Once upon a time, in what must now seem like the Stone Age—that is, before the invention of the personal computer—most graduate students would carefully copy out and assemble their research data on 3-by-5 index cards before writing up, in dissertation form, the results of their painstaking labor. Given such utter dependence on so tenuous a medium in those horse-and-buggy days, graduate student folklore was naturally filled with stories of some hapless student whose landlady (or her cat: always an amusing villain in such tales) mistook these sacred runes for random jottings and threw the whole pile out with the trash (or, in the case of the cat, chewed them to shreds). And indeed, I personally knew a graduate student at the University of Regensburg who brought along his shoebox of index cards on a train trip through Switzerland and, through a truly bizarre mishap, saw his cards whoosh out the window and blanket the Alpine foothills with a fresh new layer of white precipitation.

This peculiar image of index cards dusting the Swiss landscape comes to mind when I think of the legacy of Charles Sanders Peirce (1839-1914). Hailed by many, and with reason, as America’s greatest philosopher, indeed as probably the only philosopher this country has produced of the stature of, say, a Kant or a Hume, he is nonetheless a philosopher whose writings rarely exceed the length of an essay (or more usually, of a contribution to a dictionary), and whose unpublished posthumous work indeed resembles a veritable blizzard of index cards for posterity to pick through and arrange as best it can.

When Peirce was dying in his isolated villa in Milford, Pennsylvania, perhaps a bit like Plato in Syracuse, Josiah Royce, Harvard’s leading philosophical light after the death of William James, arranged to have Harvard purchase all of the Peirce papers. There they sat pretty much incubating unhatched until posterity arrived in the form of two enterprising graduate students—who would themselves go on one day to become important philosophers—Paul Weiss and Charles Hartshorne. From 1931 to 1935 Weiss and Hartshorne brought out Peirce’s Collected Papers (abbreviated henceforth as CP).

This finally gave Peirce the hearing he deserved (and which in his lifetime Harvard had done so much to insure he would not receive). But the Weiss-Hartshorne edition is also a bit of a mess, rather like a chest of drawers in a typical graduate student’s dorm room: the arrangement of the Peirce papers is topical rather than chronological, which can be deceptive; and the rubric they employed tends to tell us more about the editors’ "take" on Peirce than it does to disclose the architecture of Peirce’s real convictions.

Especially about religion.

The 1931-1935 edition of the CP came out in six volumes, and Peirce’s philosophy of religion is relegated to the sixth and final tome—and not as a culmination of his thought but rather as an appendix or afterthought. For as the editors say in their Introduction to volume six, Peirce’s
religious writings have "rather tenuous connections with the rest of the system" and are primarily of "sociological or biographical interest" rather than of "fundamental systematic interest." This is hardly the case. Fortunately, we now have a book by Michael Raposa, Peirce’s Philosophy of Religion,* in which the author succeeds in thoroughly demolishing this distortion.

To be sure, Raposa had the benefit of doing his work just as a new edition of Peirce’s complete works was being brought out by Indiana University Press in chronological order and covering everything Peirce ever wrote in his capacity as philosopher and scientist. In addition, Raposa made ample use of the Peirce Papers at Harvard’s Houghton Library—an immense labor. Peirce’s philosophical manuscripts and letters at Harvard number in the tens of thousands of pages.

What emerges from even a cursory glance at the CP and the newer Chronological Edition (CE) is not only the breadth and range of Peirce’s interests but, more important, his astonishing ambition. "[I intend] to make a philosophy like that of Aristotle," he said, "that is to say, to outline a theory so comprehensive that, for a long time to come, the entire work of human reason, in philosophy of every school and kind, in mathematics, in psychology, in physical science, in history, in sociology, and in whatever other department there may be, shall appear as the filling up of its details."

In the card game called "Hearts," this is what is known as "shooting the moon," and it means that unless you really can sweep the table and win all twenty-six points, you lose by the amount of your overweening ambition. If one were judging by worldly criteria, it would have to be said that Peirce lost. And as we learn from Joseph Brent’s recently published biography,* his failure had devastating consequences. Ostracized from both Harvard and Johns Hopkins, sustained only by the paltry income of book-reviewing and the charity of William James, he died a lonely pauper, harassed by bill collectors and desperate for contact with his peers.

But like King Lear’s belated realization, "I have ta’en too little care of this," Peirce could look back on this wreckage of a life and see how his own character flaws had played their role: "For long years, I suffered unspeakably, being an excessively emotional fellow, from ignorance of how to go to work to acquire a sovereignty over myself." What makes this admission so especially poignant is how much Peirce insisted that his pragmatic standard of truth (or "pragmaticist" as he preferred to say, to distinguish his theory from James’) meant that ideas had to be judged by their impact on one’s conduct. The value of an idea, he wrote, "lies exclusively in its conceivable bearing upon the conduct of life. . . . And deliberate conduct is self-controlled conduct [emphasis added]."

We may, therefore, and on the same basis as set forth by Peirce himself, judge his work a failure: he aimed high, and he missed. But he is the one who had to pay the price for that, and we are left the beneficiaries of what he did win. And that achievement is truly extraordinary, as only a very few were able to notice when he was alive but as more and more philosophers are beginning to realize now. This late-in-coming appreciation for his achievement is due not just to the sweet balm of time erasing the memory of his personal flaws but much more to the pioneering advances he made in so many fields, so pioneering, in fact, that only a few were able at the time to realize what he was doing.

