BOOKS: EVOLUTION AND CREATIONISM

Waiting for the Watchmaker

Kevin Padian

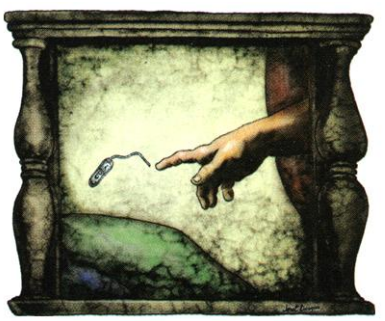
Intelligent Design (ID) is the cryptoscientific arm of a sociopolitical movement of conservative Christians who are upset about the displacement of their concept of God from institutional life in the United States and are determined to do something about it. *Intelligent Design Creationism and Its Critics* presents the arguments of ID advocates in their own words and provides closely argued critiques of the science, philosophy, and theology that underlie their positions. Robert Pennock, the editor, is a philosopher at Michigan State University whose previous book, *Tower of Babel: The Evidence Against the New Creationism* (MIT Press, Cambridge, MA, 1999), exposed the problems and pitfalls of ID, particularly in its logic and rhetoric. In the present volume, he has assembled two broad, well-qualified teams for what amounts to a wrestling-style "smackdown" that lays the current controversies bare.

Intelligent Design Creationism and Its Critics
Philosophical, Theological, and Scientific Perspectives
Robert T. Pennock, Ed.
MIT Press, Cambridge, MA, 2001. 825 pp. $110, £75.95. ISBN 0-262-16204-0. Paper, $45, £30.95. ISBN 0-262-66124-1.

The vanguard of the ID movement has been the Center for the Renewal of Science and Culture at the Discovery Institute, a conservative think tank in Seattle. ID Creationism is more or less the brainchild of Phillip E. Johnson, a now-retired criminal law professor from the University of California, who in the early 1990s set out a "wedge strategy" for destroying materialism and reinstating Christian values in education and society. Johnson found like-minded friends and financial supporters, and today the Institute is better funded than many federal and nongovernmental organization programs in science education.

The strategy Johnson developed seeks to undermine evolution and science education while rallying support for ID Creationism. In an excellent overview that begins the book, Barbara Forrest details the history and motives behind ID Creationism as well as its political and cultural underpinnings. ID itself recapitulates the late 18th-century middlebrow theology of William Paley, who famously argued that, just as the intricate design of a watch implies the existence of a watchmaker, the intricate design of nature forces us to accept the existence of a Creator who made and maintains it. Decades earlier, Hume had shown (not without sympathy) that this argument violated both logic and theology. But it persisted—even Darwin as a Cambridge undergraduate admired its rhetoric, if not its substance. It currently appears in the insistence of ID proponents that some biological structures are too complex and intricate to have any possible evolutionary intermediates. They conclude that these structures must have been "intelligently designed" by some supernatural force that they prefer not to name, obviously for fear of violating the U.S. Constitution's establishment clause.

Yet on less secular stages the advocates of ID are frank about their fervent Christian beliefs and the crusade to restore Jesus as the center of all education and culture, including science. To do this, the wedge strategists have to demonize science and show that its naturalism excludes consideration of God philosophically as well as methodologically. Johnson continues to conflate these two forms of naturalism even after being called on the issue many times, but he has no choice. If he gives up the conflation, he has lost, because he cannot call naturalism a state-supported, established religion unless it explicitly denies the existence of God.



The wedge strategy comprises three general approaches: scientific research and publication, publicity and opinion-making, and "cultural confrontation and renewal." As Forrest and many other contributors to the volume plainly show, the ID proponents have not made even a token effort at scientific research. They prefer instead the "creation-science" approach of distorting and attacking evolution and related fields. These advocates carry out their business in popular books and the proceedings of their own conferences; no article demonstrating ID has appeared in a peer-reviewed journal. But, as Johnson admits, his goal is not about science at all, but about religion and philosophy. ID proponents have no intention of playing the game of science. Why bother, when you can simply walk away from the field, call a news conference, and declare that you've already won and that the game is invalid anyway? Forrest's exposé of the wedge strategy should be required reading for all scientists as well as for government officials and bureaucrats, who seem particularly gullible when terms like "viewpoint discrimination" and the "parental right" not to educate children are introduced.

The ID supporters' other two approaches (opinion-making and cultural renewal) are squarely aimed at a public that is poorly educated in science and tolerant of their neighbors' religious beliefs. Their theological claims and the absence of scientific support for their positions would merit no scholarly attention if the movement were not achieving social and political successes. But because it is, all scientists should pay close attention to the arguments presented in this comprehensive anthology.

In the volume's no-holds-barred matches, those who favor ID are hopelessly underpowered. Pennock nicely disposes of Johnson's critique of naturalism, removing every foundation and showing that Johnson's arguments depend entirely on misrepresentation. Johnson considers naturalism anathematic in any form because, as a creationist, he knows that "a supernatural Creator not only initiated this process [life] but in some meaningful sense controls it in furtherance of a purpose" and that "the world (and especially mankind) was designed, and exists for a purpose." What that purpose is, why it would be revealed most clearly to one Christian sect instead of more broadly, and why everyone should believe this purposefulness (instead of, say, some other people's belief that their God lives on a mountain and cares little for the ways of humans) are questions that turn the tables on ID proponents' charges of "viewpoint discrimination" against them. Pennock deftly demonstrates that Johnson's pleadings are rooted in religious intolerance, not religious freedom.

