

Washington University Law Quarterly

VOLUME 83

NUMBER 1

2005

IS IT SCIENCE YET?: INTELLIGENT DESIGN CREATIONISM AND THE CONSTITUTION

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The authors appreciate comments and support from Dennis D. Hirsch, Capital University Law School; Daniel Brumbaugh, American Museum of Natural History; Robert T. Pennock, Michigan State University; and Glenn Branch, National Center for Science Education.

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ABSTRACT

On several occasions during the last eighty years, states have attempted to either prohibit the teaching of evolution in public school science classes or counter the teaching of evolution with mandatory references to the religious doctrine of creationism. The Supreme Court struck down examples of the first two generations of these statutes, holding that they violated the Establishment Clause of the First Amendment. A third generation of creationist legislation is now being proposed. Under this new generation of creationism legislation, science teachers would present so-called "intelligent design" theory as an alternative to evolution. Intelligent design theory asserts that a supernatural intelligence intervened in the natural world to dictate the nature and ordering of all biological species, which do not evolve from lower-to higher-order beings. This article considers whether these intelligent design creationism proposals can survive constitutional scrutiny. The authors analyze the religious, philosophical, and scientific details of intelligent design theory, and assess these details in light of the constitutional doctrine developed by the Court in its previous creationism decisions. The Article discusses several factors that pose problems for intelligent design theory, including the absence of objective scientific support for intelligent design, evidence of strong links between intelligent design and religious doctrine, the use of intelligent design to limit the dissemination of scientific theories that are perceived as contradicting religious teachings, and the fact that the irreducible core of intelligent design theory is what the Court has called the "manifestly religious" concept of a God or Supreme Being. Based on these details, the authors conclude that intelligent design theory cannot survive scrutiny under the constitutional framework used by the Court to invalidate earlier creationism mandates.

INTRODUCTION

For much of the last century, certain religious groups have resisted the exclusion of biblical theories of creation from public school science curricula. This resistance generated one of the more colorful and well-known constitutional battles in the Tennessee “monkey trial” of John Scopes. Scopes was a public school teacher in a small Tennessee town who was convicted of violating the Tennessee anti-evolution statute by teaching the theory of evolution in his high school science class.¹ The Scopes trial brought the dispute between science and religion to center stage, complete with appearances by larger-than-life characters such as Clarence Darrow and William Jennings Bryan, and a running commentary by a third outsized figure in the form of H. L. Mencken. The popular memory of this battle, as memorialized on celluloid by Spencer Tracy, Fredric March, and Gene Kelly,² is that science and sophisticated rationalism defeated ignorance and parochial sophistry.³ To the chagrin of modern opponents of evolution, Mencken’s harsh judgment about Darrow’s humiliation of Bryan probably sums up much of the country’s common understanding of the battle between evolution and creationism: “On the one side was bigotry, ignorance, hatred, superstition, every sort of blackness that the human mind is capable of. On the other side was sense. And sense achieved a great victory.”⁴

And yet the battle still rages. The United States Supreme Court did not get around to holding *Scopes*-style anti-evolution statutes unconstitutional until its 1968 decision in *Epperson v. Arkansas*.⁵ In *Epperson*, the Court held that the first-generation anti-evolution statutes were unconstitutional because they constituted an impermissible attempt to impose religious criteria on the public school curriculum in violation of the Establishment Clause.⁶ *Epperson*

1. The Tennessee statute made it “unlawful for any teacher in any of the Universitis [sic], Normals and all other public schools of the State which are supported in whole or in part by the public school funds of the State, to teach any theory that denies the story of the Divine Creation of man as taught in the Bible, and to teach instead that man has descended from a lower order of animals.” Act of Mar. 13, 1925, ch. 27, 1925 Tenn. Pub. Acts 50.

2. See *INHERIT THE WIND* (Metro-Goldwyn-Mayer 1960).

3. Much of this popular understanding is attributable to the Jerome Lawrence and Robert E. Lee play on which the movie version was based. See JEROME LAWRENCE & ROBERT E. LEE, *INHERIT THE WIND* (1955). For the background to the actual trial and the story of how the trial gradually achieved near mythical status, see EDWARD J. LARSON, *SUMMER FOR THE GODS: THE SCOPES TRIAL AND AMERICA’S CONTINUING DEBATE OVER SCIENCE AND RELIGION* (1997).

4. H. L. Mencken, *Aftermath*, in *THE IMPOSSIBLE H.L. MENCKEN: A SELECTION OF HIS BEST NEWSPAPER STORIES* 611 (Marion Elizabeth Rodgers ed., 1991).

5. 393 U.S. 97 (1968).

6. *Id.* at 107 (“In the present case, there can be no doubt that Arkansas has sought to prevent its teachers from discussing the theory of evolution because it is contrary to the belief of some that the

set in motion a series of efforts by anti-evolution forces to recast their theory in a form that would survive judicial scrutiny. Nearly two decades after *Epperson*, for example, the Louisiana legislature reformulated its anti-evolution position by requiring public schools to offer the creationist position as an optional approach to the theory of evolution, rather than as the sole, state-mandated perspective. Louisiana injected creationism into the public school science curriculum ostensibly as part of an effort to guarantee academic freedom and “balanced treatment” for competing theories of origins.⁷ This effort to craft a second-generation, sanitized anti-evolution statute also failed to satisfy the Supreme Court, seven members of which voted to hold the statute unconstitutional.⁸

Against this background of unsuccessful attempts to exclude or diminish the teaching of evolution in public school classrooms, a third generation of anti-evolution measures is now being discussed (and sometimes enacted) in various states. These measures are oriented around the teaching of so-called “intelligent design” theory. Intelligent design theory differs from the early generation models of creationism by abandoning the William Jennings Bryan-style biblical literalism that was common during the Scopes era. Intelligent design proponents do not leave themselves open, as Bryan did, to withering cross-examination about the precise contours of the day on which God created the earth.⁹ But two central claims of earlier creationist theories remain at the core of intelligent design: First, the claim that biological entities

Book of Genesis must be the exclusive source of doctrine as to the origin of man.”).

7. *See* *Edwards v. Aguillard*, 482 U.S. 578, 580–81 (1987).

8. *Id.* at 597.

9. One of the more famous portions of Clarence Darrow’s cross-examination of William Jennings Bryan pertained to the length of the “day” described in Genesis. After having described himself as a biblical literalist, who believed that the Bible contained factually precise evidence of everything, including the age of the earth, Bryan admitted under Darrow’s insistent questioning that the “day” described in Genesis may not have been an actual, twenty-four hour period:

[Darrow]: Then when the Bible said, for instance, “and God called the firmament heaven. And the evening and the morning were the second day,” that does not necessarily mean twenty-four hours?

[Bryan]: I do not think it necessarily does.

D: Do you think it does or does not?

B: I know a great many think so.

D: What do you think?

B: I do not think it does.

D: You think those were not literal days?

B: I do not think they were twenty-four-hour days

D: . . . Now, if you call these periods, they may have been a very long time.

B: They might have been.

D: The creation might have been going on for a very long time.

B: It might have continued for millions of years.

ATTORNEY FOR THE DAMNED 224, 226 (Arthur Weinberg ed., 1957).

in the physical world have not evolved naturally from lower-order to higher-order beings, and second, the claim that a supernatural intelligence intervened in the natural world to dictate the nature and ordering of all biological species.¹⁰ The constitutional question is whether this rearticulation of creationist theory renders that theory sufficiently non-religious to satisfy the requirements of the First Amendment.

This article considers intelligent design theories from three perspectives: the philosophical and religious, the scientific, and the constitutional. A brief introductory section will review the legal details of the courts' previous encounters with creationism. The second section will describe the religious and philosophical underpinnings of intelligent design. Although intelligent design proponents assiduously avoid this conclusion, the simple fact is that intelligent design remains a quintessentially religious doctrine. The sine qua non of intelligent design is an intelligent designer, and an intelligent designer is simply a subtle reference to God. Much of the philosophical framework within which intelligent design theory operates reinforces this conclusion. The third section will focus on the scientific aspects of intelligent design theory. Unfortunately for the theory's advocates, the scientific merits of intelligent design theory are as weak as the religious elements of the theory are strong. Intelligent design theory relies on a series of misunderstandings and misrepresentations of evolutionary theory, and the multiple flaws in the structure and details of intelligent design theory render it irredeemably flawed as science. The fourth section will consider the various legal arguments for incorporating intelligent design theory into public school curricula. These arguments range from suggestions that Establishment Clause theory has evolved (so to speak) away from the Court's strong rulings in *Epperson* and *Edwards*, to arguments that denying teachers the right to teach intelligent design violates their First Amendment free speech rights. In short, none of these arguments can withstand scrutiny. From a constitutional perspective, the most recent reinvention of biblical creation theory fares no better than the versions that preceded it.

I. A BRIEF HISTORY OF CREATION THEORY AND THE CONSTITUTION

In contrast to the conflicts and inconsistencies characterizing Establishment Clause jurisprudence generally,¹¹ the constitutional history of

10. The precise details of these scientific claims are discussed below. *See infra* notes 272–389 and accompanying text.

11. Foremost among the conflicts characterizing contemporary Establishment Clause theory is the Court's failure to settle on and consistently apply one standard for determining when a state action

creationism in the United States Supreme Court is remarkably simple and consistent. Contrary to popular perception, the constitutional history of creationism does not begin with *Scopes*. No federal court ever ruled on the constitutionality of the *Scopes* conviction. As noted above,¹² *Scopes* was convicted and fined 100 dollars in state court for violating a Tennessee statute prohibiting “any teacher in any of the Universities, normals and all other public schools of the State . . . [from] teach[ing] any theory that denies the story of the Divine Creation of man as taught in the Bible and teach[ing] instead that man has descended from a lower order of animals.”¹³ The Tennessee Supreme Court overturned this verdict on the ground that the jury, rather than the judge, had imposed the fine. Although the Tennessee Supreme Court reversed the verdict, it also expressed the view that the Tennessee statute did not constitute an establishment of religion in violation of either the federal or state constitutions.¹⁴ But having asserted the constitutionality of the Tennessee statute, the court avoided further embarrassment to the state by noting that “[w]e see nothing to be gained by prolonging the life of this bizarre case” and “suggested” that the Attorney General enter a *nolle prosequi* in the case.¹⁵ Thus the constitutional issues were addressed only in dicta in the state court, and never even reached the United States Supreme Court.

A. *The Supreme Court and Creationism*

It would be another forty years before the Supreme Court would finally review a *Scopes*-style creationism statute and announce its determination that, contrary to the Tennessee court’s dicta, the Establishment Clause of the United States Constitution does not permit states to prohibit the teaching of evolution in public schools. *Epperson v. Arkansas*¹⁶ involved a challenge to Arkansas’ version of the *Scopes*-era anti-evolution statutes. The operative language of the Arkansas statute reviewed in *Epperson* was virtually identical to that of the Tennessee statute that was enforced against John

violates the Constitution. Some proponents of intelligent design argue that the Court’s conflicting statements about the standard applicable to Establishment Clause violations have undermined the doctrinal basis for *Epperson* and *Edwards*. This argument is discussed in Section IV, *infra*.

12. See *supra* note 1 and accompanying text.

13. Act of Mar. 13, 1925, *supra* note 1 (spelling corrected).

14. See *Scopes v. State*, 289 S.W. 363, 367 (Tenn. 1927) (“We are not able to see how the prohibition of teaching the theory that man has descended from a lower order of animals gives preference to any religious establishment or mode of worship. So far as we know, there is no religious establishment or organized body that has in its creed or confession of faith any article denying or affirming such a theory.”).

15. *Id.*

16. 393 U.S. 97 (1968).

