THE
ROUTLEDGE COMPANION
TO NINETEENTH CENTURY
PHILOSOPHY

Edited by
Dean Moyar
Charles Sanders Peirce was born in 1839 into a prominent family in Cambridge, Massachusetts, graduated from Harvard College in 1859, received a master's of science from the Lawrence Scientific School in 1862, taught at the newly founded Johns Hopkins University from 1879–84 (when he was dismissed under mysterious circumstances in the middle of the academic year), and died as a recluse in his home (named Arisbe in honor of the pre-Socratic cosmologists) in Milford, Pennsylvania, in 1914. That is, he was born in the same year as was Ludwig Mond (d. 1909), a German-English chemist, who founded Mond Nickel Company, was born (Mond's company symbolizing scientific technology being subordinated to commercial interests); the year in which Charles Goodyear (1800–60), an American inventor, made possible the commercial use of rubber by his discovery of the process of "vulcanization"; and that in which John D. Rockefeller (d. 1937), an American industrialist who preached the gospel of social Darwinism, was also born. Moreover, Peirce graduated from Harvard College the year in which Charles Darwin's Origin of Species was published, also the one in which the philosophers Henri Bergson, Edmund Husserl, and John Dewey were born. Finally, he died shortly before the First World War, also during the years in which not only the geopolitical world but also the scientific one (specially theoretical physics) was undergoing cataclysmic upheavals.

Portrait of the philosopher as a young scientist

Peirce was the second and favored son of a prominent father (Benjamin Peirce), born into the intellectual capital of the United States in the nineteenth century. He was a child of privilege who in terms of worldly success squandered many of his inherited advantages. Especially in his later years, however, Peirce exemplified nothing less than intellectual heroism, devoting himself indefatigably (without much of an audience and with little hope of a publisher) to work on a variety of topics, including cosmology, pragmatism, semiotics (or the theory of signs), and most of all logic. The scientifically trained philosopher was, until the end, a philosophically speculative experimentalist who devoted himself to nothing less than offering a guess at the riddle of the Sphinx, that is, the enigma of the universe.

We obtain a sense of the household in which this experimentalist was reared by recalling what he wrote years later in retrospect:
AMERICAN PRAGMATISM AND IDEALISM

My father was universally acknowledged to be by far the strongest mathematician in the country, and was a man of great intellect and weight of character. All the leading men of science, particularly astronomers and physicists, resorted to our house [in Cambridge, on the edge of Harvard College]; so that I was brought up in an atmosphere of science.

Despite the tremendous influence Benjamin wielded over his precocious son, he could not dissuade Charles from devoting himself to logic. While his father encouraged Charles to develop his other intellectual talents, ones more likely to secure a means of livelihood, the son could never take up a subject without ultimately focusing on questions of methodology - how the study of this subject ought to be conducted. In one of his earliest but also most famous articles, "The Fixation of Belief" (1877), he claimed, "each chief step in science has been a lesson in logic" (CP: 5.363; also in EP: Vol. 1, 111). He was ultimately more interested in the lessons in logic to be learned from the history of science than the inherently fascinating discoveries made by experimental inquiries, including the most pivotal discovery in the nineteenth century: "The Darwinian controversy is, in large part, a question of logic" (CP: 5.364; also in EP: Vol. 1, 111). Specifically, it involved applying the statistical method, so successful in explaining the behavior of gas molecules, to the fate of biological populations.

Peirce's lifelong love for logic is traceable to a fateful but chance encounter at a tender time. In another letter, he reported: "... at the age of twelve or thirteen I took up, in my elder brother's room a copy of Whately's Logic, and asked him what logic was, and getting some simple [and thus unsatisfactory] answer, flung myself on the floor and buried myself in it..." (Wiener [ed.]: 408). Thus began a romance with this subject lasting a lifetime. Peirce tended to think of himself primarily as a logician, but for him this word carried a much broader and deeper meaning than it ordinarily is intended to convey. At the very least, logic in Peirce's sense extends to the logic of science, of those processes of inquiry in which certifiable discoveries about real features of the empirical world are, unquestionably, made.

Thus, he was even more concerned with the logic of science than the dazzling discoveries of specific branches of experimental investigation. His self-defined task might be described as an endeavor "to take skillful soundings of the experimentalist's minds" (CP: 5.411; also in EP: Vol. 2, 331) to reveal thereby the depths of such minds.

But Peirce did so as a philosopher, steeped in various traditions of philosophical reflection. In the letter to Victoria Lady Welby (14 March 1909), a rich source of biographical detail, Peirce noted, immediately after asserting that his "very unusual gift was for logical analysis":

I began with German philosophy, having read hardly any of the great English school and not very much of such French writers as Maine de Biran, Jouffroy, Cousin, etc. For several years I studied the Kritik der reinen Vernunft, and knew it almost word for word, in both editions [the A or earlier edition and the B or later one]. Even now, I fancy there are few who know it better. Then I devoted myself for some years chiefly to the scholastics and after that
to Locke, Hume, Berkeley, Gay, Hartley, Reid, Hamilton, etc. I had already
read the most readable part of Cadworth & all of Hobbes. Gradually, I gained
independent views. (Wiener [ed.]: 417)

Peirce did not begin his study of German philosophy – what for him was his initiation
into philosophy – with Kant’s first *Kritik*, but with Friedrich Schiller’s *Aesthetic Letters.*
He recalled in a letter: “the first book of philosophy I ever read (except Whately’s
*Logic*, which I devoured at the age of twelve or thirteen) was Schiller’s *Aethetische
Briehe* where he has so much to say about the *Spiel-Trieb* (or Play-Impulse); and it
made so much impression on me to have thoroughly soaked my notion of ‘play,’ to this
day…” (Wiener [ed.]: 401).

His youthful encounter with philosophical texts was mediated by the imposing
presence of Benjamin Peirce. He later recalled:

> When, in my teens, I was first reading the masterpieces of Kant, Hobbes, and
> other great thinkers, my father, who was a mathematician, and who, if not
> an analyst of thought ... would induce me to repeat to him the demonstra-
> tions of the philosophers, and in a very few words would usually rip them up
> and show them empty. In that way, the bad habits of thinking that would
> otherwise have been indelibly impressed upon me by those mighty powers,
> were, I hope, in some measure, overcome. Certainly, I believe the best thing
> for a fledgling philosopher is a close companionship with a stalwart practical
> reasoning. (CP: 2.405)

Benjamin Peirce’s influence was firmly, but not narrowly, scientific.

But my father was a broad man and we were intimate with literary people
too. William Story, the sculptor, Longfellow, James Lowell, Charles Norton,
Wendell Holmes, and occasionally Emerson, are among the figures of my
earliest memories.

Moreover, Benjamin was a deeply religious man who saw no inherent or inevitable
conflict between science and religion. Especially in his later life, Charles strove strenu-
ously to show how scientific inquiry might be envisioned as a form of religious worship
and, in turn, a religious life as an ongoing attempt to plumb the depths of human
experience.

The son of such a father went so far as to describe his philosophy as “the attempt of a
physicist to make such conjecture as to the constitution of the universe as the methods
of science may permit, with the aid of all that has been done by previous philosophers”
(CP: 1.7). Hence, he decisively broke with the deductivist tradition of the dominant
schools in Western thought, judging the “demonstrations of the metaphysicians” to
be “moonshine,” and he advocated an experimental approach in which deductive (or
demonstrative) arguments play a subordinate role to the systematic elaboration of
conjectures or hypotheses, acknowledged as such. In philosophy as well as elsewhere,
the “best that can be done is to supply a hypothesis, not devoid of all likelihood, in the general line of growth of scientific ideas…” (CP: 1.7). This meant for him taking seriously, far more seriously than even most of his contemporaries were doing, evolution and continuity, two of the ideas most dramatically in line with the actual growth of scientific understanding in the nineteenth century, at least as appraised by Peirce.

Though some prominent thinkers in the nineteenth century (most notably Friedrich Nietzsche) have suggested that science is as much a figment of our minds as any other mode of interpreting the data of our experience, Peirce cannot be counted among them (see CP: 6.503). At least, the natural sciences have effectively and undeniably disclosed certain real features of the empirical world. In calling these features real, Peirce is stressing that they do not depend on what you or I or any other finite mind or even some circumscribed community of such minds happens to think.

Except for less than a handful of years, Peirce’s life was not that of a professor or instructor. By training and (for much of his life) by occupation, Peirce was a scientist. Shortly after graduating from Harvard College, he took a position as a regular aide (or consultant) with the US Coast Survey. Around this time, he also met William James and married Harriet Melusina (Zina) Fay (16 October 1863). He worked at the Harvard Observatory and the only authored book by him published during his lifetime was Photometric Researches (1878), a study growing out of his work at the Observatory. Arguments with Charles W. Eliot, the President of Harvard, over the publication of this work, led to a lasting enmity between the young scientist and this powerful figure. From 1861 to 1891 Peirce was employed as a scientist by the US Coast and Geodetic Survey. His work at the Observatory and the Survey compelled him to come to terms with the practices of measurement within the exacting context of painstaking scientific observation. Of the various facets of such practices with which he thereby became familiar, the pressing need for critical attention to the probability of errors made in such observations was arguably foremost.

Sketch of a “system” as an interminable task

In sketching Peirce’s “system” I will provide an overview of his thought. But, the very attempt to do so invites the question: To what extent was Peirce committed to erecting a philosophical edifice, to constructing a philosophical system? Much depends on how we understand the expression philosophical system. I would argue that Peirce was primarily a systematic philosopher and (at most) only secondarily a speculative thinker committed to constructing a philosophical system. There are, however, important passages in which he claims either to have articulated the outlines of a philosophical system or to be engaged in the work of accomplishing nothing less than this. But a philosophical system suggests a degree of conceptual closure, finitude, and completeness that Peirce denied was attainable by the human mind. The most we can ever hope to attain, at any historical juncture, will always be open-ended, provisional, and in no small measure fragmentary. Precisely because human knowledge is such a patchwork affair, woven out of the fabric of approximations, human knowers
must commit themselves in a deliberate manner to systematic inquiry, connecting as
intimately and effectively as they can seemingly disparate spheres of investigation,
for the sake of advancing inquiry in these spheres. The hope of a grand synthesis of
these disparate fields is, for the most part, not only a vain but also a debilitating hope.
The work of systematic inquiry is nonetheless facilitated by the hope of there being
genuine affinities between (or among) apparently disparate undertakings. Just as the
isolated fact, insofar as such a matter is even conceivable, is of far less heuristic value
than connected facts (see CP: 5.594), so insular inquiries carrying no heuristic impli-
cations for other research programs are of far less importance than those fecund fields
whose organizing concepts have not only immediate applicability to a circumscribed
range of experimental questions but also an as yet unknown potential for illuminating
the footpaths of other experimental investigators.

