

Findings



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Intelligent Design

Are We Here By Accident?

By William A. Dembski



Laypersons new to the debate over intelligent design encounter many conflicting claims about whether it is science. A *Washington Post* front page story on March 14, 2005 asserts that intelligent design is “not science [but] politics.”¹ In that same story, Barry Lynn, the director of Americans United for Separation of Church and State, claims that intelligent design is merely “a veneer over a certain theological message,” thus identifying intelligent design not with science but with religion. In a related vein, University of Copenhagen philosopher Jakob Wolf argues that intelligent design is not science but philosophy (albeit a philosophy useful for understanding science).² And finally, proponents of intelligent design argue that it is indeed science.³ Who is right?

In determining how to answer this question, three points need to be kept in mind. First, science is not decided by majority vote. Can the majority of scientists be wrong about scientific matters? Yes they can. Historian and philosopher of science Thomas Kuhn, in his *Structure of Scientific Revolutions*, documented numerous reversals in science where views once confidently held by the scientific community ended up being discarded and replaced.⁴ Intelligent design is at present a minority position within science. But it is a position held by reputable scientists.⁵

Second, just because an idea has religious, philosophical, or political implications does not make it unscientific. According to the late evolutionist Stephen Jay Gould, “Biology took away our status as paragons created in the image of God.... Before Darwin, we thought that a benevolent God had created us.”⁶ Oxford

University biologist Richard Dawkins claims, “Darwin made it possible to be an intellectually fulfilled atheist.”⁷ In his book *A Darwinian Left: Politics, Evolution, and Cooperation*, Princeton bioethicist Peter Singer remarks that we must “face the fact that we are evolved animals and that we bear the evidence of our inheritance, not only in our anatomy and our DNA, but in our behavior too.”⁸

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Gould, Dawkins, and Singer are respectively drawing religious, philosophical, and political implications from evolutionary theory. Does that make evolutionary theory unscientific? No. By the same token, intelligent design’s implications do not render it unscientific.

Third, to call some area of inquiry “not science” or “unscientific” or to label it “religion” or “myth” is a common maneuver for discrediting an idea. Physicist David Lindley, for instance, to discredit cosmological theories that outstrip experimental data or verification, calls such theories “myths.”⁹

What Is Intelligent Design?

Intelligent design studies patterns in nature that are best explained as the result of intelligence. It identifies those features of objects that reliably signal the action of an intelligent cause. To see what is at stake, consider Mount Rushmore. The evidence for Mount Rushmore’s design is direct—eyewitnesses saw the sculptor Gutzon Borglum spend the better part of his life designing and building this structure. But what if there were no direct

evidence for Mount Rushmore’s design? Suppose humans went extinct and aliens, visiting the earth, discovered Mount Rushmore in substantially the same condition as now.

In that case, what about this rock formation would provide convincing circumstantial evidence that it was due to a designing intelligence and not merely to wind and erosion? Designed objects like Mount Rushmore exhibit characteristic features or patterns that point to an intelligence. Such features or patterns constitute signs of intelligence. Proponents of intelligent design, known as design theorists, purport to study such signs formally, rigorously, and scientifically. In particular, they claim that a type of information, known as specified complexity, is a key sign of intelligence.

What is specified complexity? Recall the novel *Contact* by Carl Sagan.¹⁰ In that novel, radio astronomers discover a long sequence of prime numbers from outer space. Because the sequence is long, it is complex. Moreover, because the sequence is mathematically significant, it can be characterized independently of the physical processes that bring it about. As a consequence, it is also specified. Thus, when the radio astronomers in *Contact* observe specified complexity in this sequence of numbers, they have convincing evidence of extraterrestrial intelligence. Granted, real-life SETI researchers have thus far failed to detect designed signals from outer space. The point to note, however, is that Sagan based the SETI researchers’ methods of design detection on actual scientific practice.

