edited by

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& james m. kushiner

signs of INTELLIGENCE

understanding intelligent design

ith contributions by Phillip E. Johnson,
ichael Behe, Nancy Pearcey, and others

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PREFACE

Signs of Intelligence is the result of a modest project conceived in 1998 by Bill Dembski and me while attending a conference at Cambridge University celebrating the centennial of the birth of C. S. Lewis.

When I met Bill, he was already a key player in the growing intelligent design movement. Briefly, intelligent design asks whether the nature and structure of the material universe and the life discernible therein show evidence of being intelligently designed or not. Dembski's scholarship has brought a new scientific and mathematical rigor to an old question, particularly through his recent books (*The Design Inference* and *Intelligent Design*).

Because of our common interest in the subject, Bill and I agreed at Cambridge to publish more than a dozen articles on intelligent design by various authors from different fields in a future issue of the journal that I edit, *Touchstone*, a "journal of mere Christianity." Thus came about a special "Intelligent Design" issue of *Touchstone* (July/August 1999).

Later, due to a growing demand for reprints of this issue, it became apparent that a more durable book edition was warranted, and so *Signs of Intelligence* was conceived. Now, in addition to the original articles, this book version features a new article by Bruce Gordon and a substantial new introduction by Dembski.

I wish to thank Bill for his role in bringing the authors together initially, as well as for his editing and support. I also thank the authors for their cooperation in producing this volume. In addition, I am grateful for the work of Anita Kuhn, Sam Torode, and my wife

Patricia in producing the original magazine edition. Finally, I thank Rodney Clapp, editorial director of Brazos Press, for the opportunity to publish this book, as well as Rebecca Cooper of Brazos for her patient and careful assistance.

We hope this volume will find a wide readership among laity and clergy, teachers and students. We intend not only that it educate readers in various aspects of science, scientific naturalism, and intelligent design, but also that it broaden their imagination and deepen their understanding of the world.

—James M. Kushiner
Executive Editor, *Touchstone*

INTRODUCTION

What Intelligent Design Is Not

WILLIAM A. DEMBSKI

Not Optimal Design

Quintilian, a Latin rhetorician of the first century, offered the following advice to writers: "Write not so that you can be understood but so that you cannot be misunderstood." Quintilian's advice is especially pertinent to the growing public debate over intelligent design. This became clear to me in a recent radio interview. Skeptic Michael Shermer and paleontologist Donald Prothero were interviewing me on National Public Radio. As the discussion unfolded, I was startled to find that how they were using the phrase "intelligent design" differed sharply from how the intelligent design community uses it.

The confusion centered on what the adjective *intelligent* is doing in the phrase "intelligent design." "Intelligent" can mean nothing more than being the result of an intelligent agent, even one who acts stupidly. On the other hand, it can mean that an intelligent agent acted with skill, mastery, and *éclat*. Shermer and Prothero understood it in the latter sense, and thus presumed that intelligent design must entail optimal design. The intelligent design community, on the other hand, understands the "intelligent" in "intelligent design" simply to refer to intelligent agency (irrespective of skill or mastery) and thus separates intelligent design from optimality of design.

But why then place the adjective *intelligent* in front of the noun *design*? Doesn't "design" already include the idea of intelligent agency, so that juxtaposing the two becomes redundant? No, because *intelligent design* needs to be distinguished from *apparent design* on the one hand and *optimal design* on the other. Apparent design refers to something that looks designed but really isn't. Optimal design is perfect design and hence cannot exist except in some idealized realm (sometimes called a "Platonic heaven"). Unlike intelligent design, apparent and optimal design empty design of practical significance.

Consider, for instance, biology. Many biologists claim that biological systems are not actually designed and thus attempt to assimilate all biological design to either apparent or optimal design (Stephen Jay Gould, Richard Dawkins, and Francisco Ayala are masters of this strategy). This is an evasive strategy because it avoids the central question that needs to be answered, namely, the question of actual design. The automobiles that roll off the assembly lines in Detroit are intelligently designed in the sense that actual human intelligences are responsible for them. Nevertheless, even if we think Detroit manufactures the best cars in the world, it would still be wrong to say that they are optimally designed. Nor is it correct to say that they are only apparently designed.

