THE GREAT IDEAS ONLINE

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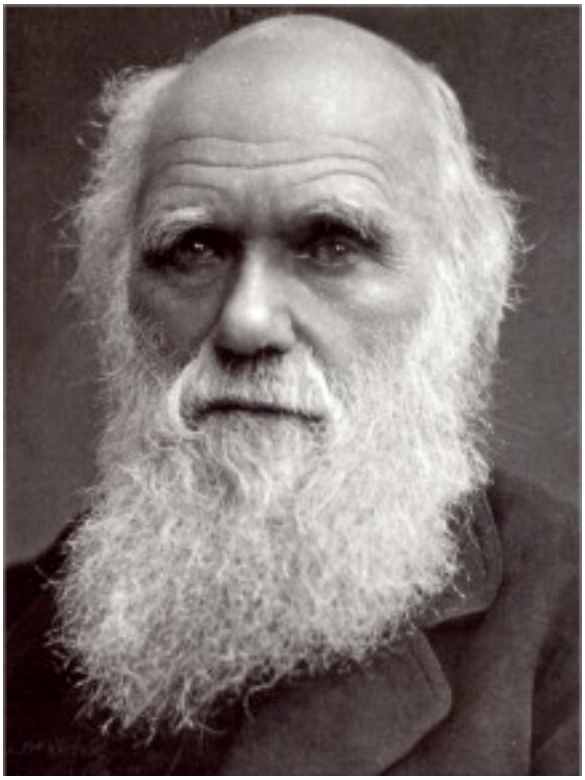

Charles Darwin
1809 -1882

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THE GREAT IDEA OF EVOLUTION

Shamelessly Doubting Darwin

The biggest threat to genuine scientific inquiry is not resistance from people of faith but unwarranted hubris on the part of many scientists.

Opinion **by William A. Dembski**

Science, we are frequently told, is tentative. And given the history of science, there is every reason for it to be tentative. No scientific theory withstands revision for long, and many are eventually superseded by ideas that flatly contradict their predecessors. Scientific revolutions are common, painful, and real. New theories regularly overturn old ones, and no scientific theory is ever the final word.

But if science is tentative, scientists are not. As the philosopher of science Thomas Kuhn rightly noted, it takes a revolution to change scientific theories precisely because scientists do not hold their theories tentatively. Thus, in his Structure of Scientific Revolutions (1996), Kuhn quotes with approval Max Planck, who wrote, "A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it."

No scientist with a career invested in a scientific theory is going to relinquish it easily. And a good thing that is! The only way to make headway with a theory is to be fully invested in it. Scientific theories are frameworks for solving problems. Scientists risk their careers and livelihoods working on theories they hope will solve interesting problems. Consequently, scientists need to be persuaded that their theories provide not only fundamental and profound insights, but also avenues of research sufficiently fruitful to span an entire scientific career (typically forty years or more).

Science Versus Dogma

By itself, a scientist's lack of tentativeness poses no danger to science. It only becomes a danger when it turns to dogmatism. Typically, a scientist's lack of tentativeness toward a scientific theory simply means that the scientist is convinced that the theory is substantially correct. Scientists are fully entitled to such convictions. On the other hand, those who hold their theories dogmatically go on to assert that their theories cannot be incorrect. How can a scientist keep from descending into dogmatism? The only way I know is to look oneself squarely in the mirror and continually affirm: I may be wrong . . . I may be massively wrong . . . I may be hopelessly and irretrievably wrong—and mean it! It's not enough just to mouth these words. We need to take them seriously and admit that they can apply even to our most cherished scientific beliefs.

A simple induction from past scientific failures should be enough to convince us that the only thing about which we cannot be wrong is the possibility that we might be wrong. This radical skepticism cuts much deeper than Cartesian skepticism, which always allows some privileged domains of knowledge to remain immune to doubt. (For Descartes, mathematics and theology constituted such domains.) At the same time, this radical skepticism is consonant with an abiding faith in human inquiry and its ability to render the world intelligible. In fact, the conviction with which scientists hold their scientific theories, so long as it is free of dogmatism, is just another word for faith. This faith sees the scientific enterprise as funda-

mentally worthwhile even if its particular claims and theories are subject to ruin.

