of "preferences" deemed to be universal. They are held to be sound because they are "agreeable to reason."²⁷

This, however, makes belief a matter of fashion. A more adequate method of fixing belief recognizes that (as Peirce himself put it) "' . . . our beliefs may be caused by nothing human, but by some external permanency-- by something upon which our thinking has no effect.'"²⁸ The scientific or pragmatic method meets this requirement by postulating an external reality in accordance with which our opinions are formed. Since this reality is as it is, independently of what any individual may think, it becomes necessary to find a means of distinguishing true from false belief. That belief is true, Peirce tells us, which is destined to be believed by every man. He recognized that man may never reach the final, true opinion. Before that happens the human race might come to an end. Peirce's position assumes, however, that even now inquiry is bringing us closer to the truth.

This assumption, in Hill's opinion, was in need of justification. "If we have caught the spirit of Peirce's effort . . . , we must certainly want to know how we can have any assurance that our processes of investigation must lead us in the direction of the final opinion which is the truth."²⁹ Though there is no direct defense of this assumption in Peirce's writings, Hill says that the answer Peirce would have to give can be made out. It is that man has an instinctive insight. That Peirce argues for such an insight is seen most clearly in his proofs of God's reality. "The belief in the reality of God is the supreme example of the working of man's natural insight, of the affinity of his mind to nature."³⁰ Now, since an instinctive

insight is nothing other than an expression of human sentiment, and since it is the a priori method which fixes belief in accordance with sentiment, the success of the scientific method recommended by Peirce depends for its success upon a method of fixing belief he had rejected in 1877. Peirce's project was therefore unsuccessful.³¹

The problem raised by Hill's cogent and persuasive argument will not be resolved easily, but even so, his position cannot be accepted without qualification. Two of Peirce's theses regarding the scientific method may be distinguished. These are that our beliefs must be fixed by an 'external permanency,' and not by sentiment, and that there is a steady progress toward the truth. In arguing that Peirce was unsuccessful in transcending the a priori method Hill shows that Peirce could not defend the latter thesis without invoking sentiment, or instinct. On those grounds he proposes that Peirce's project was a failure. Hill's argument establishes its point, however, only if Peirce's use of instinct constitutes a rejection of the former of his theses, that external permanencies must be the ultimate causes of our belief. It was that thesis which went to the heart of the matter and was the essential point of the scientific method. One holding to the a priori method could, without any logical contradiction, hold that man is getting closer and closer to that ultimate opinion which is the truth.³² He could not, however, hold that our beliefs must be fixed by an external permanency without giving up his a priorism. The test of Hill's position, then, occurs in connection with the first of Peirce's theses.

When the matter is set in this light, it appears that a part of Hill's thesis must be affirmed, and another part denied. It must be affirmed with Hill that Peirce modified his position in later years. He came, in fact, to

say that certain of our beliefs must be fixed in accordance with sentiment. As already seen, these beliefs concern practical matters, or matters of vital importance. Since belief in God fell in this category Peirce argued that it must be fixed instinctively. It is because he saw that beliefs in practical matters must be settled in this way, and not (as Hill has it)³³ because he lost his confidence in the pragmatic method, that around 1910 he wrote the following comment into his discussion of the a priori method in "The Fixation of Belief": "Indeed, as long as no better method can be applied, it ought to be followed, since it is then the expression of instinct which must be the ultimate cause of belief in all cases" (5.383).

Peirce's position, in my interpretation, is that all of man's beliefs, both practical and theoretical, have an instinctive origin. This is why Peirce wrote of God that ". . . the question whether there really is such a being is the question whether all physical science is merely the figment--the arbitrary figment-- of the students of nature. . ." (6.503). To accept the evidence of instinct in theoretical matters, and not to acknowledge that it is the source of our beliefs in practical matters as well, would be a mistake. Instinct is the source of all our knowledge. Our beliefs in the theoretical matters, unlike our beliefs in practical matters, cannot, however, be fixed in accordance with instinct. The scientific method is not given up. Peirce urges that our instincts are quite fallible in theoretical matters (6.476), and further that they apply only to a somewhat primitive mode of life (5.445, 5.511). His advice is as follows:

When one's purpose lies in the line of novelty, invention, generalization, theory. . . instinct and the rule of thumb manifestly cease to be applicable. The best plan, then, on the whole, is to base our conduct as much as possible on Instinct, but when we do reason to reason with severely scientific logic (2.178; cf. 5.522).

Thus Peirce sought to show that instinct plays a vital role in both theoretical and practical matters, but that in theoretical matters instinct must "bend the knee" to experimental testing.