Although attributing intelligent design to human artifacts is unobjectionable, it quickly raises eyebrows when applied to biological systems. A biological theory of intelligent design holds that a designing intelligence is required to account for the complex, information-rich structures in living systems. At the same time, it refuses to speculate about the nature of that designing intelligence. Whereas optimal design demands a perfectionistic, anal-retentive designer who has to get everything just right, intelligent design fits our ordinary experience of design, which is always conditioned by the needs of a situation and therefore always falls short of some idealized global optimum.

No real designer attempts optimality in the sense of attaining perfect design. Indeed, there is no such thing as perfect design. Real designers strive for *constrained optimization*, which is something altogether different. As Henry Petroski, an engineer and historian at Duke University, aptly remarks in *Invention by Design*: "All design involves conflicting objectives and hence compromise, and the best designs will always be those that come up with the best compromise."[1] Constrained optimization is the art of compromise between

conflicting objectives. This is what design is all about. To find fault with biological design—as Stephen Jay Gould regularly does—because it misses some idealized optimum is therefore gratuitous. Not knowing the objectives of the designer, Gould is in no position to say whether the designer has proposed a faulty compromise among those objectives.[2]

Nonetheless, the claim that biological design is suboptimal has been tremendously successful in shutting down discussion about design. Interestingly, that success comes not from analyzing a given biological structure and showing how a constrained optimization for constructing that structure might have been improved. This would constitute a legitimate scientific inquiry so long as the proposed improvements can be concretely implemented and do not degenerate into wish-fulfillment, where one imagines some improvement but has no idea how it can be effected or whether it might lead to deficits elsewhere. Just because we can always imagine some improvement in design doesn't mean that the structure in question wasn't designed, or that the improvement can be effected, or that the improvement, even if it could be effected, would not entail deficits elsewhere. And, of course, the charge of poor design may simply be mistaken.[3]

The success of the suboptimality objection comes not from science at all, but from shifting the terms of the discussion from science to theology. In place of *How specifically can an existing structure be improved?,* the question instead becomes *What sort of deity would create a structure like that?* Darwin, for instance, thought there was just "too much misery in the world" to accept design: "I cannot persuade myself that a beneficent and omnipotent God would have designedly created the Ichneumonidae with the express intention of their feeding within the living bodies of Caterpillars, or that a cat should play with mice."[4] Other examples he pointed to included "ants making slaves" and "the young cuckoo ejecting its foster-brother."[5] The problem of suboptimal design is thus transformed into the problem of evil. Critics who invoke the problem of evil against intelligent design have left science behind and are engaging in philosophy and theology.

Design by intelligent agency does not preclude evil. A torture chamber replete with implements of torture is designed, and the evil of its designer does nothing to undercut the torture chamber's design. The existence of design is distinct from the morality, esthetics, good-

ness, optimality, or perfection of design. Moreover, there are reliable indicators of design that work irrespective of whether design includes these additional features (cf. the chapters by Behe, Bradley, Meyer, and me in this volume).

Some scientists, however, prefer to conflate science and religion—and that despite being members of the National Academy of Sciences and professing that science and religion are separate and mutually exclusive realms. Consider, for instance, the following criticism of design by Stephen Jay Gould:

> If God had designed a beautiful machine to reflect his wisdom and power, surely he would not have used a collection of parts generally fashioned for other purposes. . . . Odd arrangements and funny solutions are the proof of evolution—paths that a sensible God would never tread but that a natural process, constrained by history, follows perforce.[6]

Gould is here criticizing the panda's thumb, a bony extrusion that helps the panda strip bamboo of its hard exterior and thus render the bamboo edible to the panda.

The first question that needs to be answered about the panda's thumb is whether it displays clear marks of intelligence. The design theorist is not committed to every biological structure being designed. Mutation and selection do operate in natural history to adapt organisms to their environments. Perhaps the panda's thumb is merely such an adaptation and not designed.

Even if the intelligent design of some structure has been established, it still is a separate question whether a wise, powerful, and beneficent God ought to have designed a complex, information-rich structure one way or another. For the sake of argument, let's grant that certain designed structures are not simply, as Gould puts it, "odd" or "funny," but even cruel. What of it? Philosophical theology has abundant resources for dealing with the problem of evil, maintaining a God who is both omnipotent and benevolent in the face of evil.

