


Evolution and Creation: Two World Views

Cedric I. Davern

ne does not have to go beyond the title of Darwin's book, *The Origin of the Species by Means of Natural Selection* (1859), before getting into deep philosophical and theological waters. What does the word *origin* connote? Are we dealing with an ontological problem, a genuine coming into being, or with change?

While the study of change is the proper domain for scientific inquiry, the origin of something, in the sense of its "coming into being out of nothing," is beyond the scope of science. But the distinction between change and origin is more ideal than real because the scholar can never be certain that his or her quest has reached the source. By using the term *origin* in the title of a scientific treatise, Darwin was signaling that the species need not, or perhaps should not, be considered direct creations of God.

Some leaped to the conclusion that Darwin's aim was to secularize the universe by denying God his most impressive work, but nothing could be further from the truth. Darwin simply sought to discover which of the world's phenomena were explicable by chains of causality. The great bulk of his intellectual effort was devoted to this enterprise; Darwin believed it an error to concede a phenomenon to God's direct intervention without first attempting to find an intermediate cause. Such a path would not only deny him an intellectual pleasure that he did not consider the least sinful; but, more importantly, it would block the progress of human inquiry.

The next word of significance in the title is *species*, a term then synonymous with Platonic form or the Aristotelean essence. To Darwin, however, and indeed to most contemporary biologists, the word *species* has lost its essentialist

CEDRIC I. DAVERN, a geneticist, is a professor of biology at the University of Utah. This article had its genesis in a 1982 debate between the author and Dr. Dwayne T. Gish, associate director of the Institute for Creation Research. Davern particularly recommends Neil C. Gillespie, Charles Darwin and the Problem of Creation (Chicago: University of Chicago Press, 1979), as relevant reading on the issues underlying the general controversy between creationism and evolution.

connotation and now refers to a group of individuals that share a recent common heritage. For those that reproduce sexually, a species exists when any pair of individuals within the group have the same chance of begetting fertile offspring. Biologists delight in distinguishing species that are so close in form that none but the expert can tell them apart, but which are deemed species nonetheless for they are either unable to mate with each other, don't care to mate, or if they do, either produce sterile offspring or none at all.

The contemporary creationist, on the other hand, still refers to *species* in the essentialist sense and, to emphasize the distinction, prefers to talk about "kinds" which usually correspond to larger taxonomical categories. Aristotle was not averse to intuiting essences nor are today's creationists. But their propensity for so doing presents a problem because the ontological status enjoyed by *kinds* in an Aristotelian world has no counterpart in the empirical realm of a scientist. In short, created species would be essentially distinct from species that arise by modification through descent. The former are necessary and the latter contingent. Even so, modern-day creationists do not object to, and indeed embrace, the notion of natural selection (or artificial selection) as an agent for the emergence of varieties.

Accompanying the emergence of these philosophical distinctions, has come a substantial change in what we define as knowledge and how we go about acquiring it. Not only did Darwin live at a time that witnessed a sharp transition in the canons of knowing, but he was one of the first to comprehend what was entailed in this shift.

This epistemological change had its roots in the Protestant Reformation. Prior to the sixteenth century, the medieval Christian world relied on a system of belief forged from Aristotelian ontology and biblical doctrine. In this system the universe was almost divorced from God; natural phenomena were manifestations of immanent forms and causes rather than the consequence of direct superintendence by deity. Medieval Christians sought to understand the world in terms of the four Aristotelian causes — the material cause (or substance), the formal cause (the design), the efficient cause (the maker), and the final cause (the purpose). While today we stress the efficient cause (or process), Aristotle's greatest emphasis was on the final cause. The why of things, or the goal of inquiry, was teleological, the method rational.