Given this interpretation, it is seen that Hill's thesis cannot be accepted without serious qualification. This is not to say, however, that Peirce's position is free from tension. In his later years it would seem that Peirce's understanding of doubt underwent some development. He affirmed, in "Answers To Questions Concerning My Belief In God" (6.498), that if one is absolutely unable to doubt a proposition, then he has achieved the greatest certainty for which one may hope. At the same time, however, he affirmed that ". . . while I may entertain, as far as I can search my mind, no perceptible doubt whatever of any one of a hundred propositions, I may suspect that, among so many, some one that is not true may have slipped in . . ." (6.498; cf. 5.498). The significance of this passage is that it allows that some proposition even among those one cannot doubt, may be false. This is nothing else than to assert that one's sentiments cannot be taken as an absolute criterion of truth. This adds evidence to the thesis that Peirce's use of instinct did not lead him to a re-affirmation of the a priori method. At the same time, it shows that his position was not free from tension, for Peirce was seemingly unable to allow that, in spite of our inability to doubt him, God might not be real. Consistency, however, would seem to require him to admit this possibility. Even those practical beliefs which I cannot doubt might even so, according to the passage just quoted, be false.

Earlier in this chapter it was suggested that Peirce's theory of instinctive insight will constitute a genuine alternative to the Cartesian

intuitive theory only if it respects three strictures. The last two of these concern the status of individuality and apodicticity in a theory of insight. According to the claim of individuality, the individual consciousness is the criterion of truth, while apodicticity is the presumption that one or more beliefs are absolutely certain. A non-Cartesian theory of insight will deny each of these claims.

These strictures were distilled from Peirce's original attempt to state an alternative to Cartesian mental action in "Some Consequences of Four Incapacities." Peirce felt that Cartesianism reduced to the claim that "'Whatever I am clearly convinced of, ~~is~~^{is} true'" (5.265). For its emphasis on individual consciousness, he denied this claim. According to Peirce's own view, then, the primacy of the individual must be rejected. In order to avoid Cartesianism, apodicticity must also be given up. This is a corollary of Peirce's recognition that inquiry is a process. Just as a sign may have some further interpretant, so in the course of inquiry some good reason for doubting a belief now passionately held may be discovered (5.265). The rejection of apodicticity follows as well from Peirce's fallibilism. Our knowledge, according to this doctrine, never reaches absolute certainty (1.147).

So far the discussion of instinct has been relevant to each of these claims. It has been seen that on Peirce's theory science is the development of man's instinctive capacities. In addition, Peirce argued that man ought to follow his instincts in matters of vital importance. In neither of these cases, with one possible exception (noted below), is it claimed that instinct is infallible. Those who follow it in vital matters take the right course more often than not, but sometimes they err. By the same

token, instinct ultimately suggests the right hypothesis in science, but often it does so only after one or more false starts (5.173). The theory is, then, compatible with fallibilism in these respects.

If there is an exception to Peirce's position on these points, it is the doctrine of God's reality. As far as I have been able to ascertain, Peirce never suggests that God's reality is less than certain. Even his suggestion that God's reality may be considered as a hypothesis yields the result that God is certainly real, for he insists that this hypothesis is like no other in its certainty (6.488). Let it be affirmed, then, that Peirce escapes the charge of apodicticity with this possible exception. The instinct theory provides Peirce with an interesting response to the charge of individualism. Nothing that is not doubted by a mature man, he suggests, will be doubted by the pragmatist. The reason for this is not difficult to find: it is that no one doubts his instincts. According to this theory, it may be expected that each normal member of the species will share certain beliefs in common, and that these will be instinctive (6.498). This, incidentally, is why Peirce insisted in his proof of God's reality that his only presumption was ". . . that my own intellectual disposition is normal" (6.484). He was concerned to show that belief in God was instinctive, and hence that every man could share it. Thus, the instinct theory of insight does not seek to make the individual consciousness the criterion of truth, but instead urges that truth is an affair of the entire species.

When Peirce is treating instinct as a theory of insight he often uses such phrases as "instinctive insight," "natural light," and "light of nature" (5.604). Sometimes "il lume naturale" is used instead of the English

"natural light" or "light of nature." Peirce says that modern science is founded on il lume naturale, and he attributes the theory to Galileo (1.80, 6.477). This is a striking circumstance, for the Latin and French equivalents of these phrases were used by Descartes as synonyms for intuition.³⁴ If Peirce was aware of this, he never said so. This raises an important interpretative problem. Did Peirce unconsciously fall back on an intuitive theory in discussing insight, or did he use the term il lume naturale without intending to invoke the intuitive theory? According to the first of the three strictures mentioned above, a theory of insight, to constitute an alternative to the Cartesian theory, must not be based on an intuitive theory of mental action. This means that if Peirce's theory of insight is to be consistently non-Cartesian, il lume naturale, on his usage, must not mean "intuition."

Peirce's dissatisfaction with the Cartesian theory of mental action led him to formulate an inferential theory. Mental action, he taught, was a process of sign translation. Later, he argued that his theory of signs was a proof of his pragmatism. Habits, on his analysis, were considered to be the ultimate logical interpretants of a process of sign translation, and in that manner meaning was related to conduct. The problem now under consideration may be resolved if this analysis is taken into account. To ask if Peirce's theory of insight marks a return to the intuitive theory of mental action is to ask if the instinct theory may be deduced from Peirce's pragmatism and his theory of signs. Assuming that these theories constitute an alternative to Cartesianism, so will Peirce's theory of insight, if it is consistent with them.

