graveyards of existentialism, but it is philosophy none the less. The standards for evaluating instances of it as good or bad may not be the same as those for evaluating other instances of philosophy. There are such standards none the less, which derive from the activity itself, not from something other than it. The question is not whether the thing in question is philosophy in any standard sense of philosophy current in academic life today, or even whether it conforms to the paradigm handed down by Plato and Aristotle, but whether this thinking is philosophical in character, informed by philosophy even though not directed to standard topics of philosophy. The latter is a subject matter conception of philosophy, which takes it to be the special science of, say, sense data and universals and reference. The former is context and method orientated.

To those who say that this is not philosophy but something else, culture study or intellectual history, or—worse yet—literary criticism, the reply is simple and obvious: there is more in philosophy than is dreamt of in your philosophy, or your simple conception of it, and a good thing it is too.

But I here wax dialectical and contentious, and that was not the spirit in which I started or that I had hoped to inculcate. As Whitehead once observed, philosophy is not—or at least, ought not to be—a ferocious debate between irritable professors.[10]

[10] A. N. Whitehead, *Adventures of Ideas* (Cambridge: University Press, 1933), Ch. 6, 125 (Penguin edn, 1942, 121).

Charles Sanders Peirce 1839–1914

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I am honoured and pleased to address you this evening on the life and work of an extraordinary American thinker, Charles Sanders Peirce. Although Peirce is perhaps most often remembered as the father of the philosophical movement known as pragmatism, I would like to impress upon you that he was also, and perhaps, especially, a logician, a working scientist and a mathematician.[1] During his life time Peirce most often referred to himself, and was referred to by his colleagues, as a logician. Furthermore, Peirce spent thirty years actively engaged in scientific research for the US Coast Survey. The National Archives in Washington, DC, holds some five thousand pages of Peirce's reports on this work. Finally, the four volumes of Peirce's mathematical papers edited by Professor Carolyn Eisele eloquently testify to his contributions to that field as well.

These facts are important background to what I have to say this evening. I will talk about Peirce's philosophy, but what I have to say can be properly appreciated only when Pierce's philosophy is understood as growing out of his first-hand experience with experimental science and its methodology. Peirce's pragmatism, I contend, is significantly, even radically, different from that of James or Dewey, because it is the result of his reflections upon his own life in the laboratory and of his thorough, even painstaking, study of logic. Neither James nor Dewey had quite this combination of experience. James was a physician and experimental psychologist, but not a logician. Dewey was a logician but not a working scientist. But Peirce, from his boyhood, lived science, logic and philosophy. From this passionate interest, from this consuming desire to under-

[1] See Max H. Fisch, 'Peirce as Scientist, Mathematician, Historian, Logician and Philosopher', *Proceedings of the C. S. Peirce Bicentennial International Congress*, No. 23 Graduate Studies (Lubbock: Texas Tech University, September 1981), 13–34. I want to thank Professor Fisch for his help in preparing this talk. His suggestions and leads to material, historical and philosophical, were invaluable. See Carolyn Eisele, *Studies in the Scientific and Mathematical Philosophy of Charles S. Peirce*, Richard M. Martin (ed.) (The Hague, Paris, New York: Mouton, 1979), 386 pp. See *The New Elements of Mathematics by Charles S. Peirce*, 4 vols (5 books), Carolyn Eisele (ed.) (The Hague, Paris, New York: Mouton, 1976), for Peirce's works on mathematics.

stand the world and our understanding of it, Peirce's pragmatism was born.

The British scientific and philosophical tradition played a major role in shaping Peirce's thought. It is the contribution of those British thinkers, some of whom Peirce knew personally, that I would emphasize this evening, not to flatter this distinguished audience, but because I am convinced that Peirce's distinctive view of pragmatism is in continuity with an authentic British philosophical tradition which antedates the classical empiricist triumvirate of Locke, Berkeley and Hume. We might call this Peirce's 'British Connection'.

Even so, Peirce is not simply a British philosopher who happened to grow up in the Colonies. His pragmatism has a distinctively American spirit about it, although that spirit may be difficult to state succinctly. The so-called 'classical' period of American philosophy is usually said to extend from the end of the American Civil War to just before World War II. During that time, according to some, philosophy in America became American Philosophy.[2] Under the umbrella term 'pragmatism', philosophers in America developed a distinctively American 'spirit', if not a philosophical doctrine. That spirit, put roughly, was that ideas, if they are to merit serious attention, must be practical. They must not remain mere abstractions, but must have some payoff or relevance to the problems of men.

Prior to this classical period, however, philosophy in America was largely a repetition of European thought—mostly British Empiricism but with generous doses of Scottish Commonsensism and a dash of the French Enlightenment. After the Civil War, German thought began to have a major impact on American thinkers. Kant and Hegel gained influence largely through the St Louis Hegelians.[3] About that time too increasing numbers of Americans were going to Germany to study. Among them, for example, was William James. These students returned marked by that experience and enthusiastic to take the German university as the model for the newly born American graduate education. Although Peirce never studied in Germany, he travelled there extensively on scientific business. He knew German philosophical thought through his close study of Kant. Peirce's pragmatism, we might say, was born of British and of German stock. Yet Peirce's 'bantling', as he once called it, had a definite resemblance to its British ancestory in its concern for the empirical. Late in his life, reminiscing about the meetings in Cambridge, Massachusetts, of the 'Metaphysical Club' in the early 1870s, Peirce remarks:

[2] See John E. Smith, *The Spirit of American Philosophy* (New York: Oxford University Press, 1963), vii–xi.

[3] See Woodbridge Riley, *American Thought: from Puritanism to Pragmatism and Beyond* (New York: Peter Smith, 1941), 240–253.

> The type of our thought was decidedly British. I, alone of our number, had come upon the threshing floor of philosophy through the doorway of Kant, and even my ideas were acquiring the English accent (CP 5.12).

Only recently has Peirce's work received recognition within the scientific and academic communities in America and Europe.[4] In fact, there have been recent testimonials to his genius which, to some, might seem extravagant. Let me cite just one example. In a paper on Peirce's existential graphs read to the Institute of Mathematics and its Application on 20 January 1981, Professor J. A. Faris, formerly of the Queen's University of Belfast, gave this appraisal of Peirce:

> He was a polymath, and because of the extraordinary range of his knowledge and interests, and the great strength and originality of his intellect, I think of him as deserving to be classed along with, for example, Aristotle and Leibniz.[5]

This is to put Pierce in no mean company. If such an appraisal is correct, philosophers, at least, ought not to neglect his views even if only to criticize them.