The line I find most convincing is that evil always "parasitizes" good. Indeed, all our words for evil presuppose a good that has been perverted. Impurity presupposes purity, unrighteousness presupposes righteousness, deviation presupposes a way (i.e., a *via*) from which we've departed, sin (the Greek *hamartia*) presupposes a target that was missed, etc. Boethius put it this way in his *Consolation of Philosophy*: "If God exists whence evil; but whence good if God does not exist?"[7]

One looks at some biological structure, and it appears evil. Did it start out evil? Was that its function when a good and all-powerful God created it? Objects invented for good purposes are regularly co-opted and used for evil purposes. Drugs that were meant to alleviate pain become sources of addiction. Knives that were meant to cut bread become implements for killing people. Political powers that were meant to maintain law and order become the means for enslaving citizens.

Within the Judeo-Christian tradition, the good that God initially intended is no longer fully in evidence. Much has been perverted. Dysteleology, the perversion of design in nature, is real. It is evident all around us. But how do we explain it? The scientific naturalist explains dysteleology by claiming that the design in nature is only apparent, that it arose through mutation and natural selection (or some other natural mechanism), and that imperfection, cruelty, and waste are to be fully expected from such mechanisms.

Nonetheless, mutation and selection are incapable of generating the highly specific, complex, information-rich structures in nature that signal not merely apparent but actual design—that is, intelligent design. Organisms display the hallmarks of intelligently engineered high-tech systems: information storage and transfer; functioning codes; sorting and delivery systems; self-regulation and feed-back loops; signal transduction circuitry; and everywhere, complex arrangements of mutually-interdependent and well-fitted parts that work in concert to perform a function. For this reason, University of Chicago molecular biologist James Shapiro, who refuses to count himself as a design theorist, regards Darwinism as almost completely unenlightening for understanding biological complexity and prefers an information processing model.[8] Design theorists take this one step further, arguing that information processing presupposes a programmer.

Intelligent design is scientifically unobjectionable. Whether it is theologically objectionable is another matter.[9] More often than we would like, design in nature has gotten perverted. But the perversion of design—dysteleology—is not explained by issuing blanket denials of design, but by accepting the reality of design and meeting the problem of evil head on. The problem of evil is a theological problem. To force a resolution of this problem by reducing all design in nature to apparent design is an evasion. It avoids the scientific challenge posed by intelligent design. It also avoids the hard

work of faith, whose task is to focus on the light of God's truth and thereby dispel evil's shadows.

Not Religiously Motivated

If the discussion until now has seemed unduly theological, it is because critics of intelligent design are preoccupied with theological concerns like the problem of evil. At the same time, critics of intelligent design charge that design theorists are preoccupied with their own theological concerns. Indeed, critics of intelligent design typically regard the opposition of design theorists to Darwinian theory as motivated not by a concern for truth but by a deep fear that Darwinism undercuts traditional morality and religious belief.[10] For such critics it is inconceivable that someone, once properly exposed to Darwin's theory, could doubt it. It is as though Darwin's theory were one of Descartes's clear and distinct ideas that immediately impels assent. Thus for design theorists to oppose Darwin's theory requires some hidden motivation, like wanting to shore up traditional morality or being a closet fundamentalist.

For the record, therefore, let's be clear that the opposition of design theorists to Darwinian theory rests in the first instance on strictly scientific grounds. Yes, we are interested in and frequently write about the theological and cultural implications of Darwinism's imminent demise and replacement by intelligent design (cf. the initial chapters in this volume). But the only reason we take seriously such implications is because we are convinced that Darwinism is on its own terms an oversold and overreaching scientific theory.

Darwinism has achieved the status of inviolable science. Consequently, in challenging Darwinian theory, design theorists encounter a ruthless dogmatism. The problem is not simply that Darwinists don't hold their theory tentatively. No scientist with a career invested in a scientific theory is going to relinquish it easily. By itself, a scientist's lack of tentativeness poses no danger to science. It only becomes a danger when it turns to dogmatism. Typically, a scientist's lack of tentativeness toward a scientific theory simply means that the scientist is convinced the theory is substantially correct. Scientists are fully entitled to such convictions. On the other hand, scientists who hold their theories dogmatically go on to assert that their theories *cannot* be incorrect. Moreover, scientists who are ruth-

less in their dogmatism regard their theories as inviolable and critics as morally and intellectually deficient.