In place of faith in the scientific enterprise, dogmatism substitutes unreasoning certainty in particular claims and theories of science. The problem with dogmatism is that it is always a form of self-deception. If Socrates taught us anything, it is that we always know a lot less than we think we know. Dogmatism, however, deceives us into thinking that we have attained ultimate mastery of information and that divergence of opinion is futile. Self-deception is the original sin for a scientist. Richard Feynman, a Nobel laureate in physics, put it this way: "The first principle is that you must not fool yourself, and you are the easiest person to fool." Feynman was particularly concerned about applying this principle to the public understanding of science: "You should not fool the laymen when you're talking as a scientist . . . I'm talking about a specific, extra type of integrity that is [more than] not lying, but bending over backwards to show how you're maybe wrong."

Dogmatic Darwinians

The importance of tentativeness and dogmatism in science is too frequently neglected in discussions of biological evolution. It hardly makes for a free and open exchange of ideas when, for example, biologist Richard Dawkins asserts, "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 (or wicked, but I'd rather not consider that)." Nor does philosopher Michael Ruse help matters when he trumpets, "Evolution is a fact, fact, FACT!" Nor, for that matter, does Stephen Jay Gould's protégé Michael Shermer promote insight into natural selection when he announces, "No one, and I mean no one, working in the field is debating whether natural selection is the driving force behind evolution, much less whether evolution happened or not."

Such remarks, and especially the attitude behind them, do nothing to settle the ongoing controversy over evolution. Gallup polls consistently indicate that only about 10 percent of the U.S. population accepts the sort of evolution argued by Dawkins, Ruse, and Shermer, evolution in which the driving force is the Darwinian selection mechanism. The rest of the population is committed to some form of intelligent design. Now, it goes without saying that science is not decided by opinion polls. Nevertheless, the overwhelming rejection of Darwinian evolution in the population at large is worth pondering. Although Michael Shermer exaggerates when he claims that no research biologist doubts the power of

natural selection, he is certainly right in claiming that it is by far the majority position among biologists.

Why, then, has the biological community failed to convince the public that natural selection is the driving force behind evolution and that evolution so conceived (Darwinian evolution) can successfully account for the full diversity of life? This question is worth pondering because in most other areas of science the public readily signs off on the considered judgments of the scientific community. Why not here? Steeped as our culture is in the fundamentalist-modernist controversy, the usual answer is that religious fundamentalists, blinded by their dogmatic prejudices, willfully refuse to acknowledge the overwhelming case for Darwinian evolution.

Although there may be something to this charge, fundamentalist intransigence cannot be solely responsible for the overwhelming rejection of Darwinian evolution by the public. Fundamentalism in the sense of strict biblical literalism is a minority position even among America's religious believers. Moreover, religious traditions do not make a virtue out of alienating the culture. Despite postmodernity's inroads, science retains tremendous cultural prestige. The religious world, by and large, would rather live in harmony with the scientific world. Most religious believers accept that species have undergone significant changes over the course of natural history and therefore that evolution in some sense has occurred. (Consider, for instance, Pope John Paul II's recent declaration that evolution is more than just a casual theory.) The question for most religious believers and the public more generally is not the factuality of evolution but the Darwinians' presumed mechanism of evolutionary change—the idea that chance and necessity alone are enough to explain the emergence of life as we see it today in all its variety.

Shameless Doubt

When reading publications by the National Academy of Science, the National Center for Science Education, and the National Association of Biology Teachers, one frequently gets the sense that the failure of the public to accept Darwinian evolution is a failure in education. If only people could be made to understand Darwin's theory properly, so we are told, they would readily sign off on it. This presumption—that the failure of Darwinism to achieve public acceptance is a failure of education—leads easily to the demonization of fundamentalism once education has been tried and found wanting. For what else could be preventing Darwinism's immediate and cheerful acceptance except religious prejudice? To convinced Darwinists, it seems ridiculous that the fault might lie with their

theory and that the public might be picking up on faults inherent in it. Yet that is exactly what is happening.