Two independent considerations lend strong evidence to the belief that

Peirce's theory of instinct is consistently non-Cartesian. The first is that pragmatism suggested and even molded his (rather novel) view of instinct. The second is that an attempt to refute the view of rationality held by certain German logicians³⁵ led Peirce to consider that instincts are habits, and thence by implication that they are interpretants in a sign process. In the following pages these points will be explained in more detail.

Evidently his pragmatism helped to spur Peirce's interest in instinct. His reasoning was as follows. The pragmatic thesis is that there is an intimate relationship between thought and action. Now if this be granted, and if certain actions are instinctive, might there not be instinctive beliefs corresponding to them? In an unpublished paper composed around 1905 Peirce remarks that the pragmaticist ". . . insists upon the close affinity between thinking in particular and endeavour in general. Since, therefore, action in general is largely a matter of instinct, he will be pretty sure to ask himself whether it be not the same with belief. . . . this question once asked admits of but one answer. . ." (5.499).

Since he speaks of instinctive beliefs Peirce goes beyond the then-current psychological theory. That there are instinctive beliefs as well as actions was a hypothesis suggested by the pragmatic theory. It is not to be found in James' Principles of Psychology, which was perhaps the leading psychology text of the day. Peirce's use of the term instinct was, then, broader than usual. It is seen that, in supposing there are instincts, he utilized the psychology of his day, but that in speaking of instinctive beliefs he gave the term his own personal and speculative twist.

Peirce had the metaphysician's impulse to see things as a whole, and to draw diverse elements into relationship with each other. His synthesis

of pragmatism with his theory of signs, which was discussed in Chapter IV, is a striking example of his ability to do this. His affirmation of instinctive beliefs is another. In affirming these beliefs Peirce was able to argue that pragmatism was compatible with the Scottish Common Sense School of Thomas Reid. Reid and his followers had affirmed that there are certain "common sense" beliefs which all men hold in common, and that these beliefs, once uncovered, might form the foundation for philosophy. By recognizing instinctive beliefs, Peirce in his turn took a similar approach. Given such beliefs, he said, ". . . pragmatism will be sure to carry critical common-sensism in its arms. . ." (5.499).

To underscore the close connection between his philosophy and that of the Scottish school, Peirce sometimes characterized his position as a "Critical Common-Sensism." The adjective "critical" was enough to indicate that his position was not a simple carbon copy of the old common-sensist position. In fact, it would seem that the major difference between the two positions, at least as Peirce explained it, was that Critical Common-Sensism took into account the results of the latest research in discussing instinctive beliefs. He said, for instance, that these beliefs apply to a "primitive mode of life," and that they cease to remain applicable in man's "highest activities." This is a thesis that was discussed above (see page 125). It will be remembered that Peirce felt one ought to follow his instincts in matters of vital importance and in selecting scientific hypotheses. Thus, he felt that instinct played an important role in both practical and theoretical matters. In theoretical matters, however, instinct must be supplemented by reason. Scientific hypotheses suggested instinctively must be tested; and in this important project one must be guided by

reason. Now this is to say that instinct is only applicable in certain areas. Peirce tells us: "The famous Scotch philosophers lived and died out before this could be duly appreciated" (5.511). In another application of his belief that the Critical Common-Sensist had the advantage of research unavailable to the original members of the school Peirce wrote:

. . . a modern recognition of evolution must distinguish the Critical Common-sensist from the old school. Modern science . . . has put us into quite another world. . . Some of the old beliefs have no application except in extended senses, and in such extended senses they are sometimes dubitable and subject to just criticism (5.513).

In an important development of his thought Peirce referred to instinctive beliefs as "indubitable." This emphasizes once again the relationship between his theory of instinct and his understanding of the nature of doubt; but at the same time it is a witness to another, and quite Cartesian, motive which Peirce apparently never quite succeeded in overcoming. To place a belief beyond doubt is apparently to give it that fundamental position in inquiry which Descartes had assigned to intuitive propositions. One of Peirce's discussions of Critical Common-sensism is written in the form of a dialogue between "Pragmaticist" and "Doctor Y." Doctor Y asks: "Can indubitable propositions be demonstrable" (5.515)? The Pragmaticist answers:

Indubitable propositions must be ultimate premisses, or at least, must be held without reference to precise proofs. For what one cannot doubt one cannot argue about; and no precise empirical argument can free its conclusion altogether from rational doubt (5.515).