Of the various unresolved tensions in Peirce’s philosophical authorship, none is
more important or illuminating than the one concerning his systematic aspirations.
Peirce took from Kant an architectonic conception of philosophical investigation
(architectonic being defined by Kant as “the art of constructing systems” [p. 653; see
Peirce, CP: 1175–9]). He derived from the inescapable influence of the nineteenth
century, however, the need to conceive our defining endeavors as unfinished processes
open to radical transformation. In a manuscript written in the last decade of the
nineteenth century, Peirce wrote: “As this Century is drawing to a close, it is interest-
ing to pause and look about us and to ask ourselves in what great questions science
is now most interested” (CP: 7.267n7). His answer says a great deal about both him
and the century in which he was born, for it is that “the question that everybody is
now asking, in metaphysics, in the theory of reasoning [i.e., in logic], in psychology, in
general history, in philology, in sociology, in astronomy, and perhaps even in molecular
physics, is the question How things grow” (see Darwin 1993: 212; also Peirce, EP: Vol.
2, 373). He immediately goes on to stress the evolution of science itself, thereby
providing a crucial piece of evidence for John Dewey’s claim that Peirce, living “when
the idea of evolution was uppermost in the mind of his generation,” “applied it every-
where” (LW: Vol. 11, 482–3). His application of this idea to science and, more broadly,
meaning is a defining feature of Peirce’s philosophical project.

Insofar as Peirce was a systematic philosopher or engaged in the interminable task
of systematic inquiry, he was so by virtue of formulating, refining, and applying a
categorial scheme of indefinite generalizability. Like Aristotle, Kant, and Hegel, he
was self-critically committed to such a scheme.

In light of his immense learning and practical involvement in several experimental
sciences, Charles Peirce returned, time and again, to several fundamental questions,
not least of all “What guess are we, at this stage in the history of inquiry, most entitled
to make about the nature of the cosmos?” and, “What are we, in addition, entitled
to say about this seemingly insignificant species of animal which lacks an intuitive
capacity to know anything whatsoever and thus must rely solely on its apparently
instinctual ability to guess more or less correctly, enough of the time, at least when
conjectures bear upon circumstances related to mortality and sociality?” In addition
to this cosmological and this anthropological question, he posed a methodological one
and, indeed, devoted even more attention to this question than the other two. With respect to these and indeed all other questions, he took his categories to be indispensible aids in goading and guiding in promising directions. Far more than his answers to these questions, these questions themselves define his philosophical interests. Even so, his answers (in a sense, his "doctrines" or positions) help to flesh out our portrait of Peirce as a philosopher.

In the course of addressing these questions, then, Peirce identified and defended a handful of substantive positions. Peirce's evolutionism, tychism (the doctrine of chance) and synecism (the doctrine of continuity) are central to his answer to the cosmological question, whereas his fallibilism, semiotic, and pragmaticism are most relevant to his largely implicit portrait of the human animal, at least in its unique stance as a logical agent or experimental inquirer. From a Peircean perspective, the human animal is first and foremost a social actor whose practical involvements (including those in the practice of theory, in the work of inquiry) ineluctably assume a dramatic form and thus call for narrative depiction. But the very efforts of this animal to offer such narratives are themselves integral parts of an ongoing dialogue, if only the conversation of the self with itself. The story of such animals, bound together in transformative associations of critical dialogue, is that of agents acquiring and refining the ability to exercise appropriate control over their cognitive processes and heuristic (or theoretical) practices. That is, it is a tale of the increase and refinement of methodological self-consciousness.

Without the resources of later thought, in particular those bearing on our understanding of the forms and functions of narrative as well as the ineliminability and power of metaphor, such a story cannot be adequately told. But the resources of Peirce's philosophy, as critically sharpened in his efforts to provide detailed answers to the cosmological and methodological questions identified above, also at least an implicit response to the anthropological question, represent the monumental achievement of a scientifically trained and metaphysically literate philosopher to offer a wild yet intelligent guess at the riddle of the sphinx. Given the cast of his mind and the range of his interests, it should hardly come as a surprise that this guess took a reflexive turn. For it extended to the logic of guessing as central to adequate understanding of experimental inquiry and, moreover, the cosmos as a perfusion of signs (CP: 5.448n1). It is necessary to see Peirce's efforts on these fronts not only in conjunction with those of post-Kantian idealists such as Schelling and Hegel, but also in anticipation of much later theorists striving to formulate a defensible form of anti-reductive naturalism. In this, he was paradigmatically representative of the nineteenth century.

To read Peirce in light of the nineteenth century is to read him, in part, as he invited us to do so. For he was a self-consciously historical thinker who was acutely aware of the tangled history of philosophical thought — moreover, one who took pains to situate his own project vis-à-vis certain especially prominent predecessors, influential contemporaries, and imagined successors. His first public address in 1863, at the age of twenty-four, was entitled "The Place of Our Age in the History of Civilization"! He was deeply engaged in both an ongoing, critical dialogue with a wide array of historical figures and (selected from among these figures) an intense,
innovative engagement with a handful of authors, several of whom were themselves pivotal figures in the nineteenth century (including here Schiller and Hegel). Though decidedly a champion of transforming philosophy into a discipline akin to science in the modern, experimental sense, Peirce was equally an advocate of traditional theism and, eventually, a thinker for whom the aesthetic dimensions of our rational pursuits came to assume a fundamental importance.

Peirce at times seemed devoted to nothing more than piecemeal analysis of disparate questions. For example, he once stressed in a letter to William James, "the only thing I have ever striven to do in philosophy is to analyze sundry concepts with exactitude" (Perry 1935: Vol. 2, 438). At other times, however, his commitment to something far less modest is unmistakably in evidence. There are occasions when he announced to his readers his aspiration to erect an edifice outlasting the vicissitudes of time (CP: 1.11). It may seem difficult to square these two sides of his intellectual temperament, but the irrepressible drive of historical agents to transcend not only the confines of their actual history but also the limits of time itself is a dominant tendency in human thought. In Peirce's writings, this drive is discernible.

A high faith in knowledge and a contrite sense of fallibility

Peirce took our scientific knowledge of the real world to be exceedingly slight: "notwithstanding all that has been discovered in Newton's time, his saying that we are little children picking up pretty pebbles while the whole ocean lies before us remains as substantially true as ever, and will do so though we shovel up the pebbles by steam shovels and carry them off by cartloads" (CP: 1.118). He makes this definitive point with utmost precision: "An infinitesimal ratio may be multiplied indefinitely and remain infinitesimal still" (ibid.). The character of our knowledge needs to be appreciated no less than the slightness of our knowledge. What Peirce writes of philosophy is also true of science: "Approximation must be the fabric out of which our philosophy [more, generally, all of our knowledge] has to be built" (CP: 1.404).

Peirce's fallibilism makes – or, at least, appears to make – his claims about our knowledge of reality paradoxical, since we can never be absolutely certain that what we claim to know we do in fact know. In one sense, our second-order knowledge (our knowledge about what we claim to know) appears to be more certain than our first-order knowledge (our claims about this or that feature of the world). Indeed, fallibilism is itself the doctrine, rather certainly held and forcefully advocated by Peirce, that we can never be completely certain about what we presume or profess to know. That is, it is an instance of second-order knowledge. In another sense, however, Peircean fallibilism insists that, while we know any number of truths about the world, we are never in the position to know with unqualified certainty or clarity what truths will remain fixed or stable in the ongoing course of human inquiry. Part of the difficulty here is that Peirce is trying to incorporate a historical dimension into his normative account of human knowledge. Truth is, for him, what would in the course of history prove itself to be reliable to an infinite community of experimental investigators. Of course, we live in the meantime, not at the end of history. But the conception of us as
participants in an unfolding historical process is critical for carrying on our practices in a responsible and intelligent manner. An abiding mindfulness of our ineliminable fallibility is a defining feature of the experimental attitude, whatever paradoxes might be generated in our efforts to underscore this feature with the emphasis it demands.

One of the most remarkable features of the Peircean approach to understanding experimental inquiry is Peirce’s insistence upon studying, in the spirit of science itself, the history of science. The point of this study is that only such an orientation opens the possibility of grasping what science actually is. Long before Thomas Kuhn revolutionized our approach to science, stressing that scientific traditions are just that—traditions, historically evolved and evolving practices prone to theoretical crises, the responses to which involve paradigm shifts in the research programs of these intergenerational communities—Peirce insisted upon a self-consciously historical approach to understanding experimental science.

Peirce’s understanding of science as first and foremost inquiry informed his vision of education. This point is best made in reference to an institution with which he was all too briefly associated, one representing an institutional innovation in the nineteenth century of immense significance. The first president of Johns Hopkins University Daniel Coit Gilman asked, in his installation address, “What are we aiming at?” He responded to his own question by asserting: “The encouragement of research ... and the advancement of individual scholars, who by their excellence will advance the sciences they pursue, and the society where they dwell.” For Peirce, however, the advancement of science ought to be the primary and direct goal of such an institution, that of society only a secondary and indirect aim. To be sure, a society in which institutions devoted to the advance of science, for its own sake, have a respected and secure place is, in Peirce’s judgment, a society worthy of high praise. But the value of science must be determined, for the most part, on the basis not of externa, societal considerations, but of internal, theoretical ones. The integrity of society no less than that of science requires that the influence of science on society and, in turn, the influence of society on science ordinarily be anything but direct and immediate. Scientists ought to be allowed to pursue their inquiries quite apart from supposed benefits to the social order. It is almost certain that many of their investigations will lead to discoveries benefiting not only the wider society but also the specific communities of experimental inquirers to which these inquirers owe their primary allegiance. But the work of scientists is impeded when it is tied too closely to the demands of society. Such, at least, is the strongly held position of Peirce.

As already intimated, this has bearing on his vision of the university. “... the function of a university is the production of knowledge, and ... teaching is only a necessary means to that end...” (Wiener [ed.]: 334) “The great mediæval universities, the modern German universities, the new science colleges of England, were never in the least founded for their students’ individual advantage, but, on the contrary, because of the expectation that the truths that would be brought to light in such institutions would benefit the state” (Wiener [ed.]: 333). Peirce is quick to stress: “Yet even this is a low view of learning and science.” Even (perhaps especially) the readers of a journal such as Science are not likely “to be content with the statement that the
searching out of ideas that govern the universe has no other value than that it helps human animals swarm and feed" (333–4).

Students "should be made to feel they are doing which was to appear in the digests [or journals] of science and for the accuracy of which they were responsible" (328). They should be accorded the status, and hence the responsibility, of co-inquirers: "instructors and pupils ... compose a company who are all occupied in studying together, some under leading strings and some not" (Wiener [ed.]: 334).

It is important to recall that, in the context of defining the function of the university, Peirce framed his discussion in terms of an adequate conception of human practice. He noted that, in his youth, he "wrote some articles to uphold a doctrine I called Pragmatism. ... That is all very well, when properly understood. I do not intend to recant it." When it is however improperly understood — in particular, when it is taken to assert or imply that theory is for the sake of practice and, in turn, practice is conceived in a narrow and superficial sense, bearing upon merely the egoistic interests of isolated or separable individuals — then pragmatism is as pernicious a doctrine as it is an erroneous one. "Subsequent experience of life has taught me," Peirce confessed in his reflections on education, "that the only thing that is really desirable without a reason for being so, is to render ideas and things reasonable" (Wiener [ed.]: 332), insofar as this is possible. The continuous growth of concrete reasonableness is alone worthy of being identified as the sumnum bonum (the highest good). Reasonableness is rendered concrete by becoming embodied in habits and artifacts, including institutions, not least of all institutions of learning.

