

Charles S. Peirce (1839-1914)

By Jaime Nubiola¹

1. Brief Vita

Charles Sanders Peirce [pronounced "purse"], was born on 10 September 1839 in Cambridge, Massachusetts, to Sarah and Benjamin Peirce. His family was already academically distinguished, his father being a professor of astronomy and mathematics at Harvard. Though Charles himself received a graduate degree in chemistry from Harvard University, he never succeeded in obtaining a tenured academic position. Peirce's academic ambitions were frustrated in part by his difficult —perhaps manic-depressive— personality, combined with the scandal surrounding his second marriage, which he contracted soon after his divorce from Harriet Melusina Fay. He undertook a career as a scientist for the United States Coast Survey (1859-1891), working especially in geodesy and in pendulum determinations. From 1879 through 1884, he was a part-time lecturer in Logic at Johns Hopkins University. In 1887, Peirce moved with his second wife, Juliette Froissy, to Milford, Pennsylvania, where in 1914, after 26 years of prolific and intense writing, he died of cancer. He had no children.

Peirce published two books, *Photometric Researches* (1878) and *Studies in Logic* (1883), and a large number of papers in journals in widely differing areas. His manuscripts, a great many of which remain unpublished, run to some 100,000 pages. In 1931-58, a selection of his writings was arranged thematically and published in eight volumes as the *Collected Papers of Charles Sanders Peirce*. Beginning in 1982, a number of volumes have been published in the series *A Chronological Edition*, which will ultimately consist of thirty volumes.

William James credited Charles Peirce with being the founder of pragmatism. Peirce is also considered to be the father of modern semiotics, the science of signs. Moreover, his —often pioneering— work was relevant in many areas of knowledge, such as astronomy, metrology, geodesy, mathematics, logic, philosophy, theory and history of science, semiotics, linguistics, econometrics, and psychology. Since his death, Peirce has been made the subject of lavish praise. Thus, Bertrand Russell writes that “beyond doubt ... he was one of the most original minds of the later nineteenth century, and certainly the greatest American thinker ever” (Russell 1959, 276). Karl Popper views him as “one of the greatest philosophers of all times” (Popper 1972, 212). It is thus no surprise that recently his work and his views on many subjects have become the subject of renewed interest; this revival is animated not only by Peirce's intelligent anticipations of recent scientific developments, but especially because he shows how philosophy may be responsibly applied to human problems.

Though in some ways Peirce was a systematic philosopher in the traditional sense of the word, his work deals primarily with modern problems of science, truth, and knowledge, starting from his own valuable personal experience as a logician and experimental researcher laboring within an international community of scientists and thinkers. “He was the most scientifically trained philosopher I'd ever read; in some ways much closer to concrete experimental science than Whitehead,” Hartshorne recalls (Lieb 1970, 157-158). Though Peirce made relevant contributions to deductive logic, he was primarily interested in the logic of science, and more especially in what he called 'abduction' (as opposed to deduction and induction). Abduction is the process whereby a hypothesis is generated, so that surprising facts may be explained. Indeed,

Peirce considered abduction to be at the heart not only of scientific research, but of all ordinary human activities as well.

Peirce's pragmatism may be understood as a method of sorting out conceptual confusions by relating the meaning of concepts to their practical consequences. Emphatically, this theory bears no resemblance to the vulgar notion of pragmatism, which connotes such things as ruthless search for profit or political convenience. In *Modes of Thought*, Whitehead notes that his own method of philosophizing is "pragmatist" in Peirce's sense: "Thus deductive logic has not the coercive supremacy which is conventionally conceded to it. When applied to concrete instances, it is a tentative procedure, finally to be judged by the self-evidence of its issues. This doctrine places philosophy on a pragmatic basis." (MT VI; Lowe 1964, 453) Aware of possible misunderstandings, Whitehead highlights the exact sense in which he uses the term: "But the meaning of 'pragmatism' must be given its widest extension. In much modern thought, it has been limited by arbitrary specialist assumptions. There should be no pragmatic exclusion of self-evidence by dogmatic denial. Pragmatism is simply an appeal to that self-evidence which sustains itself in civilized experience. Thus pragmatism ultimately appeals to the wide self-evidence of civilization, and to the self-evidence of what we mean by 'civilization'" (ibid.).

