

Book Review

Paley's New Clothes

A review of *God, the Devil, and Darwin* by Niall Shanks. Oxford: Oxford University Press, 2004.

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A new creationist offshoot, euphemistically dubbed “Intelligent Design” (ID) by its progenitors, has emerged on the political scene in recent years. Unlike its tactless counterparts (e.g., “Young Earth Creationism”), whose blatant religiosity has spelled almost certain demise, this insidious branch remains publicly agnostic about the nature of the “Intelligent Designer,” and is successfully framing ID as a *bona fide* scientific alternative to Darwinism. Although it constitutes little more than a souped-up version of theologian William Paley’s classic “argument from design,” the woeful state of America’s scientific literacy has us falling for the ruse.

Indeed, the Intelligent Design movement has recently infiltrated several state legislatures, and even tallied its first substantial victory in Ohio (American Institute of Biological Sciences, 2004), where ID devotees were highly influential in convincing the state to require “critical analysis of evolution” as a part of its new public school science curriculum. Although this stops short of a legal mandate to teach ID, it smacks of smuggling it in through the back door. This suspicion was confirmed in March of this year when Ohio approved a 10th grade biological science lesson plan, referencing seminal ID texts and directing students to ID websites (Ohio Citizens for Science, 2004). Even worse, legislation that specifically mandates “equal-time” for ID in public schools was proposed (but died) in Missouri, and is still currently pending in Michigan (American Institute of Biological Sciences, 2004). And because polls are often framed so ID is covered under the rubric of “scientific evidence against evolution,” there is artificial but overwhelming support—78% of the American public—for its inclusion in school curricula (The Discovery Institute, 2001). Clearly, ID is making serious in-roads in the U.S. political and cultural landscape, and nothing less than an equally spirited countermovement by scientists and other academics will stem the tide. To this end, *God, the Devil, and Darwin: A Critique of Intelligent Design Theory* can be an invaluable asset.

Author Niall Shanks would seem an ideal candidate to expose the fallacies of “Intelligent Design Theory”. Not only does he boast a Ph.D. in philosophy, Shanks also holds adjunct professorships in biology and physics. Such a dynamic resume allows him to tackle both the biological and cosmological cases for Intelligent Design. This fact is hardly trivial: as sound as philosopher Robert Pennock’s (1999) landmark critique of ID was, a glaring shortcoming was an almost exclusive focus on the biological. This review, however, will mostly restrict itself to Shanks’s biological critique, since theoretical physics is beyond the purview of this journal. Shanks also eclipses Pennock with his foray into the new science of self-organization and complexity, an important adjunct to Darwinism. Far from being redundant, Shanks’s broadside against the ID movement thus fills the gaps of perhaps his most notable predecessor, thereby fortifying a materialist account of the universe’s origin and design.

After apprising the audience of the high stakes involved in the matter (Introduction), and providing historical context behind ID’s origins (Chapter One), Shanks turns his attention to Darwinian Theory (Chapter Two). Here, the author tells Darwin’s now familiar story: his Christian background, the high esteem in which he held natural theologians (e.g., William Paley); and his ultimate realization of a natural mechanism to account for the design in nature formerly thought to be of divine origin. Shanks then goes on to delineate the “new synthesis,” which joined Darwinism and Mendelian genetics, as well as advances in molecular genetics that strongly suggest descent with modification from a common ancestor. This chapter, involving the standard explication and defense of evolutionary theory, is actually one of the weakest of the book. Although Shanks does a serviceable job, others (e.g., Dawkins, 1986; Mayr, 2002; Ridley, 1997; Pennock, 1999) have better articulated and catalogued the evidence for evolution.

Chapter Three commences with a long exposition of the Second Law of Thermodynamics—some rough going for the non-specialist—which nevertheless reaps a huge payoff in providing a foundation for Shanks’s use of self-organization and complexity theory. In short, the behavior of a complex, self-organizing system is not the product of either outside agency or internal centralized control. On the contrary, requisite energy is provided by the environment, whose fluctuations are also responsible for the system’s very being. And its “behavior” is a function of dynamical interaction and feedback loops within the system itself. Examples of such self-organization are readily abundant, including hurricanes, colonies of social insects, and the economy’s proverbial “invisible hand.”