You may know, too, that recently the German side of pragmatism's family has recognized its descendant. Contemporary German thinkers have taken a more than passing interest in Peirce's semiotic theory and in his understanding of the relation of theory and praxis. I have in mind, of course, among others, the Frankfurt school.[6]

[4] See Max H. Fisch, 'The Range of Peirce's Relevance', *The Relevance of Charles Peirce*, Eugene Freeman (ed.) (La Salle, Ill.: Monist Library of Philosophy, 1983), 11–37.

[5] J. A. Faris, 'C. S. Peirce's Existential Graphs', *Bulletin of the Institute of Mathematics and Its Application* **17** (Nov./Dec. 1981), 232.

[6] Thus, for example, in 1976 a two-volume German translation of Peirce by Gerd Wartenberg appeared in Frankfurt. Karl-Otto Apel edited that edition and wrote extensive introductory material. In 1981 an English translation of Apel's book on Peirce, *From Pragmatism to Pragmaticism* appeared in the United States. Finally, it may be surprising that the President of C. S. Peirce Society for the year 1982–83 was Klaus Oehler of Hamburg University, himself a translator of Peirce. No doubt there are many and varied reasons why Peirce has attracted the attention of German thinkers. Apel's reason I find fascinating. He sees Peirce's pragmatism, as distinct from James' and Dewey's, as a dialogue partner for Marxism and from which Marxism has something important to learn. He uses the unusual term 'logical Socialism' to characterize Peirce's theory of inquiry, emphasizing as it does the community of investigators. One wonders whether Apel is searching for an alternative to Marxist 'dogmatic' and unconditioned predictions about the course of history. It might surprise some Americans, I dare say, to think that some aspects of their

While Peirce's recognition by scholarly professionals is perhaps finally assured, still his works are not likely to be read by the general public. William James, Peirce's life-long friend, once described him as full of flashes of brilliance amid Cimmerian darkness.[7] Anyone who has struggled with Peirce's texts knows what James meant. This obscure quality to much of Peirce's writing explains in part the fact that he was in eclipse until relatively recently. Besides, his published papers were few. His voluminous unpublished writings were for many years virtually unavailable. When in the 1930s Charles Hartshorne and Paul Weiss edited the *Collected Papers,* their choice of materials represented only a small part of the manuscripts.[8] A new chronological edition is presently in preparation at the Indianapolis campus of Indiana University which will make available a great deal more of the manuscript material. At present twenty volumes are projected of which two have already appeared[9] and two more are in various stages of preparation. Even this much expanded edition represent only part of the materials which have survived. It is estimated that a complete edition would fill more than a hundred volumes. Still, Peirce's obscure style and the inherent difficulty of his subject matter will most likely keep him off the best-seller list.[10]

indigenous philosophy are close enough to Marxism to be an interesting alternative for 'a public, emancipatory mediation of theory and praxis'. Hegel, through Kant, however, is pragmatism's and Marxism's common ancestor. See, *Charles Sanders Peirce: Schriften zum Pragmatismus und Pragmatizismus*, 2nd edn, Karl-Otto Apel (ed.), trans. Gerd Wartenberg (Frankfurt: Suhrkamp, 1976); Karl-Otto Apel, *Charles S. Peirce: From Pragmatism to Pragmaticism*, trans. by M. Krois (Amherst: University of Massachusetts Press, 1981); *Charles S. Peirce: Ueber die Klarheit unserer Gedanken*, trans. by Klaus Oehler (ed.) (Frankfurt a/M: Vittorio Klostermann, 1968).

[7] William James, *Pragmatism: A New Name for Some Old Ways of Thinking* (Cambridge, Mass., and London, England: Harvard University Press, 1975), 10.

[8] *The Collected Papers of Charles Sanders Peirce*, Vols I–VI, Charles Hartshorne and Paul Weiss (eds.) (Cambridge, Mass.: The Belknap Press of Harvard University Press, 1960); Vols VII–VIII, Arthur Burks (ed.) (Cambridge, Mass.: The Belknap Press of Harvard University Press, 1958). I will use the standard convention for reference to these volumes, namely, CP followed by volume and paragraph number: e.g. CP 5.12.

[9] *Writings of Charles S. Peirce: A Chronological Edition*, Vol. 1 (1857–1866) and Vol. 2 (1867–1871) (Bloomington: Indiana University Press, 1982, 1984). The convention for citing from this new Peirce Project Edition is W + arabic volume number + page: e.g. W 1, 12–20.

[10] See Paul Weiss, 'Charles Sanders Peirce', *Dictionary of American Biography* (1934), Vol. 14, 398–403, for an account of Peirce's difficult character and of his divorce in 1883 from his first wife, Harriet Melusina Fay, and his

Now that Peirce's papers have been more thoroughly examined by a growing number of scholars, the close connection between his personal experience of science and his pragmatic philosophy is becoming ever more evident. Let us consider, then, how that connection grew strong and assumed a definite character through his ties, formed by personal acquaintance and by study of their work, to Britain's philosophers and men of science. And to begin, some biographical information may be helpful so that we grasp Peirce's life-long devotion to scientific investigation.

Two hundred years before Charles' birth in Cambridge, Massachusetts, a certain John Pers, then in his forties, left Norwich, England, for Massachusetts.[11] The Peirces prospered in the New World through their having entered the shipping trade of the East India Company. The family moved to Cambridge when Charles' grandfather, Benjamin, left the shipping business and became librarian at Harvard University. His son, Benjamin, Jr, Charles' father, graduated from Harvard and eventually was appointed professor of astronomy and mathematics there. Charles was born on 10 September 1839 in Cambridge a few years before his father's appointment, the second of five children. His father recognized Charles' mathematical genius and introduced him while yet a child, to mathematics, physical science and logic. Charles was constantly in the company of the scientific community at Harvard and learned from them a love and respect for scientific investigation. At the age of eight he took up the study of chemistry on his own with the encouragement of his uncle, Charles Henry Peirce, himself a physician. At thirteen he mastered his older brother's logic textbook (Whately's *Elements of Logic)* and at fifteen entered Harvard College from which four years later he graduated one of the youngest of his class. Charles found the rigid Harvard system of those days something less than a challenge. It was not until Charles studied chemistry at Harvard's Lawrence Scientific School that his academic achievement reflected his natural ability. In 1863 he received his Bachelor of Science *summa cum laude,* the first Harvard student ever to do so.

remarriage to the French woman Juliette Froissy. At about this time Peirce was notified that his appointment at the Johns Hopkins University where he was a part-time logic instructor (the only regular academic post he held) would not be renewed. He retired to the small Pennsylvania town of Milford where he lived in virtual academic isolation until his death from cancer in 1914.