2. Peirce's Connections with Whitehead

When in 1898 Whitehead published his *Treatise on Universal Algebra, with Applications*, Charles Peirce was probably one of the few persons who would have been capable of achieving a thorough understanding of Whitehead's book. In fact, Peirce was mentioned six times in the *Treatise*. In the legacy of Peirce's papers there is a handwritten manuscript of unknown date with the title "List of Books most needed (as all would be much used they should have stiff covers or binding)" in which appears "Whitehead's Universal Algebra" (Peirce, *MS* 1574). Nevertheless, in a letter to Ladd-Franklin of November 17, 1900, he writes: "I never saw Whitehead's book. Dr. Frankland offered to lend it to me when it came out, but I couldn't read it and have not read it." In the course of the years 1905-1907 Peirce prepared a paper on "Considerations Concerning the Doctrine of Multitude" in which after acknowledging his dependence upon Cantor adds: "By the time Whitehead's and other works had appeared, I was so engaged in the struggle with my own conceptions that I have preferred to postpone reading those works until my own ideas were in a more satisfactory condition, so that I do not know in how much of what I have to say I may have been anticipated" (Peirce 1976, III, 1069).

In October of 1902 Frank Morley, the editor of the *American Journal of Mathematics*, sent Peirce a copy of a recent issue, which included Whitehead's paper "On Cardinal Numbers". In his answer thanking Morley, Peirce openly expressed his dissatisfaction with the general orientation of Peano's logistic movement, an orientation shared by Russell and Whitehead: "I have not got all his propositions worked out by my method; but I have others that he has not. I rate Peano's notation along with Volapuk; and Whitehead's saying that any mathematical proposition is incapable of clear expression in ordinary language, aided by a technical terminology, and algebraic devices, is to my mind, down right silly." In the Preface of his paper, Whitehead showed an enthusiastic admiration for Peano and Russell: "I believe that the invention of the Peano and Russell symbolism, used here, forms an epoch in mathematical reasoning." Whitehead was convinced that it was not possible to reach the clarity of Peano's ideographic symbols merely by using ordinary language supplemented by algebraic devices, but as Lowe writes, "the subsequent history of mathematical writing suggests that Whitehead went too far" (Lowe 1985 I, 260).

Peirce was a deep admirer of Cantor's work on cardinal and ordinal numbers, but he rejected Whitehead and Russell's approach: "I may add that quite recently Mr. Whitehead and the Hon. Bertrand Russell have treated of the subject; but they seem merely to have put truths already known into a uselessly technical and *pedantic* form" (Peirce 1976 III, 347; *MS* 459, 1903). In a letter of the following year, sent to his former pupil Christine Ladd-Franklin, he complained of not having been able to prepare a review of Russell's *Principles of Mathematics*, and adds: "I feel its pretentiousness so strongly that I cannot well fail to express it in a notice. Yet it is a disagreeable sort of thing to say, and people may ask themselves whether it is not simply the resentment of the old man who is getting laid upon the shelf." (Peirce *L* 237, 27 July 1904) In April 1906, in his "On the System of Existential Graphs Considered as an Instrument for the Investigation of Logic," Peirce explains that "the majority of those writers who place a high value upon symbolic logic treat it as if its value consisted in its mathematical power as a *calculus*," but "Peano's system is no calculus; it is nothing but a pasigraphy [an artificial international language using mathematical symbols instead of words]; and while it is undoubtedly useful (...) few systems of any kind have been so wildly overrated" (Peirce *MS* 499). Finally, for the mature Peirce, "Russell and Whitehead are blunderers continually confusing different questions" (Peirce 1976 III, 785; *L* 148, 8 May 1906). As Hawkins remarks, Peirce generally regarded neither Russell nor Whitehead in a very positive light (Hawkins 1997, 115).

