

## Well-designed Book Skewers ID targets

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*Unintelligent Design*. By Mark Perakh. Prometheus Books, 59 John Glenn Drive, Amherst, NY 14228, 2004. ISBN 1-59102-084-0. 459 pp. Hardcover, \$32.00.

The neocreationist William Dembski likes to talk of an archer who shoots at a target on a wall. If the archer can reliably hit the target, Dembski infers design, rather than chance. *Unintelligent Design*, by Mark Perakh, is a well-designed book: by my count, Perakh has taken aim at a dozen or more targets, not least Dembski, and skewered them all.

Perakh is a physicist who began his career in the Soviet Union, passed through Israel and IBM, and is now Professor Emeritus at Cal State–Fullerton. He is well qualified in mathematics and physics, as well as common sense, and sticks mostly to those disciplines. He divides his targets into two groups, which I will call primitive creationists and intelligent-design neocreationists. By “primitive creationist,” I mean those who adjust the scientific record to force it into agreement their literal interpretation the Bible; whether they are young-earth creationists or old-earth is irrelevant. Neocreationists, by contrast, accept most of the evidence of modern science (such as the fossil record) but deny some of its conclusions. They are by far the more dangerous because they write authoritatively and hide their religious motivations and their Bibles under a cloak of objectivity. In particular, they have succeeded in convincing much of the public that there is a viable alternative to the theory of evolution and that alternative should be taught in the public schools. Additionally, they are well funded and politically astute.

The funding source, if not the motivating force, behind neocreationism is the Center for Science and Culture of the Discovery Institute (formerly the Center for the Renewal of Science and Culture). As part of the CSC’s Wedge strategy to substitute “theistic” science for real science in the public schools and elsewhere, its fellows have published 23 full-length books and run many conferences, seminars, and teacher-training conferences. Scientists may finally be fighting back. *Creationism’s Trojan Horse*, by Barbara Forrest and Paul Gross, and *God, the Devil, and Darwin*, by Niall Shanks, appeared about the same time as Perakh’s book, and my own anthology, *Why Intelligent Design Fails: A Scientific Critique of the New Creationism*, coedited with Taner Edis, appeared a few months later. (Full disclosure: Perakh contributed one chapter to that book and coauthored another with me. Fuller disclosure: We disagree on a few things, including how to define the information contained in a meaningful message and Sir Karl Popper’s theory of falsificationism.)

The stars of the CSC are Dembski, a mathematician; Wedge founder Phillip Johnson, a law professor; and Michael Behe, a biochemist. Johnson and Dembski together have written almost half of the Wedge’s books, and Behe is noted for his *Darwin’s Black Box*. Behe is the only one of the three with a record of scientific publication. The first part of Perakh’s book is devoted to a critical analysis of their writings.

Dembski has developed what he calls an “explanatory filter” for distinguishing design

from law and chance. The filter is a simple flow chart that assesses whether an “event” is the result of law or chance according to its probability. The event is attributed to law, for example, if its probability is high. But Perakh thinks that Dembski has it all backward: we do not infer a law because we think the probability is high. To the contrary, we think the probability is high because we already know the law; how else can we estimate the probability? Indeed, our estimate of a probability will change as we acquire more background information. Dembski’s explanatory filter purports to filter chance and law, leaving design where appropriate. But it cannot work, says Perakh, because the appropriate high, middle, and low probabilities are not defined rigorously. In any case, low probability is not the same as impossible. For Perakh, all of Dembski’s writings betray Dembski’s intention to prove the preconceived notion that biological systems must have been designed by an intelligence.

Perakh can usually be counted on to come up with an interesting twist. For example, he examines Dembski’s archer analogy and notes that a poor archer may well hit a large target with high probability. We cannot infer design just because the archer hits the target; we have to know something about the experimental setup. The archer’s hitting the target is a combination of law and chance, inasmuch as law takes over as soon as the archer releases the arrow; Dembski’s bifurcation into law and chance is oversimplified.