For example, during his lifetime only someone of the stature of the great British mathematician and logician William Kingdon Clifford could see that Peirce should be placed, as a logician, on a par with Aristotle and George Boole. (The German logician Ernst Schroeder had also maintained that Peirce’s "fame would [eventually] shine like that of Leibniz or Aristotle into all the thousands of years to come." But those once isolated voices are being joined by the voices of more and more philosophers today, who are coming to agree with Max Fisch, Director of the Peirce CE project at Indiana, who says, "If he has had any equals in the entire history of philosophy, they do not number more than two" (also meaning Aristotle and Leibniz). The best judgment, then, rests not with the tragic conclusion to his life but with the more considered judgment of posterity, which is perhaps best summed up in these wise observations of Lewis Mumford:

The mere failure to publish the greater parts of Peirce’s thought has obscured the fact that, in the very dregs of the Gilded Age, a large and universal mind quietly fulfilled itself, a mind whose depth and impact have still to be felt and fathomed. If one is to condemn the Gilded Age for Peirce’s lack of influence, one must
equally condemn the glorious thirteenth century for the comparative obscurity of Roger Bacon, or the sixteenth century for not publishing the notes of Leonardo da Vinci. Doubtless the condemnation would be deserved, but the glory of the achievement still remains.

In any case, we should not berate the Gilded Age too harshly, for part of the difficulty was the tremendous advance Peirce was making in the privacy of his imposed hermitage: he was striking out so far on his own that he really had no one to judge him. As Joshua Lee Auspitz wryly noted in an admirably perspicuous article on Peirce published in *Commentary* in December 1983: "There are never peers to review unique work."

But there are also—and this needs to be said, especially after reading Brent’s lucid and balanced biography—severe character issues that hampered Peirce almost from the start. In fact, reading the Brent biography one is reminded of Abba Eban’s famous line about the Palestinians (that they "never pass up an opportunity to pass up an opportunity"). Peirce never seemed to pass up an opportunity to shoot his career in the foot.

Charles was the second son of Benjamin Peirce (1809-1880), who held the chair of mathematics and astronomy at Harvard College and who was, as Brent says, "easily the most brilliant and outstanding mathematician to appear in America before the Civil War." Charles was in many ways his father’s favorite, always a dubious blessing, but especially in Charles’ case, for his professor father put him through a schedule of private tuition that will undoubtedly remind every reader of James and John Stuart Mill, with Mill *père* force-feeding the classics to Mill *fils* before the youngster had even attained his sixth year.

Even in my teens [Peirce recalled] I was reading Kant, Spinoza, and Hegel [under] my father. [He was] not a powerful analyst of thought, so that his demonstrations were sometimes faulty, but a mind who never once failed, as well as I can remember, to draw the correct conclusion from given premises, unless by a mere slip. . . . [He] would induce me to tell him about the proofs offered by the philosophers, and in a very few words would almost invariably rip them up and show them empty. He had even less mercy for such philosophers as Hobbes, Hume, and James Mill. In that way, the bad habits of thinking which would have been impressed upon me by these mighty powers were in great measure, though I confess not entirely, overcome.

This must have been a truly scintillating way to grow up, but also a risky one for Peirce’s personality development. As Brent rather sardonically observes, "It must be corrosive of character to be placed, at the age of sixteen, in the unlikely position of believing that your own philosophical abilities are demonstrably superior to those of some of the most respected and revered philosophers of the past, such as Kant, Spinoza, Hume, and Hobbes." Add to this the fact that young Peirce had written a History of Chemistry when he was eleven years old (!), and we begin to see the kind of trouble he was setting himself up for as an undergraduate. Not surprisingly, he majored in chemistry at Harvard, and one day—in the high spirits of youth—he vandalized the furniture in the chemistry lecture hall. And who was the *Herr Doktor Professor* at the time? None other than Charles William Eliot, future president of Harvard and thereafter Peirce’s implacable foe, a man who adamantly resisted the idea that Charles would ever become a member of Harvard’s faculty.

Brent also does not flinch from telling us that Peirce most likely abused both his wives, his first marriage having ended in divorce. Of course, just the fact of the divorce itself would have been a problem in those days, especially at the very moment when the research university was coming into its own in the United States and was jealously guarding its reputation. But worse still was Peirce’s rapid-fire elopement that same week—two days later in fact—to a mysterious "dark lady" from Europe who claimed to be a Romanian princess. For the Boston Brahmins, it was all too, well, *opernic*. And in a typical piece of Peircean bad luck, one of those Boston Brahmins happened to be on a train sitting next to a trustee of Johns Hopkins (where Peirce was teaching) and regaled the man with a rather lurid and embellished telling of the tale of Peirce’s marital adventuring. Whereupon the trustee went straight to Daniel Colt Gilman, the president of Johns Hopkins, and informed him not only of Peirce’s "adultery" but worse, of his generally cavalier attitude toward marriage. Gilman’s response was to fire all of the nontenured faculty in Peirce’s department for that year and then rehire everyone except Peirce.