[11] Most of the biographical material which follows comes from the following works of Max Fisch: 'Peirce as Scientist, Mathematician, Historian, Logician, and Philosopher', *Proceedings of the C. S. Peirce Bicentennial International Congress*, 13–34 (cf. note 1); 'The Range of Peirce's Relevance', *The Relevance of Charles Peirce*, 11–37 (cf. note 4); 'Introduction', *Writings of Charles S. Peirce*, Vol. 1, xv–xxxv (cf. note 9); 'Introduction', *Writings of Charles S. Peirce*, Vol. 2, xxi–xxxvi; 'Supplement: A Chronicle of Pragmaticism, 1865–1879', *The Monist* **48** (July 1964), 441–466.

During those years (1861–63) at the Lawrence School, Peirce began to work for the US Coast and Geodetic Survey with which he remained for over thirty years. From 1872 to 1875 he was assistant at the Harvard Observatory during which time he made the astronomical observations, published in 1878 under the title *Photometric Researches,* which won him election to the National Academy of Science in 1877. In 1867 he had already been elected to the American Academy of Arts and Sciences.

While Peirce's training was strongly scientific, he also developed during his Harvard days an interest in philosophy. He tells us that, as an undergraduate, he and his roommate, Horatio Paine, read and expounded to one another, as best they could, Schiller's *Aesthetische Briefe*. At about this time too he came under the influence of Kant, his most important non-British philosophical connection. He read the *Critique of Pure Reason* so many times that he had whole passages committed to memory. By the late 1860s Peirce's philosophical accomplishments were well enough known that Harvard invited him to deliver during the 1869–70 academic year a series of lectures on the British logicians.

Peirce visited England five times between 1870 and 1883 and while there got to know many of the most prominent British scientists, mathematicians and logicians. He also won their esteem for his scientific, mathematical and logical acumen. W. K. Clifford called him the greatest living logician[12] and this high opinion was concretely attested to by his election in 1880 to the London Mathematical Society.

Peirce's five journeys to Europe were all connected with his scientific work with the Coast and Geodetic Survey. His first visit to London was in 1870 when he was sent by the Survey as an advance party to check sites for the observation of the solar eclipse due to occur on 22 December 1870. On his second visit in 1875–76 he visited the newly built Cavendish Laboratory at Cambridge University and consulted with Maxwell concerning the flexure of the pendulum. In 1877 Peirce returned a third time to Europe to deliver a paper to the International Geodetic Association in Stuttgart. It was during this ocean crossing that Peirce wrote his best-known article, 'How to Make Our Ideas Clear' in which he first formulated the so-called pragmatic maxim. In order to practise his French, Peirce composed it in that language and later translated it into English. The English version, however, was published first in *Popular Science Monthly* and about a year later the French version appeared in *Revue philosophique*. This essay was the second in a series of six which appeared in *Popular Science Monthly* under the general title 'Illustrations of the Logic of Science'. It seems that Peirce had hoped to publish all six articles in French and in German as well

[12] Edward L. Youmans, editor of the *Popular Science Monthly*, writing from London to his sister in the United States on 29 October, 1877, reports Clifford's remark. Cited by Fisch in 'Supplement', op. cit. (note 11), 461.

as in English. Only the first two articles, however, appeared in French and none appeared in German.

In 1880 and 1883, respectively, Peirce made his final voyages to Europe. Not only was he then elected to the London Mathematical Society but also was a frequent guest of Clifford, Jevons, Spencer and other friends at the Royal Society, the Athenaeum Club and the Metaphysical Society.

So far we have been considering Peirce's lived experience as a working scientist who had established personal and professional ties with British mathematicians, logicians and experimentalists. Before we take a look at how some of the British thinkers shaped Peirce's view of philosophy and of logic as methodology, it may be well to recall Peirce's first formulation, in 1878, of the celebrated pragmatic maxim:

> It appears, then, that the rule for attaining the third grade of clearness of apprehension is as follows: consider what effects, that might conceivably have practical bearings, we conceive the object of our conception to have. Then, our conception of these effects is the whole of our conception of the object (CP 5.402)

Just what Peirce meant by this formulation, I trust, will become clearer as we proceed.

Peirce thought that to do philosophy well, it was absolutely essential to get logic straight. We know from any number of his papers that Peirce greatly esteemed the work of British logicians. One such paper is 'Why Study Logic?' (CP 2.119–216) intended to be part of a book he never published, 'Minute Logic'. In it Peirce contrasts what he calls 'the English position' on reasoning (e.g. Boole, De Morgan, Whewell, J. S. Mill, Jevons, Venn *et al.*) with 'the German position' (Sigwart, Wundt, Schuppe, Erdmann, Bergmann, Husserl *et al.*) and comes down unequivocally on the side of the English. As Peirce sees it, the English consider logic to be objective, while the Germans consider it to be subjective. The English come to logic with their characteristic empirical frame of mind. The 'English position' opposes any doctrine which bases the soundness of reasoning upon a sense of or feeling for rationality. For Peirce, there is neither a logical taste nor a logical instinct nor a logical 'Gefuehl' in terms of which we recognize an argument as sound.[13] He rejects any attempt to reduce logic to intuition or to psychology. In effect, Peirce sees logic as the science of how one *ought* to think, not of how one *must* think. Logic then is a normative science and reasoning is reasoning only if it is subject to critical control. Such critical control is exercised in terms of the purpose of any reasoning, namely, to avoid disappointments and disasters. The hard facts are what we want to know, he writes. The whole motive of

[13] One would infer that Peirce would not have much sympathy with James' 'Sentiment of Rationality'.

one's reasoning is to prepare for them. Reasoning is to be judged sound, therefore, in so far as those hard facts will not and cannot disappoint what reason promises. How one feels about any mode of reasoning has nothing to do with it. 'That is the *rationale* of the English doctrine. It is a perfect as it is simple' (CP 2.173).

I think it worth nothing that Peirce's preference for the 'English position' makes the norm for logical validity *empirical* in two ways: (1) it makes reasoning to consist in the observation and manipulation of diagrams or 'graphs' and (2) it makes reasoning the means of attaining truth, that is, of discovering what is the case independently of what anyone might think or wish or hope. I am convinced that this objectivist view of logic led to two of Peirce's most important and original contributions to the field, namely, his system of existential graphs to diagram his logic of relatives[14] and his broadening the notion of logic to include methodology (or a logic of discovery) by distinguishing inference into adduction, deduction and induction.

