HOW THE PHILOSOPHY OF SCIENCE CHANGED RELIGION AT NINETEENTH-CENTURY HARVARD

by David K. Nartonis

Abstract. Nineteenth-century Harvard faculty and students looked to philosophical ideas about the proper and effective study of nature as the model of rationality to which their religion must conform. As these ideas changed, notions of rationality changed and so did Harvard religion.

Keywords: nineteenth-century Harvard; philosophy of science; rational religion

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In *An essay concerning human understanding* ([1690] 2004), a book with an honored place in the nineteenth-century Harvard curriculum, John Locke proclaimed that "Nothing that is contrary to, and inconsistent with, the clear and self-evident dictates of reason, has a right to be urged or assented to as a matter of faith" (bk. IV, chap. XVIII, sec. 10). With Locke in mind, it is my thesis that nineteenth-century Harvard faculty and students looked to philosophical ideas about the proper and effective study of nature as the model of rationality to which their religion must conform. Thus, as the philosophy of science changed, notions of rationality changed and so did Harvard religion (Murphy 1990; Stout 1981). In telling this story about philosophy and religion at Harvard, I use the word *science* to mean the study of nature, *biology* to mean the study of living things, and *philosophy of science* to mean philosophical ideas about the proper and effective study of nature, even before these terms acquired their modern meaning.

Some of the actors in this story were textbook authors who figure prominently in general histories of philosophy in America but seldom appear in histories of the philosophy of science (Madden 1960; Kockelmans 1968; Oldroyd 1986; Gower 1997; Losee 2001; cf. Laudan 1968, 31; 1981, 11–12).

David K. Nartonis is an independent scholar. His mailing address is 1200 Washington Street #218, Boston, MA 02118.

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One of these, Scottish professor Thomas Reid, was in firm control of the official Harvard philosophy curriculum when the nineteenth century began. Strong competition, however, was lurking underground in popular library books, such as those by English authors Ralph Cudworth and John Norris. Ultimately, a new, *hypothetico-deductive*, approach of making and testing educated guesses defeated both of these competitors.

When the Nineteenth Century Began

The English Puritans who founded Harvard set the stage for this nineteenth-century clash of philosophies of science. These founders based both the study of nature and their notion of rationality on the philosophy of French mathematician Peter Ramus (Flower and Murphey 1977, 3–45; Gibbs 1979, 1–63). Following a brief influx of ideas from French philosopher René Descartes, eighteenth-century Harvard faculty and students adopted Locke's *inductive* philosophy. According to Locke, the proper study of nature draws probably true knowledge about nature's visible laws and hidden mechanisms strictly from observation (Flower and Murphey 1977, 61–81, 365–73; Siegel 1990, 332–468). As at other American colleges, however, faculty and students found that Locke's philosophy opened the door to religious skepticism.

At first, colleges tried to sanitize Locke with a logic text by English hymnwriter Isaac Watts, who presented a modified version of Locke's philosophy that he hoped would prevent the drawing of skeptical conclusions. About the time of the American Revolution, however, American colleges found a better way to sanitize Locke—with a book by Reid, who insisted on a so-called Baconian study of nature with no room for guesses, no matter how educated, probable laws, or hidden mechanisms (Farr 1987). For half a century, roughly 1775 to 1825, this was the official philosophy of science at Harvard, and first one and then another book by Reid was the text for the capstone philosophy course taught by the Harvard president (Flower and Murphey 1977, 203–54; Laudan 1970, 103–31). In *An Inquiry Into the Human Mind on the Principles of Common Sense* (1764), used as a text at Harvard from the 1790s to the 1820s, Reid wrote,

> Conjectures and theories are the creatures of men . . . if we would know the works of God, we must consult themselves with attention and humility, without daring to add any thing of ours. (ch. 1, sect. 1)
>
> The laws of nature are the most general facts. . . . Like other facts, they are not to be hit upon by a happy conjecture, but justly deduced from observation . . . from a copious, patient, and cautious induction. (ch. 6, sect. 12)
>
> The rules of this inductive reasoning . . . have been . . . delineated by the great genius of Lord Bacon. (ch. 6, sect. 24) (Reid [1764] 1997a, 12, 125, 200)

