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A Pragmatic Method of Reading Confused Philosophic Texts: The Case of Peirce's "Illustrations"

In 1878, Charles Peirce introduced a method for making confused ideas clear. In this essay, I put Peirce's method to work as a method for making confused writing clear, in particular, for clarifying the meaning of confused philosophic arguments as they appear in philosophic essays. In Section I, I introduce the method as a Pragmatic Method of Reading Confused Philosophic Texts. In Section II, I review Peirce's 1877-78 "Illustrations of the Logic of Science"[1] as examples of confused texts. In Section III, I apply the Pragmatic Method, reading Peirce's "Illustrations" as expressions of fundamentally contradictory "leading tendencies of thought." While it does not resolve such contradictions, the Pragmatic Method renders a confused text clear by enabling us to read it as a collection of two "implicit" texts, or two sets of meanings.

I. A Pragmatic Method of Reading Confused Philosophic Texts

In the "Fixation of Belief,"[2] Peirce criticizes what he calls the *a prioristic* tendency in modern empiricism. He says that, for good reason, the empiricists reject a scholastic tendency to fix belief on the mere authority of established social tradition. He argues that the empiricists then err, however, by replacing the authority of tradition with the authority of mere taste, fixing belief on the basis of propositions that appear "agreeable to reason," whether or not they "rest upon any observed facts." In "How to Make Our Ideas Clear,"[3] Peirce identifies *a priorism* with an inadequate method of clarifying the meaning of what he later calls our "intellectual" concepts, or "those upon the structure of which arguments concerning objective fact may hinge."[4] He says that, following Descartes, *a priorists* believe that such a concept is clear if we can provide an abstract definition of it, every term of which is subjectively familiar to us. He then argues that such definitions are inadequate, since they are selectively abstracted from out of those rules for acting in the world, in

which rules, alone, our concepts find their meaning. What he later calls the Pragmatic Maxim is a rule for reforming empiricist practice and raising our apprehension of intellectual concepts to a third grade of clarity:

> Consider what effects, which 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]

I call the Maxim a "rule for reforming earlier practice," in order to avoid portraying Peirce's pragmatism as another form of *a priorism.*[6] To apprehend Peirce's pragmatism, itself, on a third grade of clarity, we must indicate the practical context for Peirce's Maxim.[7] The confusions in Peirce's "Illustrations," in fact, arise precisely out of his tendency to present the Maxim independently of the error of *a priorism* which it is intended to repair. Similarly, a Pragmatic Method of Reading is occasioned only by the need to clarify confused philosophic texts.

Ordinarily, a philosophic text delivers its meaning by teaching its readers how to interpret it. In the language of his semeiotic, Peirce would say that a text displays its meaning with respect to various levels of interpretant. For the present analysis, I am interested in what Peirce calls the "Normal" or "Final Interpretant," or "the effect the sign *would* produce upon any mind upon which circumstances should permit it to work out its full effect."[8] As Pragmatic Reader, I want to identify these "permitting circumstances." Adapting the language of Peirce's pragmaticism,[9] I call these circumstances "habits of interpretation," defined within the Pragmatic Method of Reading as those relationships between author and reader in terms of which, alone, a text would display its full meaning. This means that a habit of interpretation is something both reader and author must share. I call a habit of interpretation a practice of interpretation or, simply, a *practice.*[10] to which the text could display its meaning: or, according to

which a text could determine its Final Interpretant. Peirce would say that such a text is "objectively general," in that, with respect to this practice, "it extends to the interpreter the privilege of carrying its determination further."[12] The method of reading a clear text is what I will call "plain-sense reading." The conditions of plain-sense reading are that reader and author have access to a common practice and that the author refers to this practice with sufficient clarity that the plain, or explicit, sense of the text is "objectively general."

Sometimes, however, a philosophic text is confused, which means that the text fails to address in its intended readers a practice in terms of which the plain sense of the text is objectively general. In his writings on pragmaticism, Peirce says a sign is "objectively vague in so far as it reserves further determination to be made in some other conceivable sign, or at least does not appoint the interpreter as its deputy in this office."[13] We might say that a text is *objectively* vague if its apparent confusion is an interpretant of some purportedly vague object of inquiry. In this case, a Pragmatic Method of Reading will not dispel the vagueness. The Pragmatic Method of Reading is useful only for clarifying the meaning of confused philosophic texts which are remediably, and not objectively, vague.

The Pragmatic Method is to suppose that, in its plain sense, the confused philosophic text may represent a conjunction of two or more mutually incompatible but otherwise clear texts. By definition, I say that every practice is self-consistent. This means that the pragmatic reader will suppose that these clear texts have as their interpretants two or more mutually incompatible practices, with respect to which the confused text will have objective generality. Since the author fails to exhibit these practices clearly, the pragmatic reader's task is to reconstruct them on the basis of limited evidence. Textual reconstruction is an exerciese in hypothesis-making. Its methods are speculative and its conclusions highly subject to error. It is therefore warranted only when it is necessary, and it is necessary only when plain-sense reading leads continually to uncertain results. The reader collects evidence for the reconstruction principally from the

text itself, but also by reading other texts by the author or by contemporaries engaged in similar work, and by examining pertinent histories and biographies. At the same time, the pragmatic reader employs statements about the author's reconstructed practices only as tools for interpreting the particular texts in question, and not as representations of some extra-textual phenomenon. A reconstruction is considered successful if it enables the reader to provide a reasonable account of the objective generality of the plain-sense of the author's text.

The general rule of thumb for pragmatic reading is to assume that authors of confused texts do not do exactly what they claim or believe they are doing.[14] The task is to identify the practice, as distinct from the claim. Toward this end, I have found it helpful to break a practice down into the following elements, the first three of which are identified through textual analysis, the last three through textual reconstruction:

Context: the practices which the author is examining: for example, empiricist theories of meaning.

Problems: the difficulties or errors which the author has identified in these practices and which he or she attempts to solve: for example, contradictions in empiricist epistemology.

Methods: the methods of inquiry the author employs in attempting to solve these problems: for example, the logic of relatives or speculative rhetoric. Generally, different methods will be employed in the service of different leading tendencies (see below).

Theses: The first step of textual reconstruction is to restate the author's text as a series of claims about the problems under examination, in which each individual claim is objectively general: such as Ia) Boole's calculus can be extended over the whole realm of formal logic, and b) the fundamental principles of formal logic are not axioms, but definitions; or IIa) the principle of Doubt and Belief is a guiding principle of ampliative reasoning *in general*; and b) the logician's task is to offer inductive generalizations about *particular* practices of reasoning. I label each claim as restated in this fashion, a *thesis*. The pragmatic reader may (as in I) or may not (as in II) find the author's

explicit language helpful in formulating these theses. In the latter case, the reader substitutes a reconstructed thesis for some collection of explicit statements in the text.[15] No matter how confused, a philosophic text extends to the reader the privilege of identifying a collection of individually self-consistent theses. The text's confusion is exhibited in irremediable inconsistences *among* these theses (for example, between IIa and IIb).

Thesis-types: The critical step in pragmatic reading is to identify each maximally inclusive collection of theses whose truth would depend upon the truth of some more general thesis, which I label a *thesis-type.*[16] It is possible to refer an objectively general text to a *single* thesis-type, or to a collection of thesis-types of which no two theses are mutually incompatible.[17] A confused philosophic text is one in which at least two thesis-types are contradictory, which means that they cannot both be true.

Leading Tendencies: The pragmatic reader regards each thesis-type as a token of the Final Interpretant which would be exhibited with respect to a particular habit of interpretation, or practice. Since such practices are identified only by their sensible effects, or by their tokens, the reader can characterize them only by describing the thesis-types. At the same time, the reader can, per hypothesis, conceive of a practice of which both a given thesis-type and other possible thesis-types would be tokens. To construct this hypothetical collection of thesis-types, the reader must already have applied the Pragmatic Method of reading to a significant number of the author's texts, ideally to all texts that employ the methods of inquiry exhibited in the text under examination. In Peirce's case, I have found it most helpful to group his texts chronologically and reconstruct practices exhibited in all texts of a given period of his work. To examine the development of his work, I then reconstruct a chronologically ordered series of practices. It is not possible to provide an abstract definition of any such practice. For the sake of textual reconstruction, however, I have found it helpful to construct a general thesis-type whose tokens would be the hypothetical collection of all thesis-types exhibited in the period of Peirce's work I am examining. I say the general thesis-type

represents a *leading tendency* of Peirce's practice, and I describe it in the language of that method of Peirce's which is most pertinent to my interpretation of a given text.