Peirce was influenced in his thinking about science and its methodology not only by Britain's men of science and logicians but also by her philosophers. Since it would be impossible in the time which remains to us to treat all the British philosophers whom Peirce had studied, I will select three, each one of whom made a direct and positive contribution to his pragmatism. Two of them, Alexander Bain and William Whewell, were Peirce's contemporaries. The third, John Duns Scotus, flourished more than five hundred years earlier. Scotus inspired Peirce's version of realism; Whewell confirmed his interpretation of scientific method; and Bain furnished his logic with a psychological framework. I suggest that we begin with Scotus.

Peirce considered the nominalist–realist controversy the most important philosophical issue on the solution of which just about everything else depended. In a long letter to Victoria Lady Welby in 1909, after recounting to her his early training, he writes:

> By this time the inexactitude of the Germans, and their tottering logic utterly disgusted me. I more and more admired British thought. Its one great and terrible fault, which my severe studies in the schoolmen rescued me from,—or rather, it was because I suspected they were right about this that I took to the study of them & found that they didn't go far enough to satisfy me,—was their extreme Nominalism. To be sure *all* modern philosophers were nominalists, even Hegel. But I was quite convinced they were absolutely wrong. Modern science, especially physics, is and must be . . . essentially on the side of scholastic realism.[15]

[14] See Faris, op. cit. (note 5), and Don Roberts, *The Existential Graphs of Charles S. Peirce* (The Hague, Paris: Mouton, 1973).

[15] *Semiotic and Significs: The Correspondence between Charles S. Peirce and Victoria Lady Welby*, Charles S. Hardwick (ed.) (Bloomington: Indiana University Press, 1977), 114–115.

Scotus defended realism; Ockham championed nominalism. Peirce's account of how the nominalists assumed ascendency in the universities, casting out the Dunces, as they were called, makes it a political rather than an intellectual matter. However that may have been, the important thing is to recall what was at stake, what the issue was between these two British thinkers. Peirce put it this way in one place:

> Roughly speaking, the nominalists conceived the *general* element of cognition to be merely a convenience for understanding this and that fact and to amount to nothing except for cognition, while the realists, still more roughly speaking, looked upon the general, not only as the end and aim of knowledge, but also as the most important element of being. Such was and is the question (CP 4.1)

The earliest published statement of Peirce's siding with the realists in this controversy is the 1868 paper 'Some Consequences of Four Incapacities' in the *Journal of Speculative Philosophy*. There he developed his notions of Truth and of Reality which so far as I can tell he never retracted. Again in 1871 in his critical review of Fraser's edition of the works of Berkeley in the *North American Review* he reiterated and developed his convictions about 'scholastic realism'. When I say that Peirce opted for 'scholastic realism', I am using his own expression. Whether Peirce thought that his realism was indeed that of Scotus, I am not sure. I rather think, however, that he realized that his version was significantly different, for he says that even Scotus was tinged with nominalism (CP 1.560) in his insistence on *haecceitas* contracting the universal to the particular (CP 8.208). Furthermore, he characterized his realism as 'extreme' over against Scotus' more moderate view (CP 5.77, 5.470). Finally, Peirce frequently identified his realism with that proposed by his friend and colleague Francis E. Abbot in his book *Scientific Theism* in which Abbot consciously modified the realism of the scholastics along the lines of modern scientific systems. Abbot called his view 'Relationalism'.[16] Other commentators, such as John Boler, have suggested other differences.[17] All that the phrase need mean is that Peirce was inspired by the scholastic realists and developed a position something like theirs. They and he held that some general conceptions are real, that is, some are not mere figments of the mind.

According to Peirce, the nominalist would reason something like this. Nothing is immediately present to us but thoughts. Those thoughts,

[16] Francis E. Abbot, *Scientific Theism* (Boston: Little, Brown & Co., 1885).

[17] See John Boler, 'Peirce, Ockham and Scholastic Realism', *The Relevance of Charles Peirce*, 93–106; *Charles Peirce and Scholastic Realism* (Seattle: University of Washington Press, 1963). See also Michael L. Raposa, 'Habits and Essences', *Transactions of the Charles S. Peirce Society* **20** (Spring 1984), 147–167.

however, are caused by sensations which in turn are constrained by something out of the mind. Because this something is out of the mind, it is independent of how we think, and is, therefore, the real. Whatever these external things be they produce sensations which can be embraced under some conception. One can say, for example, that one man is like another, but there is no way in which one can justly claim that two real men have anything in common. One knows only the mental term or thought-sign, 'man', standing indifferently for the sets of sensations caused by the two external realities. Strictly speaking, the sets of sensations do not have anything at all in common either. Such a view makes reality to consist exclusively in bare particulars which, because they are outside of consciousness, are unknowable things-in-themselves.

Peirce, the realist, however, looks at it in quite another way. Although all human thought contains an arbitrary and accidental element which limits it according to the circumstances and powers of the individuals, still human opinion tends, in the long run, to a definite form. If inquiry is pursued long enough and information enough is available to the inquirers, no matter how different (or even erroneous) their initial opinion, and no matter how idiosyncratic their initial circumstances, their final conclusion will be identical. A deaf man and a blind man may witness the same event in very different ways but conclude that they witnessed the *same* event. The realist thinks that there is an answer to every genuine question which is arrived at in the long run, that is, at the *end* of inquiry. Such an answer consists not in the particular sensations of singular men but of the truths about objects expressed in and through general terms. What those truths express is independent, not of thought in general, but of all that is arbitrary and individual in thought. It is quite independent of how you, or I, or any number of men think. This, according to Peirce, is the real and nothing else.

Peirce opines that such a conception of reality is fatal to the idea of the thing-in-itself. There is no reality which is incognizable although there may be much that is not yet actually known by you or me or any number of men. Since the thing-in-itself, according to Peirce, is literally unthinkable, Kant must be corrected.