Despite these strong words of Peirce regarding the logistic movement of the first decade of the twentieth century, some historians of mathematics believe that Russell and Whitehead's *Principia Mathematica* (1910-13) is indebted to Peirce in important ways. Carolyn Eisele holds that "many of the ideas to be found in Whitehead and Russell's *Principia Mathematica* were anticipated by Peirce," referring to Peirce's paper "Upon the Logic of Mathematics" (1867) (Eisele 1979, 12; see also, Lewis 1918, 85 and Wennerberg 1962, 21). In fact, the editors of the *Collected Papers*, when publishing Peirce's 1867 paper, made several notes on the striking similarities of Peirce's ideas to those of the *Principia* (Peirce 1939-1958, 3.42n and 3.44n). In recent years these connections have been widely acknowledged. For instance, we know that Russell learned the universal quantifier from Whitehead, and in turn Whitehead came to *his* knowledge of quantification through Peirce and his students Oscar Howard Mitchell and Christine Ladd-Franklin (UA 115-116; Putnam 1990, 258-259; Houser 1997, 5; Misak 2004, 25). On the contrary, Peirce's anticipation of the stroke function, which he first developed around 1880, was not known by Whitehead and Russell until its discovery by Henry Sheffer thirty years later, and was used in the second 1925-27 edition of the *Principia* (Fisch 1983, 16; Lowe 1990, 277).

In addition, some of Whitehead's key notions were fully anticipated by Peirce. On the one hand, many of the characteristics of Peirce's category of Firstness strikingly anticipate Whitehead's 'eternal objects' (Stearns 1952, 200; Hartshorne 1983, 82); Peirce's Secondness is equivalent to Whitehead's 'prehension', or feeling of (previous) feeling, or sensing of (previous) sensing, and Peirce's Thirdness includes Whitehead's "symbolic reference" or more generally, "mentality." As Hartshorne says in regards to this comparison, "Whitehead is in some respects clearer than Peirce, in others less clear" (1983, 85). On the other hand, when Peirce stresses the rational nature of the universe he is anticipating Whitehead's emphatic protest against the "bifurcation of nature," the sharp Cartesian division between nature and mind which, in Whitehead's view, poisoned all subsequent philosophy (Stearns 1952, 196). In contrast to many modern and contemporary philosophers since the time of Descartes, the

thought of both Peirce and Whitehead can be interpreted as largely successful attempts to break out of the prison of our own subjectivity (Platt 1968, 238).

3. Whitehead's Connections with Peirce

When in 1924 Whitehead joined the Department of Philosophy at Harvard, ten years had passed since Peirce's death and the arrival of his papers at the Department of Philosophy (Lenzen 1965). Since very little work had been done during those years with Peirce's disarrayed papers, Charles Hartshorne, then a Harvard instructor, was hired to prepare an edition. He was soon joined by Paul Weiss, a graduate student in Philosophy, and together they succeeded in editing six volumes published by Harvard University Press under the title *Collected Papers of Charles Sanders Peirce* between 1931 and 1936. Many at Harvard contributed to the editing and publication of the volumes: "Nearly all the members of the Department during the last fifteen years, as well as many others who were interested in Peirce, have devoted much time to the often very intractable material of the manuscripts," as the introduction to the *Collected Papers* states (Peirce 1931, I, vi). Whitehead gave the editors occasional advice about which papers and parts of papers to publish and, according to an early plan, he was expected to contribute the introduction for the edition (Houser 1992). Hartshorne's view, as reported to Whitehead's biographer, was that "Peirce had virtually no influence on Whitehead" (Lowe 1964, 431). In a later interview with Irwin C. Lieb, Hartshorne remembered how Whitehead "came up once at my request and I showed him an essay which had some rather abstruse things to say about geometry. I knew that Whitehead was a geometrician. Whitehead read it and said that it was interesting, but that some of it was too technical and, he thought, ought to be cut. So we did omit some passages. Whitehead read several pages in which Peirce sounded rather like Whitehead talking for instance about the 'irrevocable past' and the 'indeterminate future,' and Whitehead said to me, 'I hope you will testify that this is the first time I have seen this.' When I told him that I could find some of his characteristic ideas in Peirce he said, 'Then I say he's a great man. I'm bound to'" (Lieb 1970, 153).

In fact, in spite of the affinities between both thinkers, the real connections between Peirce and Whitehead are scarce. When Whitehead arrived at Harvard he was already sixty-three. Although, as Victor Lowe likes to highlight, it was America which gave Whitehead the opportunity to develop his ideas as a metaphysician, the seeds of his system had been germinating for over a lifetime (Lowe 1990; McHenry 1989, 335). In a letter to Max Fisch of February 9, 1985, Lowe writes "W[itehead] knew P[eirce]'s logic of relatives when he wrote *Universal Algebra*, but there is no evidence of substantial knowledge at any time of anything else that P[eirce] published." At the same time it should be said that Whitehead had a great admiration for Peirce and his work. In a letter to Frederic Young in 1945, Whitehead writes: "Peirce was a very great man, which a variety of interests in each of which he made original contributions. The essence of his thought was originality in every subject that he taught. For this reason, none of the conventional labels apply to him. He conceived every topic in his own original way" (Young 1952, 276). But, it would be more accurate, perhaps, to say that both thinkers were deeply original particularly in their speculative thinking as metaphysicians.