At a time when the old-boy network was all-powerful, Peirce’s chances for employment in
higher education were getting slimmer by the day. He eventually had to take a job with the government’s U.S. Coast and Geodetic Survey, where his father had an ancillary appointment. But even here his luck would not hold, for at this point a new enemy enters the picture, one Simon Newcomb. Newcomb, Charles’ colleague on the Survey, had been one of Benjamin Peirce’s favorite students at Harvard. He was no doubt quite bright, but like Salieri in Peter Shaffer’s Amadeus he also had just enough talent to recognize he was not a genius and just enough pettiness to resent someone who was. Furthermore, Newcomb was an intensely devout and literal-minded Christian of rigid moral standards, and he was appalled not only to see the much younger Peirce being nepotistically preferred to him in the Survey but behaving abominably to boot. Newcomb’s anti-Peirce campaign behind closed doors was nothing short of malevolent, and the upshot was that Peirce was forced to resign the Survey and see every application for a foundation stipend rejected. (Newcomb was regularly consulted by the foundations as one of Peirce’s peers.)

And so he and his second wife lived out their years at their stately home in Milford, Pennsylvania, to which they continued to make extensive repairs and renovations well after their money ran out, living off Peirce’s fantasies of striking it rich with one or another of the crackpot inventions he was always proposing to his robber baron friends. (He had moved to Milford in the first place because it was at the time a favorite watering hole of the captains of industry.)

Geniuses are often difficult for their contemporaries to spot, and even from this distance there is something vaguely unsettling about this man’s constant to-ing and fro-ing through the shoals of his precarious existence. And but for William James’ unfailing generosity and Royce’s foresight, Peirce would now be nothing much more than a footnote, a name perhaps no more recognizable than Simon Newcomb’s. Now, however, we have his papers, incomplete though their publication still is, and to read them is to be convinced that James’ and Royce’s judgment of him will be the permanent one.

II

It is an interesting exercise to note how often the names of Aristotle and Leibniz keep recurring in connection with the mention of Peirce. And here we may have the key to understanding work that might otherwise seem so intimidatingly unyielding to the nonprofessional. For what the three men have in common are minds acute enough to advance the field of logic (a field in which by its very nature innovations are extremely hard to come by) and at the same time minds too acute to become besotted by the very logic they are outlining. And above all, minds free enough to see how any logic, even the most abstruse, must be contextualized by experience. Peirce insists on a point that also constitutes the foundation to the theology of Hans Urs von Balthasar: that aesthetics must have primacy over ethics, and ethics over logic. Not, as this might sound, that the relations among these three fields are adversarial. The point is that for Peirce all three are normative sciences that bear more than a family resemblance to each other: "Esthetics and logic seem at first blush to belong to different universes. . . . [But] that seeming is illusory; on the contrary, logic needs the help of esthetics." Just as it needs the help of ethics: "Logical goodness and badness, which we shall find is simply the distinction of Truth and Falsity in general, amounts in the last analysis to nothing but a peculiar application of the more general distinction of Moral Goodness and Badness, or Righteousness and Wickedness." Peirce does not mean to equate these three realms, of course, for that would lead to the conclusion that every fallacy is a sin, which is absurd. But he does insist, in a manner reminiscent of Cardinal Newman, that "good morals and good reasoning are closely allied."

But good morals and good reasoning are still not the bedrock, or at least not all of it; for they too must relate to, and be nourished by, the beautiful. And so Peirce insists that faith in God comes first, not from ethical considerations, the way it did with Kant, but from the sheer beauty that opens out to the believer in the act of faith: "A man looks upon nature, sees its sublimity and beauty, and his spirit gradually rises to the idea of God. He does not see the Divinity, nor does nature prove to him the existence of that Being, but it does excite his mind and imagination until the idea becomes rooted in his heart."

One of Peirce’s most remarkable confessions of faith came in the late years of his life, when he was racked with facial neuralgia and unable to write down his thoughts because he and his sickly wife, Juliette, could not afford heating wood and the ink was about to freeze. In the midst of this torment, reminiscent of William’s Blake’s illustrations to the Book of Job, Peirce could
say: "As a matter of opinion, I believe that Glory shines out in everything, and that any esthetic odiousness is merely our Unfeelingness resulting from obscurations due to our own moral and intellectual aberrations."

This remarkable testament is a redemptive moment that highlights not just the Ultimate Hypothesis toward which his thought had been so laboriously groping all these years but also, and more crucially, that realm of God where he could find forgiveness for his moral failings. As Michael Raposa puts it: "Indeed, God so far transcends any morality one might be able to formulate that the divine perfection ought probably to be regarded as 'above all restraint and law,' as something 'aesthetic.' Known more properly in feeling than in abstract thought, God is revealed to persons, and transforms their habits of conduct, as one who is perfectly beautiful."

It is important to stress that these are not the last musings of a sick and lonely old man going off into the faint, ethereal glow of a Swedenborgian sunset; on the contrary, they throw an essential retrospective light on all of his thought, very much including his philosophy of science. As Brent tells us, "In general, though with some important exceptions, the worse the times were, the more remarkable his work." And Raposa notes, "Peirce’s religious ideas are less adequately conceived as constituting a part of his thought than as supplying an illuminating perspective on the whole of it. Indeed, they are among those guiding purposes by means of which 'the whole calls out its parts.'"

Peirce’s times of dolor happened also to be the times when he was most concentrating on religious questions, and his musings have none of that detached air of abstraction that marks so many contemporary academic discussions of religion. Rather, they have an intensity that falls just short of being explicitly mystical. "Forgive me for harping on the subject of theism," he wrote William James in July 1905. "It would indeed be most ridiculous for me to think I could say anything to make you better, but living in the beautiful country, I cannot but be overwhelmed with the lovableness of the universe, as everybody is. Every mortal who stops to consider it is penetrated with love. It is irresistible." One notable thing about this letter is what it does not mention: it was written shortly after Peirce heard that a position to lecture at a summer school in upstate New York on which he was desperately counting had fallen through—his last chance, it would turn out, for gainful employment before his death.