With the Reformation, the Greek philosophical tradition, with its premise that the mind of man could discover the rational elements in nature, was largely submerged and replaced by Hebrew doctrine, built around a Creator-God and a universe that was both orchestrated and explained by divine command. With this profound change in religious outlook came a new episteme where one sought to decipher God's purpose and nature by close examination of nature itself, rather than by consulting the furnishings of one's mind. Exemplifying this new climate of opinion, seventeenth-century thinkers like Galileo, Kepler, and Newton sought not so much to find out why things happened as to discern how they happened. Francis Bacon consciously shifted from the deductive to the inductive method of inquiry, stimulated by his vision of scientific discoveries being employed in the service of society. But even Bacon, for all

his proclaimed empiricism, succumbed to the allure of certainty by relying on an intuitive apprehension of truth suggested by his application of inductive processes. In doing this he strayed from the rigorous example of his predecessor, William of Ockham, who also recognized the two domains of knowing but insisted that the fruits of empirical inquiry were always tentative.

While empirical for the most part, the scientists of the seventeenth century had not yet become thoroughly positivist in orientation or method. They continued to mix their new knowledge, acquired from observation and evaluation, with traditional assumptions about the origins and purposes of natural phenomena.

The extension of this growing conscious aspiration for a strictly positivist explanation of things was one of Darwin's two great contributions to science. He expanded the scope of scientific inquiry to include all reliably observable phenomena. But, as his journals reveal, he experienced no sudden conversion. He crept toward positivism. As he gingerly embraced it, however, with a growing awareness that the world may come to be comprehensible without resort to a creator, he experienced considerable unease and, at times, an almost intolerable anxiety.

Darwin was the first modern scientist in that he both practiced and believed in positivism, although others foreshadowed his approach. Newton is a classic example, postulating the law of gravity as the explanatory principle for planetary motion. Closer in time to Darwin, Charles Lyell reiterated and popularized Hutton's theory that the geomorphology of the earth could be explained by observed natural phenomena working over the millennia, without requiring supernatural events to account for massive reworking of the earth's crust.

In looking to nature to explain natural phenomena, Lyell's approach was governed by his notion of uniformitarianism, but this principle occasionally led him beyond positivism back into the realm of theistic metaphysics. For instance, he strongly opposed the idea of progress in natural history. He was caught up in the Newtonian view of the world, where, like a clock, nature goes round and round — cycling but getting nowhere. This *a priori* conviction made it almost impossible for him to come to terms with Darwin's theory of evolution and the progress it implies for life.

For Newton, the doing of science was a form of religious devotion. Yet his methods were thoroughly positivist. He sought to deduce forces by observing motions and then by testing the forces so identified by predicting still other motions. In the same manner, Darwin sought to explain changes in species by the "force" of natural selection working on genetic variation. And just as Newton argued analogically from the terrestrial fall of the apple to the celestial fall of the moon in the earth's gravitational field to account for the origin of species, Darwin analogized from man-caused selection (noting the successes of animal breeders) to the possibility of natural selection (based on the survival of the fittest).

Despite this similarity between the methods of Darwin and Newton, there is a striking contrast in their use of hypotheses. For Newton, the purpose of

science was to discover mathematical language to explain divine prescriptions or natural laws. He was explicitly hostile to the notion that the progress of science was as dependent on the forming and testing of hypotheses as on the discovery of laws. While he correctly refused to speculate on how the force of gravity came to be, he failed to distinguish between idle speculation and productive hypothesis. Darwin was confronted with his own mystery in his theory of evolution; how did variation come to be? He struggled unsuccessfully to account for genetic mutation in positivist terms. For liberal Christian evolutionary apologists, however, this lacuna in his theory provided the loophole for God's intervention and thus allowed them to embrace Darwin's theory.

I am sure that if Newton were reincarnated as a modern biologist, he would be a population geneticist happily plotting gene-frequency changes and deducing therefrom the magnitude of the selective force. But he would have eschewed the problem of the origin of the species as being mathematically intractable. Even so, when Newton broke his own rule and waxed metaphysical about absolute time and space, Berkeley attacked him as being atheistic. Stung, Newton responded by adding a statement to the second edition of *Principia* wherein he declared the full dominion of God everywhere. To Newton the universe moved in God, in God's sensorium no less, absolute space being a metaphor for God in which he moved bodies by his will, almost as if the Universe is the mind of God. Newton could not proclaim a greater immanence for God: in his mind science and God's will were coextensive.