Peirce's realism is to be understood in terms of his categories and he arrived at his categorial scheme through logic. He was convinced that all predicates were relations and those relations were monadic, dyadic, or triadic. Any higher polyadic relation could be analysed into some combination of those three. Yet those three could not be resolved into simpler components. Hence monad, dyad, triad were both necessary and sufficient to account for any more complex predicate (that is, one with more relatives). But this suggested that the fundamental categories of being were also three and only three which Peirce denominated respectively Firstness, Secondness and Thirdness. Firstness was the category of sheer possibility, a 'may-be' or 'might be'. Secondness was the category of actuality, an 'is' or 'are'. Thirdness was the category of the necessary (in the sense of the destined), a 'would-be' or 'would-do'. Each category is really distinct from and irreducible to every other even though they cannot be separated in our experience. We can distinguish them in thought by precisive abstraction in a definite, non-reversible order. Thus one can prescind Secondness (actuality) from Thirdness (the destined), and Firstness (mere possibility) from Secondness. One can, however, experience neither Firstness nor Secondness without Thirdness. The third category, then, mediates between the airy shadows of mere possibility and the brute force of actuality. It is properly the category of thought, of regularity, or lawlikeness, and so is the category of the Real *par excellence*. Peirce's realism, then, means at least this: 'would-be's' are neither a collection of actuals (no matter how large) nor a mere figment of one's mind (no matter how convenient). The Real is what would be or what would happen if certain conditions were fulfilled—and that independently of what you or I or anyone else might happen to think.

Finally, then, keep in mind that Peirce distinguished the real from the existent. General conceptions are real (they are not figments dependent upon anyone's thinking) but they do not exist. Existence is a distinct category from that of Reality. The former designates brute force, mere action–reaction, while the latter designates regularity, continuity, law. In short, the real is what is destined, that is, what would be in the long run under certain conditions.[18]

I have dwelt upon Peirce's realism at length because he considered it essential to his pragmatism. It is pragmatism's realism which allows it to be empirical but not positivist. Peirce further was convinced that the realist interpretation of pragmatism was the only one which would recommend itself to a working scientist familiar with the history of science who had carefully studied logic as method. James, for example, was a working scientist but had steadfastly avoided logic. Mill, on the other hand, had studied logic but was not a working scientist. Both, according to Peirce, were nominalists.

James dedicated his book, *Pragmatism,* to John Stuart Mill. 'To the memory of John Stuart Mill', he writes, 'from whom I first learned the pragmatic openness of mind and whom my fancy likes to picture as our leader were he alive to-day'.[19] Peirce would certainly not fancy Mill as leader of his kind of pragmatism. If he were to choose such a leader, it would have been another British scientist and logician, William Whewell.

[18] See Vincent G. Potter, SJ, *Charles S. Peirce: On Norms and Ideals* (Amherst: University of Massachusetts Press, 1968), 8–24, for a discussion of Peirce's categories.

[19] William James, *Pragmatism*, dedication.

In the 1840s a lively controversy arose between Mill and Whewell precisely on the nature of scientific inquiry and discovery. Peirce definitely sided with Whewell and always thought of him as the one who pointed the way to a correct undestanding of the nature of scientific investigation. Max Fisch has summed up the matter well:

> Apart from its [Peirce's Harvard lectures on 'British logicians' in the academic year 1868–69] including Peirce's first public exposition of the logic of relations, and showing the fruits of a deeper study of Duns Scotus and of Ockham, the course inaugurates Peirce's lifelong championship of Whewell against Mill in the 'logic of science'. Whewell was himself a scientist (indeed he coined the word); Mill is not. Whewell was also a historian of science; Mill is not. Whewell followed Kant; Mill does not. Whewell was a realist; Mill is a nominalist.[20]

The precise point at issue in this celebrated controversy was the nature of induction. Mill contended that induction is simply the tying together of observed facts while Whewell maintained that such colligation required the introduction of a new Idea. Mill seemed to think that facts are quite independent of theory, while Whewell insisted that fact and theory are relative to each other. Mill contended, for example, that in the case of Kepler's discovering planetary motion to be elliptical, it was simply a matter of Kepler's reporting an observed fact without adding anything to it. Mill asserts that this fact, found in the motion of Mars, was just the sum of the observations. Whewell held that the elliptical orbit was not simply the sum of observations but rather the very hypothesis of the orbit being an ellipse suggested how the observations might be accounted for. The introduction by Kepler of a new idea provided a new perspective from which to interpret the observations. Whewell did not think that Kepler simply imposed an idea on reality. On the contrary, Whewell suggested that Kepler *discovered* the fact that Mars' orbit was elliptical in and through an hypothesis. The point is Whewell realized that science does not discover facts simply by 'reading them off'. Fact in science is more often than not confirmed theory.[21]

Whewell was accused of being a 'mere Kantist' (by Professor Bowen according to Peirce; W 2, 341) dragging '*a priori's*' into science in a very rationalistic way. In his Harvard lecture on Whewell Peirce defended him against this charge (made, he says, out of ignorance). While Whewell's point may fit in with Kant's analysis, it did not arise *from* Kant's analysis. It arose rather from the history of scientific discoveries. The fact is that scientists do their research in this way. Peirce would have been better satisfied if Whewell had explicitly rejected Kant's *noumenon,* for then the allegation of his being a 'mere Kantist' would not have been made.

That James should have adopted Mill and Peirce, Whewell, as their respective patrons should lead us to suspect that the differences between their understanding of pragmatism involve the difference between a nominalistic and a realistic understanding of human cognition as inquiry. Shortly, I will try to show you that this is indeed the case. But before I do, let us consider Alexander Bain's contribution to Peirce's pragmatic theory.

In the latter half of the nineteenth century Bain's works on psychology were standard treatises.[22] Peirce and James knew them well. Peirce once remarked that pragmatism 'is scarce more than a corollary' from Bain's definition of belief (CP 5.12). According to Bain, belief is that upon which one is prepared to act. Peirce adopted Bain's view of belief in his 1878 version of pragmatism. In fact, it served as the psychological framework for Peirce's logic throughout his career. But in the late 1860s and the early 1870s Bain's position was disputed by John Stuart Mill. In 1869 Mill published a new edition of his father's (James Mill's) *Analysis of the Phenomena of the Human Mind* to which he and Bain added essays critical of James Mill's theory of belief and of each other's. The details of this controversy need not detain us except to say that James Mill thought belief to consist in indissoluble associative bonds and John Stuart thought it consisted in some other mysterious residuum.

Bain's own theory of belief underwent several revisions. These revisions reveal an uncertainty as to whether belief was essentially intellectual or volitional. This waffling is important because it helps explain, I think, the difference Peirce thought he saw between his pragmatism and James' and, besides, helps explain some ambiguity in Peirce's own 1878 version of pragmatism. Permit me to explain.

Bain's problem was to decide whether belief was essentially a fact of intellect or of will. In his 1869 essay for the James Mill re-edition of *Analysis* he called it an error to think of belief as 'mainly a fact of the

[20] 'Supplement', *The Monist*, 450.