At this point, he clearly came to believe that his only redemption lay, as Brent says, "in the sacrificial pursuit of philosophy to the exclusion of everything else." We get some idea of the price of this decision from one of his letters: "I am dangerously fatigued from overwork. . . . A man of 65 ought not to work through two consecutive nights and three days as I have done, but the work is pressing." And what made this choice of hard philosophical labor especially painful was knowing how his turn to religious topics would be sneered at by his "peers": "I cannot protest against any condemnation that may be visited upon me. . . . I am accustomed to hear and read upon countenances that when I speak of religion, people say I am a sham."

The last years of his life must have been purgative ones. As Brent tells us:

> He spent the last 15 years of his life, in spite of his almost constant sufferings, in self-conscious Christian atonement, working faithfully and fruitfully, with slowly improving deliberate self-control on aspects of the semeiotic and doing his woefully inadequate best, at the same time, at the time-consuming efforts needed to take care of Juliette and to live a modest, moral life. He took solace in theism and in knowing that he had influenced such philosophers as James, Dewey, and Royce in what he believed was the right way. But he suffered the anguish and remorse of a wasted life, made especially bitter by the loneliness of having no one, except Royce in the last year of his life, with whom to share his philosophical discoveries.

Isolated, yet fashioning a new model for communal philosophy; intensely aware of God’s presence in the world, yet thought a sham; a true genius in logic, but frequently written off as a neighborhood crank: this crucible of contradiction through which he was compelled to pass gives unusual power to his writings of this time.

Lately, when I was suffering at every mouth through which a man can drink suffering, I tried to beguile it by reading three books that I hadn’t read for a long time, three religious books: Bunyan’s Pilgrim’s Progress, Boethius’ Consolations of Philosophy, and Hume’s Dialogues Concerning Natural
Religion. The last one did one most good owing to the utter blindness of the man. Man can naturally get but a vague idea of the all of things; and a vague idea is always open to being driven into contradictions. But man will never find a doctrine of the all nearer than theism.

This intensity, however, came from more than merely the personal poignancy of his life; it also came from his relentless scientific asceticism and rigor ("I am saturated through and through with the spirit of the physical sciences," he once said), a rigor that gives a new and added weight to his startling statement: "If we cannot in some measure understand God’s mind, all science . . . must be a delusion and a snare." (Imagine that engraved atop Harvard’s Houghton Library.)

This is an astonishing manifesto, but once more it must be stressed that it is not merely a testimony to the personal intensity of his own faith. Peirce was able to make this claim because of his earlier insistence that reality is continuous and not discrete—and this continuity of the universe must imply the fundamental compatibility between religion and science. In fact, it would scarcely be possible to overestimate the importance of the notion of "continuity" in his thought. Especially in his treatment of the continua of space and time, Peirce insisted, in Raposa’s words, that "one cannot simply ‘construct’ a continuum by conceiving and combining individuals, no matter how great, how infinitely great, their number." Or as Peirce himself put it, "It seems necessary to say that a continuum, where it is continuous and unbroken, contains no definite parts; that its parts are created in the act of defining them and the precise definition of them breaks the continuity."

Given his other principle, that metaphysical, logical, and moral truths are interrelated, this view that the universe is in fact seamless will naturally have significant ethical implications, and indeed at one point Peirce even goes so far as to say that "individualism and falsity are one." This certainly goes too far and perhaps is related to his almost unbearably painful isolation. But he has nonetheless located one of the great pathologies of modern life—the way it isolates one individual from another—and he insists that its cure must be fundamentally a moral one:

"I am altogether myself, and not at all you." If you embrace [my philosophy], you must abjure this metaphysics of wickedness. In the first place, your neighbors are, in a measure, yourself, and in far greater measure than, without deep studies in psychology, you would believe. Really, the selfhood you like to attribute to yourself is, for the most part, the vulgar est delusion of vanity. In the second place, all men who resemble you and are in analogous circumstances are, in a measure, yourself, though not quite in the same way in which your neighbors are you.

This favoring of continuity over against discreteness also had, as we might expect, a direct bearing on his formal logic. Inferences, too, are spread out along a continuum, moving from the hard-and-fast entailment of a deductive syllogism to the vague hunches of a lucky guess. "Logical analysis applied to mental phenomena shows that there is but one law of mind, namely, that ideas tend to spread continuously and to affect certain others which stand to them in a peculiar relation of affectability. In this spreading they lose intensity, and especially the power of affecting others, but gain generality and become welded with the other ideas."

Notice the extraordinary room, at the outer reaches of inference and affectability, that Peirce gives to the free play of the imagination as a moment of inferential judgment: at the outer penumbras of his logic we sense almost a dance of free association going on. As logic radiates outward in the energy of entailment, it becomes less rigid, less deductive, and more reliant on hunches, hypotheses, free associations, where the "entailment" is now no longer one of hard necessity but comes from Musement’s delight in weaving hypotheses ("Musement" is a favorite word of Peirce’s). One of his more startling metaphors, in fact, for the universe is "melted continuity," and that melting almost seems to well up from within a universe that is itself teeming with life and activity. According to Raposa:

Out of this stuff of "melted continuity," he both fashioned his conception of God and defended the vagueness of that conception. The relationship between God and the world, between God and persons, is also continuous, and upon this metaphysical insight Peirce erected his theory of religious knowledge and developed an account of the nature and purpose of prayer. Love was described as a power that establishes real continuity in bringing about the growth of
reasonableness and the creation of genuine community. Finally, to speculate meaningfully about the prospect of human immortality is to conjecture that death fails to represent an absolute discontinuity, a total rupture in the living continuum of feeling that comprises the personality.