Many special sciences already employ specified complexity as a sign of intelligence—notably forensic science, cryptography, random number generation, archeology, and the search for extraterrestrial intelligence (SETI).¹¹ Design theorists take

these methods and apply them to naturally occurring systems.¹² When they do, these same methods for identifying intelligence indicate that the delicate balance of cosmological constants (known as cosmological fine-tuning) and the machine-like qualities of certain tightly integrated biochemical systems (known as irreducibly complex molecular machines) are the result of intelligence and highly unlikely to have come about by purely material forces (like the Darwinian mechanism of natural selection and random variation).¹³ Accordingly, design in cosmology and biology is scientifically detectable, and intelligent design constitutes a legitimate scientific theory.

The Charge of Creationism

Despite intelligent design's clear linkage, both methodologically and in content, with existing sciences that sift the effects of intelligence from undirected natural forces, critics of intelligent design often label it a form of creationism. Not only is this label misleading, but in academic and scientific circles it has become a maneuver to censor ideas before they can be fairly discussed.

To see that the creationist label is misleading, consider that one can advocate intelligent design without advocating creationism. Creationism typically denotes a literal interpretation of the first chapters of Genesis as well as an attempt to harmonize science with this interpretation.¹⁴ It can also denote the view common to theists that a personal transcendent God created the world (a view taught by Judaism, Christianity, and Islam).¹⁵ In either case, however, creationism presupposes that the world came into being through a creative power separate from the world.

Intelligent design, by contrast, places no such requirement on any designing intelligence responsible for cosmological fine-tuning or biological complexity. It simply argues that certain finite material objects exhibit patterns that convincingly point to an intelligent cause. But the nature of that cause—whether it is one or many, whether it is a part of or separate from the world, and even whether it is good or evil—simply do not fall within intelligent design's purview.

To see that "creationism" is a question-begging label meant to stop the flow of inquiry before it can get started, consider that one of the most prominent critics of intelligent design has himself been called a creationist. That critic is Kenneth Miller. In his book *Finding Darwin's God*, Miller is critical of intelligent design in biology. Nonetheless, in that book he argues

for an intelligence or purposiveness that underlies the laws of physics (laws that are necessary for the universe to be life-permitting).¹⁶ Miller's reward for proposing intelligent design at the level of physics and cosmology is to be called a creationist by University of California professor Frederick Crews. In reviewing Miller's book, Crews writes:

*When Miller then tries to drag God and Darwin to the bargaining table [by finding design or purpose underlying the laws of physics], his sense of proportion and probability abandons him, and he himself proves to be just another "God of the gaps" creationist. That is, he joins Phillip Johnson, William Dembski, and company in seizing upon the not-yet-explained as if it must be a locus of intentional action by the Christian deity.*¹⁷

Despite criticisms like this by Crews and others, mainstream physics is now quite comfortable with design in cosmology. Take the following remark by Arno Penzias, Nobel laureate and codiscoverer of the cosmic background radiation: "Astronomy leads us to a unique event, a universe which was created out of nothing, one with the very delicate balance needed to provide exactly the conditions required to permit life, and one which has an underlying (one might say 'supernatural') plan."¹⁸ Or consider the following insight by well-known astrophysicist and science writer Paul Davies: "There is for me powerful evidence that there is something going on behind it all.... It seems as though somebody has fine-tuned nature's numbers to make the Universe.... The impression of design is overwhelming."¹⁹ Remarks like this by prominent physicists and cosmologists are now widespread.²⁰

Why should inferring design from the evidence of cosmology be scientifically respectable, but inferring design from the evidence of biology be scientifically disreputable, issuing in the charge of creationism? Clearly, a double standard is at work here. Design theorists argue that the evidence of biology confirms a design inference. But even if that confirmation were eventually overturned by new evidence, such a failure would constitute a failure of intelligent design as a scientific theory and not a failure of intelligent design to qualify as a scientific theory, much less to deserve the label creationism.