In his *Essays on the Intellectual Powers of Man* (1785), used at Harvard both earlier and later than the *Inquiry*, Reid wrote,

> . . . though we may, in many cases, form very probable conjectures concerning the works of men, every conjecture we can form with regard to the works of God, has as little probability as the conjectures of a child . . . real discovery has always been made by patient observation, by accurate experiments, or by conclusion drawn by strict reasoning from observations and experiments; and such discoveries have always tended to refute . . . the theories and hypotheses which ingenious men have invented. . . . This . . . fact . . . ought to have taught men . . . to treat with just contempt hypotheses in every branch of philosophy. (Essay I)

> The proper method of philosophizing was pointed out by Bacon and Newton. The last considered it as a reproach, when his system was called his hypothesis: and says, with disdain of such imputation, *Hypotheses non fingo* [I don't form hypotheses]. (Essay 2, ch. 3) (Reid [1785] 1997b, 48, 79)

Somewhat inconsistently, however, Reid allows,

> A *may be* is a mere hypothesis, which may furnish matter of investigation. (Essay 5, ch. 3) ([1785] 1997b, 371)

In addition, as the nineteenth century began, English defender of Christianity William Paley, in *A view of the evidences of Christianity in three parts* (1795) and *Natural theology* (1802), showed how to study both nature and the Bible in Reid's Baconian way (Sprague 1967, 19–20). Biology was the key science here because it was thought to imply most powerfully the existence and nature of God and because it bore most directly on man himself (Flower and Murphey 1977, 519–21). Thus, Paley's success in formulating a Baconian biology of purposes and final causes was widely held to warrant the rationality embodied by this philosophy of science.

Despite this official position, something like the Ramist philosophy of science on which Harvard was founded stayed alive in library books such as Cudworth's *The True Intellectual System of the World* (1678) and Norris's *An Essay towards the Theory of the Ideal or Intellectual World* (1701–1704), which were still being read by students and faculty when the nineteenth century began (Nartonis 2005).

How the Philosophy of Science Developed at Nineteenth-Century Harvard

During the first half of the nineteenth century, these books by Cudworth and Norris combined with popular literature such as John Milton's *Paradise Lost* (1668), Romantic literature imported from Germany, and the prose works of Samuel Coleridge to form an underground Harvard curriculum. As this Romantic reaction to Locke and Reid grew, students and faculty drew from these sources an approach to nature that depended on human ability to grasp God's ideas and that, it would seem, was spectacularly confirmed by the biology that Louis Agassiz introduced to Americans upon his arrival at Harvard in 1846 (Nartonis 2005; Lurie 1988, 127–28, 283; Amundson 1998; Rehbock 1983).

Also during the first half of the nineteenth century, the official Baconian philosophy began to decline at Harvard. The long connection between Reid's Baconian philosophy and religion at Princeton, and its survival in Creation Science and Intelligent Design, has been widely discussed (for example, Bozeman 1977; Allen 1986). What is less known and discussed is the fact that this same Baconianism was in decline at Harvard as early as the 1820s. This Harvard development should not be surprising. Science historian George Daniels found that American scientists who tried to apply Baconian principles to the study of nature were, by the 1820s, swimming in unanalyzed and uninterpreted facts and could no longer ignore the value of unobservable entities in such growing fields as chemistry and electricity (Daniels 1968, 102–37).

Also in the 1820s, Harvard faculty replaced Reid with the first two volumes of *Elements of the Philosophy of the Human Mind* (1792; 1814) by Scottish professor Dugald Stewart. In this new text, Stewart pointed out what American scientists were also finding—not only that Reid's Baconian philosophy was drowning scientists in uninterpreted facts but that both hypotheses and unobservable entities had a useful role to play in the study of nature and were actually employed by Newton, despite his protests to the contrary. This is not to say that Stewart fully embraced hypothesis testing as a way to study nature. However, he did allow for hypothetical beginnings and probabilistic endings in this study.