Scopes.¹⁷ Both statutes prohibited public school teachers and public university professors from teaching the theory that humans evolved from other species, or from using textbooks that contained material on evolutionary theory. A tenth-grade biology teacher at a public school in Little Rock, Arkansas challenged the statute on the ground that the statute made it technically illegal for her to use a new biology textbook that contained material on evolutionary theory.¹⁸ The Supreme Court ruled in favor of the teacher, holding that the Arkansas statute violated the Establishment Clause.

The details of the Supreme Court's ruling in *Epperson* are important, because *Epperson* continues to provide the basic constitutional framework for analyzing creationism mandates. The Court would later elaborate on this framework in *Edwards v. Aguillard*,¹⁹ and these two cases present what appears to be an insurmountable legal hurdle to introducing the intelligent design version of creationism into public school curricula and state science standards. The actual holding of *Epperson* gives little comfort to proponents of intelligent design. The actual holding of *Epperson* is that the Arkansas anti-evolution statute violated the Establishment Clause because the statute was motivated by the impermissible purpose of protecting the essential dogma of one dominant religious sect from scientific theories with which members of the sect disagreed. As the Supreme Court majority summarized its conclusion, "It is clear that fundamentalist sectarian conviction was and is the law's reason for existence."²⁰ After reviewing the original Tennessee law's religious background, the Court noted that "there is no doubt that the motivation for the [Arkansas] law was the same: to suppress the teaching of a theory which, it was thought, 'denied' the divine creation of man."²¹

There are two significant things about the Court's *Epperson* decision that make the decision just as relevant to intelligent design proposals as to earlier-generation creationism statutes. The first is the particular nature and breadth of the Court's secular purpose holding in *Epperson*. *Epperson* was decided three years before the Court formalized the three-part standard for Establishment Clause analysis in *Lemon v. Kurtzman*.²² Under the *Lemon*

17. Compare *supra* text accompanying note 1 with *Epperson*, 393 U.S. at 99 n.3 ("It shall be unlawful for any teacher or other instructor in any University, College, Normal, Public School, or other institution of the State, which is supported in whole or in part from public funds derived by State and local taxation to teach the theory or doctrine that mankind ascended or descended from a lower order of animals . . .") (quoting Ark. Stat. Ann. § 80-1627 (1960)).

18. *Epperson*, 393 U.S. at 100.

19. 482 U.S. 578 (1987).

20. *Epperson*, 393 U.S. at 107-08.

21. *Id.* at 109.

22. 403 U.S. 602 (1971).

analysis, “First, the statute must have a secular legislative purpose; second, its principal or primary effect must be one that neither advances nor inhibits religion; finally, the statute must not foster ‘an excessive government entanglement with religion.’”²³ Although *Epperson* was decided before the Court’s formal adoption of the *Lemon* standard, the first two parts of what would become the *Lemon* analysis had been part of Establishment Clause analysis for at least five years prior to *Epperson*.²⁴

Although the secular purpose and secular effect requirements are ostensibly distinct analyses, the *Epperson* majority opinion does not distinguish very carefully between purpose and effect. One reason for this is that the Arkansas statute at issue in *Epperson* was adopted by popular initiative rather than legislative action.²⁵ Thus, the Court had little direct evidence of the government’s impermissible religious purpose. Unlike a legislature, which usually generates some official record of its purpose, the electorate voting in favor of a referendum proposition may keep its reasoning to itself—if indeed it even can be said that a diverse electorate shares a particular perspective on the proposition to begin with.²⁶ For this reason, the

23. *Id.* at 612–13 (quoting *Walz v. Tax Comm’n*, 397 U.S. 664, 674 (1970)) (internal citations omitted).

24. *See* *Sch. Dist. of Abington Township v. Schempp*, 374 U.S. 203, 222 (1963) (“[T]o withstand the strictures of the Establishment Clause there must be a secular legislative purpose and a primary effect [for the state action] that neither advances nor inhibits religion.”).

25. *See Epperson*, 393 U.S. at 109 n.17.

26. The Supreme Court has recently suggested that the opinions of individual electors in a referendum election are insufficient in themselves to establish constitutionally impermissible governmental intent. In *City of Cuyahoga Falls v. Buckeye Community Hope Foundation*, 538 U.S. 188 (2003), the Court rejected a constitutional challenge to a referendum barring the construction of a low-income housing project. The challenge was brought under the Fourteenth Amendment’s Equal Protection Clause, based on an allegation that the referendum constituted unconstitutional racial discrimination. The Court noted that such a challenge depended on a finding that the government had intentionally discriminated against the plaintiffs on the basis of race. The Court then rejected the plaintiff’s challenge to the referendum on the ground that there was no evidence of the relevant impermissible intent. The Court held that evidence of allegedly discriminatory voter sentiment was insufficient to justify a finding of discriminatory intent. “[S]tatements made by private individuals in the course of a citizen-driven petition drive, while sometimes relevant to equal protection analysis . . . do not, in and of themselves, constitute state action for the purposes of the Fourteenth Amendment.” *Id.* at 196.

Outside the referendum context, the courts often ascribe to government actions the religious motives of private groups supporting those actions. In *Edwards v. Aguillard*, for example, Justice Powell discussed the religious background and perspective of two private groups—the Institute for Creation Research and the Creation Research Society—that had expressed support for the “balanced treatment” creationism statute adopted by the Louisiana legislature. “Information on both of these organizations is part of the legislative history, and a review of their goals and activities sheds light on the nature of creation science as it was presented to, and understood by, the Louisiana Legislature.” *Edwards*, 482 U.S. at 601–02 (Powell, J., concurring). For a more recent example of this phenomenon, consider *ACLU v. City of Plattsburgh*, 358 F.3d 1020 (8th Cir. 2004), where a city accepted a Ten Commandments monument from a private group, the Fraternal Order of Eagles. *Id.* at 1025. In *Plattsburgh*, there was no direct evidence of the city’s intent, but the court noted the explicitly religious

application of the secular purpose analysis to the Arkansas anti-evolution statute at issue in *Epperson* was not linked as directly to specific statements of governmental policy as the similar secular purpose analysis in cases that the Court would later encounter involving more explicit attempts by state legislatures to incorporate religious doctrine into law.²⁷

Ironically, the absence of specific statements expressing the Arkansas government's purpose in adopting the anti-evolution policy actually strengthens the Court's holding in *Epperson*. The Court's determination that state mandates to teach creationism are unconstitutional cannot be limited to situations in which a few public officials make ill-considered public statements about religion. In reaching its conclusion that the amorphous group of voters who voted in favor of the Arkansas initiative did so on the basis of constitutionally impermissible motives, the *Epperson* majority was forced to rely on evidence such as the religious nature of a "typical" political advertisement supporting the initiative,²⁸ a few letters to local newspapers,²⁹ and secondary sources such as academic articles about the nature of the Arkansas statute.³⁰ The major support for the Court's conclusion that the Arkansas initiative had an impermissible religious purpose, however, was the Court's analysis of the referendum's religious effect. In the absence of direct evidence of the state's impermissible religious purpose, the Court inferred the purpose from the referendum's inherently religious nature.

The Court found the religious nature of the statute inescapable. The Court noted that the law singled out only one subject for exclusion from Arkansas classrooms: the theory of evolution. The law was not, therefore, an attempt

purpose of the private group, and held the city accountable for adopting the same religious objectives: "The Eagles donated this monument as a part of its nationwide campaign to spread its version of the Ten Commandments; Plattsmouth's purpose in erecting it was nothing more complex than the adoption of that goal." *Id.* at 1037.

27. An excellent example of overtly expressed state intent to adopt religious legislation can be found in the Alabama silent prayer decision. *See* *Wallace v. Jaffree*, 472 U.S. 38 (1985). In this case the state of Alabama enacted a statute authorizing a period of silence for "meditation or voluntary prayer." *Id.* at 41 (quoting Ala. Code § 16-1-20.1 (1984)). The Court held that this statute failed the *Lemon* secular purpose requirement. *Id.* at 56. The Court focused much of its attention on statements made by the sponsor of the legislation in the state senate:

Senator Donald Holmes, inserted into the legislative record—apparently without dissent—a statement indicating that the legislation was an "effort to return voluntary prayer" to the public schools. Later Senator Holmes confirmed this purpose before the District Court. In response to the question whether he had any purpose for the legislation other than returning voluntary prayer to public schools, he stated: "No, I did not have no other purpose in mind." The State did not present evidence of any secular purpose.

Id. at 56–57 (footnotes omitted).

28. *Epperson*, 393 U.S. at 107 n.16.

29. *Id.*

30. *Id.* at 107 n.15.

by Arkansas to avoid all sensitive discussions of the origins of humanity. Rather, the “law’s effort was confined to an attempt to blot out a particular theory because of its supposed conflict with the biblical account, literally read.”³¹ Nothing in the referendum actually said that the law was intended to protect a particular set of religious dogmas; the Court simply concluded that it could conceive of only one possible explanation for the referendum’s specific focus—i.e., “the belief of some that the Book of Genesis must be the exclusive source of doctrine as to the origin of man.”³² Thus, although the *Epperson* Court ostensibly focused on the issue of religious intent, in fact the religious effect of the referendum determined the case. The effect of the statute—that is, to omit from public school curricula any references to evolution—was so permeated with religion that the Court felt it could only have been motivated by an impermissible religious purpose: to protect the dominant religious dogma from other theories that proponents of the dominant religion viewed as sacrilegious.

In one sense, the very fact that the religious majority deemed the referendum necessary was itself evidence of an impermissible purpose. By enacting a legal mandate to exclude from the state’s classrooms scientific evidence of evolution, the Arkansas religious majority implicitly acknowledged that in an unregulated intellectual marketplace the majority’s religious conception of biological change could not survive on its merits as science. The central holding of *Epperson* is that the representatives of a politically powerful group have no constitutional authority to skew the intellectual marketplace in favor of that group’s religion. Under *Epperson*, no group may use the law to artificially bolster the intellectual merits of its own faith’s perspective on scientific issues at the expense of an open intellectual inquiry into those issues—even if the conclusions generated by the open intellectual inquiry inevitably will create doubts among the faithful about the veracity of the dominant faith. As the Court summed up this aspect of Establishment Clause doctrine, “the state has no legitimate interest in protecting any or all religions from views distasteful to them.”³³

The prohibition of religious protectionism is key to understanding how the Court’s holding in *Epperson* will apply to later, subtler versions of creationism, such as the theory of intelligent design. The application of the *Epperson* anti-protectionism principle does not depend on the particular nature of the religious ideas being fostered by the government. *Any* political attempt to skew the process of scientific investigation in favor of a particular

31. *Id.* at 109.

32. *Id.* at 107.

33. *Id.* at 107 (quoting *Joseph Burstyn, Inc. v. Wilson*, 343 U.S. 495, 505 (1952)) (internal quotations omitted).

set of religious ideas is invalid—regardless of the mechanism used by the government to advance its sectarian agenda. The Constitution therefore prohibits statutes that bar the inclusion of evolution in public school curricula (as in *Epperson*), but it also prohibits statutes that mandate the inclusion of particular ideas (as in *Edwards v. Aguillard*³⁴) as well as statutes that disparage or disclaim the conclusions of scientific inquiry (as in a recent local school board policy struck down by the federal courts in Louisiana³⁵). Each type of statute is unconstitutional because it conflicts with the Court's basic understanding that if creationism has secular merit as science, the scientific community will recognize these merits without being forced to do so by legal decree.