A pragmatic reading is successful if the reader can offer evidence that the leading tendencies exhibited in a given text are also exhibited in comparable texts by the same author, and if the reader can refer all contradictions among the text's theses to contradictions among these leading tendencies. The reader then reconstructs the confused text as a conjunction of two or more clear texts, each one of which exhibits a single leading tendency or a collection of tendencies of which no two are mutually incompatible. The pragmatic reading could then serve as a source of suppositions, to guide empirical studies of the pragmatics of the author's inquiry. Conflicting leading tendencies may be symptoms of profound conflicts within the author's thinking, or within the practices in which the author participates.[18] In the latter case, these conflicts would be exhibited, as well, in texts written by other authors who share the same practice. The task of the pragmatic intellectual historian would be to examine the etiology of such a practice.[19]

II. Confusions in Peirce's "Illustrations"

According to the plain sense of his argument in "Illustrations," Peirce identifies certain errors in the logic of Cartesian epistemology, which he corrects by appealing to the "method of science." In the process, he makes significant contributions to the logic of science. In advancing broader claims about the character of reasoning in general, however, he replays some of the errors he has attributed to the Cartesians: in short, he argues *a priori*stically and unscientifically in criticizing what he calls *a priorism* and extolling what he calls the method of science. This confusion in Peirce's argument is made all the more complex because Peirce's argument is not strictly *a priori*stic, but, rather, a subtle blending of *a priori*stic and scientific modes of reasoning. Thomas Goudge and other Peirce scholars attempt to repair the inconsistency by separating the scientific modes from the "*a priori*stic" (or, in Goudge's terms, the "transcendental"[20]) modes. This is to

perform a Pragmatic Method of Reading: interpreting the inconsistencies in Peirce's explicit text as signs that Peirce's text has two or three different authors – two or three "Peirces," each of which is the author of a self-consistent text which remains, however, incompatible with the texts of the other authors. As noted earlier, I find this attempt worthy, but only if undertaken with great caution. Peirce's two modes of reasoning are blended too subtly to allow the reader to separate them without radically re-interpreting his explicit texts, which means interpreting them according to suppositions which may or may not be extraneous. I want to follow Goudge's lead in this matter, but only after having first examined Peirce's inconsistency strictly according to the plain sense of his texts. In this section, then, I consider only the explicit text of the "Illustrations," postponing a Pragmatic Reading to the next and final section.

Peirce displays his fundamental inconsistency in "Fixation" and then reiterates it through the successive articles of the "Illustrations." He presents "Fixation" as a polemic on behalf of the method of science, arguing that it alone measures up to his criterion for judging the rationality of competing modes of reasoning. Peirce's definition of this criterion, however, is inconsistent with his characterization of the method of science. He claims that "the settlement of opinion is the sole object of inquiry" and, therefore, that reasoning serves its end to the degree that it is conducive to settling opinion, or "fixing belief." He says that the method of science is consistent with this standard of rationality, while the methods of "tenacity," "authority" and "*a priorism*" are not. Contrary to Peirce's claim, however, the method of science respects his criterion of rationality only if that method is interpreted according to the criteria of *a priorism*.

As Peirce characterizes it, *a prioristic* inquiry most clearly illustrates the phenomena described in Alexander Bain's theory of doubt and belief.[21] *A priorists* undertake their inquiry specifically because they have doubts, first about the reliability of social authority and then about "every belief which seems to be determined by the caprice either of themselves or of those who originated the popular opinions" (5.382). Having abandoned societal methods of removing doubts, they

appeal instead to their several methods of reasoning, fixing their beliefs according to whatever appears to them to be "agreeable to reason." *A priorists* may claim that they have adopted certain formal criteria for rationality. According to Peirce's analysis, however, they attribute rationality to whatever settles their opinions, which means that, in practice, rationality is a faculty of the individual mind, or psyche. In this sense, Peirce's analysis is an insult to the Cartesians: they think they are formalists of some sort; he suggests they are behaving like all of us do when, as Descartes says, we will to know more than we do and are forced to replace knowledge with our own opinions. In another sense, however, Peirce's analysis is a concession to the Cartesians, since he adopts a criterion of rationality which has meaning only in terms of their actual practice. With the *a priorists,* Peirce suggests we need to search for a method of fixing belief in general and, as a means to this, to identify a fundamental norm of reasoning. With the *a priorists,* he suggests we can locate this norm in the rules which inform our very search: that is, in the logic of doubt and in the logic of that inquiry which is stimulated by doubt. Since doubt is an attribute of the individual psyche, this is to identify the laws of reasoning in general with the laws of individual reasoning and to identify the latter with the laws of individual psychology. Peirce may criticize the *a priorists* for failing to offer a successful method of fixing belief, but he does not criticize them for trying.

Peirce's characterization of the method of science in the "Illustrations" is equivocal. On the one hand, he suggests that science has nothing to do with fixing belief. From this perspective, he says that the scientific method is enacted by individual reasoners, but only in so far as they participate in an indefinite community of inquiry, sacrificing their personal interests to the interests of nothing less than the inquiry itself (not even, that is to say, to the interests of any finite community). The "interests" of the inquiry are defined by certain formal rules of inquiry: rules of ampliative reasoning, which Peirce identifies with rules of probable inference and with methods of inductive sampling and of theory-formation. Peirce argues pointedly that the individual mind is an inadequate judge of its own ra-

tionality. Scientists, in other words, must discipline, rather than serve, their individual tendencies to adopt the fixation of belief as the end of inquiry and to cut off inquiry once belief has been fixed. They must replace the desire for individual certainty with the sentiments of "charity" (care for the indefinite community and for its rules of inquiry), "faith" (supreme trust in these rules) and "hope" (expectation that the community will enact these rules indefinitely and, therefore, achieve its goal).

On the other hand, he represents science as a most reliable means of fixing belief: "scientific investigation has had the most wonderful triumphs in the way of settling opinion" (5.384). From this perspective, he writes

> To satisfy our doubts, therefore, it is necessary that a method should be found by which our beliefs may be caused by nothing human, but by some external permanency — by something upon which our thinking has no effect. (5.384, following text of W253)

This is the method of science. He argues that, as opposed to the methods of authority and of *a priorism,* science adopts the principle of fixing belief as its fundamental guiding principle. In "How To," he puts it this way: for the scientist, "the opinion which is fated to be ultimately agreed to by all who investigate, is what we mean by the truth, and the object represented in this opinion is the real" (5.407= W273). This is another way of saying that the logic of science is what we have called the logic of individual doubt. From the standpoint of doubt, inquiry is a means of relieving doubt; truth is the desired end of inquiry, or fixed belief; and reality is the desired object of belief. The fundamental concepts here have meaning only in terms of the psychology of individual doubt, which is the logic of inquiry viewed from the perspective of *a priorism.*

I believe the simplest explanation of Peirce's two ways of describing science is that Peirce's account is self-contradictory. The account serves two opposing ends. One is to offer an empirical description of

the *logica utens* of natural science, that it entails methods of inductive sampling, theory-formation and so on. The other is to promote the method of science as a remedy for the discomforts of *a priorism*. Having rejected societal control of their own investigations, the *a priorists* believe they have also relieved themselves of all epistemological constraints other than those which are internal to their methods of investigation. To guide their inquiry, they believe they must identify these constraints and then promote them as universal laws of reasoning as such. Peirce shares the *a priorists'* attitude toward societal control, but believes they have identified their epistemological constraints, incorrectly, with certain ideas, distinctly perceived. He says that ideas are not constraints, but mere images, abstracted from the appropriate constraints and representing these constraints only as they might be perceived, but not as they are encountered, that is, as actually constraining laws. Peirce says that the constraining laws are displayed in the practice of science as examined by logicians. Although he does not say this clearly, he means that logicians must practice science and then examine the laws of science as the laws constraining their own reasoning. If Peirce claimed, at this point, to be offering another version of Kant's transcendental method, Peirce's account would gain a coherence it lacks – whether or not the transcendental method were itself legitimate.[22] Instead of this, however, Peirce resorts to equivocation. On the one hand, he claims that the method of science will itself represent the general norm of reasoning the *a priorists* seek. On the other hand, he urges his own *a prioristic* procedure – urging us to recognize the *suppositio communis* as he sees it – as the one means of exhibiting the criterion against which the method of science is to be measured. Peirce's confusion is not merely procedural. Given his method of argument, the criterion he selects is, predictably, an *a prioristic* one: the "fixation of belief" represents a psychologistic and thus individualistic standard of rationality. To win his overall argument, he is then forced to suggest not merely that scientific practice may have the effect of fixing belief, but also that scientific practice is guided and therefore constrained by the principle of fixing belief. This principle makes sense

only in terms of individual psychology. Peirce knows, however, that the scientific method does not allow individual scientists to adopt the fixation of their belief as a guiding principle.[23] He has therefore forced himself to argue that inquiry is constrained by the need to settle the *ultimate* opinion of the *indefinite* community of inquirers, rather than to settle any immediate opinion. This "ultimate" opinion, however, represents a mere idea, rather than a constraining law. Peirce has replayed the *a priorists'* method of argument.

Readers may attempt to reclaim Peirce's arguments in either of two ways. One way is to suggest that Peirce's argument is coherent, because he had attempted to account for both the formal and psychological aspects of the logic of science, rather than to offer an *a prioristic* account which is reductively formalistic or psychologistic. Another way is to suggest that Peirce offers the *a prioristic* account merely as a rhetorical device, to speak to an *a prioristic* audience.

According to the first suggestion, Peirce's account of the logic of science is strictly empirical, and he has discovered that the principle of doubt and belief represents one of the essential elements of this logic. Induction is constrained, in part, by the laws of individual psychology and the testing of explanatory theories is constrained, in part, by the laws of social psychology. In his description of inductive sampling, for example, Peirce argues, against Mill, that scientists must predesignate the character they are going to examine in a series of samples. Within the infinite range of characters available for inspection, what law limits the scientists' choice? Peirce may argue that, of the four methods of fixing belief, only the method of science offers such a law and that it is articulated in the theory of doubt and belief. Either scientists are guided in their choice by real doubt, or else inquiry is unconstrained. Peirce's account of theory-formation offers a second example. Explanatory theories have the status of mere hypothesis until they are confirmed by the community of scientists. Members of the community employ common methods of inquiry in examining the theory. Individuals contribute their informed opinions, and the theory is considered strong to the degree that the weight of settled opinion is in its favor.