How can a scientist keep from descending into dogmatism? The only way I know is to look oneself squarely in the mirror and continually affirm: *I may be wrong . . . I may be massively wrong . . . I may be hopelessly and irretrievably wrong*—and mean it! It's not enough just to mouth these words. We need to take them seriously and admit that they can apply even to our most cherished scientific beliefs (this holds as much for design theorists as for Darwinists). Human fallibility is real and can catch us in the most unexpected places.

A simple induction from past scientific failures should be enough to convince us that the only thing about which we cannot be wrong is the possibility that we might be wrong. This radical skepticism cuts much deeper than Cartesian skepticism, which always admitted some privileged domains of knowledge that were immune to doubt (for Descartes, mathematics and theology constituted such domains). At the same time, this radical skepticism is consonant with an abiding faith in human inquiry and its ability to render the world intelligible. Indeed, the conviction with which scientists hold their scientific theories, so long as it is free of dogmatism, is just another word for faith. This faith sees the scientific enterprise as fundamentally worthwhile even if any of its particular claims and theories is subject to ruin.

In place of faith in the scientific enterprise, dogmatism substitutes unreasoning certainty in particular claims and theories of science. Dogmatism is always a form of self-deception. If Socrates taught us anything, it's that we always know a lot less than we think we know. Dogmatism deceives us into thinking we have attained ultimate mastery and that divergence of opinion is futile. Self-deception is the original sin. Richard Feynman put it this way: "The first principle is that you must not fool yourself, and you are the easiest person to fool." Feynman was particularly concerned about applying this principle to the public understanding of science: "You should not fool the laymen when you're talking as a scientist. . . . I'm talking about a specific, extra type of integrity that is [more than] not lying, but bending over backwards to show how you're maybe wrong."[11]

Sadly, Feynman's sound advice almost invariably gets lost when Darwin's theory is challenged. It hardly makes for a free and open exchange of ideas when biologist Richard Dawkins asserts, "It is absolutely safe to say that if you meet somebody who claims not to believe in evolution, that person is ignorant, stupid, or insane (or

wicked, but I'd rather not consider that)."[12] Nor does philosopher Michael Ruse help matters when he trumpets, "Evolution is a fact, *fact, FACT!*"[13] Nor, for that matter, does Stephen Jay Gould's protegé Michael Shermer promote insight into the Darwinian mechanism of natural selection when he announces, "No one, and I mean *no one*, working in the field is debating whether natural selection is the driving force behind evolution, much less whether evolution happened or not."[14]

Such remarks, and the overweening confidence behind them, do nothing to alleviate the ongoing controversy over Darwinian evolution. Gallup polls consistently indicate that only about 10 percent of the population of the United States accepts the sort of evolution advocated by Dawkins, Ruse, and Shermer, that is, evolution in which the driving force is the Darwinian selection mechanism. The rest of the population is committed to some form of intelligent design.[15]

Science, of course, is not decided by opinion polls. Nevertheless, the overwhelming rejection of Darwinian evolution in the population at large is worth pondering. Although Michael Shermer exaggerates when he claims that no research biologist doubts the power of natural selection, he is certainly right in claiming that this is the majority position among biologists.

Why has the biological community failed to convince the public that natural selection is the driving force behind evolution and that evolution so conceived (i.e., Darwinian evolution) can successfully account for the full diversity of life? This question is worth pondering because in most other areas of science the public prefers to sign off on the considered judgments of the scientific community (science, after all, holds considerable prestige in our culture). Why not here? Steeped as our culture is in the fundamentalist-modernist controversy, the usual answer is that religious fundamentalists, blinded by their dogmatic prejudices, willfully refuse to acknowledge the overwhelming case for Darwinian evolution.