When the courts strike down legal mandates protecting creationism from the challenges posed by evolutionary theory, they are not protecting evolutionary theory per se, nor are they attacking the merits of creationism. Rather, the courts are merely protecting the system of open intellectual inquiry from political manipulation directed toward protecting the interests of powerful religious groups outside the academic community. In this analysis, applying the secular purpose and secular effect tests is simpler than it otherwise might seem because the Constitution presumptively prohibits *any* legal mandate to incorporate certain perspectives in a public school educational curriculum if those perspectives have been rejected by overwhelming numbers of scientists in the academic community. It does not matter whether the religious perspective is obvious on the face of the legal mandate; the existence of the mandate itself is the problem. Thus, statutes incorporating the increasingly generalized and indefinite later versions of creationism cannot survive constitutional scrutiny any more easily than the earlier versions of that doctrine, which expressly incorporated large and detailed portions of the Book of Genesis. The Court made this clear when it struck down Louisiana's version of the second generation of creationism statutes in *Edwards v. Aguillard*.

34. 482 U.S. 578 (1987).

35. *Freiler v. Tangipahoa Parish Bd. of Educ.*, 185 F.3d 337 (5th Cir. 1999).

B. *The Evolution of Creationism*

In *Edwards v. Aguillard* the Supreme Court confronted a Louisiana statute that took a less confrontational route toward introducing creationism into the public school curriculum than the *Scopes*-style statute struck down in *Epperson*. In *Epperson* the state had attempted to exclude evolution from public schools altogether. In *Edwards* the state conceded that evolution would be taught in most schools, but required schools teaching evolution to also give equal time to creationism.³⁶ The Louisiana legislature entitled its statute the “Balanced Treatment for Creation-Science and Evolution-Science in Public School Instruction.”³⁷ As the title indicates, the legislature attempted to position its effort as intended to protect the balanced presentation of scientific evidence. The legislature argued that it really intended to protect academic freedom, not advance the religious cause represented by creationism.³⁸

The Court did not accept the legislature’s explanation. Instead, the Court rejected the second-generation “balanced treatment” creationism statute on the same ground as it had rejected the first-generation Arkansas statute in *Epperson*. That is, the Court held that the Louisiana statute also lacked the secular purpose required by the Establishment Clause.³⁹ The Court’s conclusion on this matter was not a close call; the Court seems to have not even taken the legislature’s proffered rationale seriously. As Justice Brennan noted for the majority, “While the Court is normally deferential to a State’s articulation of a secular purpose, it is required that the statement of such purpose be sincere and not a sham.”⁴⁰

The significant thing about the Court’s holding in *Edwards* is that it reached its conclusion that the Louisiana legislature’s stated reasons were a “sham” largely in the absence of direct evidence that the legislature had passed the statute with an impermissible religious purpose. In this respect *Edwards* was again similar to *Epperson*. If anything, the record in the Louisiana case was weaker than the record in Arkansas. As Justice Scalia’s dissent points out, the Louisiana legislature vehemently disavowed any religious purpose.⁴¹ Although the *Edwards* majority did cite certain statements indicating a religious purpose by the sponsor of the “balanced treatment” statute,⁴² the significance of these statements were strongly

36. *Edwards*, 482 U.S. at 580–81.

37. *Id.* at 580.

38. *Id.* at 586.

39. *Id.* at 585.

40. *Id.* at 586–87.

41. *Id.* at 621 (Scalia, J., dissenting).

42. *Id.* at 591–93 (citing several comments indicating the religious motives of Senator Bill Keith

disputed by Justice Scalia,⁴³ and few other legislators contributed similarly sectarian comments to the legislative record.

The significance of the relative dearth of unambiguous evidence regarding the Louisiana legislature's purpose is that the *Edwards* majority did not base its constitutional conclusion primarily on direct evidence of legislative intent. Instead, the Court decided that the Louisiana legislature's stated purpose was a sham based on three factors relating to the nature of the creationist doctrine advanced by the statute. These three factors are described in the next three subsections. The unifying theme of these three factors is that the inherently religious nature of creationism—not the legislature's perceptions about why it was advancing creationism—rendered the statute unconstitutional. The Court deemed the legislature's proffered secular reasons a “sham” because the Court could find no plausible secular reason for intentionally slipping an inherently religious doctrine into science classes. The clear message from *Edwards* is that government action mandating the teaching of a theory containing the central religious precepts of creationism will violate the Establishment Clause—no matter how carefully lawmakers try to cloak the religious basis of their decision. Adoption of the theory itself demonstrates the religious intent. The factors relied upon by the *Edwards* majority to determine that creationism is inherently religious are, therefore, directly relevant to the courts' future consideration of any purportedly nonreligious legal mandates incorporating the tenets of intelligent design.

1. The First Edwards Factor: The Conflict Between “Creation Science” and Mainstream Science

The first factor the *Edwards* Court cited in rejecting the Louisiana creationism mandate was the deep conflict between creationism theory and the accepted understandings of the academic scientific community. The Louisiana legislature claimed that the “balanced treatment” statute was necessary to protect the academic freedom of science teachers in the public schools.⁴⁴ The Court rejected this assertion based on its conclusion that academic freedom already existed without the statute. The Court found that “no law prohibited Louisiana public school teachers from teaching any scientific theory,”⁴⁵ and noted favorably the testimony of the President of the

in supporting the balanced treatment statute).

43. *Id.* at 621–26 (Scalia, J., dissenting) (noting that Senator Keith insisted that he was not attempting to advance religion, and summarizing evidence introduced by Keith and witnesses before the legislature supporting their contention that creationism is a scientific doctrine).

44. *Id.* at 586.

45. *Id.* at 587.

Louisiana Science Teachers Association to the effect that “[a]ny scientific concept that’s based on established fact can be included in our curriculum already, and no legislation allowing this is necessary.”⁴⁶ Thus, the statute in no way advanced the cause of adding to the science curriculum legitimate scientific data that teachers had somehow been prohibited from teaching.

In essence, the Court recognized not only that the Louisiana statute failed to advance the cause of academic freedom, but that in fact the supporters of creationism in the Louisiana legislature were undermining academic freedom. True academic freedom—that is, the freedom to consider, test, assess objectively, and ultimately reject scientific hypotheses that have no merit—was the very thing that led to the exclusion of creationism from the science textbooks and curriculum. Operating under the normal standards of academic inquiry, the scientific community had already appraised the merits of creationism and found the theory wanting. The “balanced treatment” statute was not necessary to protect academic freedom; rather, it was necessary to protect a set of scientifically invalid religious doctrines from the withering scrutiny of objective analysis that took place in circumstances defined by the undistorted conditions of academic freedom. “[W]e agree with the Court of Appeals’ conclusion that the Act does not serve to protect academic freedom, but has the distinctly different purpose of discrediting ‘evolution by counterbalancing its teaching at every turn with the teaching of creationism’”⁴⁷

2. *The Second Edwards Factor: The Historical Linkage Between Creationism and Religion*

The second factor the Court relied upon in identifying the improper intent of the Louisiana legislature was the historical linkage between creationism and certain religious groups. “There is a historic and contemporaneous link between the teachings of certain religious denominations and the teaching of evolution.”⁴⁸ During its discussion of this point, the Court referred to the district court decision in a second-generation creationism case from Arkansas, *McLean v. Arkansas Board of Education*.⁴⁹

The district court opinion in *McLean* remains the most comprehensive judicial consideration of the history and theory of creationism. In that opinion, the *McLean* district court details a long history of hostility between certain fundamentalist Protestant sects and the scientific theory of

46. *Id.*

47. *Id.* at 589 (quoting *Aguillard v. Edwards*, 765 F.2d 1251, 1257 (5th Cir. 1985)).

48. *Id.* at 590.

49. 529 F. Supp. 1255 (E.D. Ark. 1982).

evolution.⁵⁰ The court based its opinion on extensive testimony concerning the history and theory of creationism. The court first noted the religious background of the first-generation creationism movement that produced the Scopes trial and the statute struck down in *Epperson*. The anti-evolutionary sentiment that produced these statutes was the outgrowth of the evangelical Protestant religious movement that began in the United States during the nineteenth century.⁵¹

After World War I, members of this religious movement turned their attention to a perceived decline in traditional social morality, which they believed was caused by Darwin's theory of evolution.⁵² The influence of this religious movement was pervasive, if sometimes more subtle than the overt legal attempts to suppress the theory of evolution through state legislation. Because of the widespread influence of this movement, science textbooks "[g]enerally . . . avoided the topic of evolution and did not mention . . . Darwin."⁵³ Legal proscriptions were unnecessary because the textbook publishers and school boards chose voluntarily to avoid the controversial subject altogether. After the Soviet Union's launch of the Sputnik satellite, however, the nation responded by comprehensively strengthening the science curriculum in public schools. One aspect of this effort was the curriculum reform proposals of the Biological Sciences Curriculum Study ("BSCS") organization. BSCS "developed a series of biology texts which, although emphasizing different aspects of biology, incorporated the theory of evolution as a major theme."⁵⁴ The BSCS-proposed texts and curriculum soon came to dominate education in the biological sciences in the United States.

The second generation of anti-evolution statutes was a response to the growth of the BSCS-style biology curriculum. During the 1960s and 1970s, "several Fundamentalist organizations were formed to promote the idea that the Book of Genesis was supported by scientific data."⁵⁵ This led to the formation of institutions intended to advance the cause of "scientific" creationism. These institutions included the Institute for Creation Research, the Creation Science Research Center, and the Creation Research Society.⁵⁶

50. For an even more comprehensive description of the background of the creationist movement, see RONALD L. NUMBERS, *THE CREATIONISTS* (1993).

51. *McLean*, 529 F. Supp. at 1258.

52. *Id.* at 1259.

53. *Id.*

54. *Id.*

55. *Id.*

56. *Id.* at 1259-60.

The credos of these groups were often explicitly religious,⁵⁷ and the mechanisms for advancing their religious agenda were statutes—such as those struck down in *McLean* and *Edwards*—advocating the allocation of equal time in biology classes to evolution and theories of so-called “creation science” and “scientific creationism.”⁵⁸

Although lacking the extensive detail of the *McLean* district court’s examination of the religious and historical background of creationism statutes, the Supreme Court’s holdings in both *Epperson* and *Edwards* took note of the obvious relation between certain religious sects and creationism. Thus, even if legislatures enacting statutes mandating the inclusion of creationism in science classes fail to mention the religious background of creationism, the statutory mandate will nevertheless be viewed in light of the undeniable fact that creationism is still permeated with a specifically religious perspective. In light of the theory’s background, such statutes inevitably involve the manipulation of the educational curriculum for religious reasons, and therefore violate the Establishment Clause to the same extent as a legal mandate for public schools to include religious indoctrination in the form of mandatory prayer⁵⁹ or the reading of sacred texts.⁶⁰

57. See, for example, the statement of principles for admission to the Creation Research Society, which among other things required applicants to subscribe to the belief that:

- (1) The Bible is the written Word of God, and because we believe it to be inspired thruout (sic), all of its assertions are historically and scientifically true in all of the original autographs. To the student of nature, this means that the account of origins in Genesis is a factual presentation of simple historical truths.
- (2) All basic types of living things, including man, were made by direct creative acts of God during Creation Week as described in Genesis. Whatever biological changes have occurred since Creation have accomplished only changes within the original created kinds.
- (3) The great Flood described in Genesis, commonly referred to as the Noachian Deluge, was an historical event, world-wide in its extent and effect.
- (4) Finally, we are an organization of Christian men of science, who accept Jesus Christ as our Lord and Savior. The account of the special creation of Adam and Eve as one man and one woman, and their subsequent Fall into sin, is the basis for our belief in the necessity of a Savior for all mankind. Therefore, salvation can come only thru (sic) accepting Jesus Christ as our Savior.

Id. at 1260 n.7.

58. *Id.* at 1261.

