

# In Defense of Intelligent Design

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## Preliminary Considerations

Anyone new to the debate over intelligent design encounters many conflicting claims about whether it is science. A *Washington Post* front page story (Slevin 2005) asserts that intelligent design is “not science [but] politics.” 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 (2004) argues that intelligent design is not science but philosophy (albeit a philosophy useful for understanding science). And finally, proponents of intelligent design argue that it is indeed science (e.g., Dembski 2002a, ch. 6). Who is right?

In determining how to answer this question, three points need to be kept in mind:

- (1) 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 (1970), 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. For instance, until the theory of plate tectonics was proposed, geologists used to believe that the continents were immovable (compare Kearey and Vine 1996 to Clark and Stearn 1960). Intelligent design is at present a minority position within science. But that fact by itself does nothing to impugn its validity.
- (2) Just because an idea has religious, philosophical, or political implications does not make it unscientific. According to the late evolutionist Stephen Jay Gould (1977a, 267), “Biology took away our status as paragons created in the image of God... Before Darwin, we thought that a benevolent God had created us.” Oxford University biologist Richard Dawkins (1986, 6) claims, “Darwin made it possible to be an intellectually fulfilled atheist.” In his book *A Darwinian Left: Politics, Evolution, and Cooperation*, Princeton bioethicist Peter Singer (2000, 6) 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.” 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.

- (3) To call some area of inquiry “not science” or “unscientific” or to label it “religion” or “myth” is within contemporary western culture a common maneuver for discrediting an idea. Physicist David Lindley (1993), for instance, to discredit cosmological theories that outstrip experimental data or verification, calls such theories “myths.” Writer and medical doctor Michael Crichton (2003), in his Caltech Michelin Lecture, criticizes the Search for Extraterrestrial Intelligence (SETI) as follows: “SETI is not science. SETI is unquestionably a religion. Faith is defined as the firm belief in something for which there is no proof. . . . The belief that there are other life forms in the universe is a matter of faith. There is not a single shred of evidence for any other life forms, and in forty years of searching, none has been discovered. There is absolutely no evidentiary reason to maintain this belief. SETI is a religion.” Crichton’s criticism, however, seems extreme. In the past, NASA has funded SETI research. And even if the actual search for alien intelligences has thus far proved unsuccessful, SETI’s methods of search and the possibility of these methods proving successful validate SETI as a legitimate scientific enterprise.

## What Is Intelligent Design?

Intelligent design is the field of study that investigates *signs 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 fashioning 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. An exact formulation of specified complexity first appeared in my book *The Design Inference* (1998) and was then further developed in *No Free Lunch* (2002a).

What is specified complexity? Recall the novel *Contact* by Carl Sagan (1985). 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.

To employ specified complexity to detect design is to engage in effect-to-cause reasoning. As a matter of basic human rationality, we reason from causes to effects as well as from effects back to causes. Scientific experimentation, for instance, requires observation and the control of variables, and thus typically employs cause-to-effect reasoning: the experimenter, in setting up certain causal processes in an experiment, constrains the outcome of those processes (the effect). But, in many cases, we do not have control of the relevant causal processes. Rather, we are confronted with an effect and must reconstruct its cause. Thus, an alien visiting Earth and confronted with Mt. Rushmore would need to figure out whether wind and erosion could produce it or whether some additional factors might be required.

A worry now arises whether effect-to-cause reasoning leads to many absurd design hypotheses. Consider the “Zeus Hypothesis” in which lightning strikes are attributed to the divine intervention of the god Zeus (I’m indebted to Robert Pennock for this example). Such a hypothesis, though an example of effect-to-cause reasoning, would not be the conclusion of a design inference based on specified complexity. Individual lightning strikes are readily explained in terms of the laws of physics, with no need to invoke a designer. The only way lightning strikes might require an ID hypothesis is if jointly they exhibit some particularly salient pattern. Consider, for instance, the possibility that on a given day all, and only, those people in the United States who had uttered snide remarks about Zeus were hit by lightning and died. In that case, the joint pattern of lightning strikes would exhibit specified complexity, and the Zeus Hypothesis might no longer seem altogether absurd.

To sum up, 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 (Dembski 1998, chs. 1 and 2). Design theorists take these methods and apply them to naturally occurring systems (see Dembski and Ruse 2004, pt IV). 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). For such design-theoretic arguments at the level of cosmology, see Gonzalez and Richards (2004); for such design-theoretic arguments at the level of biology, see Behe (1996). In any event, it is very much a live possibility that design in cosmology and biology is scientifically detectable, thus placing intelligent design squarely within the realm of science.

