Evolution and Creationism Revisited: Philosophy, Religion, Ethics and Education

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Introduction

For almost a decade, I have taught a course entitled Evolution and Creationism: Understanding the Controversy. The course, a university colloquium, is interdisciplinary in nature and is open to students from all disciplines, both graduate and undergraduate. During this time, the course has undergone an evolution of its own. Readings have changed, and lectures and discussions have been altered both because of my own thinking and that of a number of the students as well. This paper is an effort to formalize some of my thinking about the false religious and philosophical dilemma forced on people by "creationists," or "scientific creationists," as many of these fundamentalist Christians prefer to identify themselves. In this paper I will present a history of the development of this dilemma, that is, what historical antecedents to Darwin and events during the time of Darwin led to the particular world view still espoused by creationists. In this context I will also explore the work of several scholars that clearly show there are historical precedents for a very different world view and that a general understanding of the rich religious, philosophical, and scientific ideas of western civilization leads one to alternative world views that produce harmony between science and religion. Finally, I will explore some ideas regarding the appropriate educational responses to this continuing debate and the false dilemma posed by such statements as 'one must choose evolution or creation.' Specifically, my suggestions will focus on liberal education and what we might do in teaching both science and non-science majors.

Background

"Creation scientists," part of a larger group of evangelical, fundamentalist Christians, reduce their descriptions of the modern world and its historical antecedents to black and white statements about the nature of truth. From their perspective, there is but one way to understand the world and the universe. Simply put, there is only one cosmogony: "In the beginning God created the heavens and the earth" (Revised English Bible, 1989). This simple statement and the truth of John 3:16, "God so loved the world that he gave his only Son, that everyone who has faith in him may not perish but have eternal life" (Revised English Bible, 1989), provide a Weltschauung that spells truth with a capital "T." Biblical exegesis for the "creation scientist" is based upon claims of divine revelation and scriptural inerrancy of the Bible.

In my classes when clergy, from the Catholic Church, the liberal Protestant denominations, or mainstream Judaism, discuss their denominations' understanding of the Bible, especially the first eleven chapters of Genesis, they are typically asked such questions as: "If the first eleven chapters of Genesis are to be
viewed as myth, then how do we know what is true when the Bible speaks of such things as the sins of homosexuality?" Or after class, a student may come up and tell me that, "the Catholic Church has sold out, they are not Christians." The same is said of other Christian denominations whenever they fail to understand the biblical text as a plain, simple truth with a capital "T." Parenthetically, I assume that I and the rabbi who presents one of the Judaic exegetic explanations personally escape such comments regarding Judaism and its beliefs because Judaism rejects the messianic nature of Jesus at the outset. While these students may be simply parroting what their clergy tell them,

an understanding of the historical development of Protestantism and its relation to science seems to be a necessary educational ingredient to illuminate the false dilemma.

Further, responses to a survey questionnaire that I give my students at the beginning of the course show that 20 - 50% of the students are not sure whether they have to choose between the Bible and the findings of science. The statement "I accept the theory of evolution" elicits similar responses. Specifically, in the class that I am currently teaching (mean age = 36.4 with a S.D. = 6.18), 48.7% are "not sure" how one interprets the following statement: The theory of evolution can not be correct, since it disagrees with the biblical account of creation. In the same group of 23 students, 56.5% chose "undecided" on a Likert scale in response to the statement, "I accept the theory of evolution." (Even students whose religious commitment when growing up consisted of being taken to church only on Christmas and Easter have said that their parents taught them that they must choose between God and evolution.) I infer from these survey questions that a large number of students know little of their religious heritage and they are also confused about the nature of science and its boundaries in their particular world view.

Since approximately 20% of the students indicate that evolutionary theory should be rejected and that one must choose between God and evolution, I decided that it might be useful for me to explore the historical context that leads to this false dilemma of conservative evangelicals, especially "Creation Scientists." Thus, this exercise is in part for my own intellectual curiosity, in part for this audience, and in part for what I might do with my courses, Evolution and Creationism and Evolution, as they continue to evolve.