In support of this suggestion, we must acknowledge that judgements in science are constrained in part by psychological factors and that Peirce has contributed to the philosophy of science by displaying some of these factors. Nonetheless, Peirce does more than simply offer empirical claims about the psychology of scientific practice. He claims that his psychology exhibits the fundamental law that constrains rational inquiry and therefore exhibits the ground of the validity of scientific method.[24] It is this claim that leads him into trouble. Take the case of inductive sampling. Peirce cannot, without arguing from "is" to "ought," claim that scientists ought to be constrained by real doubt. Disregarding this fallacy, moreover, it is not apparent how we are to determine which choices are constrained by real doubt and which not. The laws which constrain these choices either can or cannot be formalized. If they can be formalized, then there is no apparent way to distinguish between the "reality" of a constraining doubt and the opinion of a finite community of inquirers, which means an opinion imposed by authority. If they cannot be formalized, then there is no apparent way that a community of inquirers can verify whether or not a choice is constrained by real doubt. In order to explain a community's interest in a given subject of inquiry, we might speak of the community's being constrained by some shared experience. This would not help us evaluate the validity of the community's interest, however, since we would have no means of distinguishing between the force of authority or habit and the force of a constraining experience. We face a comparable problem in interpreting Peirce's account of how the community of inquirers verifies an explanatory theory. What does the theory of doubt and belief add to Peirce's formal logic of science? The laws which constrain the opinion of the community either can or cannot be formalized. If they can, how are they to be distinguished from the formal rules of probable inference? If they cannot, what is to be gained by speaking about them? Apparently, we can judge the validity of scientific inquiry only on the basis of its formal rules. But these rules display their validity only to those who already practice them.

The second way to reclaim Peirce's argument is recommended by Leo Strauss' *Persecution and the Art of Writing*. It is to suggest that Peirce knew he could get a hearing only if he couched his arguments for science in the *a prioristic* language of his interlocutors, for example, his colleagues in The Metaphysical Club. There is some evidence in support of this suggestion. Peirce's critique of Cartesianism is, in fact, directed against what he considers Cartesian tendencies in the British empiricism of his contemporaries and fellow Club members. Since he also works out of the empiricist tradition, however, his own language is bound to reflect some of the tendencies he wants to criticize. Furthermore, the contradictions in his account of science may themselves signal his disapproving one side of his own argument: assuring *a priorists* that science fixes belief, while indicating to a general readership that scientists remove themselves from everyday concerns with doubt and belief. For a thinker as precise as Peirce, the contradictions ought to be apparent to him. One might, in fact, imagine his appending to his contradictory statements the note "Those who understand will understand" – in the manner of medieval Jewish philosophers like Maimonides.

At the very least, this "Persecution Hypothesis" offers the reader a method and a license for reconstructing Peirce's argument. As we will see, however, it lacks strength as an explanatory theory, since Peirce displays his *a prioristic* tendencies in all his philosophic writings, published and unpublished, at least through 1903. Through the 1880's and 1890's, in fact, Peirce engages in an exhaustive effort to remove the fundamental contradictions from his argument. The effort fails until he begins to acknowledge the strength of his own *a prioristic* tendencies.

In Peirce's terms, his overall thesis on Doubt and Belief is *a prioristic* because he presents as conditions for rationality as such statements that belong only to an empirical theory of psychology. If it is not presented on the basis of a transcendental method, any such attempt to isolate the general conditions of rationality exhibits what Mill calls an *a priori* fallacy. In Peirce's terms, it is to misrepresent statements of what is merely "agreeable to someone's reason" with statements of

logical methodeutic. In "Fixation," Peirce announces his *a prioristic* intention from the start, by attempting to isolate the "guiding principles" of reasoning in general, rather than the guiding principles of the particular practice of reasoning he happens to be observing – in this case, the practice of *a priorism*. Peirce has reason to refer to his Doubt and Belief thesis as a statement of guiding principles, but only if he acknowledges that these are the guiding principles only of the particular kind of reasoning he attributes to *a priorism*: reasoning from the experience of doubt to a conception of the end of doubt. By failing to make this acknowledgement, Peirce transforms a reasonable theory into an unwarranted and overgeneralized claim. The thesis on Doubt and Belief is overgeneralized, finally, because Peirce applies it to practices other than those from which it has been generalized. This is not to deny that Peirce's thesis illuminates our understanding of all forms of reasoning. It simply means that, as formulated, the thesis applies *definitively* only to one form of reasoning.

In "How To," Peirce replays his *a priorism* on another level of analysis. Having offered what he might call a first-grade definition of *a priorism* in "Fixation," he now offers a second-grade definition. He says *a priorists* are those who define conceptions to no more than a second-grade of clarity, identifying the meaning of a conception with its abstract definition. He suggests that such definitions are incomplete, since they fail to display the habits of belief with respect to which those abstract definitions refer to the objects of those conceptions. Differently put, Peirce is arguing that *a priorists* fail to acknowledge that they have abstracted their definitions from particular habits of belief. They therefore attribute to their definitions an unwarranted generality. Once again, however, Peirce fails to practice what he preaches. He offers no more than a second-grade definition of what he calls the third-grade of clarity, failing to identify the habits of belief from which he has made his generalization. In *a prioristic* fashion, he then promotes his third-grade definition as a guiding principle for reasoning in general, rather than for a specific repair of *a prioristic* reasoning.

Were Peirce to define the pragmatic maxim to a third degree of

clarity, he would have to describe it specifically as his rule for correcting errors in *a priorism*. This means that the maxim has meaning singularly with respect to an interrupted practice of *a prioristic* reasoning, that is, with respect to the habits of belief of *a priorists* who have doubts about their practice but who have yet to adopt an alternative one. The maxim is articulated, in 5.402, in terms such *a priorists* would understand. It instructs them to correct their second-grade definitions by considering (still from their individualistic and rationalistic perspective) the conceivably practical effects of the objects of their conceptions. When they do this, they should discover that their conceptions of these effects belong to particular habits of belief, with respect to which, alone, the object has meaning. They will then observe that they have arrived at their conceptions by considering only a particular collection of practical effects and ignoring others. In later writings, Peirce calls this process "precission," or abstraction. He argues that *a priorists* err by treating these abstractions as adequate, rather than partial, representations of their objects. He suggests that, to correct their error, *a priorists* need only identify what we have called the constraining laws which occasion their acts of abstraction. While it is not possible to represent a habit of belief adequately through any finite collection of concepts, it is possible to identify the laws of abstraction which govern that collection.

If he defined his Pragmatic Maxim in this way, Peirce would no longer claim that it articulated, in an imperative voice, a guiding principle of reasoning in general. He would claim, instead, that attempts to define the guiding principles of reasoning in general have meaning only with respect to particular practices of reasoning. Speaking to non-*a priorists,* he would describe his theory of pragmatism as a probable inference about the *logica utens* of scientific practice. Furthermore, he would say that his study of scientific practice has been occasioned and influenced by his interest in correcting certain errors in *a prioristic* practice. He would describe the Pragmatic Maxim as an attempt to articulate the usual procedure for defining scientific conceptions, in order that *a priorists* might see fit to imitate that procedure. Speaking to *a priorists,* he might, appropriately or not,

attempt on *a priori* grounds to justify his adopting the maxim. He might then claim that his maxim articulates one of the guiding principles of reasoning as such (meaning *a prioristic* reasoning).

In the remaining essays of the "Illustrattions," Peirce displays the effect of his failure to identify the specific habits of reasoning in terms of which, alone, his pragmatic criticisms have meaning. His primary concern in these essays is to criticize what, after Venn, he calls conceptualistic definitions of probability (such as De Morgan's) and of induction (such as Mill's). He is concerned, specifically, with problems in the philosophy of exact science, and he therefore has reason to employ his pragmatism as a tool for exhibiting a *logica docens* for correcting errors in the exact sciences. He begins his essay on "The Doctrine of Chances" by claiming that these sciences are mathematical sciences and that their *logica docens* is therefore displayed in the mathematics of measurement, or of continuous quantity. He then employs his logic of continuous quantity, appropriately, as a tool for criticizing conceptualist philosophies of exact science.[25] Failing to respect the specific context of his argument, however, he also employs his logic of exact science as a *logica docens* for correcting errors in philosophical logic in general. These lead him to make a number of unwarranted claims.

Rulon Wells refers to Peirce's tendency to *assimilate* one form of argument to another one and to *slide* from one definition to another one.[26] These are both errors of analogy, specifically, of reasoning, without warrant, that if two entities share some characters they must also share others. "Assimilation" refers to the tendency to treat the characters of one such entity as definitive of the other. "Sliding" refers to the tendency to refer, wittingly or unwittingly, to one entity in place of the other, that is, to ignore the characters that distinguish the two entities. In "The Doctrine of Chances," Peirce subtly slides from statements about the logic of exact science to statements about the logic of inquiry in general. In order to explicate the logic of scientific predictions, he draws an analogy. He says that the exact scientist's determining the probability that a certain character will appear in a given sample is analogous to the logician's evaluating our ampliative

inference, or belief, that a certain fact is true. According to the analogy, the exact scientist is, in other words, evaluating the probability, or measuring the evidence, that a given set of premises will lead to a given conclusion.[27] Through the course of the essay, however, Peirce subtly slides from statements about the logic of exact, or mathematical, science to statements about the mathematical character of logic. In the process, he attributes to exact science characters appropriate only to a logic of reasoning as such (assimilating science to his general logci) and then extends his resulting conclusions about exact science to the general logic (assimilating his logic to science).

