



Fact or Fable?

Digging up the truth in the evolution debate
By Rodney Stark

I write as neither a creationist nor a Darwinist, but as one who knows what is probably the most disreputable scientific secret of the past century: There is no plausible scientific theory of the origin of species! Darwin himself was not sure he had produced one, and for many decades every competent evolutionary biologist has known that he did not. Although the experts have kept quiet when true believers have sworn in court and before legislative bodies that Darwin's theory is proven beyond any possible doubt, that's not what reputable biologists, including committed Darwinians, have been saying to one another.

Without question, Charles Darwin would be among the most prominent biologists in history even if he hadn't written *The Origin of Species* in 1859. But he would not have been deified in the campaign to "enlighten" humanity. The battle over evolution is not an example of how heroic scientists have withstood the relentless persecution of religious fanatics. Rather, from the very start it primarily has been an attack on religion by militant atheists who wrap themselves in the mantle of science.

When a thoroughly ideological Darwinist like Richard Dawkins claims, "The theory is about as much in doubt as that the earth goes round the sun," he does not state a fact, but merely aims to discredit *a priori* anyone who dares to express reservations about evolution. Indeed, Dawkins has written, "It is absolutely safe to say that, if you meet somebody who claims not to believe in evolution, that person is ignorant, stupid, or insane..."

That is precisely how "Darwin's Bulldog," Thomas Huxley, hoped intellectuals would react when he first adopted the tactic of claiming that the only choice is between Darwin and Bible literalism. However, just as one can doubt Max Weber's *Protestant Ethic* thesis without thereby declaring for Marxism, so too one may note the serious shortcomings of neo-Darwinism without opting for any rival theory. Modern physics provides a model of

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how science benefits from being willing to live with open questions rather than embracing obviously flawed conjectures.

What is most clear to me is that the Darwinian Crusade does not prove some basic incompatibility between religion and science. But the even more immediate reality is that Darwin's theory falls noticeably short of explaining the origin of species. Dawkins knows the many serious problems that beset a purely materialistic evolutionary theory, but asserts that no one except true believers in evolution can be allowed into the discussion, which also must be held in secret. Thus he chastises Niles Eldridge and Stephen Jay Gould, two distinguished fellow Darwinians, for giving "spurious aid and comfort to modern creationists."

Dawkins believes that, regardless of his or her good intentions, "if a reputable scholar breathes so much as a hint of criticism of some detail of Darwinian theory, that fact is seized upon and blown up out of proportion." While acknowledging that "the extreme rarity of transitional forms in the fossil record" is a major embarrassment for Darwinism, Stephen Jay Gould confided that this has been held as a "trade secret of paleontology" and acknowledged that the evolutionary diagrams "that adorn our textbooks" are based on "inference...not the evidence of fossils."

According to Steven Stanley, another distinguished evolutionist, doubts raised by the fossil record were "suppressed" for years. Stanley noted that this too was a tactic begun by Huxley, always careful not to reveal his own serious misgivings in public. Paleontologist Niles Eldridge and his colleagues have said that the history of life demonstrates gradual transformations of species, "all the while really knowing that it does not." This is not how science is conducted; it is how ideological crusades are run.

By Darwin's day it had long been recognized that the fossil evidence showed that there had been a progression in the biological complexity of organisms over an immense period of time. In the oldest strata, only simple organisms are observed. In more recent strata, more complex organisms appear. The biological world is now classified into a set of nested categories. Within each genus (mammals, reptiles, etc.) are species (dogs, horses, elephants, etc.) and within each species are many specific varieties, or breeds (Great Dane, Poodle, Beagle, etc.).

It was well-known that selective breeding can create variations within species. But the boundaries between species are distinct and firm—one species does not simply trail off into another by degrees. As Darwin acknowledged, breeding experiments reveal clear limits to selective breeding beyond which no additional changes can be produced. For example, dogs can be bred to be only so big and no bigger, let alone be selectively bred until they are cats. Hence, the question of where species come from was the real challenge and, despite the title of his famous

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book and more than a century of hoopla and celebration, Darwin essentially left it unanswered.