However narrow it might appear to us, the function of a university is, above all else, to foster the growth of experimental science. This is a communal task of a self-consciously historical character. As we have already seen, Peirce came to intellectual maturity precisely at the time when profound institutional transformations were taking place in higher education in the United States. This is nowhere more apparent in the founding of the Johns Hopkins University in 1876 and, to a less extent, such institutions as Clark University. The very kind of institution for which he was ideally suited (the research university modeled on German precedent) turned out to be the one from which he would soon be expelled, increasingly living his last years in intellectual exile from any institutional home. His ideal of an unlimited community of scientific inquirers became more central to his philosophy as the actual circumstances of his personal life forced him to become ever more reclusive and isolated. Equally, his ideal of the continuous growth of concrete reasonableness took on greater importance as the contingencies, accidents, and absurdities afflicting him threatened not only his survival but also his sanity. But neither his ideal of community nor that of reasonableness was merely a compensatory illusion (or delusion) spun to enable him to cope with crushing circumstances. Each one needs to be considered on the basis of its philosophical merits, not simply in reference to the putative psychological function each one might have had in enabling an isolated genius to carry on in exceedingly straightened circumstances. In addition, each of these ideals is intimately connected to the other.

The ideal of an unlimited community of experimental inquirers is, from Peirce's perspective, inseparable from that of deliberative or dialogic rationality (the form of
reasonableness to which he was primarily committed). In other words, the community of such inquirers is the matrix (from the Latin word for womb) from which truly rational intelligence emerges. On this view, rationality is not so much an individual possession as a communal achievement. It is achieved in and through one’s participation in those forms of community or association in which the rigorous demands of mutual accountability are instituted, refused, and enlarged. The members of the community hold one another accountable for what is said and done, especially in the name of the community (that is, in the name of those who profess to be devoted to the discovery of unknown truth). In turn, the ideal of concrete reasonableness involves the explicit recognition of the growth of traditions, institutions, and practices in which unfeathered, uncoerced exchanges among the participants define the innermost life of these traditions, institutions, and practices. The flourishing of community enjoins the growth of reasonableness. Conversely, the growth of reasonableness demands the emergence and evolution of forms of dialogue in which appeals to ideals and adherence to norms effectively guide conduct.

As a participant in such a community, however idealized in imagination, Peirce offers what might be read as an *apologia pro sua vita* when he asserts:

The first step toward finding out is to acknowledge you do not satisfactorily know already; so that no blight can so surely arrest all intellectual growth as the blight of cocksureness; and ninety-nine out of every hundred good heads are reduced to impotence by that malady – of whose inroads they are most strangely unaware! Indeed, out of a contrite fallibilism, combined with a high faith in the reality of knowledge, and an intense desire to find things out, all my philosophy has always seemed to me to grow.

(CIP 1.13)

**Logic: a normative theory of objective inquiry**

One of the principal preoccupations of Peirce’s intellectual life was logic, but logic conceived first and foremost as a theory of inquiry (more fully, as a normative theory of objective inquiry). What is meant by describing this theory as normative is this Peirce ultimately desired to offer an account of how the conduct of inquiry ought to be undertaken. His task was not simply descriptive or even explanatory; it was irreducibly normative, since Peirce strove to specify the norms and ideals defining this mode of conduct. The most pressing question for him was always, how ought humans to conduct an investigation? He addressed this question as a practitioner, that is, as a participant in a number of practices uncontroversially recognized as sciences (e.g., physics, chemistry, and various branches of mathematics). These practices were sciences in the distinctively modern sense, a sense somewhat obscured by the name of science, a late English coinage derived from the Latin word *scientia* (the Latin translation of the Greek word *episteme*). In the discourse of scientists themselves, science does not so much designate established knowledge (much less absolutely certain knowledge) as it signifies an ongoing pursuit to discover unknown truths. In brief, science signifies inquiry. What distinguishes scientific inquiry from other investigative procedures is,
more than anything else, the spirit in which the endeavor is carried on. Science is an investigation undertaken in the spirit of seeking to know what is presently unknown, not to certify pre-existing beliefs. The defense of truths already in our possession is incidental to the work of the scientist; the establishment of absolutely certain truths, rather than experimentally supported hypotheses, is no part of this work.

Such a spirit tends to prompt inquirers to be methodologically reflexive and, indeed, formally critical. The question of how to conduct a specific inquiry is one with which engaged inquirers are inevitably confronted, at least when their efforts are unsuccessful. When doing the done thing – following established procedures – proves to be ineffective, then methodological innovations are required. The felt need for the exercise of methodological ingenuity arises, time and again, in the course of inquiry, so that the activity of scientific inquirers involves, (at least) in effect, the cultivation of methodological self-consciousness (though ordinarily only within a somewhat narrow sphere). In Peirce’s case, however, we observe a scientist who deliberately committed himself to the cultivation of such self-consciousness, moreover, not simply in this or that sphere of investigation but with regard to any pursuit properly designated as scientific in its distinctively modern sense.

The cultivation of methodological self-consciousness, sought primarily to serve methodological self-criticism and self-control, was at Peirce inseparable from the acquisition of historical self-consciousness. Science is a practice that tends to efface its history, at least insofar as its most exemplary practitioners are pressing forward to use the cumulative achievements of previous inquirers to make novel discoveries. While a workaday disregard of many of the notable achievements of one’s scientific predecessors might do little or nothing to impede one’s work as a scientist, a painstaking, detailed acquaintance with the effective methodologies of various sciences might prove to be illuminating and beneficial to the working scientist. Such, at least, was Peirce’s hunch. Accordingly, he devoted considerable attention to the actual history of scientific inquiry. His interest was far from antiquarian: his concern was not with the past for its own sake alone. Rather it was truly scientific: he conjectured that a detailed historical knowledge of the methods actually used by scientists would benefit inquirers in his own time, especially on those occasions when such practicing scientists were pressed by circumstances to exercise methodological ingenuity. “All men who are now called discoverers, in every matter ruled by thought,” in the words of Augustus De Morgan, “have been men versed in the minds of their predecessors, and learned in what had been before them” (A Budget of Paradoxes, vol. 1, p. 5).

One way to read Peirce’s philosophical authorship is to see his writings as radiating from this center of concern. He typically identified himself as a logician, but in turn he identified or, more accurately, redefined logic as the theory of inquiry. So understood, logic is concerned with methods of inquiry and, more generally, the conditions facilitating the work of inquiry (conditions extending to the acquisition of certain dispositions and even certain sentiments).

More than anything else, the love of truth, particularly truths not yet known but experimentally knowable, defines the scientist. Such love either withers or flowers
into increasingly refined methods of effective inquiry. The refinement of such methods is the conscientious work of intergenerational communities. There is, in the foreground of such communities, the pressing work of carrying to fruition specific investigations; but, in the background (if often only slight so), there is inevitably the augmentation, modification, and creation of methods potentially having applicability to other spheres of inquiry. The refinement of methods is unquestionably the work of individuals, but only as self-conscious and self-critical participants in such communities. (This connects, more generally, to the pragmatist conception of human individuals as social selves, albeit ones whose sociality provides opportunities far more than posing threats to the realization of individuality.) Accordingly, science does not so much name a species of knowledge as a distinctive form of human community.

Conceived in communal terms, the defining traits and human significance of our scientific practices (including the inherent significance such practices have for scientific investigators themselves) are unknowable apart from the evolved and evolving forms of those human associations animated by an overarching love (what Peirce does not hesitate to call “scientific Eros”). The human significance of scientific inquiry is to be ascertained not only in reference to the impact of science on other human practices but also in terms of this practice itself (what it means for scientists themselves who are devoted to a lifetime of inquiry). In Peirce’s judgment, the subordination of science to other practices cannot but corrupt science. This is especially true when those practices or concerns are admirable or noble. For this reason, Peirce went so far as to characterize science as the study of useless things! Against a powerful tendency in the nineteenth century to press science into the service of the betterment of society, Peirce voiced extreme skepticism about the wisdom of such a construal. If science is conceived exclusively or even just principally in reference to its benefits to society (no matter how valuable or momentous are these benefits), the integrity of scientific practice would, he believed, be put at risk of being violated or denigrated. Moreover, the authority of traditional practices, such as traditional morality and traditional religion, would be unfairly but effectively undermined. Peirce’s position here is a complex and nuanced one, far more so than is ordinarily appreciated. At the very least, he wanted, simultaneously, to protect science from the external pressures of the encompassing society in which the work of scientists inevitably took place but also to protect society from the immediate impact of “scientific” reforms. Underlying both of these endeavors, Peirce was engaged in the task of clarifying the meaning of science, but also explicating the meanings by which scientists in the context of inquiry clarify the meaning of the terms on which their efforts so critically turn.

The pragmatic clarification of meaning and the Peircean ideal of community

Though Peirce’s synecism (doctrine of continuity), tychism (doctrine of chance), evolutionism, and other cosmological doctrines are not likely to be known outside of a narrow field of academic specialists, Peirce’s pragmatism and semiotics (or theory of signs) are today widely recognized as significant contributions to debates in contemporary thought. The deeply communitarian cast of Peirce’s thought needs, ultimately,
to be conjoined to its equally deep pragmatic character. But, first, Peircean pragmatism demands a detailed explication.

(1) Peirce’s Pragmatism

Though outside of philosophy Peirce is likely best known for his theory of signs, he is among philosophers still most famous for his contribution to pragmatism. Primarily based on several early essays (above all, “The Fixation of Belief” [1877] and “How to Make Our Ideas Clear” [1878]), the dominant view among professional philosophers is almost certainly distorted. Even so, Peirce’s mature views unquestionably grew out of his youthful work. In particular, his eventual reformulation of his pragmatic position owes much to its original formulation. First at meetings of the Metaphysical Club (an informal discussion group including Chauncey Wright, Oliver Wendell Holmes, Jr., and William James) and, then, in two essays in The Popular Science Monthly, Peirce presented a theory of inquiry and, in conjunction with this theory, a maxim designed to assist inquirers in clarifying the meaning of terms.