Only someone of Peirce’s unsparing standards for logical rigor could give so effective a defense of vagueness in our God-talk . . . and get away with it. All too often in this century, philosophers who fancy themselves adept at logic, insisting that they have thereby become rigorous, thereupon proceed to legislate out of existence the "muddled" thinking of anyone whose training might leave him deficient in logical rigor. But when they encounter Peirce, thinkers like A. J. Ayer and his epigones must sit at their desks and hear this salutary lecture from someone who is peerless in their own specialty.

"God" is a vernacular word, and, like all such words, but more than almost any, is vague. No words are so well understood as vernacular words, in one way; yet they are invariably vague; and of many of them it is true that, let the logician do his best to substitute precise equivalents in their places, still the vernacular words alone, for all their vagueness, answer the principal purposes. This is emphatically the case with the very vague word "God," which is not made less vague by saying that it imports "infinity," etc., since those attributes are at least as vague.

Every believer recognizes how much faith is a matter of groping in the dark. There is a gut certainty about the testimony of faith, but it is a certainty that is hard to locate and even harder to specify. And everyone who tries knows the futility of trying to put faith’s vision into words. But every believer also realizes the necessity for slogging on, knowing ahead of time the inadequacy of words but fashioning out of their vagueness something that both sustains and expresses that faith. In a fascinating passage, Raposa links Peirce’s efforts to make vagueness a disciplined tool for theology to those of Thomas Aquinas:

In a sense, the logic of vagueness functions within Peirce’s religious thought much as the doctrine of analogy does for Aquinas, although Peirce clearly never pursued the religious implications of his philosophy of language with anything remotely resembling the latter’s systematic thoroughness. It is because signs are not perfectly "discrete" or determinate in meaning that they are necessarily vague. Similarly, analogy of meaning implies some continuity between same-term occurrences; mere equivocation results when there is no such continuity of meaning between the same words used in different contexts. This suggests the possibility of some application of the logic of vagueness to the problem of analogy. Characters predicated both of God and of beings in the world are to be applied to the Deity only vaguely; once again, it is legitimate to conceive of God as being "vaguely like a man," with the understanding that no determinate sense of the word "man" is signified by such a claim.

Vagueness is not by any means the same thing as wooly-mindedness. Peirce’s theory of God-talk should in no sense be taken as a license for theologians to let loose with any theory that comes along, under the guise of "negative theology" (or whatever other rubric might serve to undermine the positivity of revelation), as is often done today. For Peirce, while certainly never a theologian and someone whose relations with institutional Christianity were rather checkered, would never countenance using "vagueness" as an invitation to invention or as an excuse for muddled thinking, for he never lost the ability to spot a logical fallacy in an argument or to hunt out confused thinking that arises when hidden assumptions are imported into an argument.

III

One example of this sharp eye for the too-easy assumption, the hasty conclusion, or the implicit dogmatism in an argument is his dissection of Darwin’s theory of natural selection—a theory Peirce more than once submitted to a thoroughgoing critique. He did not deny "evolution," if by that term is meant the gradual emergence of ever more complex life forms under the rubric of secondary causality. In fact, his theory of "melted continuity" would make any notion of God’s special creation of discrete species hard to explain in any event. But for Peirce this refusal to countenance special creation in no way left the field exclusively to the Darwinian explanation of how life-forms emerged.
Peirce had an intense, almost visceral, aversion toward Social Darwinism, the application of Darwin’s biology to the nineteenth century’s political economy. But he also saw that the transition from Darwinian biology to its economic application was inevitable. Now, after this century’s experience with Hitler and Stalin, few any longer have the luxury of indulging in the fantasies of the Social Darwinists; it is, then, simply assumed that since Darwin’s biological theory is true, it cannot have led, at least not necessarily, to the butchery of the twentieth century, since we also know (antecedently again) that Social Darwinism is fallacious, and indeed viciously so.

But Peirce’s logic is too rooted in his ethics to allow such easy assumptions to go floating past the mind without rigorous and unsparing examination. For him the flaws in the theory of natural selection are two-fold: (1) it demands the crowding out of the weak (the ethical objection), and (2) it relies too much on fortuitous variation to accomplish its purposes (the logical and metaphysical objection). Moreover, as we have seen, an ethical objection is for Peirce genuinely detrimental to the cogency of the theory. "Here then is the issue," he says. "The Gospel of Christ says that progress comes from every individual merging his individuality in sympathy with his neighbors. On the other side, the conviction of the nineteenth century is that progress takes place by virtue of every individual’s striving for himself with all his might and trampling his neighbor underfoot whenever he gets a chance to do so. This may accurately be called the Gospel of Greed."

For Peirce this is prima facie evidence that something must be amiss with the theory—a form of argumentation surely unique coming from so rigorous a scientist in our science-worshiping times. Without the least hint of embarrassment, Peirce will insist that the Gospel of Christ embodies more than a practical code but also has real explanatory power, quite capable of representing an attractive alternative to Darwin, Spencer, et al.