59. See *Engel v. Vitale*, 370 U.S. 421 (1962) (striking down New York statute requiring the daily recitation of the Regents’ Prayer in public school classrooms).

60. See *Sch. Dist. of Abington Township v. Schempp*, 374 U.S. 203 (1963) (striking down statutes requiring the daily reading of religious texts in public school classrooms).

3. *The Third Edwards Factor: The Inherently Religious Nature of a Supreme Being*

The third factor cited by the *Edwards* Court in support of its holding goes to the very heart of creationism and variations of creationism such as the theory of intelligent design. According to the Court, the Louisiana legislature did not have a secular purpose in passing the “balanced treatment” statute because the very theory of creationism “embodies the religious belief that a supernatural creator was responsible for the creation of humankind.”⁶¹ This central characteristic of creationist theory rendered the statutory mandate to teach creationism in public schools incompatible with the Establishment Clause. “The preeminent purpose of the Louisiana Legislature was clearly to advance the religious viewpoint that a supernatural being created humankind.”⁶² Justice Powell’s concurring opinion drove this point home forcefully:

Although the Act requires the teaching of the scientific evidences of both creation and evolution whenever either is taught, it does not define either term. . . . The “doctrine or theory of creation” is commonly defined as “holding that matter, the various forms of life, and the world were created by a transcendent God out of nothing.” Webster’s Third New International Dictionary 532 (unabridged 1981). . . . Thus, the Balanced Treatment Act mandates that public schools present the scientific evidence to support a theory of divine creation whenever they present the scientific evidence to support the theory of evolution. “[C]oncepts concerning God or a supreme being of some sort are manifestly religious These concepts do not shed that religiosity merely because they are presented as a philosophy or as a science.” From the face of the statute, a purpose to advance a religious belief is apparent.⁶³

The Court’s singular emphasis on the inherently religious nature of the central element of creationism—i.e., the notion of creation by a transcendent being—is crucial to understanding the breadth of the *Edwards* and *Epperson* holdings. These are not cases whose holdings rest on a record of unguarded religious comments by zealous government officials. Instead, in *Edwards* and *Epperson* the Court held that the Establishment Clause prohibits *any*

61. *Edwards*, 482 U.S. at 592.

62. *Id.* at 591.

63. *Id.* at 598–99 (Powell, J., concurring) (citing *Malnak v. Yogi*, 440 F. Supp. 1284, 1322 (D.N.J. 1977), *aff’d per curiam*, 592 F.2d 197 (3d Cir. 1979)).

attempt to mandate the inclusion of the quintessentially religious theory of supernatural creation in a public school curriculum—regardless of the fact that the legislature gives ostensibly secular reasons for adopting the mandate. Religion is religion, and at least since the early 1960s,⁶⁴ the public school curriculum cannot be used to indoctrinate students in any particular religious faith. Creationism violates this central precept of the First Amendment because creationism is premised on the existence and active intervention of a creator—that is, of God—in the biological processes of life. It does not matter that a theory does not actually use the term “God.” The *Edwards* majority clearly indicated that the concept of a transcendent being of any sort is inherently religious. Viewed in this light, *Edwards* and *Epperson* apply equally strongly to any legal mandate to teach that a supreme being intervenes in natural processes. Old-fashioned Scopes-era young-earth creationism is not intrinsically more constitutionally problematic than the more subtle varieties of creation theory. As long as a theory depends on the existence of a transcendent being, that theory is, for constitutional purposes, a religious theory. Therefore, the Constitution prohibits the government from incorporating any version of such a theory in the public school curriculum of a government-mandated science standard. This is the unavoidable implication of *Edwards* and *Epperson*, which is now being tested by a third generation of creationism proposals.

C. The Further Evolution of Creationism: The “Intelligent Design” Movement

Despite the Supreme Court’s consistent refusal to uphold statutes that attempt to insert religious notions of creation into the public school science curriculum, creationism activists have not given up the fight. A new group of activists has begun pressing a third generation of creationism proposals in an effort to circumvent *Epperson* and *Edwards*. The tactical approach behind the latest version of creationism is to dilute the theory to the point of abandoning all but the core of the original concept: i.e., the central claim that biology can demonstrate that a supernatural being created and conscientiously organized the natural world.⁶⁵ This third generation of creationist theory became prominent approximately a decade ago as the result of disputes over proposals for public schools to adopt a new creationist biology text entitled *Of Pandas and People: The Central Question of*

64. See *Sch. Dist. of Abington Township v. Schempp*, 374 U.S. 203 (1963); *Engel v. Vitale*, 370 U.S. 421 (1962).

65. Intelligent design proponents refer to this core theory as “mere creation.” See *infra* note 115 and accompanying text.

Biological Origins.⁶⁶ The approach taken in this book reflects the basic method of intelligent design creationism: avoid the word God, abandon many of the controversial details of earlier versions of creationism, focus on alleged problems within the theory of evolution, and avoid positing an affirmative alternative approach that coincides too closely with the Genesis version of creation.

The basic similarities and differences between the three generations of creationist theory are outlined here, and the religious, philosophical, and scientific details of intelligent design creationism will be explored further in Sections II and III, *infra*. The first and second generations of creationist theory essentially codified the creation story of the Book of Genesis. The Louisiana statute struck down in *Edwards* defined “creation-science” as evidence indicating:

- (a) sudden creation of the universe, energy, and life from nothing; (b) the insufficiency of mutation and natural selection in bringing about development of all living kinds from a single organism; (c) changes only within fixed limits or originally created kinds of plants and animals; (d) separate ancestry for man and apes; (e) explanation of the earth’s geology by catastrophism, including the occurrence of a worldwide flood; and (f) a relatively recent inception of the earth and living kinds.⁶⁷

This view of creationism embodied in this second-generation statute is very similar to the first generation of creationist theory discussed by William Jennings Bryan in his testimony regarding the Tennessee statute in the Scopes trial.⁶⁸ The two main differences between first- and second-generation creationist legal mandates are: (1) first-generation creationists tended to base their conclusions explicitly on references to the biblical text, whereas second-generation creationists tended to shun specific references to the Bible and focus instead on (to use the Louisiana statutory terminology) “scientific evidences and related inferences”⁶⁹ of creationism; and (2) second-generation creationism statutes simply attempted to insert creationism

66. PERCIVAL DAVIS & DEAN H. KENYON, *OF PANDAS AND PEOPLE: THE CENTRAL QUESTION OF BIOLOGICAL ORIGINS* (2d ed. 1993). Jay Wexler’s excellent student note on the subject documents one early battle over this textbook in Plano, Texas. See Jay D. Wexler, Note, *Of Pandas, People, and the First Amendment: The Constitutionality of Teaching Intelligent Design in the Public Schools*, 49 STAN. L. REV. 439 (1997).

67. *Edwards*, 482 U.S. at 600–01 (Powell, J., concurring).

68. See Weinberg, *supra* note 9, at 192–206 (quoting Clarence Darrow’s cross-examination of William Jennings Bryan, in which Bryan discusses the age of the earth, the great flood, and biblical literalism regarding matters of creation).

69. *Edwards*, 482 U.S. at 600 (Powell, J., concurring).

into science curriculums as an alternative to mainstream scientific explanations of evolution, instead of banning discussion of evolution outright. These are not insignificant differences, but the basic scientific assertions of first- and second-generation creationist theories are identical: they each include fairly detailed theories of the sudden creation of the universe, the denial of interspecies evolution, the explanation of geological differences by catastrophism, and the belief in a young earth. All these details relate directly to the main conclusion of both theories—that a supernatural being created the universe in more or less its present form—and the details bolstering that conclusion are affirmatively stated and defended.

The third generation of creationist theory is both simpler and far more imprecise than the two previous versions of creationism. It is difficult to avoid the conclusion that both the simplicity and the imprecision are the products of a conscious desire to present the religious concept of creation in a secular package that somehow can fit within the constitutional framework described in *Edwards*. Unlike the first and second generations of creationism, the third generation of “intelligent design” creationist theory contains few affirmative propositions other than the basic assertion that biology provides evidence that an “intelligent designer” created the natural world.⁷⁰ Much of intelligent design theory is devoted to negative attacks on the evidence supporting evolutionary theory, but with little or no suggestion of a comprehensive alternative paradigm. The third-generation creationists have largely abandoned their predecessors’ support for the more outrageous creationist claims, such as that the entire geological structure can be explained by a single divinely ordained flood, or the demonstrably absurd claim that the earth is only a few thousand years old.⁷¹

In lieu of affirmative explanations of the natural world, intelligent design creationists have chosen instead to expend most of their energy sniping at alleged flaws in the evidence supporting the theory of evolution. They bolster these empirical attacks on evolution with the assertion that the biomolecular structures of life are so complex that they could not have evolved gradually,

70. The absence of detail in material advancing notions of intelligent design may be explained as a matter of both legal and political strategy. The legal strategy is to circumvent *Epperson* and *Edwards*. The political strategy is to create a big tent under which various types of creationists can join in the battle against scientific evolution. On both of these points, see *infra* notes 91–92 and accompanying text. Of course, intelligent design proponents also face a major empirical dilemma: Any scientific theory that attempts to provide an affirmative case for an intelligent designer must at some point define and provide evidence of the characteristics and identity of the designer, but as yet the designer has chosen not to reveal himself in an empirically verifiable manifestation.

71. A few intelligent design proponents, such as Paul Nelson and Sigfried Sherer, remain young-earth creationists. See Paul Nelson & John Mark Reynolds, *Young Earth Creationism*, in *THREE VIEWS ON CREATION AND EVOLUTION* 41, 41 (J.P. Moreland & John Mark Reynolds eds., 1999) (“We hold the view of *recent* or . . . *young-earth* creation.”).

but were more likely to have been purposefully designed.⁷² The alleged inevitability of a purposeful design, in turn, leads these theorists to presuppose the existence of an intelligent designer, although in their pronouncements to the general public and policymakers the intelligent design advocates are notably silent about the exact nature—or even the identity—of this key figure in their theory.

The general refusal to call the “intelligent designer” by the name “God” is another characteristic that distinguishes the third generation of creationists from their predecessors. First- and second-generation creationists were quite willing to acknowledge who they believe designed the world. Proponents of intelligent design creationism, on the other hand, vociferously deny that the intelligent designer they postulate is equivalent to God, and in their statements to the general public they often deny taking any position at all on the nature of the world’s designer. Phillip Johnson, one of intelligent design’s leading spokesmen,⁷³ once even suggested (perhaps puckishly) to an interviewer for the *San Francisco Chronicle* that it may have been “space aliens of high intelligence who did the designing.”⁷⁴ Mark Edwards, a spokesman for the Discovery Institute, which is the most prominent intelligent design advocacy group, has likewise suggested that “a person could logically argue that some sort of human has been able to design features of life working through time travel.”⁷⁵

Of course, if intelligent design theory is viewed skeptically as itself designed to finesse *Epperson* and *Edwards* and install creationism in public school biology classrooms, then it is understandable that proponents of intelligent design cannot acknowledge to the general public (much less to courts) the true identity of their intelligent designer. In every respect, however, the nature of the intelligent designer coincides precisely with the Western religious concept of an omniscient and all-powerful deity.

Despite the secular public relations effort, religion is never far below the surface of most discussions of intelligent design. When directing their

72. The “irreducible complexity” of the biochemical world is the central theme of Michael Behe’s work, which is one of the most prominent intelligent design treatises. See MICHAEL J. BEHE, *DARWIN’S BLACK BOX: THE BIOCHEMICAL CHALLENGE TO EVOLUTION* (1996).