Following the Scottish psychologist Alexander Bain, he conceived a belief to be that upon which a person is willing to act (CP: 5.12; also in EP: Vol. 2, 399). Conscious assent or verbal expression turns out to be incidental to belief, whereas habit is essential: pragmatically defined, a belief is a habit or disposition to act in certain ways in certain circumstances. Belief concerns first and foremost how agents comport themselves in the world, not what takes place in consciousness or what is expressed in words. The opposite of belief is doubt: to be in doubt is not to know what to do or how to act. The experience of doubt signals the disruption of our habits. It makes dramatically clear that how we habitually go on has, in some context, proven to be ineffective or, worse, counterproductive. Such doubt prompts a process in which agents struggle to regain their fluency of action. Only restoring or replacing the challenged belief can accomplish this. Thus, the struggle begins in doubt and drives toward the overcoming of such uncertainty, by the re-establishment of a belief. Peirce takes inquiry in its most basic sense to be just this struggle. It is generated by the disruption of genuine doubt and brought to closure in the establishment of an effective habit. Against Descartes’ universal, hyperbolic, and methodic doubt, Peirce (anticipating Ludwig Wittgenstein and J. L. Austin) argues that there must be a specific motive or inducement to doubt any one of our beliefs. “There must be,” in other words, “a real and living doubt, and without this all discussion is idle” (CP: 5.376; also in EP: Vol. 1, 115). At any rate, he is said by expositors to offer a doubt-belief theory of inquiry.

In “The Fixation of Belief” (1877), Peirce distinguishes four ways of overcoming doubt by fixing (or establishing) belief. The first is the method of tenacity. This involves clinging as tenaciously as possible to whatever an individual happens to believe. But this purely individualistic manner of fixing belief is doomed to fail, since “the social impulse is against it” (CP: 5.378; also in EP: Vol. 1, 116). “The man who adopts it will find that other men think differently from him, and it will be apt to occur to him, in some saner moment, that their opinions are quite as good as his own, and this will shake his confidence in his belief” (5.378; 116). Human beings are social animals to such an extent that what is required is a communal method.

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The second method is that of authority. An established authority in a human community wields the power to dictate what is creditable or tenable. But the social impulse of human beings as effectively undermines this method as it does that of tenacity: "in the most priest-ridden states some individuals will be found who are raised above that condition [of being intellectual slaves]." Such individuals "possess a wider sort of social feeling; they see that men in other countries and in other ages have held to very different doctrines from those which they themselves have been brought up to believe; and they cannot help seeing that it is the mere accident of their having been taught as they have ... that has caused them to believe as they do ..." (CP: 5.381; also in EP: Vol. 1, 118). As it turns out, the scope of such feeling is, in principle, boundless, for it extends to nothing less than an infinite community of human inquirers. Historically, however, the understandable reaction to the brutal methods of institutional authority exemplified by the Roman Empire and, later, the Catholic Church (to cite Peirce's own paradigms of this method) were not only eloquent pleas for intellectual tolerance but also an unqualified endorsement of individual rationality. Whatever appears to be agreeable to the rationality of individuals, apart from the coercions or even pressures of institutional authority, is taken to be the surest route to tenable belief. This method "makes of inquiry something similar to the development of taste; but taste, unfortunately, is always more or less a matter of fashion" (CP: 5.383; also in EP: Vol. 1, 119). To draw out the implications of this, we can say that, for Peirce, this method falls far short of obtaining an adequately communal form (the circle of interlocutors is not an infinite community, but a more or less insular cluster of contemporaneous inquirers). Moreover, we can say that this method fails to accord experience a sufficiently central or critical role in inquiry. Consequently, the third method, that of apriority or agreeableness to reason, is fatally flawed.

As it turns out, all three of these methods are, from the perspective of Peirce's pragmatism, unable to distinguish in a sufficiently strong manner the way things are from the way they are taken to be by us. For advocates of the method of tenacity, this is most obviously the case: what is tenable is simply whatever one tenaciously holds to be so. It is, however, equally (though less manifestly) true of the other two methods.

The fourth method is that of science. It alone secures a basis for differentiating what is the case from what I or we happen to take to be the case. Even more radically, only the method of science (or experimentation) "presents any distinction of a right and a wrong way" (CP: 5.385; also in EP: Vol. 1, 121). It does so because it is a practice instituted on the hypothesis that there are real things, that is, things whose traits or characteristics are independent of what anyone happens to take them to be. Reality in its otherness — in its independence from what any finite individual or finite community happens to believe — is, in effect, effaced by the other three methods. The role of experience (in particular, experience as a confrontation with what is other than, or independent of, what I or we happen to believe) is effectively denied by these methods. Science or experimentalism alone accords experience the central and critical role it deserves in the drama of inquiry.

In "How to Make Our Ideas Clear" (1878), Peirce turns from the basic question of fixing our beliefs to the even more fundamental one of clarifying our meanings (see
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e.g. CP: 5.410; also in EP: Vol. 1, 141). But the second essay ("How to Make Our Ideas Clear") joins the first one ("The Fixation") by also concluding with an appeal to reality. While in "The Fixation" reality enters primarily as a hypothesis securing the basis for differentiating between reality and our accounts of reality, it is in "How to Make Our Ideas Clear" introduced as the last example of a concept calling for clarification. The clarification of the concept of reality turns out to be a refinement of the hypothesis on which a truly experimental method of responsible inquirers is based. The argument for the superiority of the scientific method is, in "How to Make Our Ideas Clear," strengthened by a pragmatic clarification of its most fundamental hypothesis (the conjecture that there are real things having discoverable properties).

In "The Fixation" Peirce distinguishes four rival methods of inquiry, while in "How to Make Our Ideas Clear" he differentiates three hierarchically ordered grades of clarity. At the lowest level, there is the familiarity indicative of our ability to use a word (or other sign) properly (our capacity to utter or interpret a word or sign in an appropriate or intelligent manner). Such largely tacit familiarity is itself a sign of our minimal competence (our linguistic or, more generally, semiotic competence). At the intermediate level, there is the grade of clarity obtained by abstract definition. At the highest level, there is that attained by pragmatic clarification. Such clarification is achieved by the application of a maxim, rather cumbrously formulated by Peirce in this essay:

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; also in EP: Vol. 1, 132)

What might easily be missed is that effects having practical bearings are ones exerting a transformative influence on human conduct in a very wide sense. From Peirce's perspective, experimental inquiry is a distinct sphere of human conduct. Things are what they disclose themselves to be in the context of experience and, more narrowly, experimentation. The disposition of, say, salt and other substances to dissolve in water and other liquids is an observable effect making up the core meaning of solubility. Our conception of these effects is, in Peirce's judgment, the whole of our conception of this property.

The practice of inquiry tends, according to Peirce, to outstrip the theoretical self-understanding of inquirers. That is, the level of heuristic sophistication characteristic of the actual procedures employed at any historical moment is higher than that of theoretical understanding: we are better investigators than our "logic" portrays us. If we take "logic" (as Peirce did) to designate a theory of inquiry (more precisely, a normative theory of experimental inquiry), then the logic embodied in the actual procedures, practices, and indeed habits of the most effective investigators are more refined than the logic articulated in formal theories. This was nowhere more evident than in reference to the mode of clarification on which experimental investigators continually rely, in contrast to those forms of definition to which theorists of inquiry
gave formal recognition. Hence, he stresses in “How to Make Our Ideas Clear,” “the doctrine that familiar use and abstract distinctness [or definition] make the perfection of apprehension [of meaning] has its only true place in philosophies which have long been extinct; and it is now time to formulate the method of attaining to a more perfect clearness of thought, such as we see and admire in the thinkers of our own time” (CP: 5.390; also in EP: Vol. 1, 125). The pragmatic clarification of terms is, accordingly, a formalization of what experimental investigators have discovered to be, for their purposes, the highest grade of conceptual clearness.

While philosophers in particular have been content with abstract definitions, they ought to attend to the practice of experimentalists and to see the necessity of moving beyond such definitions. Put positively, they ought to insist upon pragmatic clarification of the pivotal terms on which these various disputes turn.

In “How to Make Our Ideas Clear” Peirce illustrated the value of his maxim by showing how four concepts (hardness, weight, force, and reality) can be pragmatically clarified. Let us consider here only the least and the most controversial of these examples. What we, as experimentalists, mean by ascribing hardness to a substance is that this substance “will not be scratched by many other substances. The whole conception of this quality, as of every other, lies in its conceived effects” (CP: 5.403; also in EP: Vol. 1, 132). What we mean by reality, at the level of abstract definition, is “that whose characters [or properties] are independent of what anybody may think them to be” (CP: 5.405; also in EP: Vol. 1, 137). But, at the level of pragmatic clarification, reality is what would be disclosed in the course of inquiry. Hence, “reality is independent, not necessarily of thought in general, but of what you or I or any infinite number of men may think about it” (CP: 5.408; also in EP: Vol. 1, 139). On the one hand, there is here a robust affirmation of reality as possibly other than how anyone or any community happens to conceive it. On the other, there is an equally strong insistence on reality as intelligible, as what reality would, given enough time, resources, and ingenuity, disclose itself to be. As he will eventually state the matter, it is what would disclose itself to an unlimited community of experimental inquirers.

As Peirce makes clear in “The Fixation of Belief,” experimental inquiry rests upon the hypothesis that there are real things, whose characters are entirely independent of our opinions [and beliefs] about them” (CP: 5.384; also in EP: Vol. 1, 120). They have the capacity to act on us as perceptible, active, and intelligent beings in such ways that “we can ascertain by reasoning [on the disclosures of our experience] how things really and truly are” (CP: 5.384; also in EP: Vol. 1, 120). But, as he tries to show in “How to Make Our Ideas Clear,” such an abstract definition of real things is inadequate. A pragmatic clarification of the meaning of the term on which experimental investigation rests defines his term by its power to sustain and, to a greater extent, disrupt the beliefs (at bottom, the habits) of embodied agents engaged in the passionate quest to discover what is not yet known. The observable effects of enrolling realities are most telling in their power to undermine existing habits and to facilitate the acquisition of new habits (ones more fully and finely in accord with the dispositions of the things encountered in experience).

In 1898, William James presented a paper entitled “Philosophical Conceptions and Practical Results” to Philosophical Union of the University of California at Berkeley.
On this occasion, he announced to his audience his desire to identify "the most likely direction in which to start upon the trail of truth." He immediately added:

Years ago this direction was given to me by an American philosopher whose home is in the East, and whose published works, few as they are and scattered in periodicals, are not fit expression of his powers. I refer to Mr. Charles S. Peirce, with whose very existence as a philosopher I dare say many of you are unacquainted. (1975, 258)

After briefly explaining Peirce's views, as expressed in conversations in the Metaphysical Club as well as several early articles, James adapted them to his own purpose. But 1989 marks the moment when pragmatism and Peirce's role in its inauguration first came to be recognized, thanks to James, by philosophers and scholars in the United States and elsewhere. For very quickly American pragmatism became, somewhat paradoxically, an international movement. Peirce became an increasingly audible voice in the re-inauguration of pragmatism, twenty years after its original formulation in The Popular Science Monthly.