This statement is evidence that in the period following 1868, Peirce had mellowed considerably. It would be difficult to imagine the Peirce of 1868, who waged such a thorough and devastating war against ultimate and indemonstrable premisses, writing this passage. Whether or not the later Peirce went back on his former position, and contradicted the earlier Peirce is,

however, another question. The later Peirce does say that instinctive beliefs are indubitable and not subject to proof, but this may very well be consistent with his theory of inquiry. He says, in effect, that in inquiry we take certain propositions as certain. We are simply unable to doubt them, and in such a situation proof or disproof is out of the question. If one is unable to doubt a proposition he simply cannot see that it needs any proof. On the other hand, if some disproof of the proposition were available, it would not be indubitable. Thus, Peirce can say, without contradicting himself, that instinctive beliefs are indemonstrable. If he had held that instinctive beliefs are true simply because we must accept them as true, he would have contradicted his 1868 analysis. He does not, however, hold that our believing something to be true makes it true. In one of his discussions of Critical Common-sensism he writes:

. . . while it is possible that propositions that really are indubitable, for the time being, should nevertheless be false, yet in so far as we do not doubt a proposition we cannot but regard it as perfectly true and perfectly certain; that while holding certain propositions to be each individually perfectly certain, we may and ought to think it likely that some one of them, if not more, is false (5.498).

If Peirce's position here is as consistent as it appears, then he has maintained his non-Cartesianism.

There is a second, and independent, approach to this matter which will provide a final test of our thesis. It should be evident by now that Peirce had the philosopher's and not the psychologist's interest in instinct. In holding that there are instinctive beliefs as well as instinctive actions he gave the concept a speculative twist. Now there is one further respect in which Peirce built rather freely on the work of the psychologist. In the Principles of Psychology James contended that some, but not all, instincts

are blind or invariable.³⁶ Invariability attaches to the instincts of those animals who have no memory, but after some experience an animal equipped with memory will be able to foresee the results of his instinctive actions and modify them accordingly. Memory, then, makes it possible to "mask" an instinct. James felt that some animals may have contradictory instincts, so that in a given situation one must mask, or override, another before an action of a certain kind can take place. Which instinct will prevail is determined by experience in these situations. It was James' further belief that habits may mask an instinct, and that there will be a like result when reason excites the imagination. Still other instincts, he taught, are transitory and pass away of their own accord.³⁷

Peirce was influenced by this work, or by one which offered a like interpretation, for he distinguished "true inherited instincts" from those which were "merely traditional" (2.160). This distinction, in turn, enabled him to view instincts as ". . . habits of unknown parentage. . .," or ". . . habits of which we are not prepared to render an account. . ." (2.175).

He wrote:

If I may be allowed to use the word "habit," without any implication as to the time or manner in which it took birth, so as to be equivalent to the corrected phrase "habit or disposition," that is, as some general principle working in a man's nature to determine how he will act, then an instinct, in the proper sense of the word, is an inherited habit, or in more accurate language, an inherited disposition. But since it is difficult to make sure whether a habit is inherited or is due to infantile training and tradition, I shall ask leave to employ the word "instinct" to cover both cases (2.170).

Thus, the difficulty of determining whether or not an action was due to an inherited instinct or was a result of the masking of an instinct provided Peirce with a cogent reason for viewing all instincts as habits.

The immediate occasion of Peirce's decision to view instincts as habits was his concern with the reasoning process. The German logicians he had studied argued that reasoning is subjective (2.153). According to them, ". . . our last and only reliance has to be upon the accuracy of the natural judgments of mind as to what is rational" (2.158). Peirce set himself against this position, arguing for the common sense view of the English logicians.³⁸ He contended, as he had at least since 1877 (5.367), that in the reasoning process one proposition is inferred from another in accordance with some mental habit. He said, however, that these habits, or "leading principles" (2.588), are not all natural, or inherited, as the German position allowed. The very simplest of our judgements may fall in this category, but it is most likely that our reasoning habits are formed by the conscious use of mental diagrams. In Peirce's opinion, reasoning proper is conscious and controlled and not automatic or instinctive (2.181-82).

This development in Peirce's thought suggests that instincts, since they are habits, would be interpretants in a process of sign translation. Since this process is characteristic of mental action it may be supposed that the theory of instinct is compatible with Peirce's inferential theory. The theory of instinct is, then, consistently non-Cartesian.

In Chapter One, it was remarked that the language of the Cartesian theory conforms to our common sense description of insights. Even the word "insight," since it suggests a mental vision of some sort, is a case in point. It was further noted that it may be practically impossible to separate a theory of insight from a theory of mental action. Now since terms such as "insight" or "seeing" suggest the Cartesian view, ought they to be given up henceforth when a theory of discovery of the Peircean variety

is under discussion? This question deserves a negative answer. Peirce himself failed to relinquish this sort of language. In one place he writes:

The abductive suggestion comes to us like a flash. It is an act of insight, although of extremely fallible insight. It is true that the different elements of the hypothesis were in our minds before; but it is the idea of putting together what we had never before dreamed of putting together which flashes the new suggestion before our contemplation (5.181).

We will all continue to use such language to describe our discoveries because it describes how we feel in the moment in which our insight is achieved. There is a sense of immediacy (in the psychological sense of "suddenness") which characterizes these moments and which is best conveyed by the classical language of the Cartesians. A distinction must be drawn, however, between a psychological description of our feelings and a theory of mental action. We may have a sense of immediacy in the moment of insight, but this is no justification for the adoption of immediacy as a theory of the way in which the mind actually works. Peirce, then, may continue to use Cartesian language in describing insight without, by so doing, adopting the Cartesian theory of mental action.

