

Creation and Evolution: What Should We Teach?

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Bio:

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Abstract:

In this essay, I sketch an overview of the foundations of the creation/evolution debate in the United States today. Evolution is rejected by many Americans because it conflicts with their religious views. This conflict may occur because evolution is not compatible with biblical literalism, or because evolution creates other problems in Christian theology. Most Americans do not belong to Christian traditions that require a literal interpretation of the Bible; in addition, there is a long tradition of accommodation of evolution and science to Christian theology. Far from being a dichotomy, beliefs in creationism and evolution form a continuum, ranging from flat-earthers at the extreme of Biblical literalists to philosophical materialist evolutionists at the other. I conclude with the suggestion that although students need to learn more about a variety of religious beliefs in order to better understand the diversity of the social world in which they live, these beliefs should not be taught in science class: Science should be taught in science class.

Introduction

When I was an assistant professor at the University of Kentucky in the summer of 1980, I got a call from a friend who was a professor in biology asking if I had seen the newspaper that morning. A group calling themselves the Citizens for Balanced Teaching of Origins had submitted a proposal to the Fayette County Board of Education. The proposal was to require the teaching of creationism as a theory of how the earth and living things were formed, parallel to the biological theory of evolution. I had collected creation science material since my graduate school days, so I became the center of the faculty opposition to the proposal.

Scientists on campus were appalled that something like this might be considered by the Lexington Board of Education. It was clear to us that creation science was terrible science. It was factually incorrect, misinformed students about evolution, and made a hash of the philosophy of science. Scientists were not the only ones who objected to the teaching of creation science. While we objected to creation science as bad science, the mainstream clergy in town objected to it because to them it was sectarian religion. Lexington teachers also did not like the prospect of having to teach creation science because they knew it was outside of the standard curriculum.

Scientists, teachers, and mainstream clergy formed a group called the Committee for Effective Action in Science Education, or CEASE. We wrote letters to the editor, encouraged people to come to school board meetings, and generally “got out the vote” to try to persuade the school board not to introduce creation science into the curriculum. The community remained in turmoil. There was much opposition to the introduction of creationism into the science curriculum, but obviously there were also many people who thought it was a great idea.

At one dramatic meeting, the Lexington Alliance of Religious Leaders (LARL) submitted a petition signed by 78 local clergymen that supported the teaching of evolution and discouraged the teaching of creation science. That petition is presented next.

Petition from the Lexington Alliance of Religious Leaders (LARL):

As religious leaders, we share a deep faith in the God who created heaven and earth and all that is in them, and take with utmost seriousness the Biblical witness to this God who is our Creator.

However, we find no incompatibility between the God of creation and a theory of evolution which uses universally verifiable data to explain the probable processes by which life developed into its present form.

We understand that you may shortly receive considerable pressure from groups advocating the teaching of "Scientific Creationism" alongside the theory of evolution.

However, we feel strongly that to introduce such teaching into our schools would be both divisive and offensive to many members of the religious community of Fayette County, as well as to those not identified with any religious group.

Please be assured of our continuing interest in this issue, and of our strong desire that the Fayette County Public Schools not permit the teaching of "Scientific Creationism" as an alternative "theory" to evolution in science courses. (1981; signed by 78 Kentucky ministers and religious leaders)

You could have heard a pin drop in the school board meeting that night as the distinguished minister from one of the largest churches in Lexington distinctly read aloud each name on the list. Finally, on a Monday in October, the climactic school board meeting was held and the final vote was taken. On the five-person board, two people had committed to voting for the proposal and two against. The person with the swing vote had announced that he had planned to go on a retreat the weekend before to pray for guidance. At the critical meeting, he voted with the pro-evolution side, and the measure failed by one vote. Although the pro-evolution side won that particular battle, the controversy continued in communities around the country.

Within a few years, the courts decided that the teaching of creation science in public schools was unconstitutional. Early in 1982, a district court in Arkansas declared a law requiring equal time for creation science in the classroom unconstitutional. In 1987, the Supreme Court decided the issue by striking down all such equal time laws (*Edwards v. Aguillard*, 1987). However, the problem of creationism has not gone away just because the Supreme Court has declared teaching creation science to be unconstitutional. There are still efforts to have creationism taught in states and communities around the country.

A bigger problem, however, is getting evolution taught. Many teachers feel pressure not to teach it, or pressure to qualify it, or to present it as weak science. What are these ideas of Darwin's that are so controversial?