This discussion brings Shanks to his first confrontation with an ID Theorist—one William Dembski. Dembski (2001a) contends that a “design inference” is warranted when confronted with CSI, or “complex, specified, information.” In essence, CSI refers to patterns in nature that supposedly could not result from an automatic process or occur by chance alone, and also must adhere to an independently specified pattern. To offer a concrete analogy, a gunman shooting many bullets and hitting a fixed bull’s-eye from afar would constitute CSI. But as

Shanks demonstrates, self-organization is perfectly capable of accounting for CSI, thus rendering gratuitous the inference of a supernatural designer. It should be noted that Pennock (1999) exposed philosophical flaws of an earlier version of this argument (Dembski, 1997); but because he fails to explicate a naturalistic mechanism to account for CSI, Pennock's critique was far less scathing than that of Shanks.

In meeting the "biochemical case for Intelligent Design" (Chapter 5), Shanks one-ups Pennock (1999) in the same manner, as the latter's critique again was substantially less sophisticated. The battle cry of ID proponents — "irreducible complexity" — is the foundation for the biochemical case for ID (Behe, 1996). Irreducible complexity refers to the following: a system comprised of several well-matched parts contributing to a basic function, whereby the removal of any one such part entails cessation of the system's function. Superficially, irreducible complexity seems to resist Darwinian explanation, which requires that each adaptation or structure begets a distinct, independent fitness advantage in order to be selected.

To combat Behe, Shanks brings self-organization and complexity to the fore once again, referencing a basic chemistry experiment he had conducted (Shanks and Joplin, 1999). The well-known Belousov-Zhabotinski reaction occurs when several chemicals are added to a beaker and spontaneously self-organize, producing a chemical oscillator whose occurrence requires the continued presence of all ingredients. Behe (2000) responded that the example fails to adhere to his "well-matched" criterion since one of the chemicals is a general-purpose oxidizing agent. However, if this is so, then Behe's chief challenge to Darwinists that biochemical pathways are irreducibly complex does not hold water either. Examples of such "low substrate specificity" are legion in the biochemical literature.

Shanks next outlines how irreducible complexity may be produced by naturalistic, Darwinian mechanisms. First, it is obvious that Behe simply overstates his case: biochemical systems often exhibit what the author terms "redundant complexity." That is, the functionality of many processes is not contingent on the faithful execution of a specific linear sequence. Rather, functionality owes itself to a surplus of related — and hence "redundant" — components. Such complexity is also manifest in the ability of compensatory systems to come to the rescue if a primary system fails to serve its function.

Moreover, whereas they may seem diametrically opposed, Shanks points out that irreducibly complex systems "can simply be viewed as limiting cases of redundantly complex systems" (p.187). Ontogenetic processes, such as gene duplication, ultimately make for redundant genes in a system. In turn, redundant genes may be deleted by mutations rendering some of them nonfunctional, or "pseudogenes." This is important for two reasons: 1) Since pseudogenes no longer contribute to the overall function of a system, it gives selection free reign to discover evolutionarily novel functions with such genes; and 2) Elimination of functional genes shows how biological systems can ultimately become irreducibly complex. That is, irreducible complexity represents a threshold by which further elimination of genes leads to non-functionality. At this point, evolution may apply selection pressure

to ensure that this threshold is not crossed. So, no appeal is warranted to an Intelligent Designer in order to explain irreducible complexity. This phenomenon owes its existence to both phylogenetic and ontogenetic naturalistic processes.

In sum, Shanks is brilliant in decimating the biological case for Intelligent Design; and he manages to do so with witty prose devoid of *ad hominem* attacks. Also, noteworthy is his application of self-organization and complexity theory, which can only bolster the evolutionist's case, yet defenders of Darwin have been strangely silent regarding its utility (e.g., Pennock, 1999; Scott, 1997). But most impressive is Shanks's dismantling of Behe's irreducible complexity—the very hallmark of ID.