Although there may be something to this charge, fundamentalist intransigence cannot be solely responsible for the overwhelming rejection of Darwinian evolution by the public. First, fundamentalism, in the sense of strict biblical literalism, is a minority position among religious believers. Second, most religious traditions do not make a virtue out of alienating the culture. The religious world by and large would rather live in harmony with the scientific world. Despite postmodernity's inroads, science retains tremendous cul-

tural prestige. Further, most religious believers accept that species have undergone significant changes over the course of natural history and therefore that evolution in some sense has occurred (consider, for instance, Pope John Paul II's recent qualified endorsement of evolution). The question for religious believers and the public more generally is the extent of evolutionary change and the mechanism underlying evolutionary change—in particular, whether chance and necessity alone are sufficient to explain all of life.

I submit that the real reason the public continues to resist Darwinian evolution is because the Darwinian mechanism of chance variation and natural selection seems inadequate to account for the full diversity of life. One frequently gets the sense from reading publications by the National Academy of Sciences, the National Center for Science Education, and the National Association of Biology Teachers that the failure of the public to accept Darwinian evolution is a failure in education. If only people could be made to understand Darwin's theory properly, we are told, they would readily sign off on it.

This presumption—that the failure of Darwinism to be accepted is a failure of education—leads easily to the charge of fundamentalism once education has been tried and found ineffective. For what else could be preventing Darwinism's immediate and cheerful acceptance except religious prejudice? It seems ridiculous to convinced Darwinists that the fault might lie with their theory and that the public might be picking up on faults inherent in their theory. And yet that is exactly what is happening.

The public need feel no shame at disbelieving and openly criticizing Darwinism. Most scientific theories these days are initially published in specialized journals or monographs, and are directed toward experts assumed to possess considerable technical background. Not so with Darwin's theory. The *locus classicus* for Darwin's theory remains his *Origin of Species*. In it Darwin took his case directly to the public. Contemporary Darwinists likewise continue to take their case to the public. The books of Richard Dawkins, Daniel Dennett, Stephen Jay Gould, Edward O. Wilson, and a host of other biologists and philosophers aim to convince a skeptical public about the merits of Darwin's theory. These same authors commend the public when it finds their arguments convincing. But when the public remains unconvinced, commendation turns to condemnation. Daniel Dennett even warns parents who teach their children that man is not a product of evolution by natural selection, that "those

of us who have freedom of speech will feel free to describe your teachings as the spreading of falsehoods, and will attempt to demonstrate this to your children at our earliest opportunity."[16]

How can the public be commended for its scientific acumen when it accepts Darwinian evolutionary theory, but disparaged for its scientific insensibility when it doubts that same theory? The mark of dogmatism is to reward conformity and punish dissent. If contemporary science does indeed belong to the culture of rational discourse, then it must repudiate dogmatism and authoritarianism in all guises. If the public can be trusted to evaluate the case for Darwinism—and this is what Darwinists tacitly assume whenever they publish books on Darwinism for the public—then it is unfair to turn against the public when it decides that the case for Darwinism is unconvincing.

Why does the public find the case for Darwinism unconvincing? Fundamentalism aside, the claim that the Darwinian mechanism of chance variation and natural selection can generate the full range of biological diversity strikes people as an unwarranted extrapolation from the limited changes that mechanism is known to effect in practice. The hard empirical evidence for the power of the Darwinian mechanism is in fact quite limited (e.g., finch beak variation, insects developing insecticide resistance, and development in bacteria of antibiotic resistance). For instance, finch beak size does vary according to environmental pressure. The Darwinian mechanism does operate here and accounts for the changes we observe. But that same Darwinian mechanism is also supposed to account for how finches arose in the first place. This is an extrapolation. Strict Darwinists see it as perfectly plausible. The public remains unconvinced.

But shouldn't the public simply defer to the scientists? After all, they are the experts. But which scientists? It's certainly the case that the majority of the scientific community accepts Darwinism. But science is not decided at the ballot box, and Darwinism's acceptance among scientists is hardly universal. The theory of intelligent design is quickly gaining advocates at the highest level of the academy, both in the humanities and in the sciences.

Whether intelligent design is the theory that ultimately overturns Darwinism is not the issue facing scientists. The issue is whether the scientific community is willing to eschew dogmatism and admit as a live possibility that even its most cherished views might be wrong. Scientists have been wrong in the past and will continue to be wrong,