Although it has been common for readers of Peirce's metaphysical writings to notice a considerable similarity to some features of Whitehead's philosophy, an in-depth study of each one shows wide differences between them. According to Lowe, "the more likely picture is of paths which, though touching at certain important points, were for the most part so separate that whoever thinks to make further explorations must choose the one and reject the other, and

as he looks back at Peirce and Whitehead, he must then be ready to reconsider the significance of those similarities” (Lowe 1964, 430). Both philosophers seek to discover relational structures, but their methods were quite distinct. Peirce looks for metaphysical laws founded on the laws of logic, phenomenology and mathematics, but this is very far from Whitehead's conception of metaphysics as a speculative theory of process. “Convictions common to Peirce and Whitehead have been deservedly noticed by commentators, somewhat to the neglect of the first question of metaphysics: How shall metaphysics be pursued? —As a science among the sciences, says Peirce. Not so, says Whitehead; it seeks truth, but a more general truth than sciences seek” (Lowe 1964, 440). It remains true that Whitehead and Peirce agree in seeking modes of dependence and relatedness in the universe rather than absolutes, and —as Kultgen suggested— that in contrast to Kant both philosophers deny “even a problematic distinction of noumena from phenomena”: reality is wholly open to us (Kultgen 1960, 288; Lowe 1964, 445). In this sense it can be said that both philosophers are realists “in the grand manner of Plato” (Reese 1952, 225). The differences between their respective conceptions of particular metaphysical topics, for instance, time, continuity, contingency, and God, have been studied with attention by a small group of scholars (Hartshorne 1964, Martin 1980, Rosenthal 1996).

In a letter to Charles Hartshorne of January 2, 1936, Whitehead writes that “my belief is that the effective founders of the American Renaissance are Charles Peirce and William James. Of these men, W. J. is the analogue to Plato, and C. P. to Aristotle, though the time-order does not correspond, and the analogy must not be pressed too far” (Lowe 1990, 345). Thirty years later, Hartshorne will rank Whitehead amongst the luminaries of speculative philosophy: “While Whitehead's approach certainly does not exhaust the speculative possibilities open to us (...) yet he does, with Peirce, and on the whole probably more than Peirce, represent our greatest speculative model since Leibniz” (Hartshorne 1961, 37). In a more sober tone, I prefer to say with James Bradley that “the significance of Peirce and Whitehead resides in their defense of speculative reason against its critique by continental and analytical philosophers alike” (2003, 447).

4. Further Essential Readings

In order to gain a sound knowledge of Peirce it would be very useful to obtain the two-volume edition of *The Essential Peirce. Selected Philosophical Writings*, edited by Nathan Houser and Christian Kloesel of the Peirce Edition Project (Bloomington, Indiana University Press, 1992-98). Also, the reader may find helpful the collection of papers edited by Cheryl Misak in 2004, *The Cambridge Companion to Peirce*, (New York, Cambridge University Press) and the monographs by Christopher Hookway in *Peirce* (London, Routledge & Kegan Paul, 1985) and of Kelly A. Parker, *The Continuity of Peirce's Thought* (Nashville, TN, Vanderbilt University Press, 1998).

A very few scholars are experts on both Whitehead *and* Peirce. For the relations between Peirce and Whitehead it is essential to read the paper by Victor Lowe, “Peirce and Whitehead as Metaphysicians,” included in *Studies in the Philosophy of Charles Sanders Peirce*, 2nd series, Edward C. Moore and Richard R. Robin eds. 430-454 (Amherst, MA, The University of Massachusetts Press, 1964). For a more recent approach the paper by James Bradley may be illuminating: “Transformations in Speculative Philosophy,” in *The Cambridge History of Philosophy 1870-1945*, Thomas Baldwin ed., 438-448 (Cambridge, Cambridge University Press, 2003).

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