## **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 term of abuse 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 (Morris 1975). 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 (Johnson 2004). 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. Thomas Aquinas, in his *Summa Contra Gentiles* (III.38), put it this way (quoted from Pegis 1948, 454–455):

By his natural reason man is able to arrive at some knowledge of God. For seeing that natural things run their course according to a fixed order, and since there cannot be order without a cause of order, men, for the most part, perceive that there is one who orders the things that we see. But who or of what kind this cause of order may be, or whether there be but one, cannot be gathered from this general consideration.

Consistent with this statement, Aristotle, who held to an eternal uncreated world and to a purposiveness built into the world, would today hold to intelligent design but not to creationism (see his *Physics* as well as his *Metaphysics* in McKeon 1941). The same is true for Antony Flew, who until recently was the English speaking world’s most prominent atheist. He now repudiates atheism because he sees intelligent design as necessary to explain the origin of life (Associated Press 2004). Yet, in embracing an intelligence behind biological complexity, he does not hold to creationism (Habermas 2004).

Despite its constant repetition, the charge that intelligent design is a form of creationism is false. Robert Pennock (1999, 2001) and Barbara Forrest (2004), for instance, repeat this charge in virtually all of their writings that criticize intelligent design. Yet, as trained philosophers, they know that intelligent design is consistent with philosophical positions that hold to no doctrine of creation. Why, then, do they insist that intelligent design is creationism? The reason is that creationism has been discredited in the courts and among the scientific and academic elite. Thus, if the label can be made to stick, intelligent design will be defeated without the need to investigate its actual claims.

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—see Miller 1999, 226–232). 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 (2001) 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.

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 (quoted in Margenau and Varghese 1992, 83): "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." Or consider the following insight by well-known astrophysicist and science writer Paul Davies (1988, 203): "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." Elsewhere Davies (1984, 243) adds: "The laws [of physics] ... seem to be the product of exceedingly ingenious design.... The universe must have a purpose." Remarks like this by prominent physicists and cosmologists are now widespread.

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 Evolutionary Theory**

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 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 (1969) even wrote a book on this topic. He also wrote another book (Duhem 1954) to describe what scientists do when their theories do not match up with the facts. 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 Thomas Kuhn (1970, ch. 10) showed in his vastly influential *The Structure of Scientific Revolutions*, there is no easy way to draw the line between these two options.

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. In the sixth edition of Darwin's *Origin of Species*, there is exactly one diagram, namely, one that depicts the evolution of organisms as a gradually branching tree (Darwin 1872, 90–91) Yet, in fact, the fossil record is full of gaps that show no sign of being bridged by the mechanisms of evolutionary theory.

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 (1977b), who until his death was the most prominent evolutionary theorist on the American 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."

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 (see Eldredge and Gould 1973). 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. Despite primitive Earth atmospheric simulation experiments like the one by Stanley Miller (1953), the problem of life's origin remains completely unresolved in materialistic terms. Similarly, the challenge of irreducibly complex molecular machines raised by Michael Behe (1996) has resisted evolutionary explanations. Colorado State University biochemist Franklin Harold (2001, 205), citing Behe, writes, "We should reject, as a matter of principle, the substitution of intelligent design for the dialogue of chance and necessity (Behe 1996); but we must concede that there are presently no detailed Darwinian accounts of the evolution of any biochemical system, only a variety of wishful speculations."

Or take the problem of junk DNA. According to neo-Darwinian theory, the genomes of organisms are cobbled together over a long evolutionary history through a trial and error process

of natural selection sifting the effects of random genetic errors. As a consequence, neo-Darwinism expects to find a lot of “junk” DNA, that is, DNA that serves no useful purpose but that is simply carried along for the ride because it is easier for cells to keep copying DNA than genetic errors render useless than to identify and eliminate such DNA from the genome.

The theory of intelligent design, on the other hand, in approaching organisms as designed systems, is less apt to dismiss seemingly useless DNA as junk. Instead, it encourages biologists to investigate whether systems that at first appear functionless might in fact have a function. And, as it is now turning out, seemingly useless “junk” DNA is increasingly being found to serve useful biological functions. For instance, James Shapiro and Richard Sternberg (2005) have recently provided a comprehensive overview of the functions of repetitive DNA—a classic type of junk DNA. Similarly, Roy Britten (2004) has recently outlined the functions of mobile genetic elements—another class of sequences long thought to be simply parasitic junk.

