

It Ain't Necessarily So: An Essay
Review of *Intelligent Design Creationism
and Its Critics: Philosophical,
Theological, and Scientific Perspectives**

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Nature exhibits a rich variety of adaptations. Cells contain complex biomolecular structures, such as proteins, that are exquisitely adapted to perform specific biological functions. Evolutionary biology explains how biomolecular structures evolve. Intelligent design creationists reject evolutionary explanations. They want to believe that all adaptations in nature are the handiwork of God. Their critics aver that "it ain't necessarily so." The anthology under review is an excellent display of the issues between intelligent design creationists and their critics. I agree with the critics.

Robert T. Pennock (ed.), *Intelligent Design Creationism and Its Critics: Philosophical, Theological, and Scientific Perspectives*. Cambridge, MA: MIT Press (2001), xx + 805 pp., \$45.00 (paper).

Intelligent design creationism, IDC, is a contemporary revival of the old argument from design. Its pagan origins are in Plato and Aristotle. In the *Timaeus*, Plato speaks of a demiurge, an intelligent designer, who imposes geometrical order upon a pre-existing chaos to actualize a cosmos. Aristotle's final cause is the idea that in nature, animate as well as inanimate, an essential part of the explanation of change is a specific outcome for the sake of which a transition from potentiality to actuality occurs. The flower of the oak tree is potentially an acorn. The actual

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acorn, if healthy, is potentially an oak tree. The healthy acorn has what it takes to grow into an oak tree under conditions favorable for growth.

The theistic versions of the design argument attempt to prove that an intelligent designer, God himself, is the architect of any manifestation of design in the physical universe we inhabit. IDC is a strictly Christian movement. Its principal intellectual objective is to discredit anything in science that it deems to be a challenge to the essentials of Christian doctrine. It is inspired by two developments in modern science. One is the discovery in current physical cosmology that every one of the life-relevant fundamental physical constants of our Big-Bang universe has a life-permitting value. Let N be the strength of the electrical forces that hold atoms together, divided by the force of gravity between them. N is a life-permitting value of a life-relevant fundamental physical constant in our universe. It is an experimentally ascertainable fact that $N = 10^{12}$. Martin Rees, an eminent contemporary physical cosmologist, has this to say about N :

If N had a few less zeros, only a short-lived miniature universe would exist; no creature could grow larger than insects, and there would be no time for biological evolution. (1999, 11)

There are at least six life-relevant fundamental physical constants, and every one of them has a life-permitting value. ID creationists are astonished at this coincidence. They see it as fine-tuning design. They believe that it requires an explanation, and they propose that the best explanation is that an intelligent designer who wanted our universe to contain human life made all its life-relevant fundamental physical constants take life-permitting values. The intelligent fine-tuner is supposed to be God. I shall argue below that the inference is highly questionable.

The second scientific development that prompts IDC is the fact that we have come to understand in exquisite detail the workings of naturally existing complex physical structures, such as proteins, in which the parts of the whole fit together in certain specific ways enabling the complex structure to perform a specific function that nothing differently structured can perform as well or at all. From this, ID creationists infer that the best explanation of the structure is that it is the handiwork of an intelligent designer with certain objectives in mind. Again, the complexity is supposed to be the handiwork of God.

This sort of argument was central in William Paley's *Natural Theology*, published in 1802 (2nd ed., 1803). Darwin had studied that book, and in *The Origin of Species*, he countered Paley's argument brilliantly, even without the resources of modern evolutionary biology. The favorite example of design creationists was the human eye. This was Darwin's answer:

. . . reason tells me, that if numerous gradations from a perfect and complex eye to one very imperfect and simple, each grade being useful to its possessor, can be shown to exist; if further, the eye does vary ever so slightly, and the variations are inherited, which certainly is the case; and if any variation or modification in the organ be ever useful to an animal under changing conditions of life, then the difficulty of believing that a perfect and complex eye could be formed by natural selection, though insuperable by our imagination, can hardly be considered real. ([1872] 1956, 187)

Evolutionary biology is scientific orthodoxy and rightly so. Of course, as in any science, there are unanswered questions in the theory of evolution. The remedy is not to replace scientific evolution with ID creationism. The remedy is to find answers within the framework of science.