In 1903, for example, Peirce presented at Harvard a series of lectures on pragmatism and, beginning in 1905, published a series of articles in The Monist on this topic ("What Pragmatism Is" [1905], "Issues of Pragmaticism" [1905], and "Prolegomena to an Apology for Pragmatism" [1906]). In his own lectures on pragmatism several years after Peirce's, James described his predecessor's efforts as "flashes of brilliant light relieved against Cimmerian darkness" (1975: 10). In the first article in this Monist series, however, Peirce bemoaned "the merciless way" in which words are treated "when they fall into literary clutches" (CP: 5.414; also in EP: Vol. 2, 334). As a result of finding pragmatism used "to express some meaning that it was rather designed to exclude," Peirce felt the need "to kiss his child goodbye and relinquish it to its higher destiny; while to serve the precise purpose of expressing the original definition, he begs to announce the birth of the word 'pragmaticism,' which is ugly enough to be safe from kidnappers" (CP: 5.414; also in EP: Vol. 2, 334-5). Moreover, there are among his unpublished manuscripts in the period from 1898 until his death in 1914 numerous attempts to reformulate his pragmatic position. For far too long, professional philosophers have discussed Peircean pragmatism in terms of its original formulation, paying little or no attention to its mature reformulation. Especially in light of Peirce's own dissatisfaction with his earlier attempts, such an approach is unjustified.

One of the most striking features of his later efforts is their drive toward integration (e.g., toward showing how his categories, theory of signs, and pragmatism are to be integrated with each other). There is, however, an ongoing debate about the extent to which Peirce was actually successful in weaving together the disparate strands of his philosophical inquiries into a coherent fabric. Some (e.g., Justus Buchler and Murray Murphey) argue that his actual achievement fell short (perhaps far short) of his architectonic or systematic aspirations, while others (e.g., Paul Weiss, John E. Smith, Christopher Hookway, and Sandra Rosenthal) contend that at least the sufficiently charitable interpreter can discern the outlines of a philosophical system or systematic approach to philosophical questions.
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What cannot be disputed is that, in his later thought, the meaning of pragmatism tended to go beyond that of a maxim designed for clarifying the meaning of troublesome words and unduly abstract conceptions. To be sure, he would at times even then insist that his "pragmatism is, in itself, no doctrine of metaphysics, no attempt to determine any truth of things. It is merely a method of ascertaining the meanings of hard words and of abstract concepts" (CP: 5.464 [c. 1906]; also in EP: Vol. 2, 400). But he did so mostly in response to the looseness with which such authors as James, F. C. S. Schiller, and Giovanni Papini were using this word. The context in which he set forth this maxim was a theory of inquiry demanding acknowledgement of the defining features of our rational agency. This is unmistakably clear in such later texts as "What Pragmatism Is" and "Issues of Pragmaticism."

It thus might be helpful to distinguish Peirce's pragmatism in its narrowest sense and its more encompassing meaning. In its narrowest sense, it merely designates a method of clarification. In its broader meaning, however, it at least implies a normative portrait of human agency, one in which the ideal of self-control is of utmost prominence. The connection between the two senses is that we cannot obtain mastery over our selves without also obtaining control over the meanings of our words and other signs, in so far as this is possible. The pragmatic maxim in its most restrictive sense is, accordingly, only one example of a more general commitment to rational autonomy. Stated positively, then, pragmatism in its broader sense is integral to Peirce's attempt to reconstruct our understanding of rationality. In "Issues of Pragmaticism" (1935), "the secret of rational consciousness is to be sought ... in the review of the process of self-control in its entirety" (CP: 5.440; also in EP: Vol. 2, 347). In Peirce's reformulation of pragmatism (i.e., in his pragmaticism) the maxim publicly articulated in 1878 is explicitly connected to an understanding of rationality, fashioned in reference to such monumental figures in Western thought as Plato, Aristotle, Thomas, Scctus, Descartes, Kant, Hegel, and Darwin but (arguably to an even greater degree) to the practice of inquiry, especially as exemplified by the dramatic achievements of natural science.

(2) Community, Meaning, and Truth

While Peirce refused to separate the task of clarifying meaning from that of discovering truth, he devoted considerable attention to the thorny question of, "What is meaning?" and (inseparably connected to this), "How are the meaning of our words and indeed other signs most effectively clarified?" Meaning in general and the clarification of meanings in the context of inquiry (or science) were matters of the greatest interest to this philosophical inquirer.

There is, as a constitutive feature of any truly scientific community, something analogous to a code of honor (Randsell 1986 [1979] 240). The ethics of inquiry takes the form of mutual accountability (Polanyi) extending to an ethics of terminology. A scientific code of honor encompasses a conscientious use of words, a use enforced by no authority other than that of the experimentalists for whom clarity means nearly as much as truth. Peirce was simultaneously devoted to explaining how the clarification
of terms within the discourse of scientists is to be accomplished and how the very meaning of science is, in light of its history, to be clarified.

Peirce provides the warrant for reading him in this manner. But he also suggests other ways of interpreting him, not least of all one inspired by a line from one of R. W. Emerson’s poems (“The Sphinx”) (“Of thy eye, I am eyebeam”), also several lines from one of Shakespeare’s plays (“Most ignorant of what we’re most assured / Our glassy essence”). “Each man has,” Peirce insists, “an identity which far transcends the mere animal – an essence, a meaning subtle as it may be. He cannot know his own essential significance; of his eye it is eyebeam” (CP: 7.591). Such significance is transcendent: it concerns individual agents not as separable beings or at any determinate time in their unfolding lives but as communal beings contributing to an encompassing development (see e.g. CP: 5.403n3).

We are, apparently, never in the position to ascertain our place in history or (except perhaps in vaguest intimations) the ultimate meaning of our defining commitments and lifelong work. Our peculiar fate, especially after the profound transformations inaugurated in the nineteenth century, is a paradoxical one: we cannot avoid seeking what we cannot attain – a historical self-consciousness adequate to our pursuits and situation (though an awareness of this very inadequacy is, paradoxically, part of our distinctive form of historical self-consciousness and, in addition, a chastened sense of our invincible finitude requisite for the humane engagement in our defining practices). The ongoing course of human history and of the broader processes in which human history is enveloped is driving toward, without exaggeration, unimaginable transformations and upheavals. There is in evidence, at least, something akin to a mystical faith in the benevolent movement of an encompassing Spirit. On this score, Peirce is far closer to Hegel than Nietzsche.

But, those faces of the century in which Peirce was born, reared, and educated on which he tended to place the greatest emphasis are ones that work at exposing what A. N. Whitehead called the fallacy of simple location. Being located in, and representative of, the nineteenth century by no means confines Peirce to this period. His conceptions of growth, development, and evolution, also time, history, and transformation, so deeply a part of his inheritance from his time, imply that Peirce was self-consciously writing for posterity, all the more so as he advanced toward death and came increasingly to realize the extent to which he was both at odds with and unheeded by his contemporaries. His appreciation of the open-ended, prospective, and fallible dimensions of any human endeavor, including his own philosophical reflections, informed his vision of community: to be a responsible inquirer is to participate self-consciously and self-critically in an intergenerational community, stretching back to ancient times and driving forward into an unknown future. One’s contemporaries are not necessarily the most important or worthwhile interlocutors. Thus, in many late manuscripts, Peirce explicitly imagined and formally addressed his Reader, sometimes as “your Honor,” not infrequently as a person living in a faraway future. Hence, Peirce invites us to read him as a figure wrestling with Hegel and Darwin, Herbert Spencer and William James, Alexander Bain and Karl Pearson, along with countless other nineteenth-century tinkerers, but in doing so he is in effect thrusting himself beyond
the limited confines of his particular time and self-consciously addressing future generations.

If we derive a theory of science from the practice of scientists, as we ought to derive such a theory, then the reality of community cannot be gainsaid. The isolated individual is never a competent inquirer, let alone an omniscient one. Only the self as a participant in a community, but not a bounded or limited association of finite, fallible investigators—rather an infinite community of rational agents bound together by nothing less than love, hope, and faith (what Peirce calls the “three logical sentiments”)—can rightfully be accorded the status of inquirer. To be an inquirer is to be a participant in a certain form of community and to be transformed by participation in the work of that community. Though the focus of Peirce’s concern tended to foreground a particular form of human community (the unlimited community of experimental inquirers), he was far from overlooking other forms of human association, for instance, the community of worshippers so central to an adequate understanding of the religious life or the community of citizens so crucial for a compelling account of our political existence. Sometimes Peirce’s communitarianism seems to drive in the direction of collectivism, to a reductivist conception of human association in which human individuality is justifiably sacrificed for collective goals more or less externally related to the character and, thus, the individual(s) making the sacrifice. But, far more often, a critical distinction between community and collectivity is implicit in Peirce’s discussions of the associations in and through which human individuals acquire their various competencies and realize their distinctive capacities.

The reality of community is evident in a range of phenomena, not just the exemplary practice of experimental inquirers exerting mutual accountability in their ongoing pursuits. For Peirce at least, a community of scientists clearly exemplifies the reality of community, but so does simply a community of speakers sharing a language by which they can share much more. The notion of an invincibly private language (one with which the self might communicate its thoughts to itself but one in principle unintelligible to anyone else) is, for Peirce no less than the later Wittgenstein, self-defeating or self-contradictory. Meaning is inherently irreducible general in the sense that what is meaningful to you must, in principle, meaningful to me. It may turn out that meaning is not only irreducibly general but also irreducibly vague. In fact, Peirce held that this is indeed the case. But, for certain purposes in certain contexts, meaning can be rendered sufficiently determinate in both respects so that effective communication is a humanly realizable goal.

We are always already members of a community of meaning, caught up in complex exchanges as often as not initiated by parties other than our selves. There is, in Peirce’s writings, a vision of human actors as sign-using and sign-making animals who instinctually are responsive to the import of some signs. In his emphasis on these points, Peirce as much anticipated one of the central developments in twentieth-century philosophy as he gave eloquent expression to a particular vision of human life.

The question of meaning was near, or arguably at, the very center of his concern. On the one hand, he was principally interested in this question as it arises in the context of science. His pragmatic maxim was initially formulated as the practical
counsel of an experimental inquirer addressed to other such inquirers but also those (including philosophers) who aspire to carry out the exacting work of responsible investigation. On the other hand, he devised a theory of signs by which the meaning of not only scientific terms but also virtually any other one might be illuminated. That is, he desired to articulate a truly general theory of signs, one providing the resources for identifying, analyzing, and evaluating signs and, more narrowly, symbols in their myriad manifestations, not merely their scientific roles. But he designed this general theory primarily for a specific purpose—to offer a normative account of objective inquiry. In order to understand science, we have to understand signs, in particular, how certain semiotic functions become integrated in complex signs and, beyond this, become integral to the interwoven forms of logical inference. But, in order to understand signs sufficiently for this task, we have, somewhat paradoxically, to go beyond the rather narrow sphere of scientific investigation. The theoretical imagination must be allowed to take sweeping flight, gliding over (often high above) the fields of science but also those of the various other forms of human practice.