[21] Whewell's major works on inductive method were *History of the Inductive Sciences* first published in 1837 and *The Philosophy of the Inductive Sciences, founded upon their History* first published in 1840. Both went through several editions. For good accounts of Whewell's controversy with Mill, see E. W. Strong, 'William Whewell and John Stuart Mill: Their Controversy about Scientific Knowledge', *Journal of the History of Ideas* **16** (1955), 209–231; C. J. Ducasse, 'Whewell's Philosophy of Scientific Discovery', *Philosophical Review* **60** (1951), 56–69, 213–234.

[22] Those treatises are: *The Senses and the Intellect* (1855) and *The Emotions and the Will* (1859). A one-volume abridgement appeared in 1868 under the title *Mental Science*. For a careful historical study of what and how the members of the 'Metaphysical Club', at Cambridge at whose meetings Peirce first formulated pragmatism, knew about Bain's definition of belief, see Max H. Fisch, 'Alexander Bain and the Genealogy of Pragmatism', *Journal of the History of Ideas* **13** (June 1954), 413–444, on which I heavily depend for my presentation.

Intellect, with a certain participation of feelings'. There he insisted that belief is essentially a development of our active nature of will. Elsewhere around this time he admitted that belief always contains intellectual elements but they do not constitute the attitude of believing, because nothing in mere intellect makes us act or contemplate action and hence nothing in it makes us believe. In 1872, however, in an appendix to the third edition of his *Mental Science,* he admits it to be an error to make the fundamental nature of belief 'the Spontaneous Activity of the System'. Now belief is 'a primitive disposition to follow out any sequence that has been once experienced, and to expect the result', He now calls it a fact of our intellectual nature and only its energy comes from emotions and will. Again in 1875 in the third edition of *The Emotions and the Will* Bain makes the same move toward intellect even though the chapter on belief contains expressions like these: belief is 'essentially related to Action, that is, volition . . .; Action is the basis, and ultimate criterion, of belief . . .' Peirce criticized James and other pragmatists for making action the be-all and end-all of thought.[23] Without doubt the expressions which gave rise to that criticism are traceable to Bain.

I suspect that Bain's indecision concerning the essence of belief comes from a failure sharply to distinguish the act of believing from what is believed. Belief as an act of adherence to some opinion can plausibly be understood as consisting in one's readiness to act. And it seems unobjectionable to hold that actually acting in a way appropriate to the circumstances is the test of whether one truly believes something or not. But this does not immediately and directly yield a criterion for deciding the meaning of what is believed (or not believed). It is with this second, the meaning of what is believed, that the pragmatic maxim is concerned. The maxim then is not simply a restatement of Bain's definition of belief but, as Peirce thought, a conclusion to be drawn from that definition. That conclusion once drawn, however, will be differently understood depending on whether one thinks the act of believing is volitional (James, perhaps) or intellectual (Peirce, for certain).

But just how did Peirce draw the pragmatic maxim as a corollary from Bain's definition of belief in his 1878 article?[24] He argued as follows: thinking is stimulated by the irritation of doubt and ceases when that irritation is removed by the fixation of belief. Belief is a conscious appeasement of doubt establishing in us a habit or rule of action. Beliefs are distinguished from one another by the modes of action to which they give rise. To determine *what* we believe (not *that* we believe) is to determine what habits the thought in question involves. To determine what habits a thought involves is to determine what sensible result would follow from

[23] CP 5.429, 8.256.
[24] CP 5.394–402.

action so dictated by the thought under certain specifiable sensible conditions. Hence he concluded:

> Thus our action has exclusive reference to what affects the senses, our habit has the same bearing as our action, our belief the same as our habit, our conception the same as our belief. . . . Our idea of anything *is* our idea of its sensible effects; . . . (CP 5.401).

But this is the pragmatic maxim.

One final note before bidding Bain farewell. By adopting the doubt–belief framework Peirce shifts the emphasis from thought taken as an isolated cognitive incident, to thought taken as an on-going process of discovery. In the series of articles published in *The Journal of Speculative Philosophy* in 1868–69 Peirce argued that there is no intuitive cognition and that all thought is in signs.[25] It followed that there is no first cognition and that a thought is interpreted only by another thought. Peirce never abandoned this position but after adopting Bain's psychology of belief the cognitive continuum was understood as a continuum of inquiry, that is, a continuum of doubt–inquiry–belief.[26]

We have considered the influence on Peirce's pragmatism of Scotus' 'scholastic realism', Whewell's logic of discovery and Bain's analysis of belief. But just how was Peirce's understanding of pragmatism different from other versions which proliferated after James had made the maxim popular? That Peirce thought his was significantly different is clear from the fact that he adopted another term for his, 'pragmaticism', a term, he says, ugly enough to be safe from kidnappers (CP 5.414).

All this time I have been referring to Peirce's pragmatism on the assumption that you know just what it is. I am sure that you all do at least in a general way. Since my next section will compare Peirce's understanding of the pragmatic maxim with James', perhaps it is time to let Peirce tell you what he had in mind by it. In 1906 Peirce wrote:

> I understand pragmatism to be a method of ascertaining the meanings, not of all ideas, but only of what I call 'intellectual concepts', that is to say, of those upon the structure of which, arguments concerning objective fact may hinge (CP 5.467).

Peirce is excluding what he calls 'feelings' from the pragmatic test of meaning. According to him feelings, such as the sensation of red or of blue, have no intrinsic significance beyond themselves. Concepts in the proper sense, however, essentially carry some implication concerning the general behaviour of some conscious being or of some inanimate object.

[25] CP 5.213–357; W 2,193–272.
[26] Fisch, 'Alexander Bain', 438–442, for discussion of Peirce's pre- and post-Bain approach to knowing.

Let us then compare Peirce's and James' version of the pragmatic maxim. Peirce's original fomulation for *Popular Science Monthly* in 1878 goes thus:

> It appears, then, that the rule for attaining the third grade of clearness of apprehension is as follows: consider what effects, that might conceivably have practical bearings, we conceive the object of our conception to have. Then, our conception of these effects is the whole of our conception of the object (CP 5.402).