In practice, Peirce makes his unwarranted moves in the following manner. He brings to the essay his *a prioristic* assumption that reasoning is warranted if it is capable of fixing belief. After drawing his analogy between the mathematics of probability and the logic of ampliative reasoning, he then assumes, by way of assimilation, that making probable inferences must be a way of fixing belief. Examining the logic of probable inferences, he concludes that the "very idea of probability . . . rests on the assumption that (the number of our risks) . . . is indefinitely great," even though "death makes the number of our risks . . . finite" (2.654). There is no intrinsic reason why exact scientists cannot leave matters there and acknowledge that probabilities are ideal ratios, defining our expectations about a given entity at a given time. At this point, however, Peirce slides from his logic of exact science to his logic of reasoning in general. He thus adds to "the very idea of probability" the very idea "of reasoning" and concludes that, in order to fix belief, probable reasoning must be joined to certain assumptions about how we are, in fact, to imagine undertaking an infinite number of risks, which he identifies with an indefinite number of inferences. He concludes

> that logicality inexorably requires that our interests shall *not* be limited. They must not stop at our own fate, but must embrace the whole community. This community, again, must not be limited, but must extend to all races of being with whom we can come into immediate or mediate intel-

> lectual relation. It must reach, however vaguely, beyond this geological epoch, beyond all bounds. He who would not sacrifice his own soul to save the whole world is, as it seems to be, illogical in all his inferences, collectively. Logic is rooted in the social principle. (*Ibid.*)

Logic may, indeed, be rooted in the social principle, but Peirce has not offered us cogent reasons for believing it to be so. He has argued, analytically, that his conclusions about the indefinite community of inquiry are contained in the pragmatic definition of ampliative reasoning. To arrive at his definition, however, he has without warrant argued that ampliative inferences are necessarily probable inferences of the kind made in the exact sciences *and* that ampliative inferences must fix belief. He has demonstrated only that, if probable inferences are to fix belief, then they must be rooted in a social principle. Even for this case, however, he has not offered explicit reasons why a social principle might not involve, for example, a principle of societal authority. As it stands, his doctrines of community and therefore of the long run of inquiry are *a prioristic* deductions from an unwarranted definition.

In his last two essays, Peirce offers comparably *a prioristic* inferences about religion and about the physiology of human cognition. In each case he is misled by his attempt to formulate a unifed theory of reasoning in general and thus to assimilate features of independent practices of reason. In "The Order of Nature," Peirce suggests that "what sort of a conception we ought to have of the universe [that is, what cosmology we ought to adopt] is a fundamaental problem in the theory of reasoning." It might be more accurate for him to say that his contemporaries, from Spencer to Abbot and Fiske, consider this problem important, that he is not satisfied, or fully satisfied, with how they attempt to solve it and that he believes his pragmatic definition of ampliative reasoning offers him a means of correcting their errors. He argues, on the one hand, against those thinkers who offer *a prioristic* cosmologies on the basis of mere prejudice and, on the other hand, against those thinkers who imagine that science can

proceed without any prejudice at all. He says all our inductions are informed by some prejudice, or some expectation about how the universe must behave if we are to reason about it the way that we do. Our task is simply to distinguish the scientist's expectation from non-scientific ones. The scientist's expectation is that our universe is one about which we can make inductive generalizations and offer explanatory theories whose validity can and must be ascertained, but only in the long run of inquiry. If he argued in this fashion, Peirce would be engaged in an empirical inquiry, simply identifying the cosmology that accompanies scientific method. He might then argue that *a prioristic* or agnostic cosmologies are inconsistent with the scientific method. As we have seen, however, Peirce also wants to argue that scientific reasoning exemplifies ampliative reasoning in general. This is to suggest that the scientist's cosmology is the only cosmology consistent with rational inquiry into the character of the universe and, therefore, that non-scientific cosmologies are irrational. In this vein, Peirce suggests that, for "minds emancipated from the tyranny of tradition," a religion will be deemed valid only if it is consistent with the scientific cosmology. For that reason, he concludes that "the spirit of science is hostile to any religion except such a one as that of M. Vacherot," who "worships the Perfect, the Supreme Ideal; but [who] conceives that the very notion of the Ideal is repugnant to its real existence." This means that science is incompatible with the western religions.

Peirce's method of argument here is as problematic as his conclusion. According to his own standards of rationality, we would expect him to identify the meaning of "religion" by identifying the *logica utens* of actual religious practices. Instead, he evaluates religious doctrines according to *a priori* principles and without taking into consideration the practices in terms of which they have meaning. His good instincts lead him to suggest that certain principles of religion preserve their value independently of any cosmological claims made on their behalf. Even then, however, he calls these the "enlightened principles of religion," as if their validity lay only in their consistency with the universal principles of reasoning in general. He has not yet con-

sidered the possibility that the religious principles which fix belief and guide behavior may be governed by a logic that is irreducible to the distinction he makes between analytic and probable inferences. He has therefore not considered the possibility that scientific reasoning need not be burdened with the responsibility of fixing belief.

In "Deduction, Induction and Hypothesis," Peirce suggests that the rules of synthetic inference may also serve as models for understanding the fundamental faculties of psychology. His suggestion is ingenious. Peirce's tendencies to slide from his analysis of one entity to another and to assimilate the characters of one to the other are a source of his creative insight; they encourage him to make connections other thinkers might not conceive of making. Employed in the service of his *a priorism,* however, these tendencies can also breed dogmatisms. It is one thing for Peirce to draw analogies between induction and habit, hypothesis-making and emotion, deduction and volition. It is another for him to infer from these analogies – as he does in the 1880's – that he can settle disagreements in logic by claiming that certain organic laws of the human animal urge one system of logic as opposed to another. If he overburdens his analogies in this way, it is another sign of his assuming that probable reasoning must also fix belief and, therefore, that he must continually validate his empirical claims by displaying their consistency with necessary rules of reasoning.

III A Pragmatic Reading of Peirce's "Illustrations"

In the interest of Peirce's own pragmatism, I read the "Illustrations" according to the Method of Pragmatic Reading I have outlined in Section I. In the "Illustrations," Peirce addresses three *problems* which he believes share a single solution. The *first problem* is how to identify the logical rules which guide scientific practice, as exhibited in the practice of the exact natural sciences. The *second problem* is how to identify the norms of ampliative reasoning in general. The *third problem* is how to correct what he takes to be the persistent errors of British empiricism. He attributes these errors to the empiricists' tendency to reason in what he calls an *a prioristic* manner,

and he identifies *a priorism* with "Cartesianism," or the method of philosophy introduced by Descartes.

To respond to these three problems, *Peirce employs two conflicting sets of logical methods.* The first, which I will label his *Conceptualist Logic,* corresponds in appearance to the outlines of the science of logic he developed in the 1860's and continued to perfect through 1903. The second, which I will label his *Pragmatic Logic,* reflects the tendency in his logical practice which he identifies most clearly in his post-1905 writings on "pragmaticism."

In his Harvard Lectures of 1865, Peirce defines logic as "the science of the conditions which enable symbols in general to refer to objects" and distinguishes three sub-divisions of the science: Universal Grammar, Logic and Universal Rhetoric.[28] In his Minute Logic of 1902-3, he provides the following definitions (2.93). "Logic is the science of the general necessary laws of Signs and especially of Symbols." *Speculative Grammar is Erkenninisslehre,* "the doctrine of the general conditions of symbols and other signs having significant character. (In 1867, he calls this "the reference of symbols in general to their grounds or imputed characters"[29]). *Critical Logic* "is the theory of the general conditions of the reference of Symbols and other Signs to their professed Objects, that is, it is the theory of the conditions of truth." *Speculative Rhetoric,* or *methodeutic,* "is the doctrine of the general conditions of the reference of Symbols and other Signs to the interpretants which they aim to determine" (in 1867, he says it treats "of the formal conditions of the force of symbols, or their power of appealing to a mind"[30]).

Peirce's 1902-3 classifications correspond roughly to the *Conceptualist* methods of logic he practices in the "Illustrations." He employs a *Speculative Grammar* in his attempts to display the universal conditions of ampliative reasoning as such, identifying, in transcendental fashion, those "facts which we must already know before we can have any clear conception of reasoning at all" (5.369). Following this method, he identifies two kinds of facts: "guiding principles," which "are necessarily taken for granted in asking whether a certain conclusion follows from certain premises,"[31] and "rules of inference"

which are not necessarily taken for granted. Among these guiding principles, he includes the general rules of deductive, inductive and hypothetical inference as well as the pragmatic principles of Doubt and Belief, the social principle of logic, and so on. Within his Speculative Grammar, the Pragmatic Maxim is based on the following observation: that, as symbols, "intellectual concepts" have force, which means they display the effects of their objects in relation to their interpretants. Peirce employs a *Critical Logic* in his attempts to evaluate the relative strengths of the three general rules of inference, that is, the different conditions of truth which each defines. Within his Conceptualist Logic, Peirce makes no attempt to evaluate the strengths of his pragmatic principles, because he assumes these principles represent the general conditions of reasoning as such: more precisely, that they define the conditions according to which the three modes of inference determine their interpretants. According to his architectonic, Peirce's study of these conditions should belong to a *Speculative Rhetoric*. He employs a *Speculative Rhetoric* in his attempts to identify the formal rules according to which symbols display their force: including his study of the possible methods of fixing belief, of the way inquiry settles opinion and of the methods of bringing a third-grade of clarity to scientific definitions. Within this Conceptualist Logic, Peirce's critique of *a priorist* thinking is formal. That is, he identified *a priorist* thinking only as one of the possible fallacies of ampliative reasoning: as a way of misrepresenting the formal conditions of symbolization.