One of the chief results of the analysis in this chapter is the recognition that Peirce had a theory of insight and that it is consistently non-Cartesian. As was noted at the beginning of this chapter, Neville has said that Peirce's usage of the term intuition is too narrow. Peirce centered his attention on the intuitive faculty, whereas a better approach would have been to consider the subject matter of intuition. One should begin with the fact of insight, or the recognition that we know harmonies, and proceed from there to a recognition that there must be an intuitive faculty.

My argument shall be, then, that harmony, which we all believe we know, involves the immediate fitness of things which characterizes the subject matter of intuition. Because we actually

know harmonies, we actually use, and therefore have, the faculty of intuition in the sense characterized.³⁹

Now the consideration of Peirce's critique of intuition in connection with his theory of instinct suggests that Neville is substantially correct in pointing out the limited meaning of "intuition" in the Peircean corpus, but that, for all that, Peirce did not overlook the matter of harmony, or the fact of insight. It is now apparent that Peirce did have a theory of insight. In fact it is seen that in some of his arguments for the reality of insight Peirce's procedure is substantially the same as Neville's. When Peirce argues that the fact of scientific discoveries must lead us to expect that man has a certain insight he is simply utilizing the method Neville defends. He is saying that a recognition of our insights is evidence of a peculiar human capacity. Viewing instinct in relation to the Cartesian critique has the effect of showing, then, that Peirce was concerned to reject a theory of mental action and a theory of inquiry, but he was not disposed to reject the possibility of human insight.

A second consequence of this analysis is that some aspects of Peirce's pragmatism and theory of signs are related to his theory of instinct in a most interesting way. It has been mentioned that pragmatism influenced Peirce's understanding of instinct and that the latter theory was in turn theoretically consistent with his theory of signs, and through it, with his pragmatism.⁴⁰ These considerations, since they concern the relationship of several of Peirce's theories, would seem to be relevant to the problem of unity in Peirce's thought. In the next chapter, this suggestion will be briefly pursued.

NOTES

1. See Henri Bergson, An Introduction to Metaphysics, T. E. Hulme, trans., Second Edition (New York: The Bobbs-Merrill Co., Inc., 1955).

2. Ethical intuitionism's greatest influence was in the period immediately following G. E. Moore. Perhaps the key tenet of this school was that goodness is known in an intuitive cognitive act. In an article by Strawson there is a debate between an intuitionist and a non-intuitionist. The former is made to remark:

. . . moral characteristics and relations are non-empirical, and awareness of them is neither sensory nor introspectual. It is a different kind of awareness, which the specialists call "intuition" at least one such characteristic --rightness or goodness--is unanalyzable, and known by intuition alone. The fundamental cognitive situation in morals is that in which we intuit the rightness of a particular action or the goodness of a particular state of affairs.

P. F. Strawson, "Ethical Intuitionism" in Contemporary Ethical Theory: A Book of Readings, Joseph Margolis, ed. (New York: Random House, 1966), 67-68. E. F. Carritt, H. A. Prichard, and W. D. Ross are some of the most famous of the ethical intuitionists.

3. For a brief account of Husserl's use of "intuition" in the Logical Investigations and the Formal and Transcendental Logic see Quentin Lauer, Phenomenology: Its Genesis and Prospect (New York: Harper and Row, 1965), 70 ff.

4. See Robert C. Neville, "Intuition," International Philosophical Quarterly 7 (1967), 556-57. Cited hereafter as Neville.

5. Neville, 557.

6. René Descartes, "Rules for the Direction of the Mind" in The Philosophical Works of Descartes, Elizabeth S. Haldane and G. R. T. Ross, trs., Vol. 1 (New York: Dover Publications, 1955), 3. This edition of the Rules will be cited hereafter as Rules.

