Intelligent Design’s Empty but Explosive Black Box


Biologists have been lured into assuming that creationists are ignorant crackpots. That may have been a fair assessment 30 years ago, when the front lines were manned by people insisting that the Earth is only 6000 years old and the receding Noahian flood carved the Grand Canyon, but there’s a new breed afoot. Aficionados of creationism’s latest flavor, intelligent design (ID), are far more sophisticated, smarter, better organized, and more politically savvy than their predecessors.

Intelligent design is a throwback to William Paley’s 19th-century “argument from design.” Instead of claiming the improbability of organs such as eyes and bird wings, as the old school did (developmental biologists have rendered that view silly), ID supporters like Lehigh University biochemist Michael Behe (1996) adopt a modern facade by invoking the improbability of biochemical pathways and subcellular structures arising through natural selection. Instead of asking what function half a bird wing could serve, Behe belittles the utility of half a biochemical pathway. In other words, he argues that complex biochemical systems like the blood-clotting cascade could not have been selected stepwise by Darwinian mechanisms. In Behe’s world, such pathways exhibit “irreducible complexity.” Add mathematician William Dembski’s statistical arguments about the impossibility of chance accounting for design in nature, and the ID creed is complete.

Today’s evolution deniers try to avoid mentioning God, because the Supreme Court soundly trounced “scientific” creationism—the previous incarnation foisted on our school systems—as patently religious in nature and a clear violation of the separation of church and state. Intelligent design merely invokes some sort of master architect. He, she, or it could even have been (wink, wink) an extraterrestrial, adherents coyly offer.

Science or public relations?
Proponents of ID have a slick cybercathedral to sell their product: the Seattle-based Discovery Institute, whose public relations talents are awesome. The Discovery Institute has polished ID’s patina of scientific validity by rounding up a bevy of true believers with PhDs. It also takes advantage of the press’s obsession with “balance” in news stories. That evolutionary biology is supported by the vast majority of biologists, geologists, physicists, and other scientists matters little to reporters. Despite the huge disparity in numbers, evolution deniers end up equally represented with ID proponents in nightly news stories. That evolutionary biology is supported by the vast majority of biologists is supported by the vast majority of biologists in a peer-reviewed scientific journal. Despite a flurry of pro-ID books, the vast majority of biologists and geologists remain unconvinced.

With ID proponents, it’s the appearance of credibility that counts, not the substance. If facts were important, divine design would lose, hands down. After all, not a single article offering positive evidence in favor of the idea has ever been published in a peer-reviewed scientific journal. Despite a flurry of pro-ID books, the vast majority of biologists and geologists remain unconvinced. Where ID is concerned, though, science doesn’t really count. All its shock troops have to do is fool a lot of people all of the time. They’re off to a great start. In case you haven’t noticed, school boards and state legislatures across the country are busily inserting antievolution or pro-ID statements in school curricula and science textbooks. Media like the New York Times, Time magazine, and National Public Radio have rung alarm bells.

Conspiracy maven, take note
Does all this sound like a conspiracy theory to rival claims about NASA’s “faked” lunar landing? Most of us tend to be skeptical about plots behind every door. In this case, though, think again: There’s more substance than smoke here. That’s where a new round of books comes in, including Barbara Forrest and Paul Gross’s Creationism’s Trojan Horse.

A Trojan horse—the mother of all plots—is an apt description of the ID agenda, as Forrest and Gross meticulously document in their book. They ought to know what they’re talking about. Forrest, a philosophy professor at Southeastern Louisiana University, has been tracking ID creationism for years. Gross, a world-class developmental biologist, has also tackled another bit of absurdity, academic postmodernism’s attack on science (Gross and Levitt 1994).