But of course he doesn’t leave it there; it would hardly be enough to invoke the Gospel and then walk away from the fray. From here he zeroes in on the central difficulty in Darwin’s version of natural selection, namely, its total reliance on fortuitous variation to account for meaningful patterns of biological organization. Even to say that Peirce never disputed "evolution," provided this referred simply to the continuity of life forms on earth developing under the immanent laws of secondary causality, is perhaps to speak too hastily, for Peirce has a unique theory of causality (possibly, along with his logic, his most original contribution to philosophy), and it is precisely at this point—i.e., the question of causality—that his critique of Darwinism is most telling.

Peirce once said: "Let us take . . . the axiom that every event has a cause. I question whether this is exactly true." Again, we must always think "continuity" when considering his theory of causality; or as he would put it: "Relations do not inhere in the related terms taken singly, but do inhere in all the terms taken collectively." Now take that principle and apply it to the case of evolution, and what we notice is that it is not just the evolution of discrete species that requires attention but the evolution of the whole system itself: "A most important premise, playing a great part in the establishment of the Nebular Hypothesis [of the Solar System] or the Theory of Natural Selection," he says, "is that things must on the whole have proceeded from the Homogeneous to the Heterogeneous" (emphasis added).

The insight that, in terms of issues of causality, the evolution of the solar system has to be considered with those of terrestrial biology is a crucial one (and this was before the discovery of the Big Bang raised the ante so significantly). Because now, when we are referring to the whole system, the idea becomes preposterous that fortuitous variation can explain it all. And this admission requires a complete reexamination of what causality means in terms of the whole system. And here again, "continuity" is the key, as Brent lucidly explains:

In this objectively idealist universe, ideas degenerate by gradations. Logical inferences are more vital than habits; habits more vital than physical laws; and physical laws more vital than matter, which Peirce called "effete mind." Mind, the light of nature, pervades this hierarchy in an unbroken whole in a way reminiscent of the medieval vision of the Great Chain of Being.

Brent is referring here mainly to Peirce’s theory of the continuity in logical relations, but it is obvious how his remarks have a direct bearing on Peirce’s metaphysics: indeed, the two begin to fuse very rapidly. As Max Fisch noted so illuminatingly: "Peirce had an ulterior interest in
the logic of evolution as a weapon in his lifelong war against nominalism." For Peirce, ideas are not "locked up" in the dungeons of our skulls but constitute the very environment within which human minds move and have their being—which is the same environment, of course, as the world itself; and this is what determines his critique of natural selection.

Nominalists deny this continuity of mind and universe and insist that, on the contrary, ideas (and the words denoting them) are merely convenient stratagems for the mind to work its way through the plethora of sensations as economically as possible (the "real" being only what stimulates those sensations and which by definition can have no other cause than mechanical, nonmental ones). This is the epistemological equivalent of the logical doctrine called "psychologism," which holds that the rules of logic merely describe the thinking behavior of the mind, much the way, I suppose, hepatology describes the way a liver secretes bile. (The founder of phenomenology, Edmund Husserl, held this doctrine briefly, before realizing how it made mincemeat of any viable epistemology.)

Peirce’s doctrine of continuity insisted on the opposite: that logic is nothing else but a science of *implication*, and implication implies our rootedness both in the empirical world and in the world of ideas. Ideas in our mind are directly related to ideal or final causes, which Peirce defined (in Raposa’s summation) as "the essence of a living system of relations, determining the manner in which this whole calls out its parts; that is to say, they are laws governing the behavior of the fragments of such a system." And how do those laws govern? Well, first we must say: not mechanically. The premise of continuity would prevent that, for it would undercut the true nature of the mind to say it is an isolated fluke in an otherwise blank and featureless universe. (Note, however, that Peirce was not committed to the claim that physics would never be able to account for the phenomenon of mind, but only to the contention that it must fail as long as it is bound to the concept of law as blind, mechanical, and necessary. As Raposa says, "In the case of material objects, such laws do in fact display a mechanical regularity. Matter is the limit case of mind, however: mind frozen by habit, and even there the regularity is not perfect or absolute.")

And how does mind operate? According to the shopworn categories of traditionally understood logic, the mind works in two ways: deductively and inductively. The first derives true conclusions from general principles, the second comes to conclusions based on a preponderance of empirically gathered evidence. The snag—scandal even—for philosophy comes from the dilemma that while deductive reasoning will always give true conclusions if the principles are true ("All bachelors are unmarried"), the information it provides is vacuous (or true "by definition," as we say); whereas with empirical reasoning, one never knows when the next refuting example will come along ("All lobsters are red," says the novice fisherman; "here's a blue one that just spawned," says the veteran).

For Peirce what goes unrecognized in this jejune schema of deduction versus induction is the free play of the imagination in forming hypotheses, for only hypotheses can generalize from the data (whereas definitions are true deductively) in a way that can be genuinely informative and yet still give *general* information. This is a process he calls, in contrast to induction and deduction, "abduction" (Peirce was always fond of neologisms, but this term has some precedent in the literature). And as we saw earlier, this abducting hypothesizing is a mental process of free association that most closely imitates the Divine Mind, for that Mind is—especially at the moment of creation or even in its primordial state—at its most playful and musing, "feeling, sporting here and there in pure arbitrariness," as he says. Creation in fact, for Peirce, comes from the free play (or musing) of the Divine Mind. And our abductive moments of discovery put us into direct, imitative contact with this abducting Divine Mind.