For Peirce, the question of meaning is, in any event, bound up with a far-reaching, deep-cutting investigation of signs. The nineteenth century is not only a time in which historical consciousness assumed a dramatically reflexive form, but also one in which semiotic awareness (a consciousness of the role and indispensability of signs in the acquisition of experimental knowledge and in other domains of human experience or practice) assumed such form. Such semiotic consciousness was in no small measure due to Peirce’s own Herculean efforts to articulate a general theory of signs, principally in light of the painstaking contributions of various medieval logicians and the exacting demands of providing a convincing account of objective investigation (the kind of inquiry in which general laws as much as particular facts are experimentally discovered and thereby objectively established). The parallels and, of greater significance, the differences between this North American philosopher, scientist, and logician, on the one hand, and the Swiss linguist Ferdinand de Saussure, on the other, make it clear that, already in the closing decades of the nineteenth century and the opening ones of the twentieth, the linguistic turn (the turn toward language—the explicit, critical appreciation of the role and indeed centrality of language in resolving various disputes, including philosophical controversies) had been taken. But the linguistic turn as taken at least by Peirce (if not also by Saussure) was more than this: it was in the same breath a semiotic turn, a turn toward signs in their myriad forms (not just in their linguistic or verbal forms).

The claims of rationality and experience / the relationship of theory to practice

"The story of modern thought is," as John E. Smith so insightfully notes, "largely the story of the criticism of reason undertaken from many points of view and prompted by diverse motives" (1992: 103–4). The story of nineteenth-century philosophy is an important chapter in this unfolding history, but it is decidedly an intensification of this critique, one wherein the constructive and creative functions of reason are accorded at least as central a place as the self-critical and self-restraining requirements
on which the responsible exercise of human rationality insists. The Kantian project of theoretical reason subjecting itself to a systematic critique resulting in severe strictures regarding metaphysical speculation generated a variety of reactions, not the least of which involved attempts to recover a more robust conception of human reason than that offered by the author of the first *Kritik*.

To place reason within the limits of experience alone, as Kant so forcefully argued in this work, might have to be radically modified if the very meaning of experience is itself altered or transformed. This is, in any event, precisely what Peirce proposed. Peirce’s transformation of reconstruction of our conception of experience begins by stressing that experience is far from exhausted by the role it plays in the acquisition of knowledge. Experience is, first and foremost, the course of our lives, all that we have lived through (a sense expressly captured in the etymology of the German word *Erlebnis*). As valuable and informative as the differential perspective of the theoretical inquirer is, it is only one perspective among various other ones. This is indeed the point in characterizing this perspective as differential. Quite simply, it makes a difference whether one adopts a theoretical perspective or some other viewpoint. Here is a difference that truly makes a difference. But, there is, in the story to which Smith refers, the one in which the criticism of reason is undertaken from diverse perspectives and animated by diverse impulses, a strange oscillation between uncritically privileging theoretical reason and harshly denigrating it.

Beginning in the nineteenth century – more accurately, gaining clarity and force in this century – there has arisen the tendency to grant primacy to practical reason. Sometimes this has meant enslaving theory to practice, at least, to subordinating theoretical reason to the demands of some form of practical reason (be it technological, moral, or some other form of such rationality). At other times, however, the effort to grant primacy to practice has been done in the hope of honoring theory as a distinctive form of human practice. On this construal, theory is not said to be for the sake of practice but rather is itself conceived as a form of practice, possessing an integrity of its own. Theoretical reason turns out to be the somewhat misleading name for an extended family of human practices oriented toward the discovery of unknown truths. What is true of any human practice is also true of our theoretical investigations (or heuristic practices – practices having as their purpose the advancement of inquiry at least in some specific domain and possibly in providing models, strategies, and tools applicable to yet other domains). These investigations are evolved and evolving practices ordinarily stretching across a number of generations (newly instituted fields of inquiries are almost always ones generating work to be accomplished not in the course of a single lifetime but for the indeterminate duration of successive generations). Granting primacy to practice, at least in this sense, need not entail undermining the authority of theory. It does however entail squaring the authority of theoretical reason, as established within particular fields of human practice, with the authority of other forms of human rationality or, more broadly, other forms of human experience and engagement. The authority of scientific reason cannot immediately or decisively discredit the authority of religious sentiment. That is, the differential perspective of religious consciousness is simply not of such a character that it can be laid alongside
the viewpoint of science and thereby judged to be fatally flawed or defective. Certain historical forms of religious consciousness can certainly be challenged by the discoveries of science (e.g., those depending on a literal interpretation of the creation story found, say, in Genesis). But religious consciousness as such is not inherently opposed to scientific rationality. The extent to which such consciousness, in this or that historical or cultural configuration or articulation, needs to be modified because of the findings of science is itself an experimental question, moreover, one requiring hermeneutic sensitivity as much as intellectual candor. This was, at least, Peirce's position regarding such questions.

The story of philosophy — not only modern philosophy but also at least Western thought in its full sweep — conceived as the story of the critique of rationality attained, nonetheless, a heightened form of critical consciousness with Kant in the eighteenth century and a sharpened sense of historical consciousness with Schelling, Hegel, Fichte, and others in the nineteenth. The critique of reason is never anything less than the self-critical exercise of our remarkable capacity to form judgments and draw inferences. The critical exercise of human reason generates a potentially unlimited series of reflexive judgments and critical inferences (we judge a certain judgment or even an entire manner of judging to be mistaken or irresponsible, just as we infer that certain patterns of forms or inference are defective or unreliable).

In turn, the story of Peirce's philosophy is a decisive intervention into this ongoing history. It represents a unique contribution to the Kantian project, in the broadest sense of this term. For it represents a contribution to the critique of reason in all of its forms. Like Kant, Peirce's project grants, in a certain respect, primacy to practice. But, unlike Kant, it does so not by increasing the split between theory and practice, science and sentiment (though there is, in reference to Peirce, a need to qualify this claim). Rather it grants primacy to practice partly by subsuming theory under the rubric or heading of practice. And it does so without erasing the integrity of our theoretical investigations. Such investigations are like other practices in some respects (e.g., they are historical through and through) but unlike other practices in at least equally important respects.

The critique of reason is bound up with the task of philosophy. While philosophy cannot be reduced to this critique, it also cannot be relieved of the responsibility to determine the forms, functions, scope, and status of rationality. But, like so many other prominent figures in the nineteenth century, Peirce connected his critique of rationality with a defense of autonomy, above all, autonomy in the etymological sense of this highly contested term (the sense of giving laws to oneself). What most sharply distinguishes Peirce's vision of reason from Kant's view is the extent to which human autonomy is understood in uncompromisingly historical terms. Peirce replaced the antecedently fixed structures and principles of the human mind by historically emergent and operative forms and procedures. Hypothesis in philosophy ceases to be viewed as (in Kant's words) "contraband" ("Everything...which bears any measure of resemblance to an hypothesis is to be treated as contraband; it is not to be put up for sale even at the lowest price, but forthwith confiscated, immediately upon detection" [1965: 11]) and comes to be honored as the only reliable means of extending human knowledge. This goes for philosophy as much as any other field of inquiry.
The extent to which Peirce was himself engaged in a transcendental project in a Kantian sense, even a greatly modified Kantian sense, is a thorny question. It seems plausible to assert that Peirce was devoted to determining the conditions for the possibility of science, for that sort of objective inquiry in which intersubjectively established discoveries are unquestionably made. Since this seems to be what Kant defined as a transcendental justification, Peirce appears to have been engaged in just such a justification of science. But the precise character of these conditions is not anything Kant himself would recognize as underwriting a transcendental justification in the strict sense, since these conditions are not to be found in a priori forms of sensibility or categories of understanding (or anything else a priori), but in historical inheritances, innovations, and accomplishments.

This is, however, to jump ahead of the story. What most deserves to be emphasized at this juncture is that Peirce’s philosophy encompasses a contribution to the critique of reason and, as this critique was actually carried out by him, it further includes a defense of autonomy. These facets of Peirce’s project become most visible when seen against the background of earlier thought, above all, those German philosophers with whom he was caught up in a lifelong debate.

However, the towering figure of Charles Darwin is no less important than philosophical authors for appreciating the distinctive character of the Peircean project. Peirce’s undertaking represents, at once, many of the unresolved tensions of the nineteenth century and (at least as much) vivid intimations of the emergent agenda of the twentieth century in its full expanse and the twenty-first in its opening decade. These tensions are nowhere more evident than in Peirce’s Kantian tendency to conceive human reason as a capacity for heroic self-restraint and his Hegelian tendency to envision our rationality as nothing less than an integral part of a cosmic development. Connected to this tendency, there is, on the one hand, the insistence that our historical locatedness for the most part precludes ascertaining in any precise manner the defining characteristic or our particular epoch and, on the other, the confidence as a young man and ever afterwards of identifying just these characteristics!

Accordingly, Peirce’s unique contribution to the unfolding account of human rationality needs to be set in its immediate context. This means that it must, at the very least, be seen in reference to Kantian and post-Kantian idealism. The critique of reason launched by Immanuel Kant in the eighteenth century and carried forward by such figures as Schelling, Hegel, and Fichte in the nineteenth is a project to which Peirce and, indeed, the other pragmatists are committed in their own way. The pragmatic reconstruction of intelligence unquestionably takes shape against the background of the Kantian and post-Kantian efforts to determine the scope, forms, functions, and status of reason (or Reason). Above all, it takes shape against the Kantian endeavor to delimit the scope of reason within the bounds of possible experience and the post-Kantian projects to expand this scope to include a theoretically legitimate account of the divine Being and human freedom. Kant argued that God, freedom, and immortality pose theoretically undecidable questions (taken as strictly theoretical questions, human reason is in principle barred from arriving at a
rational answer. But, for the "king of modern philosophy" (as Peirce dubbed him), each of these is a necessary postulate of practical reason, where practical reason means moral reason (the specific form of human rationality requisite for the exercise of our moral agency). Moral agents as practical beings must postulate the existence of God, for such a Being alone guarantees that injustice and immorality will be punished, justice and morality rewarded. Such agents must also postulate freedom or autonomy and immortality.

The postulates of practical (or moral) reason are, thus, not based on the disclosures of theoretical reason. What moral reason most deeply needs, theoretical reason cannot provide. But, for Kant, this does not spell the defeat of rationality. For he does not take moral reason to be utterly dependent on theoretical reason. Indeed, he contends that moral rationality itself has a degree of autonomy from theoretical reason. The autonomy virtually identifiable with rationality is, on Kant's account, even more evident in moral (or practical) than in theoretical (or scientific) reason. For Kant, reason is, at bottom, the capacity to give laws to oneself. This is the justification for suggesting that, from Kant's perspective, rationality is virtually identifiable with autonomy.

In its theoretical form, the most severe challenge confronting Kant is to show how scientific reason is a self-legislative power, meaning that our reason gives laws to nature, but comes thereby to discover experimentally what reason does not dictate or construct, at least in any strong sense. Whatever nature comes specifically to mean for theoretical or scientific reason (e.g. a domain in which explicable patterns are identifiable and effective explanations discoverable), it generally means only what falls within the boundaries of possible experience. The limits of sensory experience hence define, for Kant, the limits of human knowledge. In this, he is in accord with empiricism, with such thinkers as John Locke, David Hume, and George Berkeley. But the possibility of experience in the relevant sense - the sense in which our sensory experience can serve to ground our scientific knowledge of the natural world, a knowledge in some respects universal and necessary (e.g. all bodies of a certain mass, etc.) - requires us to reject the equation between sensory experience and the allegedly unrelated data of sensory intuition. Put simply, experience cannot be what such empiricists as Locke and Hume claim it is, at least if experience is to serve as the basis of knowledge, taking our paradigm of knowledge to be physics (more precisely, natural science - what he typically called natural philosophy - as reformed by Isaac Newton).