Such mismatches between evolutionary theory and the facts of biology are significant for the public understanding of biology. 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 more adequate discussion of alternatives. Right now, the basal biology textbooks from which most people in the English-speaking world receive their first serious 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 (2002, 103), 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.” Robert Laughlin (2005, 168–169), a Nobel laureate physicist concerned with the properties of matter that make life possible, offers even stronger criticism:

Much of present-day biological knowledge is ideological. A key symptom of ideological thinking is the explanation that has no implications and cannot be tested. I call such logical dead ends antitheories because they have exactly the opposite effect of real theories: they stop thinking rather than stimulate it. Evolution by natural selection, for instance, which Charles Darwin originally conceived as a great theory, has lately come to function more as an antitheory, called upon to cover up embarrassing experimental shortcomings and legitimize findings that are at best questionable and at worst not even wrong. Your protein defies the laws of mass action? Evolution did it! Your complicated mess of chemical reactions turns into a chicken? Evolution! The human brain works on logical principles no computer can emulate? Evolution is the cause!

Note that neither Margulis nor Laughlin are advocates of intelligent design.

These criticisms cut to the very heart of contemporary evolutionary theory and are directly pertinent to how evolution should be taught. According to Simon Conway Morris (2000, 1),

“When discussing organic evolution the only point of agreement seems to be: ‘It happened.’ Thereafter, there is little consensus, which at first sight must seem rather odd.” Odd indeed. Right now, basal biology textbooks reflect a “consensus trance,” giving the illusion that there is unanimity among biologists over how evolution occurred when in fact there is no such unanimity. This consensus trance needs to be broken, with scientific alternatives to conventional evolutionary theory welcomed into biology curricula. One such alternative is intelligent design.

## **Methodological Materialism**

Notwithstanding, critics of intelligent design argue that it 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. The device by which they keep intelligent design at bay is a normative principle for science known as *methodological naturalism* or *methodological materialism*. ID’s rejection of this principle is said to show that ID is committed to a form of supernaturalism. This, in turn, is supposed to make ID a form of religious belief. Barbara Forrest (2004) and Eugenie Scott (2005) make methodological materialism the centerpiece of their critique against ID.

The impression they give is that whereas conventional evolutionary theory is engaged in the hard work of real science, intelligent design appeals to the supernatural and thus gives up on science, substituting magic for “natural explanations.” But what are “natural explanations”? Indeed, what constitutes nature remains very much an open question. If one reviews the ID literature, one finds that early on there were quite a few references to “the supernatural,” but that by 2000 (especially with Nature of Nature conference, organized by Baylor’s Michael Polanyi Center—see Dembski and Gordon 2000), references to the supernatural largely disappear. The reason for this is that the very term “supernatural” concedes precisely the point at issue, namely, what is nature like and what are the causal powers by which nature operates.

Critics of intelligent design who hold to methodological materialism say that nature operates only by natural causes and is explained scientifically only through natural explanations. But what do they mean by “nature”? Eugenie Scott (1998), director of the evolution watchdog group the National Center for Science Education (NCSE), explains how methodological materialism construes nature:

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.



Thus, for Scott, nature is “matter, energy, and their interaction.” Accordingly, by natural explanations, Scott means explanations that resort only to such material causes. Yet, 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.

Scott’s characterization of methodological materialism thus encounters two difficulties. First, if, as she suggests, methodological materialism is merely a working hypothesis that scientists employ because “it works,” then scientists are free to discard it when they deem it as no longer working. 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, clearly, that is not what she means.