These surely sound like startling claims, especially given today's atmosphere of rampant mechanism and a theory of language, structuralism, that radically divorces language from its world of referents (as the nominalists once did too). Peirce knew too much of the history of philosophy, however, to be cowed by the regnant atmosphere of his day or to be intimidated by the reactions we have come to expect today. In fact, he goes on the offensive, turning the tables on the nominalists and accusing them of being over-daring in *their* claims:

> Although nominalism is not credited with any extraordinarily lofty appreciation of the powers of the human soul, yet it attributes to it a power of originating . . . ideas the like of which Omnipotence has failed to create as real objects, and those general conceptions which men will never cease to consider the glory of the human intellect must, according to any consistent nominalism, be entirely
wanting in the mind of the Deity.

What accounts for this strange upside-down perspective called nominalism, and why has it dominated the implicit assumptions of scientists (or at least their spokesmen, the philosophers of science) throughout modernity? Peirce came to believe that science fell under the thrall of nominalism not because of its inherent cogency but only for historically accidental reasons, and thereafter it had to adopt a jerry-built metaphysics that continually worked at odds with the very science it was meant to explain. The most decisive factor of all in this story of historical contingency must be the "birthing" of science at the dawn of modern times: that is, the emergence of science (and the "new philosophy" of that science) in conscious rejection of positions associated with religious orthodoxy. As Auspitz puts it:

Because the Church revered Aristotle, science became anti-Aristotelian; because the Church glorified faith, science embraced systematic doubt; because orthodox scholastics accepted the reality of universals, the "new philosophers" followed the unorthodox Ockham in attending to empirically verifiable particulars; because the Roman priesthood invoked the world to come, science stressed utility in the here and now. In adopting what were, in effect, forensic positions, modern science had gotten off on the wrong philosophical foot. It was therefore stuck with logical dogmas that would ultimately block the road to inquiry. The remedy was to find for it a true logic not vitiated by what Peirce would later call "a barbaric reaction against the Middle Ages."

Even in his earliest published writings, he had clearly and explicitly repudiated the Cartesian heritage and called for a restoration of the medieval scholastics as the true forerunners of a viable philosophy of science for his day. In one of his most famous essays (often anthologized) called "Some Consequences of Four Incapacities," Peirce demonstrated, at least to his own satisfaction, the clear superiority of scholasticism over Descartes. Cartesianism has incapacitated us in four ways, said Peirce, and thus it represents an actual devolution from the achievement of the medieval schoolmen: (1) Cartesianism teaches that philosophy must begin with universal doubt; whereas scholasticism had never questioned essentials, and would find the proposal to do so, if it had been mooted in its day, incoherent. (2) Cartesianism teaches that the ultimate test of certainty, firmly and reliably secured against the corrosion of doubt, is to be found in the individual consciousness and only there; whereas scholasticism had rested on the testimony of sages and the Catholic Church—that is, and this is crucial for Peirce, it relied on a collective wisdom. (3) The multiform argumentation of the Middle Ages, which approached an issue from various angles and cited as many prior authorities as possible, is replaced in Cartesian reasoning by a single thread of inference often depending upon inconspicuous premises (which of course Peirce was adept at spotting and ruthlessly exposing). (4) Scholasticism had its mysteries of faith, but undertook to explain all created things first in terms of themselves; and in any event it always interpreted the mysteries according to the intelligibility they revealed. But there are many facts that Cartesianism not only does not explain but renders absolutely inexplicable, unless to say "God makes them so" is to be regarded as an explanation.

This is a severe indictment, but a just one. Cartesianism leaves the subject isolated and never really sure if what it thinks it knows is connected to that "real" reality out there. All it can really know are the concepts it cooks up in its own private cerebral kitchen and which it then imposes on the world. (One sees why nominalism had to precede Descartes and why he had to precede Freud.) But this is not real science. Science as it is actually practiced discovers, it doesn’t invent (inventions only come later, after the discoveries, and are better termed "applied science"). And this is why philosophy managed to marginalize itself in our culture, for if it were to be taken seriously, it would only undermine and enervate the very activity it is meant to clarify.

But Peirce knew that science is not only a collective activity of conduct but it is a conduct of discovery of what is out there and not inside our skulls. When he grew fearful that James’ pragmatism was slipping too readily into a subjectivism of "If it works for you, it must be good," he quickly, as we have seen, coined the neologism "pragmaticism" to distinguish his firm realism from the views of James that were so unsettling to him. The laws of nature really do govern nature, and we can discover them because of the inherent continuity in the universe between law, nature, and mind. Raposa puts the difference between the two philosophies succinctly:
These laws can be regarded as "ideas" only because the universe itself is of the nature of a Mind, a vast representamen or argument "working out its conclusions in living realities." The nominalist, however, would make the human mind the author rather than the reader or interpreter of the "book of nature." Nominalist principles render scientific inquiry farcical, Peirce contended, by dissolving the reality of those general laws that it is the task of the scientist to discover. If the world's generality, its intelligibility, is solely the product of human intellection, then the fundamental purpose of theoretical science cannot be, as Peirce had stipulated, to acquire knowledge of "God's truth." Clearly Peirce's theism, in addition to and as an ingredient of his philosophy of science, supplied an important incentive in his battle for the cause of realism.