At the very least, the possibility of experience in the relevant sense demands the categorization of enduring objects identifiable in and through their locus in causal networks (e.g. this billiard ball colliding with this one in such a manner - with such force and at such an angle - to propel the second ball in this direction, at this velocity). From Kant's perspective, the categorization of the items or data of experience is the conjoint work of sensory intuition (or input), on the one hand, and rational activity, on the other. The work of theoretical (or scientific) reason extends to organizing sensory data into recognizable objects (thus, relatively stable and enduring objects) standing in discoverable relationships to one another. Accordingly,
the possibility of experience encompasses the possibility of encountering identifiable (by implication, re-identifiable) objects connected in multiple yet for the most part unknown ways with one another. Only experience in this sense can serve as the basis of knowledge. But experience so conceived is itself possible only because reason brings to experience – to the sensory intuitions spontaneously given to human reason – a priori forms of intuition (namely, time and space) and a priori categories of the understanding (e.g. substance and property or cause and effect). Theoretical reason is able to read out of sensory experience intelligible patterns and illuminating connections only because such reason reads into such experience a coherence and stability the rendered bits of sensory impressions, in their chaotic, atomistic upsurge, could never secure. Such reason defines the terms in which experience must be cast, legislates the forms in which objects-in-relation must appear.

The conflict between rationalists and empiricists points to the need to square the claims of rationality against those of experience. For Kant and even more for Hegel, this meant overthrowing the dualism between reason and experience. But this is not by any means the only dualism to be transcended. The dualism between praxis and theoria – the domain of human practice and that of strictly theoretical investigation – a dualism already evident in René Descartes’ writings (see e.g. his Meditations on First Philosophy), assumes a peculiarly sharp form in Kant’s critical project (his endeavor to limit theoretical reason to the domain of possible experience while freeing practical or moral reason from such narrow confinement).

In Peirce’s hands, however, the critique of human reason does not assume, at the outset, the form of a critique of pure reason, but rather that of experimental intelligence. Peirce’s critique of experimental intelligence does indeed trace its roots to the Kantian project, but with arguably even greater significance issues fruits resembling Hegel’s speculative venture far more than Kant’s critical philosophy. “My philosophy,” Peirce came eventually to see, “resuscitates Hegel, though in strange costume” (CP: .42).

In its theoretical form, then, human reason is, from a Kantian perspective, a self-legislative power, properly exercising its rights to give laws to nothing less than nature. This characterization of rationality is, however, easily misunderstood. It does not mean that reason dictates how nature must, in particular, disclosure herself, only how nature must be approached in order for discoveries to be made. Put otherwise, it means that theoretical reason defines the sphere in which scientific inquiry, as a responsible undertaking (not least of all, an empirically responsive undertaking – i.e. responsive to the promptings, pressures, and revelations of experience), takes place and, indeed, alone can take place. In order for reason to take anything at all away from experience, it must bring much to experience – nothing less than those principles of organization technically identified by Kant as the a priori forms of sensibility and the a priori categories of the understanding. In this sense, theoretical or scientific reason is self-legislative.

In its practical or moral form, however, human reason is, if anything, even more decidedly self-legislative. Moral agents do not as such follow the dictates of their sensuous natures or even the commands of a divine lawgiver, but the demand of the
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categorical imperative. Such agents are acting morally, in Kant's judgment, when they are acting not only in accord with duty but also out of an explicit, conscientious sense of duty, a sense obtainable only by means of a rigorous adherence to the categorical imperative. Just as the self-legislative function of theoretical or scientific reason is not intended by Kant to deprive nature of its autonomy, so too the self-legislative function of practical or moral reason is not understood by him as denying the authority of God. In giving laws to nature in the sense of conceiving the natural world in accord with the organizational principles of human reason, Kant takes theoretical reason to be establishing not only an intelligible but also an autonomous sphere. The world is knowable in large measure because it is our world, a world of appearances organized in accord with the demands we make upon what is given to us in sensation. But, Kant nonetheless insists, our world is truly a world (the world of theoretical reason is an arena for responsible inquiry), not merely the fabrication of private fancy or even the projection of collective delusion. It stands over against us with such solidity and degree of opposition, not only coherence and intelligibility, that empirical realism becomes an integral part of the Kantian position. That is, Kant is, in a sense, a realist (specifically, an empirical realist). While he certainly does not grant that we can know what things-in-themselves are (what things independent of our forms of sensibility and categories of understanding are), he insists that things as they appear to us in our experience can only be known on the basis of this experience. Empirical reality cannot be known a priori, even if the very possibility of there being such reality is dependent on the organizational work of human rationality. It must be known empirically and, in many cases this means it can only be known experimentally (on the basis of deliberately designed and carefully executed experiments). While Kant is a transcendental idealist because he insists that the defining features of pure reason (theoretical reason in its self-legislative character) are not known empirically or experimentally, but rather transcendently, he is an empirical realist because he insists empirical reality is only knowable by empirical processes or procedures.

But Peirce encountered Schiller's Aesthetic Letters even before reading Kant's first Kritik (Peirce insisted upon translating Kritik as Critic rather than Critique, presumably stressing thereby one of the controlling metaphors presented very early in the Kantian text, that of the judge, in effect, the critic whose role is responsibly discharged only to the extent that certain canons of self-criticism are followed). Peirce came to philosophy by way of a scientific training and rather extensive reading in classical, medieval, and modern philosophy, with special attention paid to certain paradigmatic medieval logicians and modern authors. He was as deeply, if not more deeply, steeped in the German tradition of philosophical writing as any other.

Decisive steps toward a historical critique of experimental reason

Peirce was, at once, a representative figure of the nineteenth century (that is, he was a representative man in the Emersonian sense) and a thinker deeply at odds with many of the dominant tendencies of his time and place. The defining conflicts, contradictions, and aspirations (in all their ambiguity and ambivalence) of this century virtually
define Peirce himself. For example, he could not have been more strenuously opposed
to individualism, mechanism, scientism, materialism, agnosticism, and reductive
conceptions of evolutionary development. As any thinker whose genius is receptive
no less than innovative, Peirce was a child of his times and an exile from them. But
he was in fundamental respects more our contemporary than Herbert Spencer’s or
Karl Pearson’s (that we are far more familiar with his writings than theirs is indicative
of this). But he is a contemporary whose style and even thought can, at times, seem
quaint or dated, but more often one whose insights and suggestions are not yet fully
appreciated or even understood.

The image of a recluse in Milford, Pennsylvania, spending his last years filling page
after page contrasts sharply with that of us less than a hundred years later sitting in
front of a computer screen. But the words in those manuscripts can sound stunningly
contemporary. For him, methodological self-consciousness encompassed historical
self-consciousness. In this, Peirce was far more a child of Vico than a child of Descartes
(Maclntyre 1980 [1977]).

Experimental mind leans on historical consciousness. In turn, historical awareness
today is infused with an experimental spirit: it takes itself to be never more than an
attempt – a guess – at obtaining insights into what eludes definitive articulation or
final reckoning. The narrative turn is only implicit in Peirce’s writings. But his turn
toward history, so characteristic of the nineteenth century, implies a turn toward
narration, toward the process by which the past is re-appropriated and also re-framed
or reconfigured. The example of Hegel is unmistakably that of a philosopher who tries
to appropriate the reconfigurations of his predecessors.

But his approach (although in modified form) is relevant to our understanding of
more than philosophy. Peirce worked indefatigably to offer a compelling account of
scientific inquiry. He did so in a manner somewhat reminiscent of Hegel. But, at the
same time, he worked with equal persistence to transform philosophy into a science,
going so far in a letter to William James as to proclaim, “philosophy is either a science
or it is balderdash” (Perry 1935: Vol. 2, 438). One of the unresolved tensions at
the very center of Peirce’s philosophical project bears directly upon his status as a
representative thinker of the nineteenth century. For his writings both embody the
tendency to privilege scientific knowing (in the sense of experimental inquiry) as the
only reliable form of human knowing and provide the resources for (indeed, exhibit
the impetus to) frame a comprehensive theory of human practices in which scientif-
ic inquiry is but one among numerous other forms of human symbolization. While
he was in so many arenas of debate an astute critic of the reductivist impulse of so
much nineteenth-century thought, he appears to be in his principal preoccupation
an advocate (however unwitting) of reductivism. For is not scientism an instance
of reductivism, in that it reduces all human knowing to the accredited forms of scien-
tific inquiry? But the matter is more complex than this, since what Peirce means by
science is more humane and encompassing than what is ordinarily meant by this word,
especially in the mouths of the more militant defenders of the scientific faith.

What emerges from Peirce’s efforts to understand science on its own terms, from
within the sensibility and Eros of those passionately devoted to a life of investigation,
is a reconstructed understanding of human rationality. This understanding traces its roots partly to the classical vision of logos, but partly to a Darwinian (or, more broadly, evolutionary) conception of animal intelligence or cunning. In it, we clearly hear echoes of especially Aristotle and, in a more muted but still audible form, those of Kant and Hegel. In Peirce’s writings, we encounter in a somewhat implicit, but in no small measure also an articulated, form a deliberative, dialogical understanding of human reason. Experimentation is itself understood, at bottom, as a dialogue between a sign-using and making animal, on the one hand, and a sign-generating nature, on the other. Animals are in the business of uttering and interpreting signs, quite apart from their intention or consciousness of doing so. Humans are animals for whom the utterance and interpretation of signs have evolved in the direction of self-consciousness, self-criticism, and self-control. Humans cannot think without signs; but we also cannot, at least at certain junctures in the tangled histories of our various practices, avoid thinking about signs. Human semiosis is virtually destined to become a reflexive operation, one ineluctably generating and extending semiotic awareness (our consciousness of signs as sign). The emergence and evolution of science are examples of nothing less than the development of methodological self-consciousness, self-criticism, and self-control, as these have taken shape in the various exchanges constituting the life of intergenerational communities of experimental inquirers. But the development of such awareness, assessment, and autonomy are not exhausted in the forms observable in the practices of science.

Experimental intelligence (the capacity not only to learn haphazardly from experience but also — and more decisively — to learn deliberately from experimentation) must inevitably lean on narrative consciousness. An experiment in the true sense is as much a drama as a dialogue; and, as a drama, the import and teachings of an experiment are available only by means of narration (an agent undertook a course of action and, as a consequence of these actions, certain results — some of which were likely unanticipated or unexpected — ensued). While experimental intelligence inescapably relies on narrative consciousness, narrative awareness drives beyond all inherited limits. The prefix re- is, in any pragmatically inflected discourse (thus in Peirce’s own characteristic diction), as critical and central as the prefix trans- (as, for example, in such words as transmutation, transactions, transition, transformation, and translation). But this inflection is not only audible in such terms as reconstruction, renovation, reparation, and recovery but also in such words a re-narration and reconfiguration (especially when reconfiguration signifies the replacement of one figure or metaphor by another — e.g. the metaphor of constructing the edifice of knowledge on an unshakeable foundation with that of a journey, a process of making our way through largely unmapped terrain). The vitality of any tradition depends on a series of renewals and, in turn, these renewals often themselves depend on our narrative ingenuity, an ingenuity exhibited nowhere more dramatically than in our ability to re-narrate inherited stories in novel ways and, more radically, to revise what might count as an intelligible form of human storytelling.