At the same time, Peirce practices a *Pragmatic Logic*, which is an empirical science of the rules of reasoning, or *logica utens*, displayed in various forms of inquiry. He analyzes both *a prioristic* and scientific reasoning inductively: offering inductive generalizations about what he takes to be instances of each practice and explanatory hypotheses to account for the observed phenomena. He argues, for example, that *a priorists* identify ampliative reasoning with deductive inference, while scientists identify it with probable inference. Peirce's own guiding principle here is that rational practices are potentially self-

corrective. Borrowing an argument from his Conceptualist Logic, he assumes that all practices display a distinction between guiding principles and inessential rules of inference and that the latter may be corrected by way of the former. He attributes to *a prioristic* reasoning the guiding principle of Doubt and Belief, on the basis of which he criticises the *a priorists'* identifying ampliative reasoning with deductive inference. He then argues that scientific practice, alone, fulfills the conditions of reasoning defined by the guiding principle of Doubt and Belief.

As conceptualist, Peirce grounds his inductions on speculative assumptions about what forms of reasoning are logically possible. As pragmatist, he would reply that the ground of induction is not speculation but prior practice and that the conceptualist errantly identifies the assumptions of logical analysis with the assumptions of a given practice of reasoning, as if the guiding principles of logic were *ipso facto* the principles of reasoning in general. Peirce appears to argue this way in "Fixation" when he says

> It is easy to believe that those rules of reasoning which are deduced from the very idea of the process are the ones which are the most essential; and, indeed, that so long as it conforms to these it will, at least, not lead to false conclusions from true premisses . . . [For example,] conceptions which are really products of logical reflection, without being readily seen to be so, mingle with our ordinary thoughts, and are frequently the causes of great confusion. (5.369=W3.246)

This statement could be taken to imply that the principle of Doubt and Belief, for example, may be a guiding principle of logical critique, but not of a given practice of reasoning. This leaves open the question of how logicians choose their guiding principles. As pragmatist, Peirce could respond to the statement by claiming that logicians may criticise only those practices in which they, themselves, participate. They will be guided, then, by the practice's own guiding principles.

In the "Illustrations," for example, Peirce adopts the *a priorists'* principle of Doubt and Belief as his own, for the sake of criticizing *a priorist* practice. As conceptualist, Peirce could respond by claiming that the principle of Doubt and Belief guides all logical critique as such, since logical critique is stimulated specifically by doubts that arise in a given practice. This would mean both that pragmatism provides a universal method of logical critique and that there may be only one self-correcting rational practice: that science whose guiding principles are the principles of logical critique.

Applying these conflicting methods of logical inquiry to the three problems of interest to him, Peirce presents *two incompatible sets of thesis-types:* Scientific Pragmatism and Pragmatic Conceptualism.

Thesis-type 2a: "Scientific Pragmatism"

I. *The Norms of Reasoning*: The norms of reasoning are the *logica utens* displayed in particular practices of reasoning. These norms may be defined to three grades of clarity: first, identifying the norms by providing conceptual labels for them; second, defining them formally; third, describing the habits of belief and action through which the norms may be interpreted.

IA. The Norms of Scientific Reasoning. (1) These are rules for gathering information about matters of fact, that is, rules of ampliative reasoning. (2) The method of gathering such information is probable inference, which is to identify the object of inquiry with the habit of action which displays sensible effects but which cannot be identified with any finite collection of such effects. Scientists collect samples of such effects, offer inductive generalizations offered on the basis of those samples, and then offer explanatory theories to account for these generalizations. The theories are hypothetical inferences about the character of the object of inquiry as habit of action: that is, about the probability that, given certain conditions, the object would display certain characters. Scientists offer deductions only in the service of these probable inferences. By way of their probable inferences, scientists define the object of their inquiry to a third grade of clarity.

(3) (In order to define the norms of reasoning to a third grade of clarity, we would expect Peirce to offer theories which account for the scientists' identifying the objects of their inquiry with habits of action and belief. Peirce offers such a theory, but bases it on Bain's general psychology, rather than on empirical observations of scientific practice. The result is a psychological account of the pragmatic meaning of scientific reasoning. In form, as a third-grade definition, this account belongs to Peirce's scientific Thesis-type (no. 2a); in substance, however, it belongs to his *a prioristic* Thesis-type (no. 2b). We would expect a scientific account to refer to the social and linguistic, or semiotic, context of scientific reasoning, rather than to a merely psychological context.) By referring to the objects of their inquiry as habits of action and belief, scientists assert that these objects are external permanencies or real things. These are things, the knowledge of which fixes belief about matters of act. The norms of science, therefore, are instruments of the fixation of belief, or the resolution of doubt. In the human animal, the emotion of doubt accompanies two other psycho/physiological phenomena: interruptions in the animal's habits of action, and arousal of the animal's desire or will to repair these interruptions. The three rules of reasoning are the animal's means of responding to these three aspects of the phenomena of doubt: induction is the rule for re-establishing habits of action; hypothesis-making is the rule for reforming the emotions (or perhaps for replacing the emotion of doubt with that of expectation); deduction is the rule for re-directing the will to new rules of action.

IB. The Norms of A Prioristic Reasoning: (1) These are *a priori* rules for fixing belief about matters of fact. (2) The rules are displayed in any propositions which may be deduced from second-grade, or formal definitions of the objects of inquiry. In other words, the rules of ampliative reasoning are the presuppositions we bring to our reasoning about matters of fact. (3) The norms of *a priori* reasoning are the means through which the reasoner replaces deductive rules established through societal authority with deductive rules established through the reasoner's own authority. (To complete the

third-grade definition, Peirce would have to account for the etiology of *a prioristic* reasoning: identifying, for example, the habits of interpretation which guide the *a priorists'* attempt to remove reasoning from societal authority. This might mean identifying precisely how Cartesianism arises out of the practices of scholastic reasoning.)

II. *The Critique of Reasoning:* Particular practices of reasoning err if they are inconsistent with the norms that govern those practices: that is, if they do not constitute self-consistent habits of interpretation.

IIA. *Critique of A Prioristic Reasoning:* (1) *A prioristic* reasoning is self-contradictory, because it is based on the assumptions both that reasoining fixes belief about matters of fact and that the rules of reasoning are given in reasoning. This is to assume that reasoning is at once ampliative and analytic. (2) (Peirce's version of Kant's critique of pure reason is, in brief, that) employing the same methods of *a priori* reasoning, Peirce has come up with a different result. For him, analytic truths fail to fix belief about matters of fact; in fact, the logic of ampliative reasoning is the logic of probable reasoning and is irreducible to the logic of analysis. (3) *A prioristic* reasoning accompanies conflicting habits of interpretation. On the one hand, it encouragres disobedience to societal norms of reasoning, on the grounds that these norms obstruct inquiry into matters of fact that remain uncertain. On the other hand, its methods preclude our reasoning about the uncertain as uncertain. If the rules for reasoning about matters of fact may be deduced from the character of reasoning, then either the uncertain is in fact not uncertain (in which case our doubts are merely illusions, including the doubts we have about societal authority), or else we can reason only uncertainly about the uncertain (in which case the uncertain is in fact the unknowable).

Thesis-type 2b: "Pragmatic Conceptualism"

I. The Norms of Reasoning in General: All practices of reasoning display both rules of inference and guiding principles particular to those practices and guiding principles general to all such practices. Logicians identify these principles by explicating the presuppositions

they bring to various practices and the presuppositions they bring, by definition, to any such practice. The presuppositions, and thus the guiding principles, of all reasoning about matters of fact are that reasoning fixes belief about matters of fact and arises in response to real doubts. Reasoning from doubt to belief is reasoning from the practical effects of an unknown object to the object. The reasoner thereby conceives of the object of inquiry as an external permanency which displays its characters to us in the manner in which it influences our beliefs about it. In different terms, this is to conceive of the object as a habit of action and belief. Reasoning about the object proceeds in a manner epitomized in the practices of science: from inductive generalizations made on the basis of samples of the sensible effects to probable inferences about the character of the object or habit to which those effects refer. No finite series of such inferences is adequate to fix belief. Reasoning in general, and scientific reasoning in particular, is thus the indefinitely extended activity of an indefinite community of inquirers.

II. The Critique of Reasoning: Particular practices of reasoning err if they are inconsistent with the norms of reasoning in general.

IIA. Critique of A Prioristic Reasoning: A prioristic reasoning fails to offer a method for fixing belief about matters of fact. It provides methods for defining the conceptions we have of objects only to a second-grade of clarity. This is to identify the characters of the object itself with inferences drawn from a finite sample of the object's sensible effects. On the basis of such inferences, alone, we have no means of distinguishing between knowledge of the object and illusion and, thus, no means of fixing belief about the object. The *a prioristic* method identifies ampliative reasoning with a process of conceptual clarification: as if the doubts that may have stimulated inquiry were not real doubts but only confusions and as if to repair those doubts we had only to inspect our knowledge more carefully, rather than extend it. In sum, *a prioristic* reasoning is reasoning about reasoning and not about matters of fact; it is analytic rather than ampliative. There is empirical evidence, finally, that *a prioristic* reasoning fails, in practice, to settle opinion.