Newton's view stood in sharp contrast to Darwin, who insisted, for the sake of the advancement of knowledge, that science and theology be kept apart. He worked from a kind of epistemological apartheid, where the two worldviews would be regarded as separate, but equal. As we have painfully experienced in other realms, partitioning is sure to leave one or both parties feeling slighted. Darwin's scientific work precipitated a controversy that is still with us after 120 years.

In his 1979 book, *Charles Darwin and the Problem of Creation* (Chicago: University of Chicago, 1979), Neil C. Gillespie argues that as science progressed, and the pragmatic fruitfulness of the positivist approach became increasingly apparent, reference to the Creator became more a matter of ritual than of logical necessity in scientific explanations. With a growing interest in secondary causes among scientists, the ritual itself eventually evaporated. While this seems to have been the case in chemistry, physics, and perhaps geology, it was not so in biology — and certainly not among those who wrestled with the origin of species. Thus, for his insistence that science be restricted in its scope and not conflated with religion, Darwin was confronted by and isolated from the Christian scientific community. When some of his contemporaries embraced evolution to explain the fossil record but resorted to a deistic mechanism to account for it, Darwin complained in 1838, "The explanation of types and structure in classes — as resulting from the will of the deity, to create animals on certain plans — is no explanation — it has not the character of a physical law and is therefore utterly useless. It foretells nothing because we know nothing of the will of the deity, how it acts and whether con-

stant or inconstant like that of man. The cause given we know not the effect.”¹

The final element in Darwin's title is the term “natural selection,” the analogical element in his positivist theory. The rank materialism of the mechanism added insult to the already injured idealists, theists, deists, and Aristotelian scholastics. With foresight and prudence, Darwin elected to postpone the obvious extension of this theory to the origin of man, due to its great threat to man's dignity, which Darwin believed was overblown. Even so, it was the materialist mechanism for evolution that presented both the most persuasive argument for evolution and the greatest problem for the Christian communities, laymen and theologians alike.

Inspired by Paley's proof of God's existence based on his argument from design in nature, Darwin saw natural selection as the agent for diversifying species — working on the raw material of natural variation wherein separate individuals left progeny in proportion to their adaptation to their environment and their attractiveness to the opposite sex. But Darwin's theory of the origin of species replaced Paley's divinely designed contrivance with a process more akin to a Rube Goldberg contraption than to God's handiwork. In doing this Darwin enlarged the role of natural selection from simply ensuring survival of the fittest (within species) to the creative role of generating new species.

In positing this mechanism of evolution, Darwin brought into sharp focus differences in theological opinion about how the universe was divided into divine and secular phenomena. Opinions ranged widely. On the one hand were those who believed God created the universe — setting it in motion so perfectly that there was no need for his continued presence to keep it going. Such a division between the initial creative role of God and secondary consequences operating as natural laws provided a wide berth for scientific inquiry.

At the other end of the scale were those who envisioned God superintending his creation throughout time and space. In this view, God was actively and ubiquitously present. One would expect that this view leaves little scope for scientific inquiry. In thinking this, however, we underestimate the possibilities of innovative theological thinking. Some theologians who favored this notion of God argued that since deity is constantly superintending the universe, there is no need for him to intervene in his own works, and thus all the happenings of the universe, from its smallest to its greatest events, are governed by divine, orderly law. To the extent that God was seen as an orderly being, this view was congenial to scientific inquiry, though it did not encourage it. Other theologians argued for an intermediate position in which God intervened from time to time, either miraculously or according to natural law. The intermittent expression of divine will, of course, was seen as a barrier to scientific inquiry. Corresponding to this range of theological possibilities, it was not surprising that Darwin's theory could be assimilated by a Christian world view without shaking its foundations any more than they were already shaken by its own theological divisions. As science expanded its capacity to explain the universe,

¹ As quoted in Gillespie, *Charles Darwin and the Problem of Creation* (Chicago: University of Chicago Press, 1979), p. 68.

theologians no longer had the field to themselves. Their devices of accommodation were various.