73. Johnson is not a scientist, but rather a retired criminal law professor at the University of California-Berkeley. Nevertheless, he is one of the most prolific and prominent intelligent design advocates. Johnson’s book *Darwin on Trial* is probably the most significant statement of the intelligent design position. See PHILLIP E. JOHNSON, *DARWIN ON TRIAL* (2d ed. 1993); see also PHILLIP E. JOHNSON, *THE WEDGE OF TRUTH: SPLITTING THE FOUNDATIONS OF NATURALISM* (2002) [hereinafter JOHNSON, *WEDGE OF TRUTH*]; PHILLIP E. JOHNSON, *DEFEATING DARWINISM BY OPENING MINDS* (1997) [hereinafter JOHNSON, *DEFEATING DARWINISM*].

74. Louis Freedberg, *Intelligent Design’s Public Defender*, S.F. CHRON., Apr. 21, 2002, at D1.

75. Laurel Rosen, *Darwin Faces a New Rival*, SACRAMENTO BEE, June 22, 2003, at B1.

comments to friendly audiences, intelligent design proponents are usually less circumspect about denying their religious motivations. Phillip Johnson has spoken, for example, of developing a “wedge” strategy “to affirm the reality of God by challenging the domination of materialism and naturalism in the world of the mind.”⁷⁶ Jonathan Wells, the author of a widely cited anti-evolution book⁷⁷ and a senior fellow at the Discovery Institute,⁷⁸ has written extensively about the religious nature of his decision to attend graduate school in biology. Wells is a minister in the Reverend Sun Myung Moon’s Unification Church, and according to Wells his decision to “devote my life to destroying Darwinism” resulted from “Father’s [i.e., Rev. Moon’s] words, my studies, and my prayers [to God].”⁷⁹ William Dembski, another prominent figure in the intelligent design movement, has openly discounted the possibility that the designer could have been space aliens—thus eliminating even the hypothetical possibility of a non-religious designer.⁸⁰ Other intelligent design advocates have made little effort to hide their religious motivations even in discussions with outsiders. In response to a question from a *Wall Street Journal* reporter about his motivation, for example, one of the co-authors of *Pandas and People* said, “Of course my motives were religious. There’s no question about it.”⁸¹

The next section will describe in much greater detail the religious underpinning of intelligent design theory. Section III will then discuss the

76. JOHNSON, DEFEATING DARWINISM, *supra* note 73, at 91–92.

77. See JONATHAN WELLS, *ICONS OF EVOLUTION: SCIENCE OR MYTH?* (2000).

78. Wells is a Senior Fellow at the Center for Science & Culture, part of the Discovery Institute. See Center for Science & Culture, *Center Fellows*, at <http://www.discovery.org/scripts/viewDB/index.php?command=view&id=41&isFellow=true> (last visited Mar. 21, 2004).

79. See Jonathan Wells, *Darwinism: Why I Went for a Second Ph.D.*, at <http://www.tparents.org/Library/Unification/Talks/Wells/DARWIN.htm> (last visited Mar. 21, 2004):

At the end of the Washington Monument rally in September, 1976, I was admitted to the second entering class at Unification Theological Seminary. During the next two years, I took a long prayer walk every evening. I asked God what He wanted me to do with my life, and the answer came not only through my prayers, but also through Father’s many talks to us, and through my studies. Father encouraged us to set our sights high and accomplish great things.

He also spoke out against the evils in the world; among them, he frequently criticized Darwin’s theory that living things originated without God’s purposeful, creative activity. My studies included modern theologians who took Darwinism for granted and thus saw no room for God’s involvement in nature or history; in the process, they re-interpreted the fall, the incarnation, and even God as products of human imagination.

Father’s words, my studies, and my prayers convinced me that I should devote my life to destroying Darwinism, just as many of my fellow Unificationists had already devoted their lives to destroying Marxism. When Father chose me (along with about a dozen other seminary graduates) to enter a Ph.D. program in 1978, I welcomed the opportunity to prepare myself for battle.

Id.

80. See *infra* notes 152–66 and accompanying text.

81. Erik Larson, *Darwinian Struggle: Instead of Evolution, a Textbook Proposes “Intelligent Design”*, WALL ST. J., Nov. 14, 1994, at A1 (quoting Percival Davis).

theory's scientific flaws. Section IV will return to the constitutional questions surrounding intelligent design to consider whether novel legal arguments constructed from post-*Edwards* case law can justify inserting this new version of creationism into the public school classroom. For the moment, it is helpful to keep in mind Justice Powell's reminder from *Edwards* that "[C]oncepts concerning God or a supreme being of some sort are manifestly religious These concepts do not shed that religiosity merely because they are presented as a philosophy or as a science."⁸² Unless the proponents of intelligent design can convince the Court that they really do believe in "space aliens," they will have a very difficult time reconciling their theory with this blunt constitutional conclusion.

II. INTELLIGENT DESIGN'S RELIGIOUS IDENTITY AND RELEVANT PHILOSOPHICAL ISSUES

Creationists at Discovery Institute's Center for Science and Culture ("CSC") deny both that ID⁸³ is religion and that it is creationism. To forestall the charge that it is religion, William Dembski in 1998 declared ID a robust scientific theory with an empirical research program: "The empirical detectability of intelligent causes renders intelligent design a fully scientific theory and distinguishes it from . . . natural theology. . . . [S]cience is now in a position to demonstrate design rigorously . . . [W]hat has been a long-standing . . . intuition can now be cashed out as a robust program of scientific research."⁸⁴

In 2004, Dembski called ID a "full-scale scientific revolution."⁸⁵ He denies that ID is creationism in disguise:

As a Christian, I . . . believe . . . God created the world. For . . . atheists this is enough to classify me as a creationist By creationism one typically understands what is . . . called "young earth creationism," and what [its] advocates . . . refer to . . . as "creation science" or "scientific creationism." . . . Given this account of creationism, am I a creationist? No. I do not regard Genesis as a scientific text Ask

82. *Edwards*, 482 U.S. at 599 (Powell, J., concurring) (quoting *Malnak v. Yogi*, 440 F. Supp. 1284, 1322 (D.N.J. 1977)) (internal quotations marks omitted).

83. When discussing the intelligent design literature in Sections II and III, we will follow the common practice of using the acronym "ID" to refer to intelligent design.

84. William A. Dembski, *Introduction* to *MERE CREATION* 13, 17–18 (William A. Dembski ed., 1998).

85. WILLIAM A. DEMBSKI, *THE DESIGN REVOLUTION* 19 (2004).

any leader in the design movement whether intelligent design is stealth creationism, and they'll deny it.⁸⁶

These denials stem from ID creationists' need for a post-*Edwards* legal strategy that they hope can withstand legal challenges. Indeed, they try to argue that *Edwards* mandates teaching ID in public schools. This is how they explain the legal landscape in their guidebook for teachers and school officials:

Happily, the law is not on the side of an enforced Darwinian orthodoxy. . . . [T]he U.S. Supreme Court ruled in *Edwards v. Aguillard* that "teaching a variety of scientific theories about the origins of humankind to school children might be validly done with the . . . secular intent of enhancing . . . science instruction." . . . [T]eachers and school boards who . . . tell students about the evidence and arguments for intelligent design . . . fulfill this Supreme Court mandate.⁸⁷

Pursuing this "mandate," ID creationists since 1996 have executed a plan entitled *The Wedge Strategy* (sketched in a memorandum informally called the *Wedge Document*), adopted at the CSC's formation.⁸⁸ ID leader Phillip Johnson calls the movement "the Wedge," reflecting its aim to wedge the supernatural into science: "Our strategy is to drive the thin edge of our Wedge into the cracks in the log of naturalism . . ."⁸⁹ Although he calls the Wedge an "intellectual movement, not a confessional movement with an official creed or statement of faith," he wants to "explain . . . the Wedge Strategy to the public—especially the Christian public," and "set out . . . how the Wedge program fits into the specific Christian gospel (as distinguished from a generic theism), and how and where questions of biblical authority enter the picture," thus exposing the strategy as not only sectarian, but explicitly Christian.⁹⁰

86. William A. Dembski, *Intelligent Design Coming Clean*, METANEXUS, Nov. 17, 2000, at <http://www.leaderu.com/offices/dembski/docs/bd-meta098.html> (last visited Mar. 17, 2004).

87. DAVID K. DEWOLF, STEPHEN C. MEYER, & MARK E. DEFORREST, INTELLIGENT DESIGN IN PUBLIC SCHOOL SCIENCE CURRICULA: A LEGAL GUIDEBOOK (1999), available at <http://www.arn.org/docs/dewolf/guidebook.htm>. The authors argue elsewhere that "the Court's decision does not apply to design theory because design theory is not based upon a religious text or doctrine." See David K. DeWolf, Stephen C. Meyer & Mark Edward DeForrest, *Teaching the Origins Controversy: Science, or Religion, or Speech?*, 2000 UTAH L. REV. 39, 93 (2000).

88. The CSC's original name was Center for the *Renewal* of Science and Culture. See *The Wedge Strategy*, at <http://www.antievolution.org/features/wedge.html> (visited Jan. 26, 2004); see also BARBARA FORREST & PAUL R. GROSS, CREATIONISM'S TROJAN HORSE 25–33 (2004) (concerning the document).

89. JOHNSON, WEDGE OF TRUTH, *supra* note 73, at 14.

90. *Id.* at 16–17.

Besides trying to sidestep *Edwards* by denying ID's true nature, proponents seek to avoid the strategic pitfalls of young-earth creationism ("YEC") by casting ID as a scientific alternative to evolution. (Most ID leaders are old-earth creationists ("OEC").) Robert Pennock notes ID's attempt to avoid its creationist forebears' failures:

[ID] theorists have learned . . . from the failures of their predecessors and have devised a more sophisticated strategy [T]hey have learned . . . what not to say. A major element of their strategy is to advance a form of creationism that not only omits any explicit mention of Genesis but is also usually vague, if not mute, about . . . specific claims . . . that readily identified young-earth creationism as a thinly disguised biblical literalism.⁹¹

The Wedge has taken these failures into account in its quest to foment—and win—a court case. But they also adopted this strategy to minimize creationist infighting and to forge an alliance with YECs in order to present a more powerful, unified front to the public and policymakers they hope to influence. The strategy was Johnson's brainchild. His CSC colleague, Nancy Pearcey, describes its explicitly religious goals:

Johnson's . . . contribution has been a keen sense of strategy. Christians trained in the sciences . . . do . . . excellent work . . . advancing standard critiques of evolutionary theory. But scientists are . . . less adept at thinking strategically and mobilizing a movement.

. . . [T]heists . . . fought each other instead of joining . . . to oppose . . . evolution. . . . They argued over the interpretation of . . . Genesis

. . . Johnson . . . launched a new strategy. Call it "unite and win." He rallied Christians behind the crucial . . . confrontation with the secular world—the issue . . . at the heart of the conflict between Christianity and secular academia.

. . . It's the question of philosophical naturalism: Is nature all there is? Can natural forces alone explain the universe . . . ? . . . In confronting secular culture, these are the right questions . . . Christians may argue about . . . how God created . . . but they all agree that the universe is the handiwork of a personal God.⁹²

91. See ROBERT T. PENNOCK, *TOWER OF BABEL* 227 (1999).

92. Nancy Pearcey, *Foreword* to PHILLIP E. JOHNSON, *THE RIGHT QUESTIONS* 8–9 (2002).

Given such statements by ID advocates, and despite their denials, two questions must be answered in any legal discussion of “intelligent design theory”: (1) Is ID a religious belief? and (2) Is it creationism? Despite the guidebook’s assertions of ID’s secular purpose, ample evidence—especially its rejection of naturalism—shows that ID is religious (indeed, biblically based): supernaturalism forms its structural foundation. It is also *anti*-secular, with no interest in enhancing public school science instruction. Its major tenets reveal that ID is not science, but the most recent version of traditional creationism.