We know Darwin for his theory of evolution by natural selection. The theory contended that living things had descended with modification from common ancestors, and that the most powerful mechanism producing these changes was natural selection. Natural selection and descent with modification also have been the foundation of antievolutionism since Darwin's day. This is because of the ideas of special creationism and design, which formed the foundation of intellectual thought from the Middle Ages through the early part of the 19th century. Two of the major tenets of special creationism are that God created everything at one time, and that God created the "kinds" in their present form and there has been no change since that time.

The concept of common descent was not problematic for all Christians of Darwin's time. Anglicans, who were not biblical literalists, rather quickly adjusted to the idea of evolution. In the United States at end of the 19th century, much accommodation occurred among both Protestants and Catholics. Natural selection was problematic for some Christians because God appeared less directly involved in the world. Yet in the 1600s, the great and devout scientist

Isaac Newton had maintained that God worked through secondary causes, so the idea that God did not have to do everything directly was not new to Christians. However, natural selection removed God as direct creator, and this raised questions about whether there was a personal God and about the ultimate goodness of God. Indeed, evolution does have implications for Christian theology, but many thoughtful theologians have grappled with these implications and have found ways of resolving major problems. Most Christian denominations today accept evolution as the means by which God created, much as they accept Newton's law of gravitation as the means by which God makes the planets circle the sun.

If we look at antievolutionism in the United States today, we continue to find a division between biblical literalists and mainline Christians. Biblical literalists—there actually may be more of them today than in Darwin's day—object to evolution, and also to the natural selection mechanism. On the other hand, many mainline Christians accept evolution, but are disturbed by the issue of God's level of involvement and its implications. These issues have created a large variety of creationists and evolutionists, as I shall discuss next.

The Creation/Evolution Continuum

The following comments are based on my essay, "The Creation/Evolution Continuum," available on the National Center for Science Education's Website (Scott, 2000).

Many—if not most—Americans think of the creation and evolution controversy as a dichotomy with "creationists" on one side, and "evolutionists" on the other. This assumption all too often leads to the unfortunate conclusion that because creationists are believers in God, that evolutionists must be atheists. The true situation is much more complicated. I encourage people to reject the creation/evolution dichotomy and recognize the creation/evolution continuum that I

present graphically in Figure 1. It is clear that creationism comes in many forms. If a student tells a teacher, "I'm a creationist," the teacher needs to ask, "What kind?"

Flat-Earthers

The flat-earththers are the most extreme of the biblical literalists. They believe Earth is a flat, two-dimensional plane shaped more like a coin than a ball. They believe that biblical references to "the four corners of the earth" and to "the circle of the earth" imply this shape. The International Flat Earth Research Society, headquartered in California, has only about 200 members, and, thus is not a major player in the creation/evolution debate although they are the most extreme of the creationists. In fact, with the demise of its president, Charles K. Johnson, it appears to be defunct (Martin, 2001).

Geocentrists

Geocentrists believe that Earth, not the sun, is the center of the solar system. The earth is a flat disk, floating on water, covered by a dome of heaven with sun, moon, and stars attached to it. The geocentrists, like the flat-earththers, reject virtually all of modern physics, chemistry, and biology. Like the flat-earththers, they are also a very small group with an insignificant impact on the current creation/evolution debate.

Young-Earth Creationism

Young-earththers believe that Earth is between 6,000 and 10,000 years old. They also reject most of modern science, including biological evolution, although most accept that the earth is spherical and that the sun is the center of the solar system. Henry Morris and John C. Whitcomb are the founders of "creation science," which is the most significant 20th-century attempt to provide a scientific rationale for special creation, and of the Institute for Creation Research, the flagship creationist institution. Creation science has been criticized by the National

Science Teachers Association and the National Association of Biology Teachers. The U.S. Supreme Court has also ruled, as noted earlier, that the teaching of creation science is an illegal advancement of sectarian religion (*Edwards v. Aguillard*, 1987).

Old-Earth Creationism

The fact that the earth is ancient has been well accepted since the mid-1800s, even by mainstream religious institutions in the Western world. The theology of special creation has harmonized scientific data showing that the earth is ancient with the belief that God has been an active, causal agent in creation. There have been three major schools of thought attempting to accommodate Western religious beliefs and science: gap creationism, day-age creationism, and progressive creationism.

Gap creationism. Gap creationists claim two creations, described sequentially in the first and second chapters of Genesis, and that the first was destroyed before God created man. The time gap between the two creations allows for accommodation of the scientific data on the ancient age of the earth and special creation.

Day-age creationism. The day-age model accommodates science and religion by rendering each of the 6 days of creation as long periods of time, even thousands or millions of years instead of merely 24 hours.