For some orthodox Christians, like two of Darwin's great defenders in America, botanist Asa Grey and glaciologist Frederick Wright, it was the Achilles' heel of Darwin's theory, namely the *origin* of the genetic variation, that provided a loophole for God's superintendence. By creating variation, God indirectly guided evolution. This argument by Darwin's strongest supporters in America led to an exchange of letters in which each party, with great courtesy, attempted to persuade the other. Each acknowledged the power of the other's argument, but neither changed the other's assumptions.

The idea of evolution was also accommodated by some of liberal theological persuasion, such as British anatomist, Richard Owen, and American dinosaur hunter and paleontologist Edward Drinker Cope. Unfortunately, their accommodation was hopelessly compromised as far as Darwin was concerned because the mechanism for change was not natural selection at all but a throwback to Aristotelian teleology, whereby a mystical indwelling force drives a divine plan to produce a progression of species leading to man. In this deistic view of the origin of species, God's creative act is direct in originating the first life form and in providing in it the potential for, and guidance of, evolutionary progress.

One cannot leave this subject without commenting on the most intriguing and radical explanation of evolution. I refer to the theory put forward by Harvard nineteenth-century zoologist, Louis Agassiz. Agassiz was a "catastrophic creationist" who argued from the study of the fossil record illuminated by his faith that the earth was repeatedly devastated by a series of catastrophes and then repopulated by a succession of special creations, culminating in the crowning creation of man.

Collectively, these theological accommodations of Darwinian theory may be identified as *providential* evolution. It was against those who held such views of evolution, rather than against those who refused to contaminate their biblical doctrine with any accommodation, that Darwin felt most obliged to struggle. In loading the positivist core of their explanations for the origin of species with theological freight, they presented a threat to the intellectual integrity of Darwin's theory. Like wolves in sheep's clothing, Darwin might have said, they would cause many to overlook the distinction between the old episteme that awkwardly linked positivism and theology and the new, strictly secular, positivism that Darwin so energetically strove to establish as the basis for modern science.

Despite all his scientific passion, however, Darwin was sometimes repelled by the stark implications of a totally materialist vision of the universe and man's place in it. In these moments he found it impossible to believe that God had no part in the creation of life. But even on these occasions, his glimmer of hope would be quenched by his relentless curiosity: he wondered if a belief in God might itself be an adaptive strategy generated by natural selection.

Even since the rhetorical excesses of the famous 1860 debate between Bishop Wilberforce and Thomas Huxley, the proponents of evolution and

special creation have warily circled each other, bursting into episodes of attack and counterattack, as in the Scopes trial in Tennessee and more recently in the First Amendment Case in Arkansas. Reinhold Niebuhr rather nicely summed up this situation in his essay written for the Centenary of Darwin's *Origin of the Species*. He observed that scientists tend to view the pious as "telling a lot of little lies in the interest of great truth," while the religious see science as "telling a lot of little truths" which could be fashioned into a "big lie."²

The big question for me in this controversy is whether freedom of inquiry, with the agonizing ambiguity that accompanies it, will be sacrificed to the interests of those who demand certainty in the hope of salvation. It cannot be denied, as Sterling McMurrin has pointed out, that the fundamentalists have their eyes firmly fixed on personal salvation. They will not risk the bastion of their faith — their belief in the inerrancy of the scripture — to accommodate those who seek to increase knowledge through the processes of modern science.

When Galileo was having his troubles with the Inquisition over his support of the Copernican view of the solar system he felt impelled to quote an eminent ecclesiastic who opined that "the intention of the Holy Ghost is to teach us how one goes to heaven, not how heaven goes." It strikes me as a comment that has lost none of its cogency over the intervening centuries.

² "Christianity and Darwin's Revolution," in Ralph Buchsbaum, ed., *A Book that Shook the World* (Pittsburgh: University of Pittsburgh Press, 1959), p. 32.