Here is James' version as expressed in a lecture entitled 'Philosophical Conceptions and Practical Results', delivered at the University of California at Berkeley on 26 August, 1898 (by the way, the first time that the term 'Pragmatism' was used publicly and explicitly attributed to Peirce as its originator):

> To attain perfect clearness in our thoughts of an object, then, we need only consider what conceivable effects of a practical kind the object may involve—what sensations we are to expect from it, and what reactions we must prepare. Our conception of these effects, whether immediate or remote, is then for us the whole of our conception of the object, so far as that conception has positive significance at all.[27]

The general similarity between the two versions is unmistakeable. There is even parallelism in expression and I suppose this is not to be wondered at since James explicitly credits Peirce with the version he just presented. There are differences, however, and in Peirce's mind at least they were crucial.[28] First let us identify some of these differences and then show their significance. In the first place James speaks of attaining 'perfect clearness' while Peirce makes no such statement. In fact in the essay from which Peirce's maxim is taken, 'How to Make Our Ideas Clear', Peirce speaks of grades of clearness. These grades are only relative since there is no such thing as perfect clarity. All conceptions are general signs and so are always to some extent vague.

In the second place James adds a phrase, presumably to clarify what he means by 'conceivable effects of a practical kind', namely, what *sensations* we are to expect. In fact immediately after giving that statement of the pragmatic maxim (rather close to Peirce's) James restates it, expressing it, he says, 'more broadly'. This Jamesian interpretation goes like this:

[27] William James, 'Philosophical Conceptions and Practical Results', *The University Chronical* (Berkeley, California, September 1898); reprinted in *Collected Essays and Reviews* (1920), 406–437.

[28] Vincent G. Potter, 'Peirce's Pragmatic Maxim', *Tijdschrift voor Filosofie* **35** (September 1973), 505–517, where I develop the differences between Peirce and James at some length.

> The ultimate test for us of what a truth means is indeed the conduct which it dictates or inspires. But it inspires that conduct because it first foretells some particular turn to our experience which shall call for just that conduct from us. And I should prefer for our purposes this evening to express Peirce's principle by saying that the effective meaning of any philosophic proposition can always be brought down to some particular consequence, in our future practical experience, whether active or passive, the point lying rather in the fact that the experience must be particular, than in the fact that it must be active.[29]

Peirce speaks neither of practical effects nor of sensations nor of particulars. He refers to what 'might *conceivably* have practical bearings', and to 'our *conception* of these effects'. The issue here is what is the concept's interpretant. James seems to think it is sensation, while Peirce seems to think it is another concept for he speaks of the *conceivable* practical bearings the object of our thought might have.

In the third place, the title of James' talk refers to 'practical results' and in the section where he refers to the maxim as Peirce's James calls it 'the principle of practicalism'. Peirce in fact reacted sharply to the use of 'practical' and 'pragmatic' interchangeably. He insisted that he himself, at any rate, distinguished these terms as Kant did[30] and for whom they 'were as far apart as the two poles' (CP 5.412).

There are then at least three points of difference between James' and Peirce's formulation of the pragmatic maxim: (1) perfect clarity in contrast to relative clarity of conceptions, (2) sensations and particulars in contrast to conceptions and generals as interpretants of thought, and (3) practicalism in contrast to pragmatism or pragmaticism. The significance of these differences seems to me to be the following. James' supposition that there is 'perfect' clarity of conceptions entails that they are perfectly definite and determinate. If an idea's definiteness and determinateness were *perfect*, the idea would have no generality and hence would be reduced to a sensation. For Peirce, every general conception, as general, is intrinsically vague, that is, in some respect indefinite and indeterminate.[31] A *perfectly* clear and distinct *general* idea is a contradiction in terms. To think that an idea's meaning is nothing but the sum total of the particulars for which it actually stands is, according to Pierce, a nominalistic error since no number of actual particulars exhaust a concept's meaning. If there are

[29] James, 'Philosophical Conceptions', 412.

[30] Kant, *Anthropologie in pragmatischer Hinsicht* (Leipzig: Modes und Baumann, 1839), Vorrede.

[31] I have discussed vagueness in 'C. S. Peirce's Argument for God's Reality: A Pragmatist's View', *The Papin Festschrift: Wisdom and Knowledge* (Villanova: The Villanova University Press, 1976), 229–230; and in my book *On Norms and Ideals*, 89–90; see, CP 5.505–508, 5.447–408, 3.93–94; 2.357.

general ideas, therefore, they must be to some degree indeterminate and indefinite. Furthermore, what those ideas represent must be real (not mere mental figments), otherwise, Peirce argues, scientific prediction could not be explained.

James' insistence on 'what sensations we are to expect' and on 'some particular turn to our experience' also imply a nominalistic view. In his article on pragmatism in Baldwin's *Dictionary of Philosophy and Psychology* (1902) Peirce remarks that James pushed the pragmatic method 'to such extremes as must give us pause'. He continued:

> The doctrine appears to assume that the end of man is action. . . . If it be admitted, on the contrary, that action wants an end, and that that end must be something of a general description, then the spirit of the maxim itself, which is that we must look to the upshot of our concepts in order rightly to apprehend them, would direct us toward something different from practical facts, namely to general ideas, as the true interpreters of our thought . . . the meaning of the concept does not lie in any individual reactions at all, but in the manner in which those reactions contribute to that development [of concrete reasonableness] (CP 5.3).

For Peirce action cannot be an interpretant of thought because action, that is, the acting itself, is concrete and singular. No one acts in general but performs this or that action. Thought, on the other hand, always has an element of generality. Hence thought and action cannot be identified nor can thought be interpreted by action.[32] Thought and action are certainly intimately related. Thought no doubt *applies* to action in the sense that it is to be interpreted in terms of the *habits* of behaviour or action which call for certain kinds of action under certain conditions. But then this is action as conceived, or thought about, and so generalized.

Finally, the significance of Peirce's insistence on the term 'pragmatism' over against James' interchanging it with 'practicalism' is to be found in Peirce's efforts to eliminate an ambiguity in the whole notion of practical bearings or effects.[33] Certainly the term 'practical' has several meanings. In one sense it simply means action or behaviour. In this sense all human

[32] See CP 5.475–493. Peirce gives here a long explanation of what he means by 'interpretant'. He distinguishes three interpretants: emotional, energetic and logical. The emotional is the feeling produced by the sign; the energetic is the effort, mental or physical, elicited by the sign; and the logical is the sign's rational purport. The pragmatic maxim is meant to clarify a sign's rational purport. Pierce concludes that the final logical interpretant of a concept can only be a habit (not another concept, not a desire, not an expectation). Action is not a logical interpretant either. It is thought's energetic interpretant (hence there is a connection between thought and action) but it is not thought's rational purport precisely because it lacks generality.