After many years spent searching for an adequate explanation of the origin of species, in the end Darwin fell back on natural selection,

claiming that it could create new creatures too, if given immense periods of time. That is, organisms respond to their environmental circumstances by slowly changing (evolving) in the direction of traits beneficial to survival until, eventually, they are sufficiently changed to constitute a new species. Hence, new species originate very slowly, one tiny change after another, and eventually this can result in lemurs changing to humans via many intervening species.

Darwin fully recognized that a major weakness of this account of the origin of species involved what he and others referred to as the principle of "gradualism in nature." The fossil record was utterly inconsistent with gradualism. As Darwin acknowledged: "...why, if species have descended from other species by fine gradations, do we not everywhere see innumerable transitional forms? Why is not all nature in confusion instead of the species being, as we see them, well defined?"

Darwin offered two solutions. Transitional types are quickly replaced and hence would mainly only be observable in the fossil record. As for the lack of transitional types among the fossils, that was, Darwin admitted, "the most obvious and serious objection which can be urged against the theory."

Darwin dealt with this problem by blaming "the extreme imperfection of the geological record." "Only a small portion of the surface of the earth has been geologically explored, and no part with sufficient care." But, just wait, Darwin promised, the missing transitions will be found in the expected proportion when more research has been done. Thus began an intensive search for what the popular press soon called the "missing links."

Today, the fossil record is enormous compared to what it was in Darwin's day, but the facts are unchanged. The links are still missing; species appear suddenly and then remain relatively unchanged. As Steven Stanley reported: "The known fossil record...offers no evidence that the gradualistic model can be valid."

Indeed, the evidence has grown even more contrary since Darwin's day. "Many of the discontinuities [in the fossil record] tend to be more and more emphasized with increased collecting," noted the former curator of historical geology at the American Museum of Natural History. The history of most fossil species includes two features particularly inconsistent with gradualism, Stephen Jay Gould has acknowledged. The first problem is stasis. Most species exhibit no directional change during their tenure on earth. They appear in the fossil record looking much the same as when they disappear. The second problem is sudden appearance. Species do not arise gradually by the steady transformation of ancestors, they appear "fully formed."

These are precisely the objections raised by many biologists and geologists in Darwin's time—it was not merely that Darwin's claim that species arise through eons of natural selection was offered without supporting evidence, but that the available evidence was overwhelmingly contrary. Unfortunately, rather than concluding that a theory of the origin of species was yet to be accomplished, many scientists urged that Darwin's claims must be embraced, no matter what.

In keeping with Darwin's views, evolutionists have often explained new species as the result of the accumulation of tiny, favorable random mutations over an immense span of time. But this answer is inconsistent with the fossil record wherein creatures appear “full-blown and raring to go.” Consequently, for most of the past century, biologists and geneticists have tried to discover how a huge number of favorable mutations can occur at one time so that a new species would appear without intermediate types.

However, as the eminent and committed Darwinist Ernst Mayr explained, “The occurrence of genetic monstrosities by mutation...is well substantiated, but they are such evident freaks that these monsters can only be designated as ‘hopeless.’ They are so utterly unbalanced that they would not have the slightest chance of escaping elimination through selection. Giving a thrush the wings of a falcon does not make it a better flyer....To believe that such a drastic mutation would produce a viable new type, capable of occupying a new adaptive zone, is equivalent to believing in miracles.”

The word miracle crops up again and again in mathematical

assessments of the possibility that even very simple biochemical chains, let alone living organisms, can mutate into being by a process of random trial and error. For generations, Darwinians have regaled their students with the story of the monkey and the typewriter, noting that given an infinite period of time, the monkey sooner or later is bound to produce *Macbeth* purely by chance, the moral being that infinite time can perform miracles.

However, the monkey of random evolution does not have infinite time. The progression from simple to complex life forms on earth took place within a quite limited time. Moreover, when competent mathematicians considered the matter, they quickly calculated that even if the monkey's task were reduced to coming up with only a few lines of *Macbeth*, let alone Shakespeare's entire play, the probability is far, far beyond mathematical possibility. The odds of creating even the simplest organism at random are even more remote—Fred Hoyle and Chandra Wickramasinghe, celebrated cosmologists, calculated the odds as one in ten to the 40,000th power. (Consider that all atoms in the known universe are estimated to number no more than ten to the 80th power.) In this sense, then, Darwinian theory does rest on truly miraculous assumptions.