Problems with Evolution

Most scientific theories are imperfect in the sense that what they claim about the

natural world and what the natural world in fact displays do not match up perfectly. Newton's theory, for instance, predicts certain types of planetary orbits. Nevertheless, the perihelion of Mercury violated this prediction—not by much, but enough to call Newton's theory into question. Ultimately, Einstein resolved this anomaly by replacing Newton's theory with his own theory of General Relativity.

The problem of theories not matching up with facts has been known since the time of the ancient Greeks, who described this problem in terms of "saving the phenomena." In other words, the task of science (known back then as "natural philosophy") was to match up scientific theories with the phenomena (or appearances) of nature. The physicist Pierre Duhem even wrote a book on this topic.²¹ He also wrote another book to describe what scientists do when their theories do not match up with the facts.²² In that case, according to Duhem, they have two options. One is simply to abandon the theory. The other, and by far the more common option, is to add auxiliary hypotheses to try to shore up the theory. Simply put, the second option is to put patches over those aspects of the theory that don't match up with the facts.

Which option is preferable? This is a judgment call. Is the mismatch so egregious and the patch so artificial that the theory cannot be reasonably salvaged? In that case, scientists prefer option one. Has the theory proven itself useful in the past and is the mismatch so minor and the patch so unobtrusive that the theory remains largely intact. In that case, scientists prefer option two. The problem is, as

Other Helpful Resources

Here are some additional resources for understanding intelligent design:

The Discovery Institute

www.discovery.org

Intelligent Design Network

www.intelligentdesignnetwork.org

Phillip E. Johnson

www.phillipejohnson.net

Intelligent Design and Evolution Awareness Center

www.ideacenter.org

William A. Dembski

www.designinference.com

"Intelligent Design" segment from Family Policy Perspectives DVD series

www.ncfamily.org

Thomas Kuhn showed in his vastly influential *The Structure of Scientific Revolutions*, that there is no easy way to draw the line between these two options.²³

Scientists remain divided over what to do about the mismatches between contemporary evolutionary theory and the facts of biology. Nevertheless, the mismatches are there in plain view, as are the patches put on evolutionary theory to mitigate the mismatches. The best known mismatch is the overwhelming failure of the fossil record to match up with Darwin's expectation that living forms fall within one gigantic, gradually branching tree of life.²⁴ In fact, the fossil record is full of gaps that show no sign of being bridged.

To see this, one does not need to look to the work of design theorists. Evolutionists have recognized the problem right along. For instance, Stephen Jay Gould, who until his death was the most prominent evolutionary theorist this side of the Atlantic, noted: "The extreme rarity of transitional forms in the fossil record persists as the trade secret of paleontology. The evolutionary trees that adorn our textbooks have data only at the tips and nodes of their branches; the rest is inference, however reasonable, not the evidence of fossils."²⁵

Gould's solution to this problem was to propose his idea of punctuated equilibrium, in which evolution takes place in isolated populations that are unlikely to be fossilized, with the result that the fossil record exhibits a pattern of sudden change followed by stasis.²⁶ But this patch has its own problems. For one, it does not address the mechanism of evolutionary change. Also, it is largely untestable because all the interesting evolution happens where it is inaccessible to scientific observation.

There are many other mismatches between contemporary evolutionary theory and the facts of biology.²⁷ Nonetheless, even without specialized biological knowledge, it is possible for laypersons to see that evolutionary theory, as taught in high school and college biology textbooks, is desperately in need of fuller treatment and a more adequate discussion of alternatives.

Right now, the basal biology textbooks from which students receive their first exposure to evolutionary theory explain the origination of biological forms in terms of the neo-Darwinian mechanism of natural selection and random genetic errors. This mechanism, however, is now increasingly seen as inadequate to explain the diversity of biological forms, and not just by design theorists.