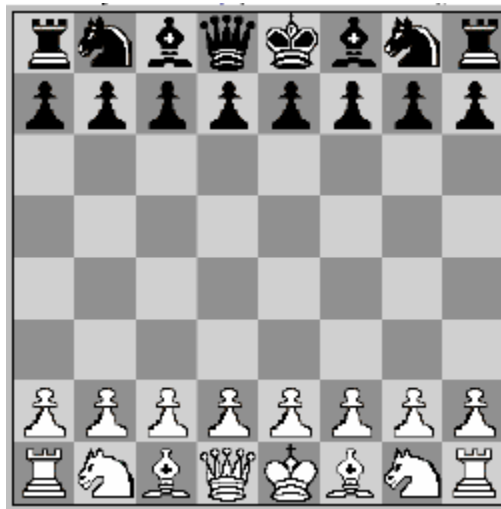
Because so much of the debate over intelligent design’s scientific status hinges on the role of methodological materialism in restricting the nature of nature, let us examine the nature of nature more closely. Nature, as conceived by Scott and most critics of intelligent design, consists of material entities ruled by fixed laws of interaction, often referred to as “natural laws.” These laws can be deterministic or nondeterministic, which is why some scientists refer to nature as being governed by “chance and necessity” (like Jacques Monod 1972). Obviously, these laws of interaction rule out any form of intelligent agency acting real-time within nature. They operate autonomously and automatically: given certain material entities with certain energetic properties in certain spatio-temporal relationships, these entities will behave in certain prescribed ways.

An inescapable question now arises: How do we know that nature is in fact a set of material entities ruled by fixed laws of interaction? Equivalently, how do we know that everything that happens in nature can be accounted for in terms of antecedent material conditions and the material causes that act on them? Once the question is posed this way, it becomes an open question whether nature comprises a set of material entities ruled by fixed laws of interaction. In fact, it becomes a live possibility that nature, so conceived, is radically incomplete. *No Free Lunch* (Dembski 2002a, xiii–xiv) summarizes what’s at issue here as follows:

In arguing that naturalistic [materialistic] explanations are incomplete or, equivalently, that natural [material] causes cannot account for all the features of the natural world, I am placing natural causes in contradistinction to intelligent causes. The scientific community has itself drawn this distinction in its use of these twin categories of causation. Thus, in the quote earlier by Francisco Ayala, “Darwin’s greatest accomplishment [was] to show

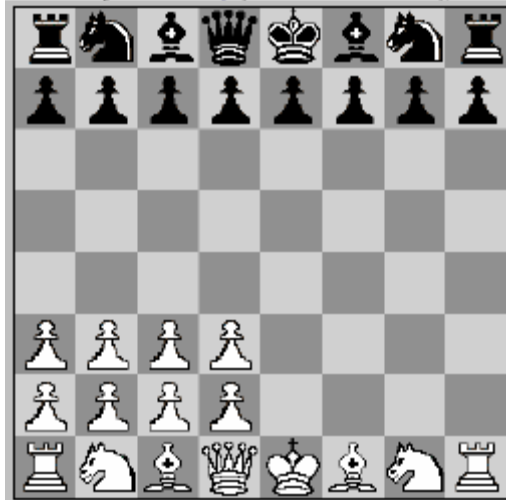
that the directive organization of living beings can be explained as the result of a natural process, natural selection, without any need to resort to a Creator or other external agent.” Natural causes, as the scientific community understands them, are causes that operate according to deterministic and nondeterministic laws and that can be characterized in terms of chance, necessity, or their combination (cf. Jacques Monod’s *Chance and Necessity*). To be sure, if one is more liberal about what one means by natural causes and includes among natural causes telic processes that are not reducible to chance and necessity (as the ancient Stoics did by endowing nature with immanent teleology), then my claim that natural causes are incomplete dissolves. But that is not how the scientific community by and large understands natural causes.

Accordingly, to define science (in line with methodological materialism) as the search for natural explanations of natural phenomena is to affirm that such explanations exist for *all* natural phenomena. But how is this affirmation to be justified? Rather than justify it, methodological materialism begs the question. To see this, consider the following analogy from the game of chess. In chess, there are initially thirty-two pieces arranged on an eight-by-eight chessboard as follows:



Moreover, chess operates by certain fixed rules. For instance, bishops move diagonally, pawns only move forward and only take one square diagonally, etc. In this analogy, the chess pieces in their initial configuration correspond to the material entities that within methodological materialism constitute nature and the rules of chess correspond to the laws of interaction that for methodological materialism govern nature.

Given the initial position of chess pieces and the rules of the game, we can ask whether the following position is possible:



It turns out that it is not. There is no way to get from the first position to the second by the rules of chess.