Perhaps the most amazing aspect of the current situation is that while Darwin is treated as a secular saint in the popular media and the theory of evolution is regarded as the invincible challenge to all religious claims, it is taken for granted among the leading biological scientists that the origin of species has yet to be explained. Writing in *Nature* in 1999, Eörs Szathmáry summarizes

The Miracle of Creation

Freeman Dyson, professor emeritus at Princeton's Institute for Advanced Study, is a preeminent mathematical physicist, and one of the most wide-ranging thinkers and writers in modern science. These observations are drawn from interviews with Monte Davis and Stewart Brand.

QUESTION: How do we understand the universe at all? Do you agree with Carl Sagan that humans find the mathematics of gravitation so simple and elegant because natural selection eliminated the apes who couldn't understand?

DYSON: Not at all. For apes to come out of the trees, and change in the direction of being able to write down Maxwell's equations, I don't think you can explain that by natural selection at all. It's just a miracle.

QUESTION: You have written that “as we look out into the universe and identify the many accidents of physics and

astronomy that have worked together to our benefit, it almost seems as if the universe must in some sense have known that we were coming.” Is that a playful suggestion?

DYSON: It's not playful at all.

QUESTION: Then we seem to be talking about sentiments that most people would consider religious. Are they religious for you?

DYSON: Oh yes.

QUESTION: The dominant tendency in modern science has been to assert that we occupy no privileged place, that the universe does not care, that science and religion don't mix. Where do you fit into those ideas?

DYSON: The tendency you're talking about is a modern one, not old. I think it became almost a dogma only with the fight for acceptance of Darwinism, Huxley versus Bishop Wilberforce, and so on.

Before the nineteenth century, scientists were not ashamed of being religious, but since Darwin, it's been taboo.

The biologists are still fighting Wilberforce. If you look now, the view that everything is due to chance and to little bits of molecular clockwork is mostly propounded by biologists, particularly people like Jacques Monod—whereas the physicists have become far more skeptical about that. If you actually look at the way modern physics is going, it's very far from that. Yes, it's the biologists who've made it so hard to talk about these things.

I was reading recently a magnificent book by Thomas Wright, written about 1750, when these inhibitions didn't exist at all. Wright was the discoverer of galaxies, you know, and he writes:

“I can never look upon the stars without wondering that the whole world does

that, “The origin of species has long fascinated biologists. Although Darwin’s major work bears it as a title, it does not provide a solution to the problem.” When Julian Huxley claimed that “Darwin’s theory is...no longer a theory but a fact,” he surely knew better. But, just like his grandfather, Thomas Huxley, he knew that his lie served the greater good of “enlightenment.”

When *The Origin of Species* was published it aroused immense interest, but initially it did not provoke antagonism on religious grounds. Although many criticized Darwin’s lack of evidence, none raised religious objections. Instead, the initial response from theologians was favorable. The distinguished Harvard botanist Asa Gray hailed Darwin for having solved the most difficult problem confronting the Design argument—the many imperfections and failures revealed in the fossil record. Acknowledging that Darwin himself “rejects the idea of design,” Gray congratulated him for “bringing out the neatest illustrations of it.” Gray interpreted Darwin’s work as showing that God has created a few original forms and then let evolution proceed within the framework of divine laws.

When religious antagonism finally came it was in response to aggressive claims, like Huxley’s, that Newton and Darwin together had evicted God from the cosmos. For the heirs of the Enlightenment, evolution seemed finally to supply the weapon needed to destroy religion. As Richard Dawkins confided, “Darwin made it possible to be an intellectually fulfilled atheist.”