Dembski defines a quantity he calls complex specified information, which Perakh interprets to mean “a meaningful message.” In the context of biology, a meaningful message might be the information encoded in the gene for a specific protein. Dembski promulgates a “law of conservation of information,” as if it were a far-reaching information-theoretic principle. It is in reality no more than the statement that natural causes cannot write a meaningful message that contains more than 500 bits of information; it is not a conservation law. Perakh notes that 500 bits is equivalent to about a page of text. Thus, Dembski is saying that, even given a few billion years, natural mechanisms alone could not have evolved a genome with more information than a single printed page.

Dembski’s definition of information is idiosyncratic, and Perakh confuses Dembski’s use of the term with information in the communication-theoretic sense, where meaning is irrelevant. Dembski would agree, for example, that meaningless sequences of DNA can increase without limit; presumably, only useful genes are restricted to 500 bits, and exact copies do not count as additional information. Perakh argues that nothing prevents information in the conventional sense from increasing without limit, but that is not what Dembski claims. Thus, Perakh is here arguing at cross-purposes with Dembski.

Perakh next turns his attention to Michael Behe, author of *Darwin’s Black Box*. Perakh notes that both Behe and Dembski associate design with complexity. Again, says Perakh, they have it backward. We recognize a design because it is simple, not because it is complex. If Perakh were lost near Rome, he would not say, “All roads lead to Rome,” and start walking arbitrarily. He would get a map and find the shortest route. The intelligently designed route is the shortest and simplest, not the longest, most complex route with the most twists and turns. Similarly, Perakh asks, if you found a sphere in a pile of jagged pebbles, which would you assume was designed? The sphere: because its shape is simple, whereas the pebbles have complex shapes. You might, incidentally, get a false positive if you found a pearl, so neither complexity nor simplicity alone is enough to force a judgement of design. In Dembski’s terms, you need to employ *side information* (you recognize it as a pearl), but in this case the side information, not the explanatory filter, leads to the conclusion that the pearl has a natural origin.

Behe has coined a term, irreducible complexity, to describe a system that contains many

interlocking parts, all of which are necessary for its functioning. If all the parts are necessary, then there is by definition no redundancy, so failure of any one part will mean failure of the entire system. Not only is that bad design, says Perakh, it is contrary to the evidence, which shows that biological systems have many redundancies that prevent complete failure in case any one component fails. He could have added that Behe has failed to provide any evidence that a system cannot evolve to be irreducibly complex, presuming that the interlocking parts coevolved and only gradually does the system become critically dependent on each part.

Perakh characterizes Johnson as a “militant dilettante” who has the chutzpah to tell scientists what they are or are not doing. Johnson’s training as a lawyer, implies Perakh, makes him less than qualified to critique science: scientists are trained to evaluate evidence and consider both arguments for and against their hypotheses, that is, to search for the best explanations they can find. Lawyers, by contrast, are often adversarial and want to prove their side of a case, rather than learn the truth — to prove that, not find out whether. It is undoubtedly true that lawyers are trained differently from scientists, but, contrary to Perakh, Johnson’s problem is arguably that his irrational adherence to a religious belief forces him to deny known facts, rather than accommodate his religion to those facts, and to wrongly accuse the majority of the world’s scientists of behaving precisely as he does.

Specifically, Johnson claims that scientists believe only what they want to believe; they support “Darwinism” because it is dogma. These are odd charges from someone whose religious beliefs have led him to undertake a frontal assault on modern science, and Perakh again turns the argument around; he asks for a single experiment or careful observation that confirms any religious belief. Perakh, however, is not antireligious, and he notes that scientists may be religious or not, but even religious scientists accept evolution. Perakh compares Johnson’s attitude to that of a physicist who learns the laws of thermodynamics but refuses to study statistical mechanics (which underlies thermodynamics) in favor of the hypothesis that the laws are divinely granted.

Johnson arrogates to himself the responsibility to instruct scientists and, for example, tell them the difference between natural causes and unnatural. Perakh, unfortunately, loses his patience several times and asks condescending questions like, “Really, Mr. Johnson? Are Darwinists such fools that they need a lawyer to teach them the meaning of common terms?”