For instance, Lynn Margulis, a

biologist who is a member of the National Academy of Sciences, criticizes the neo-Darwinian theory as follows: "Like a sugary snack that temporarily satisfies our appetite but deprives us of more nutritious foods, neo-Darwinism sates intellectual curiosity with abstractions bereft of actual details—whether metabolic, biochemical, ecological, or of natural history."²⁸

Margulis is not an advocate of intelligent design.

The Controversy Surrounding ID

The controversy surrounding intelligent design occurs at many levels, but it is ultimately a scientific controversy within the scientific community. To be sure, there are educational, political, religious, and philosophical aspects to this controversy, but if there were no scientific controversy here, these other aspects would never have gotten off the ground.

There are a number of ways to see that this truly is a scientific controversy. One indicator is that design theorists are increasingly publishing research supporting intelligent design in the peer-reviewed mainstream scientific literature, especially in the biological literature.²⁹ A related indicator is that their work is increasingly being subjected to criticism within the mainstream scientific literature.³⁰ And, most importantly, design theorists have a genuine program of scientific research that they are now pursuing with increasing vigor.

Despite this, critics of intelligent design argue that intelligent design is not a scientific theory. They do so, however, not by confronting the evidence and logic by which design theorists argue for their conclusions. Rather, they do so by definitional fiat. Essentially, they engage in conceptual gerrymandering, carefully defining science so that conventional evolutionary theory falls within science and intelligent design falls without. This device typically goes by the name of *methodological naturalism* or *methodological materialism*. Eugenie Scott, director of the evolution watchdog group the National Center for Science Education (NCSE), describes methodological materialism as follows:

Most scientists today require that science be carried out according to the rule of methodological materialism: to explain the natural world scientifically, scientists must restrict themselves only to material causes (to matter, energy, and their interaction). There is a practical reason for this restriction: it works. By continuing to seek natural explanations for how the

*world works, we have been able to find them. If supernatural explanations are allowed, they will discourage—or at least delay—the discovery of natural explanations, and we will understand less about the universe.*³¹

There are two problems with this statement. First, if methodological materialism is merely a working hypothesis that scientists employ because "it works," then scientists are free to discard it when it no longer works. Design theorists contend that for adequately explaining biological complexity, methodological materialism fails and rightly needs to be discarded. Second, and more significantly, in defining science as the search for natural explanations, Scott presupposes precisely what must be demonstrated. If, by natural explanations, Scott simply means explanations that explain what is happening in nature, there would be no problem, and intelligent design would constitute a perfectly good natural explanation of biological complexity. But that is not what she means.

By natural explanations, Scott means explanations that resort only to material causes—as she puts it, to "matter, energy, and their interaction." But that is precisely the point at issue, namely, whether nature operates exclusively by such causes. If nature contains a richer set of causes than purely material causes, then intelligent design is a live possibility and methodological materialism will misread physical reality. Note, also, that to contrast natural explanations with supernatural explanations further obscures this crucial point. Supernatural explanations typically denote explanations that invoke miracles and cannot be understood scientifically. But explanations that call upon intelligent causes require no miracles and give no evidence of being reducible to Scott's trio of "matter, energy, and their interaction." Indeed, design theorists argue that intelligent causation is perfectly natural provided that nature is understood aright.

The Scientific Usefulness of ID

According to Nobel laureate William Lawrence Bragg, "The important thing in science is not so much to obtain new facts as to discover new ways of thinking about them."³² Intelligent design is doing just that—discovering useful ways of thinking about and interpreting well-established facts of science that pertain to biological complexity and diversity.

The theory of intelligent design is capable of generating useful insights into biological systems—insights not forth-

coming from a purely materialistic conception of evolution such as neo-Darwinism. At the same time, intelligent design is also asking tough questions of conventional evolutionary theory, forcing it to own up to its unsolved problems. David Raup, one of the world's leading paleontologists and a member of the National Academy of Sciences, though a skeptic of intelligent design, regards this as a healthy development. As he puts it:

*[If] some natural biological process, as yet undiscovered, yields the organisms we have without relying solely on conventional natural selection operating on random variation,... then Darwin et al. have found a mechanism that works in simple cases (which it certainly does!) but misses more important mechanisms of evolutionary change and adaptation. The search for the missing mechanisms can only be helped by people like you [i.e., design theorists] asking tough questions. Keep at it!*³³

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Editor's Note: This paper is a condensed version of "The Scientific Status of Intelligent Design" by William A. Dembski.