Historical Development of the Dilemma

It is hard to know where to begin to examine this modern dilemma. As with the development of any paradigm, there are variant themes that compete in the effort to provide some sort of truth about the nature of our world. If my sense of history is correct, the clerics, who were more often than not the philosopher/scientists of ancient and more recent times formed a continuum of ideas that led among some of these philosopher/scientists to the dichotomy in science and religion and to the false dilemma in the late 19th and early 20th century. According to McMullin (1985), the problem grew out of the way that 17th and 18th century philosopher/scientists approached their science and their theology. The result was the evolution of two central epistemes as Gillespie (1979, p. 2) prefers to describe them. They are creationism and positivism (Gillespie, p. 3). Creationism and positivism differ with respect to interpretations of natural history. As the knowledge of the natural world grew, the epistemic framework labeled as creationism evolved among philosopher/scientists. In the 19th century, these changes led naturalists to invoke different standards of scientific knowledge and these various standards influenced the practices of naturalists as well as their theories about nature. Positivists limited scientific knowledge to the laws of nature and to processes which involved only secondary or natural causes. For the time period noted, this was
their only valid form of scientific knowledge. In contrast, creationists "... saw the world and everything in it as being the result of direct or indirect divine activity" (Gillespie, 1979, p. 3). Science, to creationists, was inseparable from their theology and a First Cause was essential to their thinking. I examine, in part, the historical evolution below.

The Protestant reformation occurred in the 16th century beginning with Luther; in England the church underwent a similar transformation, especially during and following the reign of Henry VIII.

The explosion of learning, reading, and writing, because of the availability of the printed word produced new ideas in religion, philosophy, and science, let education become accessible to more than the aristocracy.

However, scholars are not in agreement regarding the role of the Reformation on the flowering of modern science (Hooykaas, 1972, pp. 98ff.). What is clear is that there were a disproportionate number of Protestants in the sciences, and that religion and science (and capitalism) were intertwined. Hooykaas (1972, p. 105), a scholar of the history of modern science and religion notes that early Protestant scientists expressed "... their love for nature, in which they recognize the work of God's hands, and their pleasure in investigating natural phenomena." The subsequent evolution of Protestant-based theologies and numerous Protestant denominations, especially in higher education, set the stage for the conflict among competing theological interpretations and between science and philosophy on one hand and some of these theological interpretations on the other. It was inevitable, given the place of prominent Protestant philosopher/scientists that they would influence the trend toward positivism in biology.

While Protestantism encouraged individual opinion and free thinking with regard to theology and science and "the rejection of Tradition as a source of revelation" (Hooykaas, 1972, p. 115), in general, in the universities many scholars seemed more determined to cling to scriptural inerrancy and the authority of the text as a historically accurate document. The conflicting views reached their zenith following the publication of Darwin's Origin of Species. Clearly Darwin's theories "separated God from his creation" and "required a new concept of God and a new basis of religion" (Mayr, 1972, p. 988). I will not review the details of the changes in scientific thinking that led Darwin to transcend the barrier from the individualistic and idealistic concept of species to populational thinking in this paper, but simply let Dewey's description of the impact on science and society as he saw it, in 1909, suffice.

The conceptions that had reigned in the philosophy of nature and knowledge for two thousand years, the conceptions that had become the familiar furniture of the mind, rested on the assumption of the superiority of the fixed and final; they rested upon treating change and origin as signs of defect and unreality. In laying hands upon the sacred ark of absolute permanency, in treating the forms that had been recorded as types of fixity and perfection as originating and passing away, the "Origin of Species" introduced a mode of thinking that in the end was bound to transform the logic of knowledge, and hence the treatments of morals, politics, and religion (Dewey, 1909, 52).