Atheism was central to the agenda of the Darwinians. Darwin

himself once wrote that he could not understand how anyone could even wish that Christianity were true, noting that the doctrine of damnation was itself damnable. Huxley expressed his hostility toward religion often and clearly, writing in 1859: “My screed was meant as a protest against Theology & Parsondom...both of which are in my mind the natural & irreconcilable enemies of Science. Few see it but I believe we are on the Eve of a new Reformation and if I have a wish to live 30 years, it is to see the foot of Science on the necks of her Enemies.” According to Oxford historian J. R. Lucas, Huxley was “remarkably resistant to the idea that there were clergymen who accepted evolution, even when actually faced with them.” Quite simply, there could be no compromises with faith.

Writing at the same time as Huxley, the leading Darwinian in Germany, Ernst Haeckel, drew this picture: **On one side spiritual freedom and truth, reason and culture, evolution and progress stand under the bright banner of science; on the other side, under the black flag of hierarchy, stand spiritual slavery and falsehood, irrationality and barbarism, superstition and retrogression.... Evolution is the heavy artillery in the struggle for truth. Whole ranks of...sophistries fall together under the chain shot of this...artillery, and the proud and mighty structure of the Roman hierarchy, that powerful stronghold of infallible dogmatism, falls like a house of cards.**

These were not the natterings of radical circles and peripheral publications. The author of the huge review of *The Origin* in the *Times of London* was none other than Thomas Huxley. He built his lectures on evolution into a popular touring stage show

not become astronomers; and that men, endowed with sense and reason, should neglect a science that must convince them of their immortality.”

QUESTION: There’s a provocative sentence in your book *Imagined Worlds*: “The laws of nature are constructed in such a way as to make the universe as interesting as possible.” What do you mean by that?

DYSON: It’s the numerical accidents that make life possible. I define an interesting universe as one that is friendly to life, and especially one that produces lots of variety.

QUESTION: What accidental numbers make that possible?

DYSON: If you look at just the physical building blocks, there’s a famous problem with producing carbon in stars. All the carbon necessary for life has to be produced in stars, and it’s difficult to do. To make carbon, you’ve got to have three

helium atoms collide in a triple collision. Helium has an atomic weight of 4, and carbon is 12. Beryllium, at 8, is unstable, therefore you can’t go from helium to beryllium to carbon; you have to make helium into carbon in one jump. This means three atoms colliding together.

QUESTION: Which statistically is not so often.

DYSON: No. But Fred Hoyle, who discovered this process, came up with one of the most brilliant ideas in the whole of science. He said that in order to make carbon abundant as it should be, there must be an accidental, coincidental resonance. This means that there’s a nuclear state in the carbon nucleus at precisely the right energy level for these three atoms to combine smoothly. The chance of having that resonance in the right place is maybe 1 in 1,000. Hoyle believed it must be there in order to produce the carbon. Of course,

the nuclear physicists then looked for this resonance, and found it!

There are other famous cases: The fact that the nuclear force is just strong enough to bind a proton and a neutron to make the heavy isotope hydrogen, but not strong enough to bind two protons to make helium with an atomic weight of 2. Just two protons stuck together is a rather narrow range of strength. So the nuclear force is fine-tuned so that hydrogen doesn’t burn to helium right away. If the two hydrogen nuclei did bind, all the hydrogen would burn to helium in the first five minutes. The universe would then be pure helium and a rather boring place. Whereas, if the force were a little bit weaker, so that the neutron and the proton didn’t bind, you wouldn’t get any heavy elements at all. You’d have nothing but hydrogen. Again, this would make for a boring universe.

wherein he challenged various potential religious opponents by name. Is it surprising that religious people, scientists as well as clerics, began to respond in the face of unrelenting challenges like these issued in the name of evolution? It was not as if they merely were asked to accept that life had evolved—many theologians had long taken that for granted. What the Darwinians demanded was that religionists agree to the untrue and unscientific claim that Darwin had proved that God played no role in the process.

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some of these criticisms were sufficiently compelling that Darwin immediately wrote his friend the botanist J. D. Hooker that the article “is uncommonly clever; it picks out with skill all the most conjectural parts, and brings forward well all the difficulties. It quizzes me quite splendidly.” In a subsequent

letter to geologist Charles Lyell, Darwin acknowledges that “the bishop makes a very telling case against me.” Indeed, several of Wilberforce’s comments caused Darwin to make modifications in a later revision of the book.