To account for the contradictions between Peirce's two thesis-types, I interpret them as tokens of the following two *Leading Tendencies* of Peirce's practice:[32] As *Pragmatic Realist,* Peirce tends to assume that his logical inquiry belongs to the practice of reasoning he is examining and, therefore, that the guiding principles of that practice are the guiding principles of his logical inquiry. *As Pragmatic Conceptualist,* Peirce tends to assume that his logical inquiry does not belong to the practice he is examining. He also tends to assume that he must, by way of his logical inquiry, identify the principles that will guide this or any other examination. The most basic of these principles is that inquiry is warranted by doubts about a given practice and moves from doubt to belief.

The significant difference between the two tendencies is that, for Pragmatic Realism, there is no need and no way to demonstrate the universal validity of any guiding principle of inquiry. Realists must disclaim, and Conceptualists claim, such validity for their methods of inquiry. On the other hand, Conceptualists, as opposed to Realists, must in every case demonstrate the pertinence of their inquiry to the particular practices under examination. Realists assume that their inquiry shares guiding princples with the practice under examination and that these principles, therefore, remain acritical. They also assume that their inquiry is occasioned by conditions unique to it and that their conclusions need not, therefore, have any validity independently of those conditions. Conceptualists assume that both the guiding principles and the conditions of their inquiry are context-independent, or universal.

My final task in this essay is to explain how the pragmatic reading may reasonably account for the confusions which appear in Peirce's text. My explanation addresses two issues: how Peirce's leading tendencies may have emerged out of the context of his work in the 1870's and how these tendencies may have guided his brilliant, if equivocal, attempt to resolve the philosophic problems he set for himself.

According to a pragmatic account of Peirce's philosophic practice, the leading tendencies of his thought are interpretants of the leading tendencies of the empiricist practice in which he participated. He

participated in the practice of empiricist philosophy: in his case, an aspect of that practice which links Descartes and Kant to the British empiricists. "Pragmatic Realism" is an interpretant of empiricism *as* a practice, in particular, as a scientific practice. "Pragmatic Conceptualism" is an interpretant of empiricist tendencies to deny that empiricism is a particular practice: in effect, to practice empiricism as a species of what Peirce calls *a prioristic* philosophizing. Empiricism may, in fact, tend to promote the dialectic of tendencies exhibited in Peirce's early work. It is reasonable, however, to ask why the dialectic is so pronounced in Peirce's work.

Peirce's biography discloses influences which may conceivably have contributed to his living out the dialectic of realism and conceptualism in dramatic fashion. One such influence was his father's religious naturalism, which may, conceivably, have predisposed its adherents to a skeptical faith: believing both that empirical inquiry brings us into immediate contact with God's presence and that we know of God only that God is there. Biographer Joseph Brent suggests both that Peirce was given to grandiose visions of his capacities and calling and that he had a profound capacity to surrender himself to his chosen disciplines and to let truth lead him where it would.[33] A religious naturalist with intense drives of this kind may, conceivably, have cultivated the following, conflicting beliefs: that he ought to be able to demonstrate to skeptics the immediacy of our knowledge of God, or of the real; that this demonstration would have as its premises certain self-evident intuitions about this immediacy; that no such intuitions are available; and that no such demonstration is, therefore, possible. If Peirce held beliefs like these, then the conflicting tendencies in his work may correspond to conflicting assumptions about the self-evidency or non-self-evidency of our knowledge of the real.

It is reasonable to ask, finally, why either of Peirce's two tendencies may have been stronger at different stages in his work. Murphey refers to the years 1859-61 as the first stage of Peirce's philosophical development, during which he constructed what Murphey calls his "first system."[34] During this period, Peirce was a student of Kant's, trying his hand at architectonic philosophy by revising Kant's categorial scheme. Peirce rejected Kant's transcendentalism in the interest of a nascent philosophical realism:

> There can be no need of a Transcendental Philosophy if right reason does not lead to contradictions of *a priori* principles.
>
> For the principle of the syllogism itself we must assume to be right in all cases since it is that which we use and the only thing we can use in refuting any use of reason. . . .[35]

Peirce's realist tendency appeared here in his attempt to defend the possibility of our having direct knowledge of the real by way of our rules of reasoning themselves. At the same time, Peirce's method of argument expressed his conceptualist tendency. He failed to read Kant on Kant's own terms and to recognize that Kant's arguments do not lend themselves to the kind of critique Peirce wants to offer.[36] His method was to argue independently of an explicit and publicly shared philosophic practice and to argue on behalf of a merely *a priori*, or "second grade," notion of realism. This is a conceptualist method, and, at this period in his work, it dominated his realist tendencies.

Peirce's 1868-9 papers on Cartesianism displayed a comparable tension between philosophic aspiration and philosophical method. Once again, he wanted to defend the notion that we have direct experience of the real, this time against intuitionist tendencies among his empiricist peers. Once again, however, he was unable to argue from out of an appropriately realist philosophic practice. He admired the scholastics, but only from afar: arguing on behalf of certain elements of scholastic practice which he felt were neglected by the empiricists, but distancing himself from most other elements. He admired Whewell and Boole and continued to admire Kant, but drew on their insights eclectically and selectively.[37] In the end, he was able to define his realism only as the logical contrary of the intuitionism he condemned: reducing his realism to a species of logicism. To be sure, his arguments were strengthened by his capacity to criticise his earlier work. He attributed to "Cartesianism," and criticised, many of the conceptualist tendencies that marked his "first system": among them, unwarranted doubt, individualism, and uniform argumentation. Nonetheless, his philosophic isolation kept him from practicing what he preached and allowed his conceptualist tendencies to dominate. He

therefore defined intuitionism only to what he would later call a second-grade of clarity: abstracting a limited set of characters from the intuitionists' actual practices, without describing those practices empirically and without exhibiting the *a priori* interests that guided his abstraction.

Several developments after 1869 reinforced Peirce's Realist tendencies and contributed to the pragmatism of his "Illustrations." His study of Boole's mathematical logic had, by 1865, already helped him clarify his logic of deduction, induction and hypothesis and, in particular, his notion of the probabilistic character of inductive and hypothetical reasoning.[38] After 1865, however, he began to study De Morgan's logic of relations.[39] By 1869, he had begun to incorporate this logic into a Boolean calculus of relatives which would transform his logical analyses and free his epistemology from the limitations of classical, subject-predicate logic.[40] In terms of the classical logic he employed through 1868-9, Peirce could argue only that the alternative to intuitionism was the logical contrary of intuitionism, or, as we have seen, a kind of logicism. This is to argue that, if intuitions are not predicates of external objects, then they must be predicates of our own modes of reasoning. Through the idiom of his logic of relatives, however, Peirce could argue that both intuitionism and logicism are forms of *a priorism,* and that the alternative to both is pragmatism. According to Murphey, pragmatism emerges as the metaphysical correlate of the logic of relatives.[41] Peirce could now introduce dyadic and triadic relations into his predicate calculus, which means that what were called sense-intuitions could include dyadic relations of existence (indices) and triadic relations of symbolization (representations of laws or dispositions) as well as simple qualities. He could then describe the perception of real objects as, in Murphey's words, "a conjunction of conditional propositions relating the conditions of perception to the occurrence of sense properties."[42] Each sense property would be the representation of a disposition, and the series of propositions would represent the real object as a series of such representations, or as a disposition or law. Peirce could then offer what appears to be a realist theory of perception.

In his Lowell Lectures of 1866, Peirce began to refer to inductions as "habits." In the 1868-9 papers, he described habits as nervous associations. At the same time that he was developing his logic of relatives, Peirce applied his notion of habit to a theory of belief, producing the Doubt-Belief thesis of his "Illustrations." According to this thesis, beliefs are conjunctions of conditional propositions and, thus, what he would later call interpretants of the real objects of experience: habits (as beliefs) are interpretants of habits (as objects). In drawing this conclusion, Peirce drew on his readings in Bain's psychology. This brings us to the subject of Peirce's participation in the Metaphysical Club.[43]

The Club strengthened Peirce's Realist tendencies in two ways. On the one hand, such Club members as James, Green, Abbot and Fiske reinforced Peirce's critique of the positivist representatives of what he called Cartesianism. Green promoted Bain's psychology, and Wright promoted the Darwinian naturalism that appears in Peirce's physiological conceptions of habit and belief. On the other hand, Peirce's fellowship with like-minded inquirers must also have tempered that sense of philosophic isolation which had previously contributed to his conceptualism. At a propitious time in the development of his thinking, this fellowship encouraged Peirce to place his discoveries in logic and psychology, and his continuing practice in natural science, in the service of his realism. The result was his early pragmatism.

Nonetheless, Peirce's conceptualist tendencies were also reinforced throughout this stage of his work. All of Peirce's Metaphysical Club peers displayed conceptualist tendencies in their work. Wright's naturalism was of a positivist stripe; to defend their faith against positivism, Fiske and Abbot offered *a prioristic* arguments for religious naturalism; and, following Renouvier, James' empiricism was voluntaristic and individualistic. Each of these thinkers contributed to the reform of some aspect of empiricist conceptualism, which promoting other aspects uncritically. These latter stimulated Peirce's persistent polemic: against Descartes, which means against conceptualist (or "*a priorist*") elements of British empiricism, which means

against such elements in the Club's empiricism, which means against such elements in his own empiricism. Displaying again his remarkable capacity for self-criticism, Peirce identified both intuitionism and, by implication, his earlier logicism as species of *a priorism*, against which he promoted his emergent methods of pragmatic definition and pragmatic critique. Nonetheless, he had yet to locate actual models of pragmatic practice.