In fact, according to Edward H. Madden, Stewart modified "Reid's rigid inductivism . . . in the direction of a fuller appreciation of the hypothetico-deductive method" (Madden 1986, 45). For example, Stewart quoted a contemporary critic who complained, "The fashion at present appears to be little else than the collecting from every quarter, into voluminous records, an infinite number of sensible, particular, and unconnected facts" (Stewart 1792, 208). Stewart told his readers, This is not what Bacon taught or Newton practiced; in fact, what Newton practiced was the making and testing of hypotheses about invisible entities and processes. For example,

> the theory of Gravitation . . . took its first rise from a conjecture or hypothesis suggested by analogy.
>
> While, therefore, we maintain, with the followers of Bacon, that no theory is to be admitted as proved, any farther than it is supported by facts, we should, at the same time, acknowledge our obligations to those writers who hazard their conjectures to the world with modesty and diffidence. (Stewart 1814, 299–300, 423)

Stewart and Reid were well aware of these differences. The first volume of Stewart's text contains pointed criticisms of some of Reid's positions and, in Reid's unpublished papers, there is a "vigorous critique" of Stewart's book (Robinson 1989).

Another text, written by Scottish professor Thomas Brown and abridged for Harvard students in the 1820s, reinforced Stewart's positive view of

hypotheses and probable conclusions about nature (Brown 1827, I:50). Beyond this, a new logic text by Irish Bishop Richard Whately that also became official at Harvard in the 1820s revived the study and legitimacy of deductive logic used to draw testable conclusions from educated guesses about nature (Prior 1967, 287–88). Because of these new texts, there was a gradual shift away from the Baconian notion of scientific rationality.

This shift was further reinforced by the American publication, in 1831, of *A preliminary discourse on the study of natural philosophy* (1830) by English astronomer John Herschel. In it Herschel went a step beyond Stewart and Whately and advocated the study of nature through hypotheses developed by careful induction and then proved by deduction of novel retrodictions as well as predictions (Cannon 1967, 490–91; Herschel 1831, 147, 150–53). By mid-century, the decline of Baconianism at Harvard had reached the point that philosophy professor James Walker prepared a new edition of Reid's *Essays on the Intellectual Powers of Man* for student use in which he rejected Reid's narrow inductivism in pointed footnotes that cited Stewart (Reid 1850, 10–15, 304–21). Subsequently, Herschel's fully hypothetico-deductive view of science gradually replaced Reid's Baconian philosophy.

At mid-century, then, there were three contending philosophies of science at Harvard: the gradually fading Baconian philosophy, the gradually ascending hypothetico-deductive philosophy, and the briefly dominant philosophy of divine ideas, long emerging at Harvard and supposedly confirmed at mid-century by Agassiz and his biology (Mayr 1967, xxii–xxiii). Echoing Ramus, Cudworth, and Norris in his initial lectures at Harvard and in New York, Agassiz announced, "We have that within ourselves which assures us of participation in the Divine Nature and it is a particular characteristic of man to be able to rise in that way above material Nature, and to understand intellectual existences." He made it clear that by "intellectual existences" he meant a divine plan of creation. "What naturalists intend when they speak of what they call 'types' . . . may be easily understood by comparison. We all know that architects construct our dwellings according to plans conceived by them before the erection of the edifice" (Agassiz 1847, 5–6, 9; Lurie 1988, 127 n16). There is no doubt that Agassiz valued the careful collection of observational data. "It has only been step by step that man has acquired an insight into this plan" (Agassiz 1849, 5). However, he subordinated his empiricism, if that is the right term, to an apprehension of divine ideas that alone deserved to be called science (Mayr 1959, 168; cf. Bowen 1877, 133–34).

A number of factors combined to shorten the reign of this idealist view. Few American scientists embraced Agassiz's philosophy of science and, after Darwin published in 1859, Harvard botanist Asa Gray bested Agassiz both intellectually and politically within the scientific community (Dupree 1959, 254, 267, 288, 291–94). At the same time, Stewart's *Elements* was

succeeded by a new capstone text by Scottish philosopher William Hamilton, whose synthesis of Kant and Stewart was a basis for Herbert Spencer's successful popularization of evolution (Flower and Murphey 1977, 266). Not only did the content of Darwin's science overcome that of Agassiz, but Harvard community member Chauncy Wright argued persuasively that Darwin's methods validated the hypothetico-deductive philosophy of Herschel and not the idealist philosophy of Agassiz.