A. *Intelligent Design as Religion*

1. *ID’s Religious Roots*

The idea that natural entities are intelligently designed is not new. It is central to William Paley’s famous “watchmaker” argument for God’s existence in *Natural Theology* (1802) and to traditional creationism.⁹³ Since Thomas Aquinas’s cooption of Aristotle’s non-religious design argument to advance medieval Christianity’s theological mission, Western design arguments have invariably been theistic, used to advance religious aims. Continuing this tradition, ID reflects its founders’ religious callings and doctrinal loyalties. In 1996, Stephen C. Meyer became co-director (with John G. West, Jr.) of the Center for the Renewal of Science and Culture (“CRSC”), shortened to “Center for Science and Culture” (“CSC”) in 2002. William Dembski, Paul Nelson, Jonathan Wells, and Michael Behe were CRSC’s first fellows, with Phillip Johnson as advisor.⁹⁴ Dembski, Meyer, Behe, and Wells became anti-evolutionists independently but were brought together in the early 1990s by Johnson, the catalyst for the Wedge’s formation.⁹⁵

By his own account, Johnson’s divorce and ensuing personal difficulties led to his religious conversion, from which his anti-evolutionism stems and which he says “aroused . . . [my] interest in . . . why the intellectual world is so dominated by naturalistic and agnostic thinking.”⁹⁶ Meyer entered the

93. WILLIAM PALEY, *NATURAL THEOLOGY; OR, EVIDENCES OF THE EXISTENCE AND ATTRIBUTES OF THE DIETY* (1809), available at <http://www.hti.umich.edu/cgi/p/pd-modeng/pd-modeng-idx?type=header&id=PaleyNatur> (last visited Aug. 2, 2005); see also *SCIENTIFIC CREATIONISM* (Henry Morris ed., Public School Edition 1974).

94. Discovery Institute, *1996–1997 Research Fellows at the Center for the Renewal of Science and Culture*, at <http://www.discovery.org/w3/discovery.org/crsc/crsc96fellows.html> (last visited June 6, 2000) (on file with Barbara Forrest).

95. See Lynn Vincent, *Science vs. World*, *WORLD*, Feb. 26, 2000.

96. Stephen Goode, *Johnson Challenges Advocates of Evolution*, *INSIGHT ON THE NEWS*, Oct. 25, 1999, at 36, 39.

“origins” debate precisely *because* it is theistic, recollecting a conference he attended “that brought together top philosophers, cosmologists and origin-of-life biologists to debate the religious implications of contemporary scientific findings.” He recalls, “I remember being especially fascinated with the origins debate It impressed me to see that scientists who had always accepted the standard evolutionary story were now defending a theistic belief. . . . I was really taken with this.”⁹⁷ Dembski traces his ID commitment to his college days, when he offered his Christian witness to two seminary students. Their mainstream seminary had supposedly destroyed their faith by teaching that the Bible was not divinely inspired and was incompatible with evolution (thus undermining biblical veracity). Dembski calls this experience the “driving force behind what I’ve been doing all these years.”⁹⁸ Wells’s anti-evolutionism stems from the influence of his spiritual mentor, the Rev. Sun Myung Moon.⁹⁹

Nelson, grandson of well-known YEC Byron C. Nelson, adopted his grandfather’s YEC views. His mostly OEC Wedge colleagues know this, but they minimize differences over Earth’s age in order to build a “big tent,” a YEC-OEC coalition in which ID proponents and YECs defer such disputes to advance their common goal of cultural and legal acceptance of creationism in public schools.¹⁰⁰ Nelson served on a subcommittee of the American Scientific Affiliation’s Commission on Creation, which wrote a *General Statement on Creation* outlining divergent views within the evangelical ASA, “a fellowship of men and women of science and disciplines that relate to science who share a common fidelity to the Word of God and a commitment to integrity in the practice of science.”¹⁰¹ His YEC views are thus included in the statement he helped draft. He believes that “[a]ll basic types of organisms, including human beings,” beginning with Adam and Eve, “were directly created by God” as in Genesis and that Noah’s flood was “an historical event.”¹⁰² Nelson’s creationism is clearly biblical, not scientific.

97. *By Design: A Whitworth Professor Takes a Controversial Stand to Show That Life Was No Accident*, WHITWORTH TODAY, Winter 1995, available at http://www.arn.org/docs/meyer/sm_bydesign.htm.

98. FORREST & GROSS, *supra* note 88, at 293, chs. 1 & 9.

99. See Wells, *supra* note 79.

100. See Nancy Pearcey, *The Evolution Backlash*, WORLD, Mar. 1, 1997, reprinted as *Opening the “Big Tent” in Science*, in ACCESS RES. NETWORK, at http://www.arn.org/docs/pearcey/np_bigtent30197.htm (last visited Jan. 26, 2004); see also PENNOCK, *supra* note 91, at 29 (concerning Byron C. Nelson); Dembski, *supra* note 86 (noting Nelson’s YEC views).

101. *Information About the American Scientific Affiliation*, at <http://www.asa3.org/ASA/aboutASA.html> (last visited Jan. 26, 2004).

102. See American Scientific Affiliation Commission on Creation, *General Statement on Creation*, Aug. 2000, at http://www.asa3.org/ASA/topics/Evolution/commission_on_creation.html (last visited Jan. 26, 2004). The statement includes theistic evolution, the view that God used evolution

Behe says his views resulted from a scientific assessment of evolution: “My religious beliefs haven’t influenced my scientific work. I . . . learned Darwin’s theory in parochial school. We were taught that it was God’s way of making life through natural laws. . . . It was only when I learned of scientific problems with . . . evolution that I became skeptical of it.”¹⁰³ Yet Behe, the only ID leader who is a working scientist (a biochemist, not an evolutionary biologist), considers the chief question for science to be *religious*: “[R]eligion has made room for science for a long time. But as biology uncovers startling complexity in life, the question becomes, can science make room for religion?”¹⁰⁴ His question betrays his belief that science must incorporate theism to achieve full explanatory adequacy (which helps explain his failure so far to publish original scientific data supporting his concept of “irreducible complexity,” a fundamental ID tenet). Moreover, in *Darwin’s Black Box*, a seminal ID book, although Behe declares that “the separateness of the spheres of science versus philosophy and religion is as it should be,” he then nullifies his statement by rejecting the restriction of science to naturalistic methodology and explanations: “The philosophical argument . . . that science should avoid theories which smack of the supernatural is an artificial restriction on science.”¹⁰⁵ Elsewhere, when Behe, a Catholic, attacks claims by “prominent scientists” (e.g., Richard Dawkins) that “science sees no purpose in living things because there is no purpose, and therefore there is no God,” he quotes Cardinal Joseph Ratzinger (as he often does for religious audiences): “[T]he great projects of the living creation are not the products of chance and error [They] . . . show us a creating Intelligence”¹⁰⁶ Though he denies ID’s religious agenda, Behe, according to Amanda Onion, holds that its explanation of “how the world got here” is mystical (yet he considers that irrelevant).¹⁰⁷

to create biological organisms. Adherents see no conflict between evolution and religion since they are not biblical literalists. *See also* Nelson & Reynolds, *supra* note 71 (“We hold the view of *recent* or . . . *young-earth* creation.”).

103. Pamela R. Winnick, *Scientist Gives Darwin’s Theory a Nudge*, PITT. POST-GAZETTE, Feb. 8, 2001, at C1.

104. Michael J. Behe, *Darwin Under the Microscope*, N.Y. TIMES, Oct. 29, 1996, at A25.

105. *See* BEHE, *supra* note 72, at 250–51; *see also* FORREST & GROSS, *supra* note 88, at 66–72 (concerning Behe’s failure to publish ID data).

106. *See* Michael J. Behe, *Darwin’s Breakdown*, TOUCHSTONE, July/Aug. 1999, at 40 (quoting CARDINAL JOSEPH RATZINGER, “IN THE BEGINNING . . .”: A CATHOLIC UNDERSTANDING OF THE STORY OF THE CREATION AND THE FALL 54–56 (1986)). Ratzinger’s capitalization of “Intelligence” is a Christian tradition when referring to God. Johnson does it, too: “[T]he Creator is real.” PHILLIP E. JOHNSON, REASON IN THE BALANCE 49 (1995). Such stylistic practice is another mark of ID’s religious essence.

107. *See* Amanda Onion, *New Evolution Battle Underway in Ohio*, ABC NEWS, Apr. 1, 2002, at <http://abcnews.go.com/Technology/print?id=98041> (last visited Feb. 9, 2005).

Since virtually all of the Wedge founders' anti-evolutionism stems from personal religious views, since they have yet to produce empirical ID data or even a research program, and since their basic appeal is to an intelligent designer, the conclusion that ID is fundamentally religious in terms of its historical background is not only justified but unavoidable. Moreover, the Wedge's development since its inception as a formal program confirms religion's integral role in its agenda. In 1998, Dembski, tracing the movement's development, objected to "Darwinism's" exclusion of God: "Darwinism rules out . . . God or any guiding intelligence . . . in life's origin and development."¹⁰⁸ In 2001, Johnson also referred to ID's religious foundation:

We founded . . . the Intelligent Design movement . . . to . . . explain the evidence which . . . point[s] towards . . . a Creator, . . . [and] to . . . unify the religious world. . . . [T]here should be a central issue [D]o you need a Creator to do the creating, or don't you? . . . [T]he evidence of science is viewed through the . . . prejudice that natural causes can do . . . the whole job [S]o we thought . . . religious people ought to challenge that. The people of God ought to be unwilling to accept that . . . dogmatic decision.¹⁰⁹

Nancy Pearcey explains the Wedge's religious framework under Johnson's leadership. She nullifies the disclaimer in her first statement by then revealing ID's religious goals and the Wedge's integral connection to Johnson's personal religious life:

[D]esign theory . . . does not start by asking what the Bible teaches; it starts by asking what can be known by scientific means: Can the . . . marks of design be detected empirically? And thus it reconnects Christian theology to the empirical world and restores its . . . claim to cognitive knowledge

. . . .

As the Intelligent Design Movement challenges naturalism in science, it will challenge naturalism in theology and other fields . . . restor[ing] religion and morality to the status of genuine knowledge

108. See William A. Dembski, *The Intelligent Design Movement*, COSMIC PURSUIT, Spring 1998, available at http://www.arn.org/docs/dembski/wd_idmovement.htm (last visited Apr. 15, 2004).

109. Phillip E. Johnson, *The State of the Wedge*, Address at the Darwin, Design, and Democracy II Symposium (June 29, 2001) (transcript available from authors).

Johnson has charted this new course because he is sitting in the supernaturalist's chair

. . . .

Johnson's decision to sit in the supernaturalist's chair in both the content and method of his ministry . . . stems from spiritual humility and brokenness. Here we touch on the heart of who Phil Johnson is as a person.¹¹⁰

"Spiritual humility and brokenness" refer to Johnson's 2001 stroke, which threatened his leadership of the Wedge and resulted in his transferring duties to younger colleagues. Speaking of his recovery, Johnson considers the Wedge his religious calling and compares himself to Job, who, tested by God, renews his commitment to his Creator:

"Why did this . . . happen to *me just now*?" . . . God was answering that question even as I was asking it.

. . . [I]t seemed fitting that Satan might point to me as . . . to Job and say to God, "Of course that Phillip Johnson gives . . . thanks to you After one marriage failed, God gave him another . . . just as God gave Job . . . another family. Then in middle age he was blessed with an insight, and . . . a new vocation that . . . employs his gifts for a campaign that gives meaning to his life."

. . . .