Darwin's explanation as to how a perfect and complex eye could be formed by natural selection invokes no extra-natural agencies. It is a scientific answer to a scientific question. Paley is a theistic adaptationist. His view is very easy to understand. A watch is a complex mechanism exquisitely adapted to keeping time. Obviously, watches are human artifacts. A seeing eye is exquisitely adapted to seeing. Obviously, no human being can make an eye. So, a non-human agent is the best, if not the only, explanation of the existence of the eye. That agent is God, himself.

Paley proposes no natural mechanism for the formation of an eye. Without such a mechanism, God's activities are the activities of an undecieving magician. But an undecieving magician is an oxymoron. A magician is, by definition, an illusionist. Without an alternative hypothesis as to how complex physical structures that perform a specific function could be formed in nature, Paley offers us no scientifically testable alternative to evolutionary biology. The same is true of ID creationists.

There is a difference between Paley and IDC that redounds to Paley's credit. Paley died before the first printing of *The Origin of Species*. He had no idea that a naturalistic explanation of adaptation is possible. My guess is that had he read Darwin, a highly intelligent and civilized exchange of ideas would have developed between them. Darwin was fully prepared for such an exchange. He wrote to a friend that at one time he had almost memorized Paley's *Natural Theology*, and that he "hardly ever admired a book more than Paley's *Natural Theology*" (Gould 2002, 116).

The IDC movement has access to everything that Darwin published. It also has access to the literature to date of evolutionary biology. ID creationists use every means at their disposal to try to discredit evolutionary biology for being thoroughly Darwinian. They propose no scientific alternative. They are convinced that the creation story in Genesis is true. They believe that it is incompatible with the theory of descent by

natural selection or any naturalistic alternative. What is more, they are convinced that believing Darwin leads to moral degeneration. They are engaged in an ideological crusade. I believe that Paley would have none of that.

The anthology under review is an expertly edited collection of thirty-seven essays. They are sorted into nine sections, each devoted to a major topic that falls under the main title. The lead essay by Barbara Forrest is an informative historical survey of IDC as a mostly disguised and sometimes upfront (e.g., Alvin Plantinga) religious movement with a social and political agenda. The movement is typically American and confined to the United States. It begins with Berkeley law professor Philip E. Johnson's essay, "Evolution as Dogma: The Establishment of Naturalism," originally published in 1990 in the periodical *First Things*. Forrest identifies IDC's leading intellectual proponents, describes their organizations and activities, their proximate and ultimate social and political objectives, and their tactics and strategies for achieving them.

The rest of the essays are philosophical, theological, and scientific confrontations between creationists and their critics. The disputes are between naturalists and supernaturalists, and those who feel at home in science and enlightened by it and those who are suspicious of it or even feel offended or threatened by it. Among the disputants there are also compatibilists, such as theologian Roy Clouser, the philosopher of science Ernan McMullin, and the physicist and astronomer Howard J. Van Till. The compatibilists believe that science and Christianity are not necessarily incompatible. The most deeply felt division is between those who believe that without religion (meaning Christianity) there can be no satisfactory explanation of what it is to be a human being, how mankind came to exist, and what the purpose of human existence is. Without a proper understanding of those matters, the believers aver, there can be no properly organized communities and properly functioning individuals who live in them. The unbelievers reject all that. "The [IDC] movement is fueled by a religious vision which, although it varies among its members in its particulars, is predicated on the shared conviction that America is in need of 'renewal' which can be accomplished only by instituting religion as its cultural foundation" (6; all page references are to the anthology unless otherwise specified). On this, there is agreement between some of the least sophisticated Christian fundamentalists and some of the most sophisticated Christian intellectuals.