7. Rules, 5.

8. Rules, 7.

9. Rules, 2.
10. Rules, 9-10.
11. George J. Seidel, The Crisis of Creativity (Notre Dame: University of Notre Dame Press, 1966), 20.
12. Rules, 10.
13. Rules, 10-13.
14. Ernest R. Hilgard, Introduction to Psychology, Second Edition (New York: Harcourt, Brace and Company, 1957), 119. Cited hereafter as Hilgard.
15. Hilgard, 120.
16. This letter is quoted in Ralph Barton Perry, The Thought and Character of William James: Briefer Version (Cambridge, Massachusetts: Harvard University Press, 1948), 285. Cited hereafter as Perry.
17. Perry, 285.
18. Perry, 285.
19. On this point see Fr. O'Connell, S. M. A., "Peirce's Conception of Philosophy," The Downside Review, 77 (1959), 279-80.
20. See William James, The Principles of Psychology (Chicago: Encyclopaedia Britannica, Inc., 1955), 706. Cited hereafter as Principles.
21. An excellent discussion of this distinction is found in Richard L. Trammell, "Religion, Instinct and Reason in the Thought of Charles S. Peirce," Transactions of the Charles S. Peirce Society, 8 (1972), 3-23.
22. On forced options see William James, "The Will To Believe," in Essays In Pragmatism, Alburey Castell, ed. (New York: Hafner Publishing Co., 1965), 89.
23. Peirce's use of the term 'instinct' to cover beliefs as well as actions will be discussed in detail at a later point.
24. Galbraith's "conventional wisdom" might be a species of uninherited instinctive beliefs if the latter are merely traditional and not strictly necessary for survival. The conventional wisdom persists in the face of rational argument disputing it, it is slow to change, and its most salient characteristic is its acceptability. See John Kenneth Galbraith, The Affluent Society (New York: The New American Library, 1958), 20. However, Peirce usually means by an instinctive belief one which ". . . no well matured man doubts" (6.498). They are those beliefs which tend to characterize the entire species. The beliefs of conventional wisdom are generally more provincial than this.

25. Peirce, curiously enough, also wanted to say that deduction has only probable certainty. He emphasizes its experimental nature. This becomes clear in his treatment of deduction in "The First Rule of Logic," which was the third of his 1898 lectures on vitally important matters. He states:

In practice, and in fact, mathematics is not exempt from that liability to error that affects everything that man does. Strictly speaking, it is not certain that twice two is four. If on an average in every thousand figures obtained by addition by the average man there be one error, and if a thousand million men have each added 2 to 2 ten thousand times, there is still a possibility that they have all committed the same error of addition every time (5.577).

Let us examine this passage. We may very well grant, to begin with, that the average man will make one error in every thousand acts of addition, but what possible effect could this have on the certainty of the proposition that $2 + 2 = 4$? Peirce says that the fact of error shows that the proposition is not absolutely certain. Even if two is added to two an enormous number of times by an enormous number of men, it is still possible that all of these men, after adding the numbers over and over, are mistaken. It may be granted immediately that this is an accurate characterization of many propositions. It was believed at one time, for instance, that blood-letting was a cure for disease. Looking back on that time now, we would all agree that no matter how many times blood was let, and no matter by how many men, belief in the efficacy of blood-letting was still mistaken. However, the status of mathematical propositions is quite different from the status of the proposition concerning blood-letting. We consider that proof of the efficacy of blood-letting is subject to experimental test, but no experimental situation exists, or can exist, which would convince us that $2 + 2 \neq 4$. Suppose that two suitcases are placed in the baggage car of a train in Chicago. The train travels to St. Louis, and at that point two more suitcases are added to the baggage car. Next, suppose that the train travels to Oklahoma City, where its passengers disembark. The baggage car is opened, and three suitcases are found inside. Will anyone conclude from this that $2 + 2 = 3$? Hardly. It will be supposed that one bag fell out of the car, or was stolen, or (fantastic as it sounds) that something caused it to disintegrate. Any hypothesis except the hypothesis that $2 + 2 = 3$ will be adopted. If we agree upon the meaning of the symbols 2 and 4, and if we agree upon the rules for manipulating them, the conclusion that the sum of 2 and 2 is 4 is inescapable. Therefore, Peirce is wrong in supposing that the proposition $2 + 2 = 4$ is not absolutely certain.

26. See W. H. Hill, "Peirce's 'Pragmatic' Method," Philosophy of Science, 7 (1940), 168-81. Cited hereafter as Hill.

27. Hill, 170.

28. Hill, 171. Hill is quoting from 5.384.

29. Hill, 175.

30. Hill, 179.

31. Hill, 180.

32. Hill himself notes (see above) that on the a priori method men are led, through conflict of opinion, to views having greater and greater universality. Some other circumstance must distinguish the scientific and a priori methods.

33. Hill, 180.

34. On this point see L. J. Beck, The Method of Descartes: A Study of the "Regulae" (Oxford: Clarendon Press, 1964), 50.

35. Peirce's editors list the following relevant German logicians: Sigwart, Wundt, Schuppe, Erdmann, Bergmann, Glogau, and Husserl (2.152n).

36. Principles, 704.

37. Principles, 704-07.

38. Peirce's editors list the following relevant English logicians: Boole, DeMorgan, Whewell, J. S. Mill, Jevons, Venn, Pearson, and MacColl (2.152n).

39. Neville, 558.

40. Peirce's characteristic method of philosophizing, once he had settled on his pragmatism, was to try to apply the method to a wide range of problems. Given any of the chief elements of his thought it may be expected that it bore, to Peirce's way of thinking, some relation to his pragmatism. This is seen in his attempt to relate pragmatism to the theory of signs and to the Common Sense school, and it is seen even in his most speculative extensions of the concept of habit. If a habit of action is the effect of some thought, then it is understandable that he was led to say that nature was ". . . mind hidebound with habits" (6.158). (Incidentally, James argued that habit was in the first instance a physical principle. See Principles, 68-69.)