Peirce took great pains to tell the story of the emergence and evolution of science. In doing so, he reformed our understanding of science, unquestionably anticipating
the revolution inaugurated by Thomas Kuhn in academic circles a hundred years later. But his narration could not help but be a re-narration and even a counter-narrative, a story crafted and defended in the teeth of previous and rival accounts. In the course of unfolding this story, however, Peirce also articulated a reconstructed understanding of human rationality in which the ideal of demonstrative proof (animated by a demand for apodictic certitude) is replaced by the ideal of dialogical suasion (infused with the spirit of concrète fallibilism). Paradoxically, the severe self-restraint characteristic of the Kantian approach to theoretical reason is combined by Peirce with an abiding confidence in the irrepressible self-transcendence of our rational pursuits, in any of their actually realized forms (including their most authoritatively established ones at the present time), so central to the Hegelian account of living Reason.

Peirce’s evolutionary cosmology was an attempt to envision a cosmos in which the myriad forms of living beings in their ongoing evolution are far from incidental or insignificant. This is, more than anything else, a universe in which life has emerged, evolved, and continues to evolve. Life—thus, growth and evolution—are not cosmic anomalies or (even more paradoxically) metaphysical impossibilities, but among the most salient features of the empirical world—phenomena to which our attention is drawn at every turn, though ones rendered inexplicable by the very theories whose function it is to illuminate—rather than deny—such phenomena.

“What the true definition of Pragmatism may be,” Peirce once confessed, “I find it very hard to say; but in my nature it is a sort of instinctive attraction for living facts” (CP: 5.64; emphasis added). In my judgment, a deft feel for living facts, beginning with the phenomena of life themselves, is the deepest mark of Peircean pragmatism. In any event, scientific inquiry is, for Peirce, “a living thing” (CP: 1.234; emphasis added). But, to be in the position to conceive adequately the life of science, we must appreciate that “the woof and warp of all thought and all research is symbols, and the life of thought and science is the life inherent in symbols” (CP: 2.220). But it is all too easy to miss how seriously Peirce intends this point. Hence, it is helpful to stress that, for him, “every symbol is a living thing, in a very strict sense that is no mere figure of speech” (CP: 2.222; emphasis added), even if it is inescapably such a figure. In order to offer an account of the life of science, Peirce elaborated a general theory of signs, one applying to much more than linguistic signs or even the specific functions fulfilled by various signs in the vastly extended family of experimental inquiries. The phenomena of life in the cosmos—taken as telltale and undeniable signs of an irreducible and irrepressible reality—pointed Peirce toward an acknowledgement of the life of signs. His intellectual response to vital phenomena, extending to the life of science and more broadly signs, not just that of plants and animals, was the self-conscious articulation of an evolutionary perspective, albeit one in which social Darwinism and even the Darwinian theory of biological evolution were contested. Peirce was a thoroughgoing evolutionist but, in some respects, a half-hearted Darwinian.

In this and numerous other ways, he was a representative thinker in the Emersonian sense of the nineteenth century. Indeed, his deeply ambivalent relationship to this other paradigmatic figure—this other exemplar of the century in question—is nowhere more apparent than in his deep agreement with Emerson (Nature is a manifestation
the dominant approach in the nineteenth century, continued throughout much of the twentieth and indeed into the twenty-first, to the physical world.

The attempt to square our scientific understanding of the natural world with our moral self-understanding, so central to Kant’s critical project but also to post-Kantian thought, was ingeniously reconfigured by Peirce with respect to both our vision of nature and our portrait of our own agency. Chance is as objectively or really characteristic of nature as is lawfulness or regularity. Chance might in truth be an even more prominent and pervasive trait of nature than law. Indeterminacy marks being, what is no less than our thoughts and efforts to know what is. That is, reality itself is in some respects and to some degree indeterminate. The intelligibility of the cosmos implies the presence—in the end, nothing less than the reality—of continuity. The world is intelligible and the degree to which it is such can only be determined experimentally. The tendency to pronounce this or that inexplicable or unknowable amounts to the suicide of thought. For thought in the relevant sense here is primarily imagination transfigured by demands of rendering phenomena explicable. For thought to insist upon inexplicability amounts to thought in the pertinent sense destroying itself.

Logical agency – the form of deliberative rationality exerted and refashioned by the experimental inquirer, moreover, the form explored and explicated by the logician in the uniquely Peircean sense of that word—is, according to Peirce, only a species of moral agency. The principal task confronting human beings in their role as logical agents is neither to construct demonstrative arguments (or deductive proofs) nor to secure reliable inductions, but to generate fruitful hypotheses (and this practically means putting forth somewhat wild but not unintelligent guesses carrying the promise to illuminate facets or features of what presently eludes understanding or explanation).

For many of the impulses unleashed or at least intensified during this time are ones that define arcs and trajectories extending all the way into the present. C. S. Peirce’s efforts to come to terms with his own time, partly in terms inherited from his most immediate predecessors (most notably, Kant, Schiller, Schelling, Hegel, and Darwin) and partly in ones improvised by him, provides us with a model for coming to terms with Peirce himself in his time. That his physical life extended beyond the limit of the century in which he was born might be taken as a symbol of not only the unfinished task embodied in his voluminous writings but also (more broadly) the ongoing work of considering anew numerous pivotal figures in the nineteenth century. What Schelling and Hegel were to the three inaugural decades of the nineteenth century, arguably Peirce and James were to the concluding decades of that century and the opening years of the twentieth—at the very least, disparate attempts to square the natural world with human freedom, to reconcile the claims of religious consciousness with the discoveries of experimental inquiry, and finally a sustained interrogation of the meaning of science (Wissenschaft) encompassing a reflexive account of meaning itself. An understanding of science articulated self-consciously in light of the history of science—one aiming to display the meaning of science—turned out to be impossible apart from a science of meaning or, more exactly, the study of signs. But such a study, especially when conjoined to an unqualified acceptance of unconscious mind, an insistence upon the evolutionary continuity between the human species and other species, a conception
of intelligibility inhering in networks of relationship as much discovered as created by the symbolific propensities of the human mind, and finally an acute awareness of the metaphorical character of all innovative thought, could not avoid directing attention (regarding the unconscious mind) from Eduard von Hartmann to Sigmund Freud and beyond, (regarding evolutionary continuity) from Charles Darwin, Louis Agassiz, and Asa Gray to contemporary biologists and (more broadly) evolutionary theorists in various fields (e.g. Terrence Deacon [1997]), from Saussure and Peirce himself to Ernst Cassirer, Susanne Langer, and other theorists of signs today, finally from (again) Peirce to Mary Hesse, Paul Ricoeur, George Lakoff, Mark Johnson and other theorists of metaphor. That is, one cannot but trace the trajectories of thought originating or intensifying in the nineteenth century into, and beyond, the twentieth. This is one of the insights we have inherited from this century regarding the meaning of meaning itself: significance is irreducibly and irrepressibly historical and, thus, it is, no matter how firmly consolidated or authoritatively instituted, ineluctably driving toward an unending series of more or less radical transformations.

Meaning is, first and foremost, in the making — meanings made (those established and integrated, adumbrated and codified) are ultimately in the service of meanings in the making. The value of symbols is that they inscribe the growth of symbols and, ultimately, their own self-overcoming or self-overturning. Peirce’s vision of the cosmos, so intimately connected to his understanding of signs (or semiosis — i.e. sign-activity or sign-process) and, more specifically, to the experimentally controlled use of signs in methodically deliberate investigations, exemplifies this growth. It also offers one of the most penetrating analyses of this dramatic process to be found in a writer from this epoch or, for that matter, from any other one. The manner in which meaning and evolution are creatively linked here is emblematic of this thinker and the century in which he was born. This is no less least of all because we can observe, as a sign of the times, the unresolved tension between rational control of our use of signs and the uncontrollable growth of signs in their myriad forms — more precisely, between the ideal of rational control and the recognition of ungovernable evolution.

The exercise of rational agency as much as anything else leads to a vision of staggeringly complex, intricately interwoven processes (biological, cultural, political, economic, and ultimately cosmic) in which humans are ineluctably caught up. The historical situatedness of human rationality is, at once, a disclosure of rationality itself and an apparent threat to even the minimal requirements for rational control over our various pursuits (including experimental inquiry). Part of the story is, arguably, the transition from conceiving reason as a transcendent capacity (indeed, the tendency to identify reason with the capacity to transcend the contingencies and particularities of time and place, personality and culture, animal life and human finitude) to envisioning reason as an immanent force (at least, an immanent presence) in the actual world in all of its unfinished and alterable character.

Does human reason truly possess the powers it presumes to exercise? The most troublesome threats to human rationality emerge — or, perhaps more accurately, erupt — from within the life of reason itself. As a result, reason appears to be divided within itself. The efforts of Kant and subsequently such thinkers as Schelling, Fichte, and
Hegel to portray human rationality as an ultimately harmonious unity were taken up and carried forward by Peirce and the other pragmatists (to name but one significant movement tracing its roots to the nineteenth century and, more specifically, staking its identity in part on offering an radical revision of human reason). Peirce and the pragmatists no more offered a definitive solution to the internal conflicts befalling human reason by virtue of its most dramatic achievements than did Kant or the post-Kantian idealists. But like those and other predecessors, they provide profound insights into the situated and thus conditioned character of rationality, also the critical function and dialectical developments so much a part of the evolution of reason. These insights alert us to the possibilities of distortion in such expressions as “the evolution of reason” and “the intelligibility of nature,” without necessarily forcing us to abandon such expressions. The work of reason is unfolding, the evolution of rationality and thus autonomy is full of unpredictable twists and turns, and our alliances with nature are intimate and fateful, making our estrangement from nature inescapable but (whenever frozen into a permanent posture) destructive beyond imagination.

Can acknowledgement of the historicity of reason be conjoined to an unblinking recognition of the ultimately irrational character of human history (at least, the possibility of this being true of history), without losing reason? Peirce and other pragmatists, along with other movements inaugurated in the century of Marx, Kierkegaard, Darwin, and Nietzsche, are as important for pressing this question as they are for providing resources to address it. Perhaps Peirce is more a child of the century in which he was born than the one in which he died by being more preoccupied with showing the rationality of evolution and history than exhibiting the historicity and evolution of reason. But the unresolved tensions evident even in his most carefully developed positions suggest he represents that century not so much in the positions he advocated as in the problematics he embodied, with all their jagged edges and unanswered questions.

References