I must object, however, that Shanks gives creationists some fodder in his critique of the cosmological case for Intelligent Design (Chapter 6). Without going too deeply into theoretical physics, Shanks espouses a painfully conservative view of modern cosmology: 1) He is overly fond of a Big Bang Cosmology he knows to be flawed; 2) He is unjustifiably dismissive of current attempts to develop a theory of quantum gravity (e.g., String Theory); and 3) He deems multiversal cosmological models “highly speculative” when such models represent the simplest interpretation of quantum mechanics (Deutsch, 1998).

But most damning is Shanks's failure to relay that the uncertainty principle in quantum mechanics precludes the existence of complete nothingness. The ontological implications of such a basic fact are monumental, yet he remains mute: 1) The Christian doctrine of “creation *ex nihilo*” is rendered an impossibility; and 2) The very need for a Creator becomes superfluous. Indeed, several authors have argued (Barrow, 2002; Genz, 2001; Guth, 1998; Halliwell and Hawking, 1985) that the Big Bang quite plausibly could have sprung from an ever-present quantum vacuum of seething potentiality. In eminent theoretical physicist Stephen Hawking's (1988) famous words, “What place, then, for a creator”? Granted, Shanks mentions that origin of the Big Bang does not require an exogenous force due to the negative potential energy of gravity (which can exactly counterbalance the positive energy of matter). But he remains cryptic about the complete picture offered by quantum cosmology. A picture that tears at the very fabric of our most basic ontological notions of reality: “nothingness” is imbued with unthinkable creative potential.

References

- American Institute for Biological Sciences, *Threats to the Teaching of Evolution Science*. Retrieved August 24, 2004 from the AIBS Website: http://www.aibs.org/public-policy/evolution_state_news.html.
- Barrow, J. (2002). *The Book of Nothing: Vacuums, Voids, and the Latest Ideas About the Origin of the Universe*. New York: Vintage Books.
- Behe, M. (1996). *Darwin's Black Box: The Biochemical Challenge to Evolution*. New York: Free Press.
- Behe, M. (2000). Self-Organization and Irreducibly Complex Systems: A Reply to Shanks and Joplin. *Philosophy of Science*, 67: 155-162.

- Dembski, W. (1997). Intelligent Design as a Theory of Information. *Perspectives on Science and Christian Faith*, 49 (3): 180-190.
- Dembski, W. (2001a). Introduction: What Intelligent Design Is Not. In Dembski, W. and Kusiner, J. (Eds.), *Signs of Intelligence: Understanding Intelligent Design*. Grand Rapids, MI: Brazos Press.
- Dawkins, R. (1986). *The Blind Watchmaker: Why the Evidence of Evolution Reveals a Universe Without Design*. New York: W. W. Norton and Company.
- Deutsch, D. (1997). *The Fabric of Reality: The Science of Parallel Universes—And Its Implications*. New York: Penguin Books.
- Zogby America Report. Retrieved August 24, 2004 from the Discovery Institute Website: <http://www.discovery.org/articleFiles/PDFs/ZogbyFinalReport.pdf>.
- Genz, H. (2001). *Nothingness: The Science of Empty Space*. Cambridge, MA: Perseus Books Group.
- Guth, A (1998). *The Inflationary Universe*. Cambridge, MA: Perseus Books Group.
- Halliwell, J. and Hawking, S (1985). Origin of structure in the universe. *Physical Review D*, 31: 1777-91.
- Hawking, S (1988). *A Brief History of Time*. New York: Bantam Books.
- Mayr, E. (2002). *What Evolution Is*. New York: Basic Books.
- A Guide to the “Critical Analysis of Evolution” Lesson Plan Controversy. Retrieved August 24, 2004 from the Ohio Citizens for Science Website: http://ecology.cwru.edu/ohioscience/Controversy_Guide.html.
- Pennock, R. T. (1999). *The Tower of Babel: The Evidence Against The New Creationism*. Cambridge, MA: MIT Press.
- Ridley, M. (1997). *Evolution*. Oxford, England: Oxford University Press.
- Scott, E. (1997). Antievolution and creationism in the United States. *Annual Review of Anthropology*, 26: 263-289.
- Shanks, N and Joplin, K. (1999). Redundant Complexity: A Critical Analysis of Intelligent Design in Biochemistry. *Philosophy of Science*, 66: 268-282.