So too, intelligent design purports to show that there exist configurations of material entities in biology (e.g., bacterial flagella, protein synthesis mechanisms, and complex organ systems) that cannot be adequately explained in terms of antecedent material conditions together with the law-governed processes (i.e., mechanistic evolutionary processes) that act on them. Granted, chess constitutes a toy example whereas the biological examples ID theorists investigate are far more complicated. Moreover, whereas chess operates according to precise mathematical rules, the laws of interaction associated with material entities are probabilistic, so the obstacles to producing complex biological configurations of material entities are not logical impossibilities but empirical improbabilities. But the point of the analogy still holds. Whenever one has a theory about process — how one state is supposed, by some process, to transform into another — it is perfectly legitimate to ask whether the process in question is capable of accounting for the final state in terms of the initial state.

It follows that the charge of supernaturalism against intelligent design cannot be sustained. Indeed, to say that rejecting naturalism entails accepting supernaturalism holds only if nature is defined as a closed system of material entities ruled by unbroken laws of material interaction. But this definition of nature begs the question. Nature is what nature is and not what we define it to be. To see this, consider the following riddle: How many legs does a dog have if one calls a tail a leg? The correct answer is four. Calling one thing another thing doesn't make it something else.

Likewise, defining nature as a closed system of material entities operating by fixed laws of interaction doesn't make it so. Nature is what nature is, and prescribing methodological materialism as a normative principle for science does nothing to change that. ID theorists argue that methodological materialism fundamentally distorts our understanding of nature. In assessing the validity of ID, the crucial thing is not whether they are right but whether they might be right. Given that they might be right, methodological materialism cannot be taken as a defining feature of science, much less should it be held dogmatically. To make methodological materialism a

defining feature of science commits the premodern sin of forcing nature into a priori categories rather than allowing nature to speak for itself.

To sum up, methodological materialism presents us with a false dilemma: either science must be limited to “natural explanations” (taken in a highly tendentious sense) or it must embrace “supernatural explanations,” by which is meant magic. But there is a third possibility: *neither materialism nor magic but mind*. ID theorists are not willing to concede the materialist claim that a designing intelligence (mind) interacting with matter is “supernatural.” Indeed, investigations by ID theorists are beginning to demonstrate that this interaction is perfectly natural — that nature cannot be properly understood apart from the activity of a designing intelligence (cf. Schwartz and Begley 2002).

## **The Controversy Surrounding Intelligent Design**

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 (see Meyer 2004; Behe and Snoke 2004; and Denton et al. 2002). A related indicator is that their work is increasingly being subjected to criticism within the mainstream scientific literature (see Thornhill and Ussery 2000; Schneider 2000; and Lenski et al. 2003). And, most significantly, design theorists have a genuine program of scientific research that they are now pursuing with increasing vigor (see the “research themes” in Dembski 2002b).

To say that the intelligent design research program is at odds with the conventional evolutionary theory is to offer a truism. Less obvious, perhaps, is that this controversy between competing theories is healthy for science, for it renders both intelligent design and evolutionary theory scientifically testable. Unfortunately, the way things stand now, given the artificial exclusion of intelligent design from scientific discussion (as by the device of methodological materialism), evolutionary theory has been rendered immune to scientific disconfirmation. In other words, it has become scientifically untestable.

Eshel Ben Jacob, a physicist who specializes in complex systems, is troubled by this state of affairs. He writes, “Darwin, a free thinker who dared make far-reaching conclusions based on observations, would have been dismayed to see the petrified doctrine his brainchild has become. Must we admit that all organisms are nothing but watery Turing machines evolved merely by a sequence of accidents favored by nature? Or do we have the intellectual freedom to rethink this fundamental issue?” (Quoted in Dembski 2004, back cover.)

Darwin’s theory of descent with modification by means of natural selection acting on variations presents a nonteleological alternative to intelligent design. In fact, Darwin’s *Origin* can be

viewed as a self-conscious response to the design argument. Contemporary evolutionary theory follows in this train. Hence Richard Dawkins (1986) gives his book *The Blind Watchmaker* the subtitle *Why the Evidence of Evolution Reveals a Universe without Design*. The study of biological origins is fundamentally incomplete so long as intelligent design is removed from scientific discussion. More is true: evolutionary theory cannot be adequately understood apart from intelligent design as its proper foil and counterpart.

The integrity of current evolutionary theorizing depends on making room for intelligent design. Darwin himself would have agreed. In his *Origin of Species*, Darwin (1859, 2) wrote: “A fair result can be obtained only by fully stating and balancing the facts and arguments on both sides of each question.” When it comes to biological origins, intelligent design presents the facts and arguments for one side of this question. To pretend that there is no scientific controversy surrounding intelligent design is therefore itself unscientific.

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