The Effect of Philosophy of Science on Religion at Nineteenth-Century Harvard

When the nineteenth century began, Harvard-trained ministers were carrying an increasingly attenuated Christianity to their churches. As a result, most of the rural New England churches were replacing these Harvard ministers with followers of eighteenth-century preacher and theologian Jonathan Edwards (Nartonis 2000). Best known for his balance of heart and head in religion, along with his reassertion of harsh Puritan Calvinism, in his private notebooks Edwards also formulated a rational religion that rejected Locke and reaffirmed the idealism of Harvard's founders. Enough of this leaked into his published writings that Princeton recoiled from Edwards in favor of a lasting commitment to the Scottish Calvinism and narrow empiricism of Reid.

Despite his popularity in the rural churches, Harvard also rejected Edwards, but in favor of an increasingly intellectual Christianity with a largely ethical and moral focus that eschewed such Calvinist doctrines as a helplessly sinful man and an unforgiving God (Flower and Murphey 1977, 242–69; Williams 1988; Nartonis 2000; Ahlstrom 1955). With the success of Edwards's followers in pushing Harvard graduates out of rural New England pulpits, early nineteenth-century Harvard was increasingly left at the head of a small Unitarian denomination, largely concentrated in eastern Massachusetts (Ahlstrom and Carey 1985). The effect of nineteenth-century developments in the philosophy of science on this Harvard-centered religion was spectacular.

When the nineteenth century began, Harvard faculty and students embraced the same Bible Baconism seen at contemporary Princeton and in other conservative groups like the Disciples of Christ, who trained their ministers at suggestively named Bacon College (Allen 1986). When Harvard graduate Ralph Waldo Emerson challenged this notion of an empirically rational Christianity, former Harvard professor Andrews Norton rose to the defense of Bible Baconism (Howe 1970, 82–92). Echoing Paley, Norton asserted the authority of empirical evidence in religion against Emerson's view of religion as based in human intuition (Williams 1988; Hurth 1990; Colacuricio 1988, 211). Norton wrote, "There can be no . . . direct perception, of the truth of Christianity." Instead, "we must use the

same faculties, and adopt the same rules, in judging concerning the facts of the world which we have not seen [the Bible world] as concerning those of the world of which we have seen a very little [nature]" (Norton 1985, 449–50, 455, 457–59).

Note, however, that Norton was trying to emulate not the content of Paley or Newton's science but the methods and values that had supposedly led to this content. It was this philosophy of science that Norton took to be the standard of rationality, in both science and religion, and it was this philosophy that Norton emulated in dealing with Bible assertions, most notably with Bible miracles (Paley 1802, 1–2, 14, 306; 1795, 1–13, 431; Norton [1846] 1848, 95, 129, 163–64, 254–55, 260, 329, 331, 334). He based his rational religion in a widely accepted philosophy of science, and this same general pattern would be repeated twice more before the end of the century.

In fact, Norton's chief competitor among Harvard religionists was not Emerson but a popular Harvard-trained minister, Theodore Parker (Bartlett 1967, 46–47; Howe 1970, 89). Like Norton, Parker sought a rational religion, but he based it in a very different philosophy of science. Drawing on the precursors of Agassiz at Harvard—Cudworth, Norris, Coleridge, and the German Romantics—Parker sought to apprehend the essence of all religion in the mind of God (Howe 1989, 108). In his religious manifesto of 1841 Parker preached the same essentialism as Agassiz—but about religion, not biology: "There is but one system of Nature as it exists in fact, though there are many theories of Nature . . . [similarly] there can be but one Religion which is absolutely true, existing in . . . the ideas of Infinite God" (Parker 1841, 10). Agassiz studied good examples of codfish and thought he apprehended in them God's idea of a cod. Similarly, Parker studied a good example of religion—Christianity—and thought he apprehended in it God's own idea of religion. Parker called this result of his study *simple Christianity* and, for a while, it was the new rational religion of radical young Harvard ministers, both in and out of the emerging American Unitarian denomination. So here we have a second example of a putatively rational religion based in an ascendant philosophy of science.