However, we need to return to the pre-Origin... period of the 17th, 18th and early 19th century to understand how Darwin's conceptualization of the theory of evolution set the stage for this modern false dilemma. The gradual adoption, or evolution, of a physicotheology by the "virtuosi" of the Royal Society, who were opponents of Descartes ideas on the physics of nature, led to a "God of the gaps" approach to understanding the natural world (McMullin, 1985, pp. 27ff.). The physicotheologists used the knowledge of science, i.e., secondary causes and explanations, to explain the natural world where they were able; they invoked a first
cause where science had no adequate explanation. The result would lead to a retreat of religion as the body of knowledge about the universe grew. To put it another way, the "God of the gaps" would ultimately shrink. Thus, when Darwin set forth his ideas in 1859, the false dilemma for the philosopher/scientist and for theological thinking became sharply focused.

Since Darwin's philosopher/scientist contemporaries could not conceive of species without special creation, the origin of species required divine intervention and one was simply ignorant of God's methods (Gillespie, 1979, chapter 2). But the logic of many of his contemporaries was flawed. Some physicotheologians had accepted the uniformitarian geology of Lyell. Whewell, a philosopher of science and a defender of catastrophism (McMullin, 1985, p. 34ff.), recognized the problem that these physicotheologians had created in accepting uniformitarianism in geology. This theoretical construct as understood by Lyell and his contemporaries provided for a "uniformitarian God," if you will permit me the liberty of such a phrase. Whewell wrote that geological history now consists of

...the transition from an earth peopled by one set of animals to the same earth swarming with entirely new forms of organic life, a distinct manifestation of creative power, transcending the known laws of nature: and, it appears to us, that geology has thus lighted a new lamp along the path of natural theology (Whewell as quoted in McMullin, 1985, p. 35).

The problem as Whewell saw it was how could these scientists preclude the idea that some yet undiscovered natural law might not make a first cause unnecessary (McMullin, 1985, p. 35). Thus, if one is unwilling to accept a retreat of the domain of religion in natural theology, or if one is not prepared to accept a more distant God, as the Deists did, then the evolution of the creationist episteme leads one toward the dilemma, God or evolution.

The historical and scientific truth of Scriptures had been confirmed by both the Catholic Church and the numerous Protestant denominations in debates in the 17th century. The Carmelite Foscarinì "who held (like Galileo) that the theory of the motion of the earth, as it did not affect an article of faith or concern salvation, might be true, even though it was contradictory to the letter of Scripture" was soundly rebutted by Cardinal Bellarmine, S.J (1615), a theological leader of the Counter-reformation. Bellarmine responded that the Council of Trent required that Scripture be explained according to the "teaching of the Holy Fathers, and they, as well as the modern commentators on Genesis, Psalms, Ecclesiastes and Joshua, took the movement of the sun around the earth to be in the literal sense" (Hooykaas, 1972, p. 115). He argued that the issue was a matter of faith and that one could no more deny the truth of a geocentric universe than one could deny the fact that Abraham had two sons (Hooykaas, 1972, p. 115).

But, as noted above, it appears that the rise of Physicotheology, in the late 17th century, among the physical scientists, the physicists and chemists, produced the basis for the modern "creation scientist" dilemma. These scientists had deep religious convictions and roots in the Calvinist theology of the Puritans. According to McMullin (1985, p. 27), the heart of the new physicotheology was the argument from design expressed by Boyle in 1688, in his work A Disquisition about the Final Causes of Living Things.

Boyle, Newton and others adhered to Gillespie's creationist episteme which, as noted, presupposes a First Cause and then a naturalistic interpretation. Again, it was a world view that combined both theology and positivism. By 1859, one could separate creationism among the philosopher/scientists into two epistemes, both of which included a first cause (Mayr, 1982, p. 502ff.). One model, supported by Lyell and Agassiz, required a continual creation with the perpetual intervention of the creator who replaced species and faunas
that had become extinct (Mayr, 1982, p. 103). The other was a teleological... and deistic theory of evolution: a belief in the existence of teleological, evolutionary laws ordained at the time of creation, that would lead to ever greater perfection and adaptation and would guarantee an orderly replacement of faunas in the geological sequence (Mayr, 1982, p. 103).