Without such models, Peirce's arguments on behalf of pragmatism became *a prioristic* and visionary, rather than descriptive. He claimed that the community of natural scientists represented such a model, but he failed to describe any instances of this community's practice. His studies of scientific practice were studies, exclusively, of the logic of scientific inquiry as practiced by individual scientists. Adopting the perspective of such individuals, Peirce described the "indefinite community of inquiry" as a logical possibility, rather than as a practice about which he could offer inductive generalizations. To argue on behalf of the merely possible is to argue conceptualistically. As pragmatist, moreover, Peirce practiced philosophy and not natural science. He did not even attempt to describe the kind of community of inquirers which would foster the pragmatic practice of philosophy. The Metaphysical Club served some of the passing needs of its members, but hardly represented the kind of community Peirce may have envisioned. Empiricist philosophy may not, in fact, be conducive to the practice of pragmatic or, in Peirce's vocabulary, "genuine" inquiry. This means that throughout this stage in his work, Peirce may have conceived of himself as an isolated inquirer. As I have suggested earlier, the sense of isolation breeds conceptualist tendencies.

In the 1870's, Peirce's realist tendency thus led him to revise his earlier critique of Cartesianism in the interest of an emergent pragmatism, while his conceptualist tendency led him to present this revision in a non-pragmatic manner. In his 1868-9 papers, Peirce had portrayed his polemic against the conceptualist aspects of empiricism as a battle of *a priori* theories of knowledge. In the 1870's, he began to portray it, instead, as a critique of errant practices. He was convinced that, in his work as natural scientist and laboratory

scientist, he practiced what the empiricists preach. He reasoned that, if, in fact, their preaching is at all misguided, it is because the ways of the seminary (and the university?) accustom them to unempirical habits of interpreation. If they are attracted to Cartesian intuitionism, it is not merely because they commit errors in formal logic, but also because their lack of practice in the laboratory encourages this attraction. In this way, Peirce began to criticize Cartesianism as an errant way of practicing empiricism, rather than as a collection of errant claims. He argued that empiricists want to reason about matters of fact, that such reasoning is displayed only in the practice of science and that empiricist practice tends to be unscientific, since it substitutes *a prioristic* reflection for laboratory research. To reform empiricism, he offered a logic of scientific practice. At the same time, Peirce presented his argument dogmatically: defining his pragmatic critique itself to only a second-grade of clarity and presenting it, once again, as a battle of ideas rather than as a reform of practices, with the idea of empirical science set on the one side and the idea of *a prioristic* reasoning set on the other.

In conclusion, I review a sampling of the contradictions in Peirce's explicit text, to show how they may be interpreted as signs[44] of contradictions in his Leading Tendencies as applied to the context of his work in the 1860's.

In "Fixation," Peirce wants to identify the guiding principles of both *a prioristic* and scientific practice. According to his Leading Tendency of Pragmatic Realism, he would argue that the principle of Doubt and Belief is a guiding principle of *a prioristic* practice, since *a priorism* is defined by its search for an epistemological substitute for scholasticism and, thus, for a belief that would respond to its practitioners' generalized doubts. He would also argue that scientific practice is guided by principles of probable inference (relating the practice of science to its object) and by what he would later call principles of fallibility (relating the practice of science to its interpretant). According to the latter, probable inferences have validity only with respect to a finite set of assumptions about the object. According to his Pragmatic Conceptualism, Peirce would argue that am-

pliative reasoning, as such, is guided by the principles of probable inference, fallibility and Doubt and Belief and that these principles are exemplified in different ways in scientific and in *a prioristic* practices. Together, Peirce's contradictory tendencies lead him to conclude, in the text of "Fixation," that the principle of Doubt and Belief guides scientific practice and that the method of science therefore settles opinion. The conclusion is contradictory, since the goal of "settling opinion" is incommensurate with the scientific principle of fallibility.

In "How To," Peirce wants to identify a method for reforming *a prioristic* practice. According to his Pragmatic Realism, he would argue that what he later calls the Pragmatic Maxim is a rule for correcting *a prioristic* practice by transforming second-grade, *a prioristic* definitions into third-grade, scientific ones. According to his Pragmatic Conceptualism, he would argue that the Maxim is a rule for clarifying the meaning of intellectual conceptions in general. In "How To," Peirce adopts the Conceptualist argument. The argument is self-contradictory, however, since, according to the Maxim, the Maxim itself would have meaning only with respect to some particular practice of reasoning, such as that described in the Realist argument.

In the "Doctrine of Chances," finally, Peirce wants to bring the definition of probability to a third degree of clarity. In accordance with his Pragmatic Realism, he draws an analogy between the exact scientist's measuring probabilities and the logician's measuring the evidence that a certain belief may be true. Following his Conceptualist tendency, however, Peirce assumes that the principles which guide each of these practices must be general with respect to all instances of ampliative reasoning. He reasons, therefore, that ampliative reasoning, in general, is probaabilistic (as exemplified in the practice of exact science) and fixes belief (according to the argument of "Fixation"). He then concludes that probable inference, and therefore ampliative reasoning in general, can fix belief only in the long run of inquiry, prosecuted by an "indefinite community" of inquirers. This conclusion replays the contradictions of Peirce's argument in "Fixation." Peirce is asserting that probable inferences are offered about

a given object both *with respect* to some interpretant (that is, to some finite set of assumptions) and *independently* of any interpretant (as if to describe the object as it is "in itself"). In the first case, Peirce argues, as pragmatic realist, that probable inferences are made with respect to some particular practice of reasoning and, thus, some finite community of inquiry. In the second case, he argues, as pragmatic conceptualist, that probable inferences must be validated with respect to universal criteria of rationality and, thus, with reference to an indefinite community of inquiry.

Peirce's concern to demonstrate the validity of probable inference displays the incompleteness of his pragmatism in 1877-8. If he were guided only by his Pragmatic Realism, Peirce would argue that the empiricists simply do an incomplete job of isolating the rules of scientific reasoning that are embedded in scholastic practice. There is no need to validate these rules, but only to show that they are, indeed, the rules that the empiricists are looking for. Moved by his Pragmatic Conceptualism, however, Peirce believes he must validate those rules according to the empiricists' *a priori* principles of rationality. Of course, empiricists are in a quandry precisely about what those principles are, so Peirce finds himself joining a foundational search. In his Harvard Lectures of 1865, he says that "we may proceed . . . to discover the elementary processes which lie at the bottom of all scientific reasoning" (W175). He identifies these with the grounds of possibility of the three fundamental forms of inference. In the "Illustrations," he adds to these grounds the pragmatic principles of Doubt and Belief, of the social basis of logic, and so on. This list of elementary principles still fails to satisfy him, however, and he proceeds, in the 1880's and 1890's, to search for the grounds of possibility of the pragmatic principles themselves. The energy Peirce invests in this unproductive search is the last piece of evidence I can offer about the contradictions in Peirce's leading tendencies of thought. Unproductive, foundational inquiry is a response to irremediable self-contradiction.

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NOTES

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1. *Popular Science Monthly* 12-13 (1877-78). In *Writings of Charles S. Peirce*, 3, eds. Kloesel and others (Boomington: Indiana University Press, 1986): pp. 242-338. Hereafter, references to the *Writings* will be to W + volume and page number. Where helpful, I will also indicate corresponding references to the volume and paragraph number of the *Collected Papers of Charles Sanders Peirce*, eds. Hartshorne and Weiss (Cambridge: Harvard University Press, 1934, 35).

2. The first of the "Illustrations": W3.242ff=5.358ff.

3. The second "Illustration": W3.257=5.388ff.

4. "A Survey of Pragmaticism," 5.467:c1907.

5. W3.266=5.403.

6. Cf. Thomas Olshewsky's insistence that the Maxim is a "rule about meaning" rather than a "theory of meaning": in "'Peirce's Pragmatic Maxim," *Trans. C. S. Peirce Soc.* XIX.2 (1983): 200.

7. I am following Richard Smyth's lead here. In order to read the Pragmatic Maxim of 1878, he says he considers "the historical causes that are known to have had an effect on Peirce's thinking in this period. By appealing to this type of evidence, I deliberately invoke what I think is the spirit of the pragmatic maxim as it applies to the ideas of a deceased author: If you wish to determine the content of some fixed belief, consider the circumstances in which the belief was first occasioned and any additional circumstances that might have caused the belief to have been modified" in "The Pragmatic Maxim in 1878," *Trans. C. S. Peirce Soc.* XIII (1977, pp. 94-111):93.

8. Charles Hardwick, ed., *Semiotic and Significs*, the Correspondence Between Charles S. Peirce and Victoria Lady Welby (Bloomington: Indiana University Press, 1977): p. 110. After Buczynska-Gorewicz, Kalaga defines an "internal interpretant" as "the necessary element of the signifying triad, the one which, itself being a potential sign, defines its own sign as "being interpretable" within a semiotic universe." He contrasts this with the "external interpretant": "a way in which the actual understanding of the sign manifests itself." In these terms, I am examining the *circumstances* in terms of which a text displays its "internal interpreant." See Kalaga's "The Concept of Interpretant in Literary Semiotics," *Trans. C. S. Peirce Soc.* XXII (1986:43-59):p.45. His

citations are from Hanna Buczynska-Garewicz, "Slowo wstepne: semiotyka i filozofia znaku," in Max Bense, *Swiat przez pryzmaz znaku* (Warszawa:PIW, 5-38).