You could quit here if you wanted to or skip to the third part of the book, but either would be a mistake. In the second part, Perakh turns to reviews of books by a variety of primitive creationists. Life is short, and I am a slow reader, so I have not read most of these books. I am, however, familiar with the writings of Gerald Schroeder and Hugh Ross, and I found Perakh’s discussion of their works compelling. Perakh’s chapter on the Bible code, which I thought he should have put into this section, is also right on the mark. His fluency in Hebrew enhances this chapter as well as one or two others. Perakh seems to think highly of Del Ratzsch, a philosopher of science at Calvin College, who has ties with the neocreationists but disagrees with much of their reasoning; it is unfortunate that he did not review Ratzsch’s work as well as the others’.

The third part of the book discusses the practice of science as seen by a scientist. I doubt that science is as cut and dried as Perakh implies, and I did not see the need for some of his categories, but he takes the nonscientist on a nice tour from experiments and data, through laws, and on to models and theories. He defines what he calls a bridging hypothesis, or the hypothesis that a given data set represents an objective law; the data plus the bridging hypothesis allow us to infer the law. His claim that the bridging hypothesis happens to be true most of the time seems

like an overstatement, however. Nonspecialists may be interested in his comment that data by no means imply a law such as the inverse-square law but rather that we use simplicity or elegance to guess at a law and then compare our guess with experiment or observation.

Likewise, Perakh explains that a model is an analogy that extracts salient features and omits unnecessary features. Behe's irreducible complexity is based on a bad model, however, because Behe's archetype, the mousetrap, cannot replicate and (according to Behe) has no redundant parts, whereas biological systems replicate and display redundancy. Perakh might have added that phenotypes generally change incrementally from one generation to the next, whereas the next-generation mousetrap may look nothing like its spiritual ancestor. This entire chapter, incidentally, would have been much stronger, or at least more relevant to the chapters in the first part of the book, had more of the examples been drawn from biology.

Perakh briefly discusses science and the supernatural. He argues, and I agree, that there is no need to define science so that it excludes the supernatural. So far, observations or events that have been attributed to supernatural causes have not been supported by reliable evidence. Still, if a deity has left her footprints, science ought be allowed to look for them. It will be hard, however, to avoid the argument that any inference to the supernatural uses a God-of-the-gaps argument. In this regard, I wish that Perakh had spent more time discussing Johnson's claim that naturalism necessarily excludes a deity.

The chapter on probability makes some good observations, especially that probabilities are hard to estimate off the top of the head and that sometimes rigorously correct results are counterintuitive (depending, of course, on how good your intuition is). Perakh discusses for what seems like the  $n$ th time that small probability does not imply impossibility. The book is an anthology, most or all of which has been previously published on the Web, and it could have been much better edited and less repetitive. Indeed, Perakh apologizes in a footnote for the redundancy.

At any rate, I found one argument unconvincing: It is true that, if I roll a die 100 times and get some random-looking sequence, that sequence is no more probable than a sequence of all 4's. All sequences are equally probable; it is only psychological, says Perakh, that we notice a sequence of 100, 4's in a row. I do not agree that it is only psychological. Only a few dozen or a few score sequences would attract our attention; the odds in favor of rolling any one of these sequences are very small. Indeed, if Perakh wanted to test whether his dice were fair, he would roll a die perhaps 100 times and then check the sequence to see whether it was approximately random. If he rolled all 4's or even mostly 4's, he would suspect a loaded die. The flaw in the neocreationists' logic is not simply to conflate impossibility with improbability but, as Perakh points out, to do the calculations wrong.

Perakh's afterword is a gem; you might consider reading it first. Though presumably an unbeliever, he shows his respect for religious beliefs and once or twice in the book mentions the value of a religious belief. He clearly distinguishes the question whether there is a deity, a question he thinks will never be answered definitively, from the truth of a particular religious belief. I think he may be a bit harsh calling both atheism and theism irrational — I would say they could be *nonrational* — but his main concern in this book is to refute the faulty arguments of creationists, not religious thinkers in general. I have only minor reservations in claiming that he has done exactly what he has set out to do.

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