CHAPTER VI

SOME CONCLUDING REMARKS

Currently, the unity of Peirce's thought is a chief concern of Peirce scholars. Peirce's lectures, scholarly articles, book reviews, letters, and unpublished papers cover a period of over forty years. Do all of these writings form a unity? Are there no significant changes in Peirce's philosophy throughout the long period in which he was active, or is his career marked by the elaboration of doctrines which may or may not be consistent with each other?

These are difficult questions. Peirce himself would probably contend that there are no major shifts in his philosophy. Toward the end of his career his attitude seems to have been that his later work was only an amplification and clarification of earlier insights. Thus, for example, a great deal of his energy was spent in making his pragmatism clear, and in distinguishing it from the pragmatism of James. W. B. Gallie's interpretation of Peirce's theory of knowledge seems to be motivated by a similar attitude toward Peirce's work. In his consideration of the 1868 articles Gallie feels free to amplify Peirce's earlier treatments of an issue ". . . in the light of his maturer writings. . ." ¹ and he could not do this if he did not suppose that there was a consistent thread running from Peirce's earlier work throughout his later. Gallie does recognize that "Peirce nowhere gives us a unified official exposition of his own theory of knowledge." ²

Further, he notes that this is a source of great interpretative difficulties. He insists, however, that there is unity to Peirce's epistemology. As he interprets it, it is expressed in three different terminologies. In one version, his language is psychological, or descriptive. Peirce's elucidations of the meaning of doubt and belief fall in this category. At other times, as when he formulates the theory that mental action is inferential, Peirce uses the language of traditional logic. Lastly, Peirce's theory of signs requires a terminology all its own. Although they obscure the unity of Peirce's thought, says Gallie, ". . . each of these terminologies is seen to have a merit of its own: each enables Peirce to bring out certain facets of his own thought which neither of the others is so well suited to express."³

Gallie is not alone in finding unity in Peirce's thought. Paul Weiss, one of the editors of Peirce's papers, has taken this position. Commenting on Peirce's work he suggested that it is something of a misfortune

. . . for a dead philosopher to win disciples. . . His followers mould his remains into shapes which conform to the passing fashions of the day, or dissect him into a multiplicity of minor and apparently conflicting views. And when those views pass, we risk the loss of the philosopher altogether.⁴

Weiss' position would appear to be that conflict in Peirce's thought is apparent rather than actual. Essentially this same position is taken by James Feibleman. Though he recognizes that there are conflicting statements in the Peircean corpus he is of the opinion that the main lines of Peirce's thought are clear, and that statements conflicting with these "leading principles," as he calls them, may be disregarded.⁵ John J. Fitzgerald, one of Feibleman's students, follows his mentor in maintaining that ". . . Peirce is a systematic philosopher."⁶

There has been a marked reaction against the position that Peirce's thought forms a unity. In his important and influential discussion of the problem Murray G. Murphey has said that Peirce never succeeded in elaborating a position which was coherent in every way. However, he argues that Peirce's development falls into four phases and that most of the apparent contradictions in his work are resolved when this is taken into account.⁷ Much more than Murphey, it would seem, Thomas A. Goudge emphasizes the diversity rather than the unity of Peirce's thought. A conflict between naturalism and transcendentalism is evident in Peirce's writings, he says. By "naturalism" he means a position which emphasizes logic, scientific method, and empirical verification. Man in such a position is seen as continuous with the natural world, and attempts to construct systems of metaphysics are shunned. In "transcendentalism," on the other hand, feeling and instinct are emphasized at the expense of reason and science. Man is viewed in anthropomorphic categories, and there is some attempt at metaphysical system-building. Goudge argues that naturalism and transcendentalism vie with each other in the Peircean corpus, and that as a result there are genuine and major discrepancies in Peirce's philosophy.⁸

It must be said that there is plenty of evidence to support Goudge's thesis. Peirce's attitude toward metaphysics is one case in point. In one place he writes that "almost every proposition of ontological metaphysics is either meaningless gibberish. . . or else is downright absurd; so that all such rubbish being swept away, what will remain of philosophy will be a series of problems capable of investigation by the observational methods of the true sciences. . ." (5.423). In another passage he warns his readers that ". . . metaphysics generally is the most powerful of all causes of

mental cecity, because it deprives the mind of the power to ask itself certain questions, as the habit of wearing a confining dress deprives one's joints of their suppleness" (5.499). On the other hand, Peirce argued ". . . that what we call matter is not completely dead, but is merely mind hidebound with habits" (6.158). It is difficult to see how this thesis could be tested by conventional observational methods. Further, this statement would seem to indicate that Peirce, who had such disparaging things to say about metaphysics, was himself a confirmed metaphysical idealist!