It seems that all of the ID shenanigans follow a carefully scripted, elaborate plan, crafted by a relatively small group of people associated with Berkeley lawyer Phillip Johnson and the Discovery Institute. The tactics afford ID credibility and an equal place at the public-affairs table, whether at a school board meeting or a congressional hearing. The strategy is clever. Instead of trying to replace evolution with ID, which proponents know is probably impossible, they instead seek “fairness” and “academic freedom” by asking that teachers be allowed to cover both sides of the evolution “controversy.” After all, isn’t fairness the American way? Intelligent-design proponents don’t recognize the concept that not all ideas in science are created equal—at least in biology—and they hope an uninformed public won’t either. On the basis of ID-instigated press reports, many lay people assume that lots of credible scientists doubt evolution. Supporters of ID even promote the myth that hordes of scientists are jumping off a sinking evolution ship.

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Institute. Before 1999, many would have scoffed at the idea of an effective antievolution cabal. But that year, an internal Discovery Institute document called “The Wedge Strategy” was outed on the Internet. As Forrest and Gross show, this document sets out a strategy to dismantle the evolution edifice brick by brick. Although the Discovery Institute at first did not formally acknowledge the strategy as its own, Forrest and Gross leave little doubt about how and where the wedge strategy evolved. Intelligent design is Johnson’s brainchild, the wedge its battle plan.

Using everything from anecdotal accounts of ID lectures to exhaustive literature searches and direct quotes of ID proponents, Forrest and Gross trace the history of the wedge strategy, mark its progress, and hold the feet of Behe, Dembski, and their ilk to the fire. They reveal the misrepresentations, out-of-context quotes, and outright falsehoods in ID critiques of evolution, showing that, despite their new look, neocreationists are up to the same old tricks.

Forrest and Gross even explore a conspiracy within the conspiracy: ID proponents like to whine that scientists keep them out of journals, thereby preventing them from publishing their work. What work? counter Forrest and Gross. The authors even adhere to the now-famous Watergate advice to “follow the money.” After tracing where and how the Discovery Institute gets its funding, they move to its public relations strategies, its influence with politicians, its use of public-opinion polls, and the campaign to change school science standards. What ID supporters can’t win with data they intend to achieve through politics, legislation, and legal decisions.

This exposé is as disturbing as it is enlightening. It’s true that, when it comes to supporting data, the ID emperor has no clothes. It’s also true that scientists have convincingly challenged ID’s pseudoscientific claims with respect to probability and irreducible complexity. Unfortunately, none of that seems to matter. As far as ID believers like Johnson are concerned, the refutations are a plus, because they keep their agenda in the public eye and lend credence to the myth of a genuine debate between equal, competing camps. For scientists, that mentality is a lose–lose situation. We’re damned if we keep quiet and let the lunacy proliferate, and damned if we speak out and, by doing so, lend authenticity to it. Aficionados of ID subscribe to Hollywood’s view that there’s no such thing as bad publicity.

Bigger fish to fry
It would be wrong to give the impression that evolution is the evil to end all evils in the minds of people like Johnson, Dembski, and Behe. Actually, the ID movement and the Discovery Institute have more lofty (dare I say heavenly?) goals. Evolution is just the tip of the iceberg—the edge of the wedge, if you like. Forrest and Gross point out that the institute and its followers rail against materialism and naturalism in contemporary society, blaming not only Darwin but Marx, Freud, and others for leading us to perdition.

Believers in ID make no distinction between methodological and philosophical materialism. Yes, many scientists may be atheists or philosophical materialists—that is, they may believe that what you see in this world is all that’s there. The problem is, ID supporters can’t or won’t wrap their minds around the concept that scientific discovery and progress don’t depend on an investigator’s religion, politics, or personal philosophy. Scientists base their conclusions on material evidence drawn from the natural world. Results of an experiment done in Riyadh, Rome, Beijing, or Brooklyn should be the same, provided that the conditions are identical.