My friend and erstwhile colleague at Wayne State University, Alvin Plantinga, is one of those most highly sophisticated Christian intellectuals. He is an intelligent design creationist. He urges Christian intellectuals to do their scholarly work in any domain of inquiry within an "Augustinian science." For example, as historians, psychologists, or psychiatrists they

should not hesitate to invoke the Christian doctrine of original sin as an explanatory principle. But how can such explanations be viewed as being scientific? Plantinga is not a biblical literalist or fundamentalist. But he agrees with the most unschooled among them that revelation can be a source of knowledge. Even if that were true, how could revealed knowledge be scientific? "Revealed scientific knowledge" sounds much like "living fossil": exemplary oxymorons. Scientific hypotheses (except for serendipitous insights) are suggested and tested by, and limited to, experiment, observation, logic, and mathematics.

Plantinga compares science and religion, and finds science to be at a disadvantage in two related respects. Science, he says, keeps changing its mind. Religion is steadfast. Scientific beliefs are uncertain. Religious beliefs can be certain. It is true that science does keep changing its mind. For the likes of me, that is one of its most admirable and reassuring traits. The major changes in science, such as from Newton to Einstein, are progressive and rational. They are prompted by the recognition that there is a fundamental problem that the existing science cannot resolve. Newton's physics is not competent to deal with the physics of the very small or the very large. Quantum theory can deal with the very small and general relativity can deal with the very large. But general relativity cannot deal with the very small. At present we have no physics that can deal with the gravitational forces at the quantum level. To move ahead, we need a quantum theory of gravity, one that can merge with quantum mechanics. When we achieve that unified theory, we shall better understand the physical states of affairs before the beginning of our Big-Bang universe and at minuscule intervals of time during the first few seconds and minutes after the beginning. Only physics can deal with such questions. When, for example, physics moves from Newton to Einstein, it is not because Newtonian physics is false. It is because Newtonian physics is not sufficiently general. From Newton to quantum mechanics and from general relativity to a quantum theory of gravity are rational and progressive changes. We know exactly what our problem is and we know that we need to do something about it. And we get to work. Sooner or later, we shall have a quantum theory of gravity. Physicists then will be able to make predictions and provide explanations that they cannot make and provide now. That is progress achieved by rational means. Nothing is lost, and much is gained.

It is not quite correct to say that religion never changes. In the fourth century, a new dogma emerged. Jesus was officially declared God. The Athanasians politically overwhelmed the Arians. The question was: Who is the giver of salvation? Everybody agreed that God alone was the savior. Arius argued that Jesus was not the savior, because he was a man in the full sense of that term. It was logically impossible, therefore, that he be

identical with God. The Athanasians wanted Jesus to be the savior. So, after about sixty years of hate, murder, blackmail, ethnic cleansing and warfare, Jesus was officially declared God in an ecumenical council in A.D. 381. The story is told in Richard E. Rubenstein's *When Jesus Became God* (1999). Since then Christians have confidently professed belief in the divinity of Jesus. During the sixty odd years when Jesus became God, no evidence was introduced against Arius. His point was strictly logical. The theological reposit was the old idea of the trinity, a mystery. It still is. A religious or theological innovation, even when it happens without murder and mayhem, is nothing like a scientific change of mind.

Just as it is not quite correct to say that religion (and theology) never changes, it is not quite correct to say that science always changes its mind. Science up to the present has not discovered a final physical theory of our Big-Bang universe. But some prominent scientists, including the chemist Peter Atkins, and the physicists Stephen Hawking and Steven Weinberg, believe that physics is on the way to a final theory of our Big-Bang universe. We may not be able to explain why the final theory is true by deriving its basic physical principles from more fundamental physical principles outside the theory. That does not mean that we shall be forced to accept the final theory as being a brute fact.

In his book, *Galileo's Finger*, Peter Atkins invites us to "suppose that a future version of M-theory settles down into a form that predicts all the known masses of the fundamental particles, all the values of the fundamental constants, and the structure of space-time, but suggests absolutely no other experiment. It would not be falsifiable because it has predicted accurately all known fundamental properties of the universe, and I suspect that we would form the opinion that it was valid and indeed be celebrated as the apotheosis of scientific achievement" (2003, 363). Such a version of M-theory would be *a* final theory of our universe. All known fundamental properties of our universe, for example, the numerical values of its fundamental physical constants, can be ascertained by ingenious experiments. The theory would predict those results. It, therefore, would explain all experimentally ascertainable fundamental properties of our universe. Atkins is surely right that we would all accept it as being empirically verified.