[33] See Smith, *Spirit of American Philosophy*, 13–17.

action is practical. In a second sense it means the immediate relevance of means to ends—in effect 'what works'. In a third sense 'practical' refers to some purpose we have in mind, some end we wish to achieve, which specifies the kind of behaviour which is appropriate. If two thoughts make no practical difference to the purpose one has in mind then they can be considered to mean the same thing with respect to that purpose. Thus a carpenter can consider two boards to be of equal length if whatever small difference there is between them makes no difference to what he intends to make. Peirce seems to think that James slides from the second to the third sense and back again. Peirce wants to make it clear that he means the third sense and so uses Kant's term 'pragmatic'. The sum total of all the conceivable practical bearings upon conduct is what a conception means. Hence Peirce thinks it essential to consider what ends or purposes are possible for and suitable to human endeavour. These ends or purposes are general and interpret our thought in so far as they become in us dispositions to act (habits or beliefs). If, as James suggests, we must anticipate the sensations we would experience or the particular turn our experience would take if certain thoughts were acted upon, this anticipation would be of *kinds* of sensations and of *kinds* of experience and hence general ideas about those sensations and experiences. Action, and so the sensations which constitute the particular experience as particular, is the upshot of thought not its interpretant nor its purpose.

Consider these restatements of the maxim. In 1903 in his Harvard Lectures on pragmatism, Peirce put it this way (perhaps with tongue in cheek):

> Pragmatism is the principle that every theoretical judgment expressible in a sentence in the indicative mood is a confused form of thought whose only meaning, if it has any, lies in its tendency to enforce a corresponding practical maxim expressible as a conditional sentence having its apodosis in the imperative mood (CP 5.18).

In 1905 in a *Monist* article, 'Issues of Pragmaticism', Peirce restated his maxim in a way he hoped would make clear once and for all what he meant:

> The entire intellectual purport of any symbol consists in the total of all general modes of rational conduct which, conditionally upon all the possible different circumstances and desires, would ensue upon the acceptance of the symbol (CP 5.438).

Peirce, then, thought James to be nominalistic in that he made action the purpose of thought and not merely its outcome or upshot. In that case James implicitly makes some non-thought the ultimate logical interpretant of thought and hence implicitly subscribes to an incognizable (the sensuous flux of experience as proposed in his 'radical empiricism'). For

Peirce, this is the one great sin against logic as method since it blocks the road to inquiry (CP 6.171; 6.273).[34]

To be fair to James, however, I must say that in 1906, Peirce, while still insisting on the differences between his understanding of pragmatism and James', writes in a much more irenic vein:

> The most prominent of all our school and the most respected, William James, defines pragmatism as the doctrine that the whole 'meaning' of a concept expresses itself either in the shape of conduct to

[34] Even if we suppose this assessment is correct, to be fair to James we should admit that Peirce's first exposition of pragmatism in the 1878 article 'How to Make Our Ideas Clear' was open to such an interpretation. There he analysed 'hardness' according to the pragmatic maxim (CP 5.403ff.). The results were misleading and later rejected. Imagine a diamond crystallized within soft cotton where it remains until completely burned up. No other substance is ever rubbed against it. Would it be false to say that the diamond was soft? Peirce answers that it would not be incorrect or even false to call it soft since nothing prevents us from saying that all bodies remain soft until they are touched when their hardness increases with the pressure until they are scratched. Such modes of speech 'would involve a modification of our present usage of speech with respect to the words hard and soft, but not of their meaning. For they represent no fact to be different from what it is' (CP 5.403). This passage might be understood in a nominalist or even positivist sense. Again writing to Calderoni, Peirce admitted: 'I myself went too far in the direction of nominalism when I said that it was a mere question of the convenience of speech whether we say that a diamond is hard when it is not pressed upon, or whether we say that it is soft until it is pressed upon. I *now* say that experiment will prove that the diamond is hard, as a positive fact. That is, it is a real fact that it *would* resist pressure, which amounts to extreme scholastic realism. I deny that pragmatism as originally defined by me made the intellectual purport of symbols to consist in our conduct. On the contrary, I was most careful to say that it consists in our *concept* of what our conduct *would* be upon *conceivable* occasions' (CP 8.208). The passage is nominalistic then because it tends to identify the real with the actual. The meaning of 'hardness' is in the actual resistance of the diamond to pressure. Potentiality in the diamond to resist pressure is only a linguistic usage not a matter of a real fact where 'real' means not a figment of mind. Peirce would later (after 1903) put the matter this way: 'would-be's' are real even though they cannot be reduced to 'is's' (if I might be allowed to coin a barbarous expression). 'Would-be's' consist in a reference to the future (*esse in futuro*, as Peirce would say) and as such are general and no number of actual cases exhausts their meaning. Even though Peirce maintained in his letter to Calderoni that he did not intend to fall back into nominalism, none the less the example was unfortunate and could easily have been so understood. And if, mind you if, James was in fact a nominalist already, it is understandable why he attributed to Peirce his own interpretation which Peirce found unacceptable.

> be recommended or of experience to be expected. Between this definition and mine there certainly appears to be no slight theoretical divergence, which, for the most part, becomes evanescent in practice (CP 5.466).

Much more could and, no doubt, should be said both about British influences on Peirce and about his pragmatism. I have not said a word about the influence of Herbert Spencer, negative though it was, on Peirce's evolutionary cosmology. I have passed over in silence the positive influence of Charles Darwin whose scientific work Peirce more than admired. I have not touched Peirce's doctrine of the normative sciences and their essential role in understanding pragmaticism. Finally, I have no more than hinted at Peirce's system of categories which he considered to be his one lasting contribution to philosophy and at the correction of Kant which a serious study of logic, as understood by the English, demands. Oddly enough Peirce thought that his corrections of Kant made his own views a resuscitation of Hegel 'in a strange costume' (CP 1.42).[35] Such considerations would bring us to Peirce's tychistic views of cosmology and to the synechistic ontology which grounds his 'scholastic realism'. But all of this will have to wait for another occasion.

I will close with this statement concerning the meaning of pragmaticism by Peirce himself:

> Pragmaticism makes thinking to consist in the living inferential metaboly of symbols whose purport lies in conditional general resolutions to act. As for the ultimate purpose of thought, which must be the purpose of everything, it is beyond human comprehension; but according to the stage of approach which my thought has made to it . . . it is by the indefinite replication of self-control upon self-control that the *vir* is begotten, and by action, through thought, he grows an esthetic ideal . . . as the share which God permits him to have in the work of creation (CP 5.403 n. 3).

[35] Yet see CP 5.38 for a passage in which Peirce denies any conscious influence of Hegel upon his thought.