Among those drawn to respond was the Bishop of Oxford, Samuel Wilberforce, who is widely said to have made an ass of himself in a debate with Huxley during the 1860 meeting of the British Association at Oxford. The relevant account of this confrontation reported: “I was happy enough to be present on the memorable occasion at Oxford when Mr. Huxley bearded Bishop Wilberforce. The bishop arose and in a light scoffing tone, florid and fluent, he assured us that there was nothing in the idea of evolution. Then turning to his antagonist with a smiling insolence, he begged to know, was it through his grandfather or his grandmother that he claimed descent from a monkey? On this Mr. Huxley...arose...and spoke these tremendous words. He was not ashamed to have a monkey for an ancestor; but he would be ashamed to be connected with a man who used his great gifts to obscure the truth. No one doubted his meaning and the effect was tremendous.”

This marvelous anecdote has appeared in every distinguished biography of Darwin and of Huxley, as well as in every popular history of the theory of evolution. In his celebrated *Apes, Angels and Victorians*, William Irvine used this tale to disparage the bishop’s snobbery. In his prize-winning study, James Brix went much farther, describing Wilberforce as “naive and pompous,” a man whose “faulty opinions” were those of a “fundamentalist creationist” and who provided Huxley with the opportunity to give evolution “its first major victory over dogmatism and duplicity.” Every writer tells how the audience gave Huxley an ovation.

Trouble is, it never happened. The quotation above was the only such report of this story and it appeared in an article titled “A Grandmother’s Tales” written by a non-scholar in a popular magazine 38 years after the alleged encounter. No other account of these meetings, and there were many written at the time, made any mention of remarks concerning Huxley’s monkey ancestors, or claimed that he made a fool of the bishop. To the contrary, many thought the bishop had the better of it, and even many of the committed Darwinians thought it at most a draw.

Moreover, as all of the scholars present at Oxford knew, prior to the meeting, Bishop Wilberforce had penned a review of *The Origin* in which he fully acknowledged the principle of natural selection as the source of variations within species. He rejected Darwin’s claims concerning the origin of species, however, and

The tale of the foolish and narrow-minded bishop seems to have thrived as a revealing “truth” about the incompatibility of religion and science simply because many of its tellers wanted to believe that a bishop is wrong by nature. J. R. Lucas, who debunked the bishop myth, has suggested that the “most important reason why the legend grew” is, first, because academics generally “know nothing outside their own special subject” and therefore easily believe that outsiders are necessarily ignorant, and, second, because Huxley encouraged that conclusion. “The quarrel between religion and science was what Huxley wanted; and as Darwin’s theory gained supporters, they took over his view of the incident.”

Since then the Darwinian Crusade has tried to focus all attention on the most unqualified and most vulnerable opponents, and when no easy targets present themselves it has invented them. Huxley “made straw men of the ‘creationists,’” as his biographer Desmond admitted. Even today it is a rare textbook or any popular treatment of evolution and religion that does not reduce “creationism” to the simplest caricatures.

This tradition remains so potent that whenever it is asked that evolution be presented as “only a theory,” the requester is ridiculed as a buffoon. Even when the great philosopher of science Karl Popper suggested that the standard version of evolution even falls short of being a scientific theory, being instead an untestable tautology, he was subjected to public condemnations and much personal abuse.

Popper’s tribulations illustrate an important basis for the victory of Darwinism: A successful appeal for a united front on the part of scientists to oppose religious opposition has had the consequence of silencing dissent within the scientific community. The eminent observer Everett Olson notes that there is “a generally silent group” of biological scientists “who tend to disagree with much of the current thought” about evolution, but who remain silent for fear of censure.

I believe that one day there will be a plausible theory of the origin of species. But, if and when that occurs, there will be nothing in any such theory that makes it impossible to propose that the principles involved were not part of God’s great design any more than such a theory will demonstrate the existence of God. But, while we wait, why not lift the requirement that high school texts enshrine Darwin’s failed attempt as an eternal truth?