In contrast, Darwin's thinking was consistent with a positivistic episteme; he made it clear that evolution by means of natural selection was an adequate explanation and that this explanation was free of a First Cause. This break with the creationist epistemes opened new scientific vistas, but philosopher/scientists such as Sedgewick and Lyell continued to maintain a creationist episteme. For example, we would have to wait until 1872, for Lyell to admit that Darwin's theories were acceptable explanations. Ultimately, however, it seems that in England and in the rest of western Europe, the philosopher/scientists and the theologians were able to reconcile their differences. Science and society became more secular and theological expressions of the nature of religion were less insistent on one truth for science and religion. As Barr (1978, p. iv) notes, fundamentalism in England has not been a cause for major denominational splits. Thus, I think it is safe to say that a compromise developed and science became free to explore the nature of the universe from a purely positivistic paradigm.

In the United States, however, no such compromise appeared on the horizon. No gracious retreat for religion seemed possible here. I have found no grand explanation for the differences that have permitted modern "Scientific Creationism" to seemingly have such an impact on many Christians in America today; however I wish to suggest a plausible scenario.

The United States, both before and after the revolution for independence from England, was and has been a haven for the religiously persecuted. The colonists, at least in New England, sought relief from the church and the crown. These people brought their religious values and have largely maintained them since colonial times. Because of the diverse origins of the colonists and subsequent immigrants, the nation is culturally and religiously diverse. Moreover, in spite of coming to the new world to be free of religious persecution, the religious diversity established here was often intolerant of other religious truths. These factors combined with the prohibitions of the First Amendment established the framework for the development of many religious truths, one of them "scientific creationism" developed in this social and cultural context.

Furthermore, as higher education grew and expanded in the United States, we were less constrained by the European traditions in both science and religion. In the pioneer atmosphere which has survived into the 20th century in the United States, the compromise that took place, in the intellectual community of Europe with respect to science and religion, never occurred in our society. Theological seminaries that reformulated their faith simply parted religious paths with traditional, fundamentalist realities. Those theologians and clergy who maintained the traditional views established new denominations and new seminaries.

The creationist episteme continued to be promoted by many philosopher/scientists and theologians alike; among the prominent theologians was the Princeton professor Charles Hodge. His extensive critique of Darwinian theory has been recently analyzed by Wells (1988) in his book, Charles Hodge's Critique of Darwinism. The writings of Hodge greatly influenced the continuing debate and hence, the current existence of the false dilemma, 'God or evolution.'

I am struck by the similarity of both the logic and the language of Hodge when compared to some of Henry Morris' "scientific" writings. Wells writes,
According to his Systematic Theology, the "Fundamental principle of all sciences" is that "theory has to be determined by facts, and not facts by theory." Facts "do not admit of denial. They are determined by the wisdom and will of God. To deny facts, is to deny what God affirms to be true." Theories, on the other hand, "are human speculations, and can have no higher authority than their own inherent probability." Facts, being divine, cannot conflict with each other; but theories being human, often do. Apparent discrepancies between scientific and religious truth arise only because scientists "are disposed to demand for their theories the authority due only to established facts; while "theologians, because at liberty to reject theories, are sometimes led to assert their independence of facts" (Wells, pp. 50 and 51).

Like Charles Hodge, Henry Morris and other "scientific creationists" seem to believe that the sciences are merely collections of facts and that these facts are what give meaning and cohesiveness to science. Similarly, both pick and choose among the "relevant facts" to develop their exegetical framework. Hodge revised his understanding of the relationship between scientific facts and their bearing on religious truths during his tenure at Princeton. To his credit, he did so in the light of new scientific facts which he believed corrected the mistaken theories of scientists. Barr (1978, p. 93) observes that both Hodge and his Princeton colleague Warfield took their doctrinal method of fundamentalism as expressly analogous to the methods of natural science especially in the Newtonian mold. However, while Hodge professed a "profound confidence in the harmony of natural science and religion," and believed that no contradiction between nature and scripture was possible, it is clear that Darwin's truths went too far.