Endnotes

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- Jakob Wolf, "What Kind of Revolution Is the Design Revolution?" *Metanexus* (May 12, 2004): available online at http://www.metanexus.net/metanexus_online/show_article.asp?8846 (last accessed March 15, 2005). See also Jakob Wolf's analysis of intelligent design titled *The Cry of the Rose: Intelligent Design in Nature and the Critique of Darwinism* (Copenhagen: ANIS Publishers, 2004). The original title in Danish reads *Rosens Råb: Intelligent Design I Naturen, Opgør Med Darwinismen*.
- See William A. Dembski, *No Free Lunch: Why Specified Complexity Cannot Be Purchased without Intelligence* (Lanham, Md.: Rowman and Littlefield, 2002), ch. 6.
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- The fellows of the International Society for Complexity, Information, and Design are a case in point: <http://www.iscid.org/fellows.php> (last accessed March 15, 2005). Here is a list of internationally recognized scientists from around the globe, all of whom accept that intelligent design is a legitimate scientific theory.
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- Richard Dawkins, *The Blind Watchmaker* (New York: Norton, 1986), 6.
- Peter Singer, *A Darwinian Left: Politics, Evolution, and Cooperation* (New Haven, Conn.: Yale University Press, 2000), 6.
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- Carl Sagan, *Contact* (New York: Simon Schuster, 1985).
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- See, for instance, William A. Dembski and Michael Ruse, eds., *Debating Design: From Darwin to DNA* (Cambridge: Cambridge University Press, 2004), pt. IV.
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- See Michael Denton, *Evolution: A Theory in Crisis* (Chevy Chase, MD: Adler & Adler), Michael Behe, *Darwin's Black Box* (New York: The Free Press, 2006) and Jonathan Wells *Icons of Evolution* (Washington D.C.: Regnery, 2000).
- Lynn Margulis and Dorion Sagan, *Acquiring Genomes: A Theory of the Origins of Species* (New York: Basic Books, 2002), 103.
- See Peer-Reviewed & Peer-Edited Scientific Publications Supporting the Theory of Intelligent Design (Annotated), <http://www.discovery.org/scripts/viewDB/index.php?command=view&id=2640&program=CSC%20-%20Scientific%20Research%20and%20Scholarship%20-%20Science>
- Criticism of intelligent design in the mainstream biological literature is now so extensive that I give only a few examples: R. H. Thornhill and D. W. Ussery, "A Classification of Possible Routes of Darwinian Evolution," *Journal of Theoretical Biology* 203 (2000): 111–116. This paper presents a conceptual analysis of Michael Behe's claim that irreducible complexity poses an obstacle to Darwinian evolution. Thomas D. Schneider, "Evolution of Biological Information," *Nucleic Acids Research* 28(14) (2000): 2794–2799 and Richard E. Lenski, Charles Ofria, Robert T. Pennock, and Christoph Adami, "The Evolutionary Origin of Complex Features," *Nature* 423 (May 8, 2003): 139–144. These last two papers offer computational simulations that are supposed to demonstrate Darwinian evolutionary pathways leading to irreducible complexity. Reviews of intelligent design books are also increasingly common in the biological literature. For instance, my book *No Free Lunch* received the following review in *Nature*: Brian Charlesworth, "Evolution by Design?" *Nature* 418 (July 11, 2002): 129.
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- See <http://www.whitehat.com.au/Australia/People/Bragg.asp> (last accessed March 28, 2005).
- Email correspondence from David Raup addressed to me and dated July 18, 2001.

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