Would the theory be *the* final theory of our universe? Could a different theory not make the same predictions? Physicists have tried to tinker ever so slightly with quantum mechanics. Every such attempt has resulted in logical and mathematical incoherence. Steven Weinberg calls such a theory "logically isolated" (1992, 236). If explaining a physical principle consists of deducing it from some other principle of physics, we may not be able to explain why the fundamental principles of the final M-theory are true. But, as Weinberg puts it, "although we may still not know why the final

theory is true, we would know on the basis of pure mathematics and logic, why the theory is not slightly different" (236–237). In physics, there are ways of showing that even a final theory is not just a brute fact.

There cannot be comparable methods for showing that somebody's favorite version of monotheism predicts facts that are ascertainable independently of the prediction, and that that favorite version of monotheism cannot be slightly altered without reducing it to logical absurdity. There is a reason for that. The three monotheistic religions agree that there is exactly one God. Nevertheless, they cannot all be true. For Christians, Jesus is God. For Judaism and Islam, that is blasphemy. Islam views the Quran as being the last and most authentic word of God vouchsafed to mankind. Christians and Jews reject that claim. Which, if any, of these monotheisms is the truth? It is impossible to tell. Predictive success is a mark of progress in the search for scientific truth. I proposed, above, that scientific hypotheses are, except for serendipitous advances, suggested and tested by, and limited to, experiment, observation, logic and mathematics. Scientific hypotheses make empirically testable predictions. There are no predictions in religion. Instead, there are prophecies. They prove nothing. A prophet declares that God is punishing his people for being disobedient. What the prophet says is not falsifiable. If the people mend their ways and their suffering continues, God must be testing their faith. Can any one of the three monotheistic religions be logically isolated? No, because being logically isolated cannot be a property of anything but a scientific hypothesis. It cannot be a property of theistic hypotheses or their philosophical and theological elaborations.

Plantinga avers that Scriptural revelations about God can be correctives to scientific errors. Not so. Scientific shortcomings can be remedied only by finding scientific solutions to scientific problems. Paley was right that the existence of complex physical structures that are exquisitely suited to performing certain functions exhibited adaptation. His solution to why there is adaptation in nature was God's intelligently designing complex physical systems that can perform certain functions. He treated the problem of why there is adaptation as a problem for natural theology. Darwin saw it as a problem for science. The scientific problem is to explain how adaptation is formed in nature. Darwin found the answer in descent by natural selection. Paley did not see the problem of adaptation as a problem in science. Had he lived to read Darwin, in all probability, he would have agreed with him that there *was*, after all, a scientific problem here, and he might even have agreed with Darwin's solution of it. He could also have believed that the mechanisms of biological evolution were God's way of seeing to it that his creation contained complex physical structures capable of performing certain functions that nothing differently structured could perform as well or at all.

In religion, there is no way of telling if what is believed is true. That would be true even if there were only one religion accepted by all religious individuals. Plantinga believes that a Christian monotheist is warranted in believing that Christianity is true:

Clearly, a person (including a highly educated, wholly with-it, twenty-first century person who has read all the latest objections to Christian belief) *could* be justified in accepting these and other Christian beliefs and *would* be so justified if (for example) after careful and nonculpable reflection and investigation into the alleged objections and defeaters, she still found these beliefs wholly compelling. She could hardly be blamed for believing what strongly seems, after extensive investigation, to be the truth of the matter. (She's supposed to believe what seems *false* to her?) As for the various analogical extensions of justification in the original sense—being responsible, doing as well as could be expected with respect to your part in belief formation, and the like—again, it is obvious, I think, both that believers *can* meet these conditions and that many believers *do* meet them. (2000, 203)

I submit that precisely the same things can be said about observant Jews and Muslims. In the preceding quotation Plantinga is describing not epistemically warranted belief, but conscientiously reaffirmed belief. Two logically incompatible beliefs can both be conscientiously reaffirmed without either belief having been shown to be true. A person steeped in Thomism, Calvinism, or Cartesianism may conscientiously reaffirm that all human beings are born with a capacity to conceive of God and to believe in him. An atheist is not a good candidate for conscientiously reaffirming that the *sensus divinitatis* is congenital. Conscientious reaffirmation is not necessarily the same thing as the affirmation of truth. (See Everitt 2004, ch. 2.)