9. See "The Basis of Pragmaticism," (R282-84): 1905-6. Hereafter, manuscript references (R) are to catalogue listings in Richard Robin's *Annotated Catalogue of the Papers of Charles S. Peirce* (Amherst, Mass: University of Massachusetts Press, 1967).

10. For another, non-hermeneutical, use of the term, see Alasdair MacIntyre, *After Virtue* (Notre Dame: University of Notre Dame Press, 1981): pp. 187ff. Contrast also Pierre Bourdieu, *Outline of a Theory of Practice*, trans. Richard Nice (Cambridge, New York: Cambridge University Press, 1977): p. 78ff.

11. Vincent Colapietro says that, for Peirce, the "ultimate logical interpretant" of an intellectual concept is "a habit-change" (see "Inwardness and Autonomy: A Neglected Aspect of Peirce's Approach to Mind," *Trans. C. S. Peirce Soc.* XXI (1985:485-512).) I am assuming, as well, that the Dynamical Interpretant of a text is itself a change in the readers' practices. There is a difference, however, between the readers' actual practices and that set of practices in terms of which a text displays its Final Interpretant.

12. "Issues of Pragmaticism," 5.447: 1905.

13. *Ibid.*

14. Robert Meyers paraphrases Peirce's principle this way: "belief is a habit of action which may be present even though the individual is not conscious of his belief." In: "Peirce on Cartesian Doubt," *Trans. C. S. Peirce Soc.*III.I(1967):14.

15. The author may, for example, restate a single thesis in the languages of different methods of analysis. The reader may substitute a single thesis for a collection of such restatements. Or, the author may fail to make a certain claim explicit, in which case the reader is substituting a thesis for a collection of statements whose truth would appear to depend upon the truth of that claim.

16. If the author employs more than one method of analysis, it is simplest, for the sake of analysis, to limit each *thesis-type* to the language of a single method.

17. In Peirce's terms, such a collection is an icon of a "perfect continuum" (see 4.642:1908).

18. Thomas Goudge and Murray Murphey tend to examine Peirce's work in this fashion, although their studies remain more text-critical than empirical. See Goudge's *The Thought of C. S. Peirce* (New York: Dover Pubs., 1969 -orig. 1950) and Murphey's *The Development of Peirce's Philosophy* (Cambridge: Harvard University Press, 1961). Rulon Wells offers a telling critique of the logical fallacies that underlie or accompany Peirce's contradictions. See, for example, "Criteria for Semiosis," in *A Perfusion of Signs*, Thomas Sebeok, ed., (Bloomington and London: Indiana University Press, 1977): 1-21. See also "The True Nature of Peirce's Evolutionism," in *Studies in the Philosophy of*

Charles Sanders Peirce, Second Series, E. Moore and R. Robin, eds. (Amherst: The University of Massachusetts Press, 1964):304-322.

19. Examples of this kind of examination are Richard Rorty's *Philosophy and the Mirror of Nature* (Princeton, 1979) and Alasdair MacIntyre's *After Virtue*.

20. Goudge, *The Thought of C. S. Peirce*.

21. See *The Senses and The Intellect* (1855; repr. Frederick, Md.: University Pubns. of America, 1978) and *The Emotions and The Will* (1859; repr. U. Pubns., 1978); and Max Fisch, "Alexander Bain and the Geneology of Pragmatism," *Journ. Hist. of Ideas* XV (1954): 413-444.

22. As Smyth argues, Peirce framed the Pragmatic Maxim in Kantian terms (see above, n. 7). Yet, Peirce fails to take responsibility for the method of inquiry to which those terms belong.

23. Marcus Singer makes a similar point about Peirce's conflating an "Inquiry theory" and a "Belief theory" of truth. See his "Truth, Belief and Inquiry in Peirce," *Trans. C. S. Peirce Soc.* XXI (1985:383-406).

24. In 1903, Peirce criticizes this claim: "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" (5.28). Robert Meyers argues that Peirce is objecting here to basing logic on "psychological *generalizations*" but not "to using psychological *notions* in logic." (See Meyers' review of Christopher Hookway, *Peirce*, in *Trans. C. S. Peirce Soc.* XXII, 1986, pp. 327-338:332.) I believe that Meyers understands Peirce correctly but also that Peirce's psychological "notions" may be more troublesome than Meyers suggests. In terms of Peirce's science, these notions are a legitimate source of analogically derived abductive generalizations about the categories of a logic of inquiry, but therefore not a source of empirical generalizations about that logic.

25. As interpreted by Peirce, De Morgan makes judgments of probability mere attributes of belief, which is equivalent to identifying our habits of belief about a given object with some finite collection of concepts abstracted from those habits. Similarly, Mill says the validity of induction depends on our *a priori* conception of the uniformity of nature: in effect, suggesting that our inferences about matters of fact rest on wholly *a priori* criteria of validity. Peirce's method of correcting these conceptualist accounts reflects his method of correcting *a priori* definitions. He argues that, just as the *a priorists* ought to refer their second-grade definitions to the habits of belief from which they have been abstracted, so De Morgan ought to refer probability to *two* terms (belief and the amount of knowledge on which it is based) rather than one

(simply belief). Similarly, Peirce suggests that Mill ought to refer induction to the particular presumptions we bring to the study of nature, rather than to the mere concept of the uniformity of nature.

26. According to a recent conversation with Wells (1987). See references above, n. 18.

27. As Peirce explains in a note of 1910 (2.6611ff), we attribute probability to a given character of some object the way we attribute a predictable character, or "would-be," to some habit of action. We have seen previously that, for Peirce, no finite collection of concepts adequately represents a habit of belief. This means that it is not possible at a given time to formalize everything that "would be" true of a given habit of action. We can, however, attend strictly to certain effects of that habit and state the probability that, given specifically defined conditions, those effects will be observable.

28. W1.175, 274.

29. "On A New List of Categories," W2.57=1.559.

30. *Ibid.*

31. W3.246=5.369. Cf. 2.189 (1902-3) on "A-reasonings and B-reasonings."

32. My distinction bears some resemblance to Olshewsky's distinction between Peirce's "Realistic Pragmatism" and what he calls James' "Nominalistic Pragmatism": in "Peirce's Pragmatic Maxim," (p. 202) cited above, no. 6. Goudge's distinction between Peirce's Naturalism and Transcendentalism is analogous in form but different in detail (see above, n. 18) as is Marcus Singer's distinction between Peirce's "Inquiry theory" and "Belief theory" (see above, n.23). In the context of current debates, it may be more accurate to label Peirce's pragmatism "hermeneutical" rather than "realist" or "naturalist." The terms of the medieval debates do not fit Peirce's pragmatism precisely, and "naturalism" lends itself, in the terms I am using, to either hermeneutical or conceptualist readings. Nonetheless, I retain the term "realist" in this paper, to remain consistence, for now, with Olshewsky's and others' labels for Peirce.

33. *A Study of the Life of Charles Sanders Peirce,* Ph.D. Dissertation, UCLA, May, 1960: p. 31. Biographical reference like this are a source of corroborative (or "multiform," as in 5.264) evidence for my thesis, but by no means a source of privileged explanation.

34. *The Development of Peirce's Philosophy,* pp. 20ff.

35. "That There is No Need of Transcendentalism," May 21, 1859 (CF. Robin 921), cited in Murphey, p. 39.

36. See Murphey, pp. 39ff.

37. In his Harvard Lectures of 1865, Peirce advocates an "unpsychological" reading of Kant's logic as "the science of the sheer Form of thought in general" (W1.165); Whewell's modification of Kant's logic (W1.205ff); and

Boole's calculus of probabilities (W1.223ff). In the 1868-9 papers, Peirce displayed Boole's influence in his theory of probability, and Whewell's and Kant's in the transcendental cast of his argument for the validity of logic, but he made little explicit reference to any of these thinkers.

38. See Harvard Lecture VI of 1865, "Boole's Calculus of Logic," W1.223ff. Cf. "On an Improvement in Boole's Calculus of Logic," W2.12ff= 3.1ff and note Murphey's comment, p. 60.

39. See 1.562 and Murphey, pp. 65 and 151ff.

40. See "Description of a Notation for the Logic of Relatives," W2.359ff = 3.45ff.

41. Murphey, pp. 152ff.

42. Murphey, p. 155.

43. My comments are drawn principally from Max Fisch's many studies, among them the "Introduction" to ***Writings***,3; "Was there a Metaphysical Club in Cambridge?" in *Studies in the Philosophy of Charles Sanders Peirce*, Second Series: pp. 3-32; "Was There a Metaphysical Club in Cambridge – A Postscript," *Transactions* 17 (1981): 128-30; "Justice Holmes, the Prediction Theory of Law, and Pragmatism," *Journal of Philosophy* 39 (1942): 85-97; and "Alexander Bain and the Geneology of Pragmatism," *Journal of the History of Ideas* 15 (1954): 413-44.

44. Technically, what Peirce later calls "dicent indexical legisigns (see 2.243ff: 1897; 8.334ff: 1904).