To ID supporters, though, scientists are instead foisting a materialist philosophy or worldview on impressionable children. To them, naturalism is about worshipping nature, not God. That’s why, in their own words, ID proponents seek “nothing less than the overthrow of materialism and its cultural legacies.” What

Biodiversity of Fungi argues that fungi and their allies (slime molds and water molds) are critically important players in the world’s ecosystems, yet science has documented relatively few of the species that are thought to exist. The book’s purpose is to provide standardized methods for quantitative measures of fungal populations in almost any habitat. Perhaps equally important, the book encourages researchers not only to carefully record their discoveries—with annotated voucher specimens deposited in herbaria—but also to create computerized databases in a form that others can share. After all, they argue, no one benefits from poorly documented or inaccessible research.

Not surprisingly, Biodiversity of Fungi is a team effort, requiring three editors and about 10 years of work. Two of the editors have extensive experience in mycology. Gregory M. Mueller is curator of mycology and chair of botany at the Field Museum of Natural History in Chicago; Gerald F. Bills studies the systematics, diversity, life history, and ecology of filamentous fungi at Merck Research Laboratories. Mercedes S. Foster, of the US Geological Survey’s Patuxent Wildlife Research Center at the Smithsonian Institution’s National Museum of Natural History, has previously edited books on measuring and monitoring the biodiversity of mammals and amphibians. Together, the three editors coordinated the efforts of some 88 expert authors.

The book’s content is divided into three units. Unit I consists of six chapters that cover general issues relevant to all fungal research. Serious researchers should take special note of the chapters on herbaria, database design, and statistical considerations. The 20 chapters of unit II, which occupy the bulk of the book, describe detection and isolation techniques. Unit III is a collection of useful resources, including recipes for culture media; lists of institutions, Web sites, and vendors; and a glossary.

Unit II is organized mostly by habitat. Chapters include guidelines for finding fungi on or in other fungi, living plants (both inside and out, for both shoots and roots), plant debris, wood, soil, arthropods and other invertebrates (both terrestrial and aquatic), vertebrates (both inside and out), dung, fresh water, estuaries, and oceans. Even “stressful” environments—those that are hot, cold, nutrient poor, salty, dry, or metal contaminated—are included. A few chapters depart from this habitat-based focus and instead discuss fungi by group, including lichens, sequestrate fungi, yeasts, and slime molds. Along the way, the book acknowledges the many difficulties that researchers face when inventorying fungi: the huge number of undescribed species, the ubiquity of fungi nearly everywhere on Earth (with scores of species colonizing the same tiny substrate), multiple correct binomial names for different stages in the same organism’s life history, constantly changing names, and species that refuse to grow in pure culture.

Because it is so wide-ranging, this book will be useful for both beginners and experts. Many chapters are extremely user-friendly, giving easy-to-follow instructions for collecting fungi, preserving cultures, and keeping records. However, beginners may find other chapters difficult. For example, the first chapter introduces the current state of systematics for the fungi and their allies. It dives right into terminology such as dolipore septa, plesiomorphies, and homoplasy. A cladogram accompanies the discussion of each phylum, but this introductory chapter would have been more useful to beginners if illustrations of zygosporcs, asci, basidia, and other fundamental features.

Imagine trying to document the diversity of the world’s fungi. You would have to look literally everywhere—from the microscopic fungi that parasitize the protozoa in animal rumens to the lichens that colonize the leaves of the highest trees. After you finished looking on and inside all of Earth’s plants and animals, you could begin sampling soil, fresh water, estuaries, and oceans. It would be an immense task, but luckily you now have a guide: a one-stop reference book called Biodiversity of Fungi: Inventory and Monitoring Methods. This volume illustrates the enormous amount of work it would take to document fungal diversity, while simultaneously breaking the task into more manageable chunks.

While the Discovery Institute and its allies want to revive this failed mantra. If you think that’s hyperbole, read Forrest and Gross’s book. The authors demonstrate convincingly that “this movement seeks nothing less than to overthrow the system of rules and procedures of modern science and those intellectual footings of our culture laid down in the Enlightenment and over some 300 years” (p. 10).

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References cited

SHOOTING FOR THE IMPOSSIBLE DREAM: A COMPREHENSIVE CATALOG OF FUNGAL DIVERSITY