It also supplied him with an armory of interesting arguments against Hume's critique of miracles. Peirce, of course, dismissed Hume utterly, starting with his precocious reading as an adolescent. Hume in a way is the mirror-image of Peirce: where Peirce sees the laws of causality bringing coherence to a whole system and as establishing the inherent connection between mind and matter, Hume saw causality as operating nowhere. ("Cause" for Hume was merely the learned response of noticing how often B follows A; then the mind says, in a kind of shorthand, "A causes B.") And the same holds true for miracles: "To look upon the order of nature as being of the nature of a 'law,'" Peirce said, "is to adopt a view which is really favorable to miracles, rather than the reverse." And he also knew that the philosophical discussion of miracles would get nowhere unless the issue were addressed in the context where it really belongs: he insisted that, on the basis of the evidence alone, one should neither pronounce against the biblical claims of miracles nor affirm their validity "unless the general divinity of the Christian religion be assumed."

Even in the midst of the direst misery in his by-now rickety manse in Milford, Peirce remained truly baffled by the fact of unbelief, especially among scientists. "The question arises," he said, "how it is possible that the existence of this being should ever have been doubted by anybody. The only answer that I can at present make is that facts that stand before our face and eyes and stare us in the face are far from being, in all cases, the ones most easily discerned. That has been remarked from time immemorial."

What seemed to baffle him the most was the lack of imagination in those who could not see the world as God's handiwork. Peirce felt sure that if only the thinker would also become a Muser, if only the scientist would let the free play of imagination take over at some point in the abductive process, the thoughts of the mind would then inevitably be lifted to God and the wisdom of accepting that hypothesis would find confirmation.

The idea of God's reality will be sure sooner or later to be found an attractive fancy, which the Muser will develop in various ways. The more he ponders it, the more it will find repose in every part of his mind, for its beauty, for its supplying an ideal of life, and for its thoroughly satisfactory explanation of his whole . . . environment. . . . [In time he] will come to be stirred to the depths of his nature by the beauty of the idea and its august practicality, even to the point of earnestly loving and adoring his strictly hypothetical God, and to that of desiring above all things to shape the whole conduct of life and all the springs of action into conformity with that hypothesis.

Which brings us back once more to the puzzle of Peirce's own life, to his failure, at least as he saw it, to shape the whole conduct of his life "in conformity with that hypothesis." As he looked back on his life in the desperation of his wife's failing health and in their ever more degrading poverty (they went for days without groceries, for example), he knew full well his own responsibility for this turn of events—that his life was not merely a losing battle against the bluenoses of Boston and Baltimore (though history will no doubt judge their sabotage of his career at nearly every crossroad harshly). His life was also a losing battle against his own hot blood and overweening nature. Or perhaps it was not so much a losing battle as a battle never engaged. At least that is the sense we get when, for his own part, he looks back on his life and tries to see—through an imaginative exercise of "what if"—where he went astray:

If I had a son, I should instill into him this view of morality (that is that Ethics is the science of the method of bringing Self-Control to bear to gain satisfaction) and force him to see that there is but one thing that raises one individual above
another—Self-Mastery; and [I] should teach him that the Will is Free only in the sense that, by employing the proper appliances, he can make himself behave in the way he really desires to behave. As to what one ought to desire, it is, I should show him, what he will desire if he sufficiently considers it, and that will be to make his life beautiful, admirable. Now the science of the Admirable is true Esthetics. Thus, the Freedom of the Will, such as it is, is a one-sided affair. . . . There is no freedom to be or to do anything else. Nor is there any freedom to do right if one has neglected the proper discipline. By these teachings, by showing him that a poor dog is more to be respected than an improvident man who has not prepared himself beforehand to withstand the day of temptation, I should expect to render him eager to submit to a pretty severe discipline.

These are painful reflections to read, and no doubt his imaginary son would have found this compensatory discipline chafing, and perhaps even stifling. But they bespeak the hard and bitter wisdom that he gained, as he said, by "suffering at every mouth through which a man can drink suffering." Still, the results of his intense labors in those last years do somehow transfigure this otherwise unbearable pathos. In Brent’s words, "At the end, he stands there in tatters, surrounded by the melancholy debris of his life, contrite and apologetic; asking our—and especially his dearest friend William James’—indulgence. But all the while, this poor fool, behind the scenes and between the acts, has been building piece by piece the armature of a most marvelously intricate universe, so beautiful it transfigures him amidst the wreck of his afflictions, and we gratefully see the signs around us with new eyes."


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Evident also is the sense of Mexican-American pride, as seen in the importance the community places on being a "real Mexican," a norm to which Dante struggles to conform. With its rich portrayal of the perils and peaks of growing up and finding oneself, and for its important contribution to the movement towards greater diversity in YA novels, Aristotle and Dante Discover the Secrets of the Universe is surely a recommended read. Related Posts. Scholar Library launched a mini-fair and youth discussion. [I intend] to make a philosophy like that of Aristotle, he said, that is to say, to outline a theory so comprehensive that, for a long time to come, the entire work of human reason, in philosophy of every school and kind, in mathematics, in psychology, in physical science, in history, in sociology, and in whatever other department there may be, shall appear. It is an interesting exercise to note how often the names of Aristotle and Leibniz keep recurring in connection with the mention of Peirce. And here we may have the key to understanding work that might otherwise seem so intimidatingly unyielding to the nonprofessional.