As philosopher of science Philip Kitcher notes, some ID supporters are foxes (they know many things) and some are

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CREDIT: SEA STUDIOS

BROWSINGS

The Shape of Life. Sea Studios Foundation, Monterey, CA, and National Geographic Television, Washington, DC. On PBS, Tuesday evenings, beginning 2 April 2002.
The Shape of Life. *Nancy Burnett and Brad Matsen.* Monterey Bay Aquarium, Monterey, CA, 2002. Paper, 136 pp. $19.95. ISBN 1-878244-39-6.

The focus of this television series and the accompanying book is much narrower than the title suggests. But the eight metazoan phyla that are covered—sponges, cnidarians, flatworms, annelids, arthropods, molluscs, echinoderms, and chordates—encompass more than 95% of all animal species. Viewers and readers are introduced to the diversity of forms and variety of lifestyles that have evolved within these basic body plans. For example, the annelids include both dull-colored earthworms that plow through the soil- and tube-dwelling polychaetes such as the "christmas tree worm" *Spirobranchus*, which extracts food from the water with its tentacular crown.

hedgehogs (they know only one thing, but it's important). If Johnson is a fox, then Michael Behe (a biochemist at Lehigh University) is a hedgehog, because he has made much of the notion that some biological structures are "irreducibly complex" and no intermediates from simpler functional forms are possible. As Kitcher shows, Behe is saying that because science has yet to solve (or, in some cases, even study) some problems, they are insoluble—even though many problems previously considered insoluble and gaps previously considered unbridgeable have been solved and bridged. Moreover, evidence of scientific ignorance is not evidence for creation, which Behe is unable to test in any empirical sense. Kitcher is equally good at showing how Behe's and Johnson's books are full of sophistries and cover-ups that deny the truly impressive evidence of evolution, specific claims of which are explained and vindicated in the chapter by Matthew Brauer and Daniel Brumbaugh.

Another ID "hedgehog" is William Dembski, who claims to have invented a probabilistic "explanatory filter" that can distinguish among the increasingly improbable effects he interprets as caused by regularity, chance, and design. Dembski seems not to understand that in any attempt to explain the distribution of a set of phenomena, chance is the simplest (null) hypothesis, but this is the least of his problems. Even allowing Dembski most of his questionable propositions, Peter Godfrey-Smith still easily shows that Dembski's explanatory filter is merely a restatement of the fact that some events are highly unlikely to have arisen by chance, and evolution is clearly not driven by chance. Dembski's smoke-and-mirrors approach to causality (which he never effectively separates from statistical probability) is exacerbated by the confusion he generates with the meanings of "information." In information theory, the term can imply increasing predictability or increasing entropy, depending on the context. Godfrey-Smith also demonstrates that Dembski does not realize the concepts of "chance and necessity" that François Monod discussed are merely metaphors and they do not adequately describe evolution (or any other life process).

Pennock's book is an invaluable compilation for anyone who wants to learn about the scientific and philosophical failures of intelligent design and the long-term political and social strategies of its advocates. The book's principal shortcoming is that one-fifth of its length is spent on the arguments of and responses to Alvin Plantinga, a philosopher of religion at the University of Notre Dame. He seems neither fox nor hedgehog, and he has little to offer except assertions of "what Christians know"—as if other religious groups know nothing, and as if he could speak for all Christians. Plantinga's specious logic and his general ignorance of even basic scientific concepts reveal that he doesn't take science seriously enough to be considered seriously himself. People like Plantinga and Johnson claim the high ground without earning it, and so they seldom hold it long. Johnson believes that the more people learn about the philosophy behind evolution, the less they'll like it. Wait until they learn what's behind intelligent design.

In the Wake of Tacoma
Suspension Bridges and the Quest for Aerodynamic Stability
by Richard Scott
ASCE Press, Reston, VA, 2001. Paper, 314 pp. $69. ISBN 0-7844-0542-5.

BOOKS: ENGINEERING

Keeping Swaying Bridges from Falling Down

Henry Petroski

When the Tacoma Narrows Bridge was completed in July 1940, its 853-meter main span made it the third longest suspension bridge in the world. In comparison to its length, however, the bridge was not at all a very wide or deep structure. The area south of Seattle where it had been built was then very sparsely populated, and traffic projections had justified only a two-lane crossing. Also, in keeping with the aesthetics of long-span bridges during the late 1930s, the bridge's deck structure was very shallow. To achieve the desired extremely slender appearance, the roadway rested on solid plate girders only 2.4 meters deep, a far cry from the 7.6-meter deep open trusswork that stiffens San Francisco's Golden Gate Bridge (completed in 1937).

The consulting engineer for the state-of-the-art steel structure at the Tacoma Narrows

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