The public need feel no shame at disbelieving and openly criticizing Darwinism. Most scientific theories these days are initially published in specialized journals or monographs and are directed toward experts assumed to possess considerable technical background. Darwin's theory was not disseminated in this manner. The *locus classicus* for Darwin's theory remains his The Origin of Species (1859), in which Darwin took his case directly to the public. Contemporary Darwinists likewise continue to take their case directly to the people. The books of Richard Dawkins, Daniel Dennett, Stephen Jay Gould, E. O. Wilson, and a host of other biologists and philosophers aim to convince a skeptical public about the merits of Darwin's theory. These authors commend those parts of the public that find their arguments convincing. But toward those who remain unconvinced, commendation gives way to condemnation. Daniel Dennett even recommends "quarantining" parents who teach their children to doubt Darwinism—see the end of his book Darwin's *Dangerous Idea* (1996).

How is it that the public is commended for its scientific acumen when it accepts Darwinian evolutionary theory, but disparaged for its scientific insensibility when it doubts that same theory? The mark of dogmatism is to reward conformity and punish dissent. If contemporary science does indeed belong to the culture of rational discourse, then it must repudiate dogmatism and authoritarianism in all guises. If the public can be trusted to evaluate the case for Darwinism—and this is what Darwinists tacitly assume whenever they publish books on Darwinism for the public—then it is unfair to turn against the public when it decides that the case for Darwinism is unconvincing.

Evidence Versus Extrapolation

Why does the public find the case for Darwinism unconvincing? I submit that the real reason the public continues to resist Darwinian evolution is the apparent inadequacy of the Darwinian mechanism of chance variation and natural selection in accounting for the full diversity of life. Fundamentalism aside, the claim that the Darwinian mechanism of chance variation and natural selection can generate the full range of biological diversity strikes people as an unwarranted extrapolation from the limited changes that mechanism is known to effect in practice. The hard empirical evidence for the power of the Darwinian mechanism is in fact quite limited—such phenomena as finch beak variations, changes in moth coloration, and development in bacteria of antibiotic resistance. No one seri-

ously doubts that finch beak size, for example, does vary according to environmental pressures. The Darwinian mechanism does operate here and accounts for the changes we observe. But that same Darwinian mechanism is also supposed to account for how finches arose in the first place. This is an extrapolation. Strict Darwinists see it as perfectly plausible. The public remains unconvinced.

But shouldn't the public simply defer to the scientists? After all, they are the experts. But which scientists? It is certainly true that the majority of the scientific community accepts Darwinism. But science is not decided at the ballot box, and Darwinism's acceptance among scientists is hardly universal. A growing movement of scientists known as "design theorists" is advocating a theory known as "intelligent design." Intelligent design argues that complex, information-rich biological structures cannot arise by undirected natural forces but instead require a guiding intelligence. These are reputable scientists who argue their case on strictly scientific grounds and who are publishing their results in accepted academic outlets. This includes my own work and that of Jonathan Wells, Siegfried Scherer, and others.

Whether intelligent design will ultimately overturn Darwinism is not the issue. The issue is whether the scientific community is willing to set aside dogmatism and admit as a live possibility that even its most cherished views might be wrong. Scientists have been wrong in the past and will continue to be wrong, both in the niggling details and in broad conceptual matters. Darwinism is one scientific theory that attempts to account for the history of life, but it is not the only scientific theory that could possibly account for it. It is, in fact, just a theory like any other one, and indeed a widely disputed hypothesis, one that is facing increasingly trenchant criticisms. Scientists should take a cue from the public in this matter and discard their defensive dogmatism. Only then will their work be truly scientific. Like any other scientific theory, Darwinism needs periodic reality checks. 

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