The conscientious reaffirmations of a Christian would be true, only if Christian metaphysics and epistemology were true. It would have to be true that the Christian God exists, and that in creating us in his own image, he has endowed us with cognitive powers which make us capable of arriving at true beliefs, provided that we employ these powers appropriately and in appropriate conditions, as God meant us to employ them. It is also true that if Christian metaphysics and epistemology were true, then conscientiously reaffirmed Christian beliefs would also be true. But I know of no Christian religionist or Christian theologian or Christian philosopher who has produced intellectually compelling reasons for believing that Christian metaphysics and epistemology are true. For those beliefs to be true, it must be true that the Christian God exists, which presupposes that he is logically possible. Because God is so deeply hidden

from us, that presupposition is far from being self-evident to us. By 'us' I mean everybody, including Muslims, Jews, Christians, atheists, and agnostics. Until the proposition that God is logically possible is clearly understood, it cannot be among a normal, mature, and intellectually scrupulous person's privileged verities. He may be entitled to reaffirm conscientiously that God is logically possible. But that is not sufficient for God's being logically possible.

IDC is, as I said, a Christian ideology. The ideology is highly controversial. Some of the debates in this anthology revolve around the ideology. There are also confrontations about issues that are independent of the ideology. Some of them are philosophically competent exchanges about important and interesting issues.

For example, Section IX is a debate about teaching creationism in public schools as a worthy alternative to scientific evolution. Alvin Plantinga is in favor of it. Robert T. Pennock is opposed. Their debate involves John Rawls's theory of justice as fairness. Plantinga invokes it to argue that Rawlsian fairness requires that *evolution* not be taught. Pennock argues the contrary. The debate is wholly independent of IDC. Plantinga and Pennock are engaged in an earnest philosophical discussion about an important question: Does a parent have the right not to have "comprehensive beliefs" taught to her children that contradict her own "comprehensive beliefs"? It is assumed that religious convictions are "comprehensive beliefs." There are other questions very much like that. Does a Christian Scientist have the right to withhold medicine from a sick child? The issue is clearly momentous and its disputants rise to the occasion. The debate is instructive.

Another example is the debate in Section V between Plantinga and his critics about Plantinga's probabilistic argument against evolutionary naturalism. This is pure philosophy at a high level of competence. The issues are again logically independent of IDC. Plantinga argues that the conjunction of naturalism and evolution is probably false. In another argument he tries to show that the conjunction is self-defeating. If you believe it, you should stop believing it. There are three critical respondents, Michael Ruse, Evan Fales, and co-authors Brandon Fitelson and Elliott Sober. All three responses are interesting and effective. The most incisive of the three is the Fitelson-Sober essay. They show that there are serious errors in Plantinga's two arguments. There are other examples of this kind in the anthology. The interested reader should see Plantinga's response to Fitelson and Sober in *Warranted Christian Belief* (2000, 229–240). (See also Everitt 2004, ch. 9.)

This anthology contains telling responses to essays that defend IDC. The pro-IDC essays come in various degrees of questionability. The most egregious one among them is Michael Behe's essay on what he calls "ir-

reducible complexity” as a purportedly decisive counterexample to the theory of biological evolution initiated by Darwin. Behe is a biochemist at Lehigh University. His essay is the only example in this anthology of a working scientist’s scientific objection to the theory of biological evolution.