Rather quickly, however, the triumph of Darwinian biology swept away the religious rationalities of both Norton and Parker. After the publication of Darwin's *The Origin of Species* in 1859, evolution was promoted among American scientists by Gray; in popular talks by Harvard lecturer John Fiske; and through the widely read books of Spencer (Flower and Murphey 1977, 528–35; MacPherson 2003, 370–72). Harvard anatomist Jeffries Wyman came over to Darwin's side in the 1860s (Appel 1988). When Agassiz died in 1873, his own students had already deserted him (Flower and Murphey 1977, 527). Hoping to push back this Darwinian tide, Harvard philosophy professor Francis Bowen followed J. S. Mill in resuscitating the narrow inductivism of Reid and opposing Darwin's theory as too

hypothetical to be scientific. By the 1870s, however, Bowen's students too had rejected his narrow empiricism and his anti-Darwinian stand (Kuklick 1977, 28–45; Flower and Murphey 1977, 382–87).

Fiske and Gray tried to reconcile the content of this new biology with traditional religion, but Wright concluded they were irreconcilable. In his published writings and in meetings of the Metaphysical Club, which included Harvard faculty such as William James, Wright further argued that the hypothetico-deductive philosophy of Herschel that triumphed in Darwin's biology mandated a new rational standard that religion could never meet. James disagreed and described religion itself as a hypothesis that could be put to the same tests as those in the sciences (Kuklick 1977, 63–79; Flower and Murphey 1977, 535–53; Menand 2001, 141–43, 201–32). Rejecting both the inductive rationality of Norton and the idealist rationality of Parker, James told an audience in 1900–1901 that, after Darwin, philosophy would take a new approach to "religious constructions." "With these she can deal as hypotheses, testing them in all the manners, whether negative or positive, by which hypotheses are ever tested" (James 2003; Flower and Murphey 1977, 673–88; Kuklick 1977, 292). Thus, we see in James the familiar pattern repeated—a change in the philosophy of science, supposedly warranted by a new biology; a new rationality implied by that philosophy; and finally a change by those who wanted their religion to be seen as rational.

Conclusion

I believe that the story of Norton, Parker, and James illustrates my thesis, even though the Unitarian denomination took a somewhat different path after Darwin's triumph. Like James, late nineteenth-century Unitarians generally adopted Darwin's evolution and a new rationality of religion (Snyder 1992, 238, 232–62; Chadwick 1901, 230–31; Moore 1979, 11, 92, 103). Also like James, theirs was a "new [developmental] way of looking at religious ideas and institutions [that] undercut equally the Absolute Religion of Theodore Parker and the static rationalism of Andrews Norton" (Wright 1975, 93–94). Unlike James, however, in adopting this new view Unitarians were responding less to the latest change in the philosophy of science and more to a general shift from being to becoming in Western thought, exemplified (they thought) by the content of Darwin's biology and, more important, by the application of historical methods to Bible texts (Wright 1975, 93; Croce 1998; Curtis 1986; 1989; Brace 1997; Hull 1989; Robinson 1985, 116; Baumer 1977; Szasz 1982, 1–14).

As a result, I cannot claim that late nineteenth-century Unitarians were drawing their rationality of religion from an ascendant philosophy of science, but I do claim that Norton, Parker, and James were. Norton drew his notion of a rational religion from Reid's Baconian philosophy, exemplified

in Paley's biology. Parker drew his ideal of rationality from the philosophy of divine ideas, found in books by Cudworth, Norris, and classic and Romantic writers and later exemplified in Agassiz's biology. James drew his idea of rationality in religion from the hypothetico-deductive philosophy of science, nascent in Locke and Stewart, explicit in Herschel, and exemplified in Darwin's biology. To this extent, I believe that nineteenth-century Harvard faculty and students looked to philosophical ideas about the proper and effective study of nature as the model of rationality to which their religion must conform, and, as the philosophy of science changed, notions of rationality changed and so did Harvard religion.

Note

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