. . . I had been wondering how I could get back to where I had been . . . before . . . the stroke, . . . fit to direct the Wedge in the decisive moment of our struggle I had reason to think that the . . . breakthrough had . . . already been made [E]volutionary science would be split open . . . because so many people knew . . . the fatal flaw in the Darwinian logic If intelligent Christians followed up on what the Wedge . . . had . . . accomplished, then Darwinism would strangle in its own . . . illogic. If educated Christians continued to

110. Pearcey, *supra* note 92, at 15, 19–20, 22–23. Contra Pearcey, ID does start with biblical teaching. Rejecting natural selection's power to create life, Johnson tells where he found ID's biblical starting point:

I looked for the best place to start . . . and I found it in the . . . Gospel of John . . . [T]he Gospel's . . . explanation of . . . creation . . . is far better supported by scientific investigation than the contrary. . . . [A]ll I . . . want to do with the scientific evidence is to clear away the obstacle . . . it presents to a belief that the creator is the God of the Bible.

John Perry, *Courtly Combatant*, WORLD, Dec. 13, 2003, available at <http://www.worldmag.com/displayarticle.cfm?id=8356> (last visited Feb. 9, 2005).

accept . . . the understanding that naturalism and “science” . . . are . . . the same, then nothing human could save such a cowardly faith.¹¹¹

For Johnson, evolution will die if committed Christians promote ID. However, if Christians accept modern science, Christianity itself will die.

2. *ID's Religious Essence*

Defining religion is troublesome, for both legal and philosophical purposes. Philosopher of religion and theologian John Hick points out that “The nature of religion is a . . . complex subject that can be approached from a bewildering variety of viewpoints. Religion is one thing to the anthropologist, another to the sociologist, . . . and yet another to the Jew or the Christian. . . . There is . . . no universally accepted definition . . . and . . . possibly . . . never will be.”¹¹²

However, traditional theism has unmistakable characteristics:

Theism . . . perceives . . . physical things, organisms, persons . . . as dependent for their being and continuance on one self-existent God Theists . . . close ranks against deists, who . . . exclude revelation and divine intervention in world order, and against pantheists, who identify God with these orders. Theists hold that God, transcendent creator of the orders, remains an indivisible unity as he sustains them in accordance with their capacities and his ultimate purposes.¹¹³

Theism signifies belief in one God . . . who is (a) personal, (b) worthy of adoration, and (c) separate from the world but (d) continuously active in it.¹¹⁴

Whether some beliefs qualify as religion may be uncertain, but belief in a transcendent, i.e., supernatural, deity who intervenes in nature certainly

111. PHILLIP JOHNSON, *THE RIGHT QUESTIONS* 95–97 (2002). Johnson’s mid-life “insight” is that “theistic science” must replace naturalistic science because naturalism threatens religion:

Why do people get this idea that naturalism is the only way to proceed? They think that it’s been validated by science. At the . . . heart of that scientific validation is the . . . story of our creation. . . . If it were only science . . . at stake, nobody would care about it so much, including the scientists. . . . They think they are going to get rid of religion

Tim Stafford, *The Making of a Revolution*, *CHRISTIANITY TODAY*, Dec. 8, 1997, at 16, 20. His “new vocation” is anti-evolutionism: “Once Johnson had sunk his teeth into evolutionary theory, it dominated his thoughts, his work, his conversation.” *Id.* at 18.

112. JOHN HICK, *PHILOSOPHY OF RELIGION* 3 (1973) (1963).

113. Peter A. Bertocci, *Theism*, in 14 *ENCYCLOPEDIA OF RELIGION* 421, 421 (Mircea Eliade ed., 1987).

114. H. P. Owen, *Theism*, in 8 *ENCYCLOPEDIA OF PHILOSOPHY* 97, 97 (Paul Edwards ed., 1967).

qualifies. Even without a firm consensus on how to define religion, ID unquestionably fits within the boundaries of traditional theism: as our analysis shows, ID is belief in the creative, purposeful activity of a supernatural deity.

Wedge leaders, explaining ID to their followers (thus revealing how they intend it to be understood), have captured every major part of the definition of theism. Johnson defines “creationist” as one who believes in “a supernatural Creator” who created the world and “controls it in furtherance of a purpose.” This reflects his designation of “‘theistic realism’—or ‘mere creation’” as ID’s “defining concept.”¹¹⁵ In a book he wrote to advance the Wedge Strategy, he rejects deism in favor of traditional theism, integrating ID with the latter: “The important question is not whether God ‘exists’; it is whether God cares about us, and whether we need to care about God’s purposes. Deism answers no to these questions.” For Johnson, exchanging “the Creator God of the Bible for the lifeless First Cause of deism” is like “trading . . . gold for counterfeit money.”¹¹⁶ Stephen Meyer, arguing that a four-dimensional universe can be accounted for only by a transcendent entity, considers God a better explanation for the Big Bang than naturalism: “In so far as God, as conceived by Judeo-Christian theists, possesses . . . such transcendent causal powers, theism provides a better explanation than naturalism for . . . Big Bang cosmology.”¹¹⁷ Meyer uses the same reasoning to reject pantheism.

In *Intelligent Design: The Bridge Between Science and Theology*, in which he explains ID to his lay audience, Dembski amply shows that ID instantiates the definition of theism. God is personal: “God’s lovingkindness, steadfastness and tender mercy, all find their guarantee in God’s role as Creator. . . . All instances of fatherhood reflect the fatherhood of God.”¹¹⁸ Only God is worthy of adoration:

Naturalism leads irresistibly to idolatry

[I]t sets the creation above the Creator and . . . transforms creation into nature

115. See JOHNSON, DARWIN ON TRIAL, *supra* note 73, at 4 n.1 (for Johnson’s definition of *creationist*); see also Phillip E. Johnson, *Starting a Conversation About Evolution*, Aug. 31, 1996, available at <http://www.arn.org/docs/johnson/ratzsch.htm> (last visited Apr. 14, 2004) (book review) (concerning ID as theistic realism). Johnson’s definition of ID as theistic realism also stipulates that “the reality of God is tangibly recorded in evidence accessible to science, particularly in biology.” *Id.*

116. See JOHNSON, DEFEATING DARWINISM, *supra* note 73, at 17.

117. Stephen C. Meyer, *The Return of the God Hypothesis*, 11 J. INTERDISC. STUD. NO. 1/2, 1999, at 25, quoted in Robert T. Pennock, *DNA by Design? Stephen Meyer and the Return of the God Hypothesis*, in *DEBATING DESIGN: DARWIN TO DNA* (William Dembski & Michael Ruse eds., 2004).

118. WILLIAM A. DEMBSKI, INTELLIGENT DESIGN: THE BRIDGE BETWEEN SCIENCE AND THEOLOGY 102, 231 (1999).

Naturalism . . . pervades our cultural atmosphere. . . . We see it, alas, whenever we forget God and worship the creature more than the Creator.

. . . No longer do we live in a naturalistic world devoid of transcendence. Rather the world . . . becomes a sacrament, radiating God's glory. . . . [O]ur language becomes capable of celebrating that glory by speaking truly about what God has wrought¹¹⁹

God is separate from the world, but continuously intervenes:

. . . Either the world derives its order from . . . outside . . . (à la creation) or it possesses . . . order . . . intrinsically. . . . So long as the order is coming from outside, we are dealing with a . . . creation

. . . Not only has God created the world, but God upholds the world moment by moment. . . .

[T]here is no question that God interacts with the world.¹²⁰

Finally, of "Hindu pantheism," Dembski says that "cosmic law" is "embedded in nature" and "supplants divine creation"; therefore, "[t]here can be no transcendent God within such a framework." And he rejects deism unequivocally: "Theists are not deists. God is not an absentee landlord."¹²¹

Incredibly, Dembski asserts in the appendix that "[i]ntelligent design nowhere attempts to identify the intelligent cause responsible for the design in nature" and that "[i]ntelligent design is a strictly scientific theory devoid of religious commitments."¹²² But if this were true, he would not have devoted virtually the entire book to explaining the essentiality of theism to ID. The appendix, exemplifying his well-known (and calculated) inconsistency, is easily explained: Dembski is trying to deny the most damaging criticisms of ID, especially the charge that it is "scientific creationism."

Thus, the ID movement has relieved its critics of the need to define religion in order to classify ID as a religious belief; its leaders' statements reveal its religious essence at every turn.¹²³ Johnson asserts that "he and most others in the intelligent design movement believe the designer is the God of the Bible."¹²⁴ Dembski laments the putative obstacle evolution poses to

119. *Id.* at 101–03, 231.

120. *Id.* at 99, 104.

121. *Id.* at 100–01, 104.

122. *Id.* at 247, 252.

123. See FORREST & GROSS, *supra* note 88, ch.9.

124. Steve Maynard, *Life's Intelligent Design*, TACOMA NEWS-TRIBUNE, May 7, 2001, available at <http://www.arn.org/docs/news/lifesintelligentdesign050701.htm> (last visited Apr. 13, 2004).

potential Christians: “[I]f . . . anything . . . has blocked the growth of Christ . . . and people accepting the Scripture and Jesus Christ, it is the Darwinian naturalistic view.”¹²⁵ Since there is no ID *science*, ID’s corpus consists only of its advocates’ non-scientific publications and pronouncements. Since Johnson is the Wedge’s founder and chief promoter and Dembski its chief intellectual and apologist, their words (and those of other ID leaders) are legitimately viewed as affirmations of ID’s substance.

Supernaturalist religion’s foundational importance to ID is clear not only in Wedge leaders’ statements but in the organization’s rationale. An early CRSC website announced that “new developments in biology, physics, and cognitive science . . . have re-opened the case for the supernatural.”¹²⁶ The site’s signature banner was the overtly religious image of Michelangelo’s God creating Adam. As the Wedge has taken a higher public profile, the banner was gradually changed to present the CRSC as a secular, scientific organization—from God creating Adam (1996–1999), to God creating DNA (1999–2001), to a Hubble photo of the MyCn 18 Hourglass Nebula (2001–2002), to the photo of the Hourglass Nebula but with “renewal” dropped from the center’s name (2002–2004), to the current banner showing Leonardo da Vinci’s *Vitruvian Man* beneath a DNA helix.¹²⁷

The Wedge Strategy specifies the Wedge’s aim to replace naturalistic science with “a broadly theistic understanding of nature,” i.e., “theistic science.”¹²⁸ Though Dembski denies that ID is theistic science, he uses theistic language for his popular audience, explicitly identifying the designer as God, belying his claim that ID does not do this:

Theism (whether Christian, Jewish, or Muslim) holds that God . . . created the world. The origin of the world . . . thus result[s] *from the designing activity of an intelligent agent—God*. Naturalism . . . allows no place for intelligent agency except at the end of a blind, purposeless, material process. Within naturalism, . . . humans . . . are . . . certainly not creatures made in the image of a benevolent God.¹²⁹

125. Steve Benen, *The Discovery Institute: Genesis of “Intelligent Design”*, CHURCH & ST., May 2002, at 11.

126. Discovery Institute, *What Is the Center for the Renewal of Science & Culture All About?*, at <http://www.discovery.org/w3/discovery.org/crsc/aboutcrsc.html> (visited Mar. 18, 2000) (on file with Barbara Forrest).

127. See Glenn Branch, *Evolving Banners at the Discovery Institute*, REP. OF THE NAT’L CENTER FOR SCI. EDUC., Sept.–Oct. 2002, at 12. The CSC says the old name “was simply too long and we got tired of saying it.” Mark Edwards, *The Center’s Name Change*, at <http://www.crsc.org/TopQuestions/nameChange.html> (last visited Jan. 27, 2004).