Progressive creationism. The view held by the majority of modern old-earth creationists is some form of progressive creationism, blending special creationism with a fair amount of modern science. Progressive creationists believe that God created “kinds” of animals sequentially. The fossil record is an accurate representation of history because different animals and plants appeared at different times. Earlier forms are not related genetically to later ones because the “kinds” are separate creations; one “kind” cannot evolve into another “kind”; and

descent with modification cannot occur. Evolution within a “kind” can occur however, through the processes of recombination, natural selection, and genetic drift. God acts through these natural, micro-evolutionary processes as well as through active and direct creation.

Intelligent Design Creationism

On this continuum, intelligent design creationism overlaps with young-earth creationism and old-earth creationism. While most are old-earthers, some of the more prominent proponents today are young-earthers. In 1803, William Paley argued that God’s existence could be proved by examining his works using the analogy of a watch. If one found a watch in a forest, it is obvious that such a thing could not have come together by chance; the existence of a watch implies the existence of a watchmaker who has designed the watch with a purpose in mind. Similarly, the existence of order, purpose, and design in the world is proof of an omniscient designer. Paley’s example of intelligent design in nature was the human eye. Modern intelligent designers are more likely to refer to DNA structure or cellular complexity as too complex to have evolved by chance. Some of the biologists in this school accept a fair amount of modern science, including evidence of descent with modification in evolution, even evidence linking the ancestry of chimpanzees and apes.

Evolutionary Creationism

In evolutionary creationism, God the Creator uses evolution to bring about the universe according to his plan. The difference between evolutionary creationism and theistic evolution, which follows in the continuum, is that evolutionary creationists are more likely to be conservative Christians; evolutionary creationism is more theologically conservative.

Theistic Evolution

Theistic evolution is the theological view that God creates through evolution.

Astronomical, geological, and biological evolution are acceptable, although different schools of theistic evolution vary over when and how much God intervenes. Theistic evolution is the view of mainline Protestant sects and the Catholic Church. In 1996, Pope John Paul II reiterated the Catholic position that God created, evolution happened, humans may indeed have descended from more primitive forms, but God was needed for the creation of the human soul (John Paul II, 1996).

Materialist Evolutionism

Materialist evolution is a nonreligious view of evolution. “Materialism” may be used in two ways: in terms of methodology, and in terms of philosophy. Methodological materialism is the methodology of science. Science attempts to explain the world by focusing on natural causes—matter and energy. Science in and of itself is neutral on religion; supernatural forces by definition cannot be held constant and therefore cannot be tested. If an explanation cannot be tested, it is not considered scientific. Philosophical materialists go beyond methodological materialism to propose that the laws of nature are all there are; the supernatural does not exist. Philosophical materialism is distinct from the practical rules of how to do science. It is very likely that all philosophical materialists are also methodological materialists, but the converse is not necessarily true. There are many scientists who use methodological materialism in their work, but who are theists and therefore not philosophical materialists. Gregor Mendel is a classic case of a scientist who was a methodological materialist but not a philosophical one. Materialist evolutionism is a form of philosophical materialism, not a variety of methodological materialism.

What Should We Teach?

So, finally, we come to the question I began this essay with: What should we teach? Both high school and college teachers have told me that many students come into a class with the attitude that evolution is somehow unacceptable for a religious person. Such students are reluctant to learn about evolution. One way to assuage their concerns is to use the "creation/evolution continuum" to illustrate the wide range of opinion within Christianity toward evolution, which helps religious students understand that there are many options available to them as people of faith. Most students will recognize themselves somewhere on the continuum, whether believers or nonbelievers; it makes for an engaging lecture. It is perfectly legal for teachers to describe religious views in a classroom; it is only unconstitutional for teachers to *advocate* religious ideas in the classroom. If a teacher should use the continuum, he or she should present it only as a description of a range of religious views, and avoid advocating any particular position. To do so would violate the First Amendment's requirement that the classroom be religiously neutral. Many people are unaware that there is far more variation among creationists as to how things came to be than there is among evolutionists!

We should also be teaching science in the science classroom. None of the schools of creationist thought is science. That does not mean they are true or false, but it does mean they are not science. As I say in my book, *Evolution versus Creationism*:

Science requires deciding among alternative explanations of the natural world by going to the natural world itself to "test" them. There are many ways of testing an explanation, but virtually all of them involve the idea of holding constant some factors that might influence the explanation, so that some alternative explanations can be eliminated. The most familiar kind is the *direct experiment*, which is so familiar that it is even used to sell us products on television. The willingness to change one's explanation with more or better data, or a different way of looking at the same data, is one of the great strengths of the scientific method. The anthropologist Ashley Montagu summarized science rather nicely when he wrote, "The scientist believes in proof without certainty, the bigot in certainty without proof" (Montagu, 1984, p. 9). (Scott, 2004, p. 5)

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