Hodge and Morris differ, however, because Morris and other members of the Institute for Creation Research (ICR) appear to exhibit no constraints when they use the facts of science to support and interpret scriptures. Morris, in Scientific Creationism (1974) for example, exhibits no logical or consistent pattern in his quest to reinterpret all of the social and natural sciences based upon the authority of scripture. In contrast, Hodge's writings document that he was not wedded to a literal, fundamentalist interpretation and therefore not committed to a six day creation (Wells, 1988, p. 56); hence, I suspect that Hodge believed new scientific facts would eventually corroborate scriptures. That this has not happened leads to a new problem for Morris and ICR with respect to their cosmology. Because Morris and other "creation scientists" have retained a principle tenet of early Calvinist doctrine:

Whatever human investigations may discover about natural processes must be interpreted in light of the fundamental truth that such processes are guided by God for divine purposes (Wells, 1988, p. 27),

and because they interpret the principle narrowly, insisting upon literal and inerrant scriptures, they have to reject much of modern science by arguing that it is incorrect. The result is that Morris, "scientific creationists," and fundamentalists in general let doctrine based on scriptural authority drive them to accept an obsolete, if not incorrect, episteme. Thus, one could logically infer that Morris would conclude Hodge had parted with truth.

Modern "scientific creationists" go back in time and in most respects stop the clock with arguments from design proposed in Paley's Natural Theology (1802). Their logic is virtually identical to those of the philosopher/scientists of the 18th century. That "scientific creationists" selectively use the data of modern science, especially 20th century science, to argue the correctness of the 18th and 19th century creationist ideas is abundantly clear when one examines the assembled list of scientific disciplines established by "creationist scientists" of the 16th through 20th centuries that have been prepared by
Morris (1982). The list purports to show their readers that the important scientists were creationists. Indeed they were. What Morris neglects to tell his readers is that creationism was a dominant view at that time and that among the names on this list few even lived to enter the 20th century. Most made their contributions to science in a period when various forms of positivism had not yet become fully developed or accepted as the normative ways of science.

In conclusion, the theological schism at Princeton Theological Seminary in the early 1900’s and the publication of a series of pamphlets, The Fundamentals: A Testimony to the Truth (Dixon, et al, 1910-15), beginning in 1910, completed the development of the false dilemma.

The central problem is that “creation scientists” lack a long historical framework or fail to acknowledge its existence;

hence, they begin with a doctrinal base which has its origin in 1910. Contemporary “creation scientists” then take these truths, Paley’s argument from design, and “bits and pieces” of contemporary scientific findings to develop their case for the incompatibility of evolution and creation. For Christians adhering to the Fundamentals, which are defined and justified by the pamphlets, the choice was clear, God and Darwinian evolution were mutually exclusive. These Christians were simply waiting for the “creation scientists” at ICR to tell them what they already knew - Homo sapiens; next of kin was not an ape and that contemporary science supports Creationism.

An Alternative Interpretation

At the beginning of this paper, I indicated that most scholars, including a majority of contemporary theologians, find this dilemma unnecessary. Numerous scholars, Sarna (1989) and McMullin for example, consider the historic religious views of both Judaism and Christianity, respectively, to support a rational and philosophical compatibility between creation and evolution. McMullin (1988, pp. 8-16) examines both Jewish and Christian teachings. He finds no evidence for a Jewish doctrine of creation and his examination of Augustine’s The Literal Meaning of Genesis written in the 5th century clearly retrieves Christians from the false dilemma imposed by fundamentalists such as those at ICR. Similarly, the Jewish scholar Moses Maimonides, a 12th century Spanish rabbi and philosopher, in his book The Guide of the Perplexed (Pines, 1963) tells his readers “belief in the truth of the Bible does not require a denial of science (‘reason,’ ‘logic’) when the two seem to conflict” (Tigay, 1987/88, p. 23). Maimonides argued that the creation story was written metaphorically and in another instance quotes a Talmudic passage rejecting an astronomical theory held by Jewish scholars in favor of one proposed by Christian scholars. Tigay (1987/88, p. 23) notes that Maimonides approved of the Talmudic writers actions stating that “speculative matters everyone treats according to the results of his own study, and everyone accepts that which appears to him established by proof [Guide, II, 8].”

Educational Implications

In consideration of the lengthy and foregoing discussion and the objectives of this paper stated at the outset, I wish to consider briefly the nature of education in the liberal arts and sciences today.