Behe argues that biomolecular systems, proteins, for example, exhibit “irreducible complexity.” A system is “irreducibly complex” if, and only if, it is a complex made up of components that must fit together in the right way. If any of the components is missing, or none is missing but they do not all fit together in the right way, the system cannot perform the function that it performs when it is intact. Behe contends that because of their “irreducible complexity,” biomolecular systems are not capable of appearing as outcomes of Darwinian evolution as it is currently understood. The greater likelihood, Behe suggests, is that “irreducibly complex” biomolecular systems are intelligently designed by God. Behe is right that biomolecular systems are “irreducibly complex,” by his own definition of irreducible complexity. But from that it does not follow that they cannot be products of biological evolution.

There are two excellent critical responses in this anthology to Behe’s thesis and his manner of reasoning. The first is by Philip Kitcher, a scientifically informed analytic philosopher. The second is co-authored by two working zoologists, Matthew J. Brauer and Daniel R. Brumbaugh. The best criticism of Behe is in Kenneth R. Miller’s *Finding Darwin’s God: A Scientist’s Search for Common Ground between God and Evolution* (1999). Miller is a compatibilist. He suggests a way of reconciling God and evolution: “the indeterminate nature of quantum mechanics would allow a clever and subtle God to influence events in ways that are profound but scientifically undetectable to us . . . Chaos theory emphasizes the fact that enormous changes in physical systems can be brought about by unimaginably small changes in initial conditions; and this, too, could serve as an undetectable amplifier of divine action” (1999, 241). God’s non-physical, scientifically undetectable interventions would be an essential part of a miracle. Fair enough. Note, however, that this is not a proof that actual miracles occur. It is a plausible scenario for how a miracle could be involved in a natural event without any violation of natural law. I admire very much the first and strictly scientific part of Miller’s book. In that part, Miller reports “that the evolution of proteins can be observed in the laboratory” (1999, 143). This happened in California, and was reported in *Science* in 1997 (Atwell et al., 1997). Behe’s 1998 paper reprinted in this anthology is a condensed report of his idea of “irreducible complexity” that appeared originally in Behe’s book *Darwin’s Black Box: The Biochemical Challenge to Evolution* (1996). The anthology we are reviewing was published in 2001. Behe’s 1998 essay was originally pub-

lished in *Cosmic Pursuit*. It is reprinted in this anthology “by permission.” Behe had two opportunities to admit his mistake about “irreducible complexity”: one in 1998 and the other in 2001. He did nothing of the sort. Does he still believe that complex biomolecular systems cannot be models of the scientific theory of evolution?

The criticisms of Kitcher, Brauer and Brumbaugh, and Miller are more than enough to convince me that Behe’s thesis is dead wrong. There is more than that in those critical responses. They contain diagnoses of the errors in Behe’s ways of thinking. Such errors are rather widespread among creationists who attack evolution in particular and scientific naturalism in general. Among intellectuals who defend IDC there is a misunderstanding of science as a process that seems to be almost willful. It is startling to find a working scientist in that company. Behe’s “irreducible complexes” are complex physical structures that can perform a specific function. Call this “design,” if you will. But to infer from this “design” an intelligent designer is an egregious error. Behe’s inference has a single premise: that irreducibly complex physical structures cannot be formed by Darwinian evolutionary mechanisms. (See also Everitt 2004, ch. 9) The denial of that proposition is observed in the laboratory. Behe’s premise is empirically false. His argument is valid but not sound.

David Hume argued that God is not necessarily the best explanation of adaptations we see in nature. A god with more limited powers, or a committee of lesser gods, could have contrived the adaptations. That is true, but it should not bother believers like Paley. They could say that the glories and splendors of the observable universe reveal a creator of such superabundant power as to make it easy for him to be also the artificer of the adaptations we find in his creation. The serious challenge to Paley and IDC comes from evolutionary biology as a strongly confirmed scientific theory. For ID creationists, the intelligent designer is the God of Christianity. His activities in the physical universe are miracles, and they are beyond human comprehension. The closest analogy to them in human experience are magical acts. They necessarily involve deception. God cannot be a deceiver. He must be an undecieving magician. That is an oxymoron. Either we give up on God as an ultimate explanation of certain states of affairs in the physical universe, or we fall back on mystery. But mystery is not an ultimate explanation. It is not an explanation at all. The choice is between science and mystery. Take your pick.

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