This dissertation has not solved the problem of unity in Peirce's thought; but if Peirce's theory of instinct is related to his pragmatism and theory of signs in the manner suggested in the last chapter, then there is an important connection between his transcendentalism and his naturalism. In their opposition to Cartesianism, Peirce's theories are also united. If there is no overall unity in Peirce's thought, as the proponents of disunity contend, there is certainly a unity of purpose in Peirce's attempt to overthrow Cartesianism. The theories examined in this dissertation all bear the marks of Peirce's efforts to come to an understanding free of Cartesianism's difficulties. The weaknesses of that venerable tradition served as a stern reminder to Peirce of certain philosophical traps which he must avoid. When his theories of mental action, inquiry, and insight are investigated from that point of view they are found, with the only possible exception being Peirce's treatment of the knowledge of God, to be consistently non-Cartesian.

In these pages Peirce's strong opposition to Cartesianism has been repeatedly emphasized. It is often the case, however, that a thinker's staunchest critics will absorb more of his thought than they realize. The

successors of a great philosopher generally do not proceed by rejecting his thought in toto, even when they think they do. Their procedure is generally to "tidy up" some portion of his thought. Let us ask whether or not this holds true in the case of Descartes and Peirce.

Peirce's and Descartes' theories are obviously incompatible in certain respects. If Cartesian intuition is compared with Peircean instinct it is seen that the former is a mode of reason, while the latter is, for the most part, distinguished from reason. Peirce does recognize that "In applying . . . instincts, . . . we do reason a little" (2.175), but he emphasizes that reasoning proper is a conscious, controlled act (2.182; 2.588). The two theories also diverge on the matter of clarity and distinctness. The intuitive act yields a clear and distinct idea, but one of the chief characters of an instinctive belief is its extreme vagueness (5.498). Thus, there are marked differences between the respective theories.

In retrospect, however, these disparities are hardly more striking than the unity of motive which characterizes Descartes' and Peirce's methods. Peirce maintained that the fault of Descartes' position was that it made the individual consciousness the criterion of truth; but even if the Cartesian system was inherently subjective, that was not Descartes' intention. Descartes' entire method was aimed at eliminating disagreement in the sciences. He was concerned to show how one could uncover those propositions which were clearly and distinctly true, and on which everyone would agree. Peirce was motivated by a like interest. The goal of inquiry, as he conceived it, was to establish those beliefs which the community of inquirers would share in common. Thus both men were interested in finding propositions which would be universally held. This is the clue to Descartes' and

Peirce's usage of the term "the natural light." Each was interested in discovering those beliefs which were "natural" to man, each was convinced that the mind has a natural propensity for seeking out the truth, and each found the possibility of achieving this goal in a faculty which every man was supposed to possess. Descartes' and Peirce's motives, then, were not dissimilar.

What, then, was gained by Peirce's critique of Cartesianism? What lesson is to be learned? Where should we go from here? It would seem that Peirce's analysis can teach us two important and related lessons. The first is that no one of our beliefs, even the one which is apparently most certain, ought to be taken as apodictic. Whenever some belief is considered absolute, then, in that case one has shut off the possibility of further investigation. Peirce was convinced that

. . . the first step toward finding out is to acknowledge you do not satisfactorily know already; . . . no blight can so surely arrest all intellectual growth as the blight of cock-sureness; and ninety-nine out of every hundred good heads are reduced to impotence by that malady. . . (1.13).

Peirce's willingness to hold open the possibility that even our most cherished beliefs may be false was aimed only at insuring that inquiry would not be prematurely drawn to a close. His aim was not, for instance, to make uncertain the hallmark of our existential predicament; and he never doubted that it was possible to know the truth. One may block the road to inquiry by presuming that it is impossible to know the truth just as certainly as he can by presuming that the truth is already known. Peirce's philosophy is set against either extreme. Thus a second methodological axiom is in order, and that is that one should entertain a doubt concerning some belief only when there is a positive reason for doing so.

The gravest complaint Peirce made against Descartes' philosophy was that it did not respect these two strictures. What spurred his indignation more than anything else was his conviction that Descartes had made truth a matter of personal preference. Peirce's message for the philosopher-inquirer is, then, that he must make a systematic effort to avoid claims of finality in every branch of his thought. To argue that one's position is "standpointless," or that it is based on an immediacy of some sort that is beyond question, is both delusory and prohibitive of further progress. Peirce's persistent drive for philosophic openness and candor at all costs is a priceless legacy.

NOTES

1. W. B. Gallie, Peirce and Pragmatism, (New York: Dover Publications, Inc., 1966), 67. Cited hereafter as Gallie.
2. Gallie, 84.
3. Gallie, 84.
4. Paul Weiss, "The Essence of Peirce's System," The Journal of Philosophy, 37 (1940), 254.
5. See James K. Feibleman, An Introduction to Peirce's Philosophy, (New York: Harper and Brothers, 1946), XIX.
6. John J. Fitzgerald, Peirce's Theory of Signs As Foundation For Pragmatism, (The Hague: Moulton and Co., 1966), 14.
7. Murray G. Murphey, The Development of Peirce's Philosophy, (Cambridge, Massachusetts: Harvard University Press, 1961).
8. Thomas A. Goudge, The Thought of C. S. Peirce (New York: Dover Publications, Inc., 1950), 5-7.

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