We come to our disciplines from various cultural and religious backgrounds. Most of us would describe our undergraduate education, for me 2.5 decades ago, as a liberal education. Yet, has it prepared us to deal with the complex evolution of ideas about the world we live in that I have presented in a superficial manner? And do we now prepare our students to understand these historic ideas and their bearing on the modern neo-Darwinian synthesis of evolutionary theory? Do our students understand the significance of evolutionary theory in this
historical context? Do they understand its application and its implications to modern problems such as ecology, the environment, agriculture, genetics, medicine and public policy (Jungck & Dyke, 1985)? I suggest to you that they do not. Biology students earn baccalaureate degrees without even understanding the role of evolution in biological thinking. And liberal arts students at large pass through the doors of our educational institutions without acquiring any understanding of the value and correctness of evolution as a scientific theory.

Moreover, there is a broader question. How do we begin to remedy the lack of understanding of our historical, let alone our intellectual, roots in western civilization and the Judeo-Christian heritage.

Thoughtful observers of the educational system recognize that institutions of higher learning have so carved up the educational turf that most college students can and do omit the components of education that help to explain the origin and nature of the diverse religious, political and socioeconomic values which create the current legislative and judicial dilemmas existing in our society today. Thus, I believe that the real social and educational problem is how to achieve a balance between the educational needs of students in the disciplinary and technical areas, as we have defined them, and still provide students with the ability to function as good citizens in our complex society. To achieve such a goal requires a reevaluation of the undergraduate curriculum across colleges and universities.

I pale at the magnitude of the problem. Designing a course or a few courses that might be required of all students boggles the mind. After giving the problem considerable thought, I am not even certain that I know at what level to pitch these courses, whether they should be for first year students or seniors, who should teach these courses, or what are a realistic set of educational goals. I leave this dilemma to your and my urgent attention. As educators, the problem that I have outlined requires the application of all of our abilities. I believe that the success or failures of our educational system can be measured by our nations' political decisions and by the ethical and political conduct of our citizens. How the nation changes ultimately depends upon what we decide are necessary components of a college education.

We live in a time when more than 50% of our high school graduates attend college. Further, many adults who never attended college are seeking knowledge and skills through higher education. Finally, many have returned to explore areas of knowledge that time did not permit during their early college days.

With wise decisions, we have an opportunity to educate students by teaching them about some of the most influential ideas in the history of human cultures.

Endnotes

1 In his book *The Remarkable Birth of the Planet Earth*, Morris (1972, pp. 75-76) comments on "the semantic curiosity called progressive creation" and on theistic evolution. In his discussion, Morris tells us that Christians who hold such views are dishonoring God, especially those who promote progressive creation.

In *Scientific Creationism*, Morris (1985, 12th Printing, pp. 137-38) in his discussion of radiometric dating states, "Whether or not the apparent age is really the true age depends completely on the validity of the assumptions. Since there is no way in which the assumptions can be tested, there is no sure way (except by divine revelation) [emphasis added here] of knowing the true age of any geologic formation." While this statement does not demand a choice, it clearly implies that insight into the nature of the universe is limited to what Scriptures tells us.
Gillespie, after analyzing Kuhn and Foucault, elects to take Foucault's terminology for his use in his analysis of the problem of creation as it changed and as it affected the sciences in the 18th and 19th centuries. Foucault in his book, *The Order of Things: An Archeology of the Human Sciences* (London: Tavistock, 1970), describes an episteme as the "historical a priori" that

in a given period, delimits in the totality of experience a field of knowledge, defines the mode of being of objects that appear in the field, provides man's [sic] everyday perception with theoretical powers, and defines the conditions in which he [sic] can sustain a discourse about things that is recognized to be true (Gillespie, 1979).

In light of Foucault's analysis, Gillespie states "Paradigms guide research and epistemes provide them with logic, metaphysics, and epistemology that make scientific work possible" (p. 3).

The word "Tradition" as it is used here refers to the influence of Greek philosophy on the interpretation of the Bible (see Hooykaas, 1972, p. 116).

**LITERATURE CITED**