128. See *The Wedge Strategy*, *supra* note 88.

129. DEMBSKI, *supra* note 85, at 22 (emphasis added). For Dembski’s disavowal of theistic science, see Donald Yerxa, *Questioning Darwin*, RES. NEWS & OPPORTUNITIES IN SCI. & THEOLOGY

Even a brief perusal of *Intelligent Design* confirms that Dembski proposes what can only be called theistic science. In fact, he believes naturalistic science is idolatry:

There is something profoundly unsettling about conceiving of the world as nature The scientist . . . ignores . . . God and looks at the world in and for itself

. . . For the scientist, God is [an unnecessary] hypothesis As long as scientists are . . . getting results, why compel them to bring God into the picture?

But . . . [t]he problem with conceiving of the world as nature is . . . this: For nature to be an object of inquiry for the scientist, nature must have an order This is the mystery confronting the scientist. Why is the world ordered and whence cometh this order?

There are but two options So long as the order is coming from outside, we are dealing with a . . . creation [I]f the order belongs to the world intrinsically, we are dealing with nature

. . . [S]evering . . . the world from God is . . . idolatry¹³⁰

For Dembski, scientific explanations *must* incorporate God. The alternative, idolatry, is a *religious* offense, a violation of the first commandment. Ironically, while denying that ID is “creation science,” (which is theistic, thus unconstitutional, if taught as public school science), he insists passionately that ID’s creator is the Bible’s patriarchal God who creates by verbal fiat:

God speaks the *divine Logos* to create the world¹³¹

. . . Certain feminist theologians . . . object to referring to God as father. . . . “Father,” we are told, is a metaphor co-opted from human

(Templeton Found.), Nov. 2001: “I am not at all sympathetic to [theistic science] because intelligent design is not dealing with a doctrine of creation.” But Dembski’s CSC colleague Robert Koons uses “theistic science” and “intelligent design theory” interchangeably: “If theistic science or intelligent design theory is to become a progressive research program, it must do more than poke holes in the evidence for Darwinism” Robert Koons, *Making Progress in the Origins Debate: A Summary of NTSE, THE REAL ISSUE*, Mar.–Apr. 1997, at <http://www.leaderu.com/real/ri9701/koons2.html> (last visited Jan. 26, 2004); see also J.P. Moreland, *Theistic Science and Methodological Naturalism*, in *THE CREATION HYPOTHESIS* 41 (J.P. Moreland ed., 1994).

130. DEMBSKI, *supra* note 118, at 98–99.

131. Recall *Genesis* 1:1-6 (King James): “And God said, Let there be light: and there was light And God said, let there be a firmament in the midst of the waters”

experience and pressed into theological service. No, *No*, *NO!* This view of theological language . . . destroys the Christian faith.

The concept father is not an anthropomorphism, nor is referring to God as father metaphorical. All instances of fatherhood reflect the fatherhood of God.¹³²

Though couched in the idiom of “design theory,” he leaves no doubt of ID’s inseparability from doctrinal commitment:

The crucial breakthrough of the . . . [ID] movement has been to show that this great theological truth—that God acts in the world by dispersing information—also has scientific content. . . .

Predictive prophecies in Scripture are instances of specified complexity and signal information inputted by God as part of his sovereign activity within creation.¹³³

Dembski thus posits scriptural prophecies as examples of specified complexity, his ID specialty, but has not demonstrated how the latter can be detected in a biological system, though he claims to have done so: “This [complexity-specification] criterion is relevant to biology. When applied to the complex, information-rich structures of biology, it detects design.”¹³⁴ Nor has he responded to requests for data confirming his claim.¹³⁵ His failure

132. DEMBSKI, *supra* note 118, at 230–31. Dembski will object that, as a theist, he identifies the designer as God, whereas ID as science does not identify the designer. This argument is insufficient to overcome the courts’ insistence that any reference to a transcendent intelligence is religious for purposes of the Establishment Clause. See *infra* notes 392–593 and accompanying text.

133. DEMBSKI, *supra* note 118, at 233. “Specified complexity” (also called “complex specified information” or CSI) is Dembski’s contribution to the ID opus. See *also id.* at 153–83 (concerning specified complexity).

134. *Id.* at 149.

135. Zoologist Wesley Elsberry asked for such data in an Oct. 1, 2000, e-mail; Dembski never responded. See Posting of Wesley R. Elsberry, to evolution@calvin.edu (Oct. 1, 2000), available at http://www.antievolution.org/people/dembski_wa/corr_wre_cs_bio.txt (visited Jan. 22, 2004) (showing the request). In 2001 Elsberry requested it again; Dembski deferred until publication of his book *No Free Lunch*.

NFL has precisely one attempted application to a biological system, . . . the *E. coli* flagellum. It is . . . incomplete . . . (see . . . Elsberry and Shallit . . .). So there was no direct response, and the indirect fulfillment had definite problems. Further, there is no evidence that *any* work of the sort which Dembski implied had been done when he made his claim had actually been accomplished. I know of no other attempted application of Dembski’s EF/DI [Explanatory Filter/Design Inference] to a biological system.

E-mail from Wesley R. Elsberry to Barbara Forrest (Jan. 19, 2004) (on file with Barbara Forrest); see also WILLIAM A. DEMBSKI, *NO FREE LUNCH* (2002); Wesley Elsberry & Jeffrey Shallit, *Information Theory, Evolutionary Computation, and Dembski’s “Complex Specified Information,”* Nov. 16, 2003, at <http://www.talkreason.org/articles/eandsdembski.pdf> (last visited Mar. 4, 2004). Physicist Howard Van Till also judges Dembski’s attempt in *No Free Lunch* a failure. See Howard J. Van Till, *E. Coli at the No Free Lunchroom*, *DIALOGUE ON SCI., ETHICS & RELIGION* (Am. Ass’n for the Advancement of

reveals the hollowness of his claim that ID is robust science rather than religion.

Dembski's statements force his Wedge colleague Francis Beckwith to employ verbal sleight-of-hand to sidestep the question of whether ID is a religious belief: "ID is not *a conventional religion* and thus is not a paradigm case of a religion. Rather, it is a point of view based on philosophical and empirical arguments."¹³⁶ But Beckwith has built a straw man. If by "conventional" he means "institutional," then ID need not be an institutional religion in order to qualify as a religious *belief*. Nor need it be *a religion*. ID is not *a religion* in the same sense that belief in the resurrection is not *a religion* but a foundational element of one. ID's commitment to a supernatural creator is something more important—it is the *essential* component of three major institutional religions: Christianity, Judaism, and Islam—a fact made explicit by Dembski himself.¹³⁷

3. *Intelligent Design's Religious Structure and Content*

Evidence of ID's religious essence lies not merely in its visual symbols (as on CRSC's early website) and proponents' religious confessions, but also in its conceptual structure and substantive content. In fact, ID presupposes religion (specifically Christianity). This presupposition is clear in Meyer's 1986 article, *Scientific Tenets of Faith*. Reflecting on creationists' losses in early stages of *Edwards*, he asserts that the courtroom proceedings exposed a "philosophical naiveté" about science's need for its own "tenets of faith."¹³⁸ Discussing the "methodological and presuppositional roots of science," he rejects the "context of philosophic naturalism and positivism that ignores the entire conceptual framework necessary to modern science" and contends that this framework must be religious.¹³⁹ Arguing that scientists must decide what constitutes data by referring to "a whole network of foundational beliefs" that include their own "concepts and intuitions," he calls those beliefs a "gridwork" structuring the scientist's observations.¹⁴⁰ Thus, arguing that "Such creative mental contributions must be presupposed to correlate

Sci.), July 22, 2002, at <http://www.aaas.org/spp/dser/evolution/perspectives/vantillecoli.pdf> (last visited Jan. 22, 2004).

136. Francis J. Beckwith, *Public Education, Religious Establishment, and the Challenge of Intelligent Design*, 17 NOTRE DAME J. L. ETHICS & PUB. POL'Y 461, 488 (2003) (emphasis added) (concerning whether ID is a religion).

137. See *supra* note 129 and accompanying text.

138. Stephen C. Meyer, *Scientific Tenets of Faith*, 38 PERS. ON SCI. & CHRISTIAN FAITH 40, 40 (1986).

139. *Id.* at 40.

140. *Id.* at 42.

meaningfully to the world outside the observer,” he rationalizes his contention that the Bible undergirds scientific truth:

Given the . . . difficulty human philosophic systems have faced in accounting for truth as autonomous from revelation, scientists and philosophers might be most receptive to systems of thought that find their roots in Biblical theology.

The Judeo-Christian scriptures have much to say about the ultimate source of human reason, the existence of a real and uniformly ordered universe, and the ability present in a creative and ordered human intellect to know that universe. Both the Old and New Testaments define these relationships such that the presuppositional base necessary to modern science is not only explicable but [also] meaningful . . . [A]ll of us would do well to reflect on the scriptural axiom that “in Him all things hold together,” and . . . on the serious consequences to . . . culture[s] that divorce spiritual thought not only from moral considerations but scientific ones as well.¹⁴¹

Meyer’s sectarian religious presuppositions are the basis for the Wedge’s later definition of ID.¹⁴²

Thus framed by Meyer, Johnson’s and Dembski’s early definitions of ID betray its religious grounding. In 1996, the CRSC’s religious identity had to be established quickly and publicly to attract financing and to build “a popular base of support among our natural constituency, namely, Christians” as a source of political momentum.¹⁴³ Johnson then defined ID as dependent on God’s existence: “My colleagues and I speak of ‘theistic realism’—or . . . ‘mere creation’—as the *defining concept of our movement. This means that we affirm that God is objectively real as Creator, and that the reality of God is tangibly recorded in evidence accessible to science, particularly in biology.*”¹⁴⁴ In 1999, Dembski rooted ID specifically in the New Testament, incorporating an explicit *Christian* sectarianism: “Intelligent design . . . embraces the sacramental nature of physical reality. Indeed, intelligent design is just the Logos theology of John’s Gospel restated in the idiom of information theory.”¹⁴⁵ Inside ID’s “big tent,” the Wedge seeks to avoid

141. *Id.* at 42.

142. See Pennock, *supra* note 117 (discussing Meyer’s presuppositions in *DNA by Design?*).

143. See *The Wedge Strategy*, *supra* note 88 (concerning ID’s Christian base); see also FORREST & GROSS, *supra* note 88, chs.6 & 9 (concerning ID’s financial benefactors).

144. Johnson, *Starting a Conversation About Evolution*, *supra* note 115 (emphasis added); see also JOHNSON, *supra* note 106, at 48–50.

145. William A. Dembski, *Signs of Intelligence*, TOUCHSTONE, Jul./Aug. 1999, at 76, 84. “Information theory” refers to ways of measuring the information content of strings of symbols. Claude E. Shannon introduced a measure based on the probabilities of symbols transmitted over a

conflict by de-emphasizing Genesis in favor of the minimalist creation account in *John* 1:1: “In the beginning was the Word, and the Word was with God, and the Word was God All things were made by him; and without him was not anything made that was made.”¹⁴⁶ This is what Johnson means by “mere creation”: God created the world, and *how* he did it is secondary in importance to reconstructing science (more accurately, public understanding of it) to accommodate this truth.¹⁴⁷

Dembski candidly revealed ID’s supernatural, theistic essence—and the designer’s identity—in 1992, long before his 2000 assurance that “[d]esign has no prior commitment to supernaturalism” and his 2002 avowal that “the designer need not be a deity” but “could be an extraterrestrial or a telic [purposeful] process inherent in the universe.”¹⁴⁸ He offered this revelation in *The Incompleteness of Scientific Naturalism*, four years before the CRSC’s

communication channel, and Kolmogorov and others proposed a measure based on minimum program/input pair lengths needed to encode a string (algorithmic information theory). While Dembski refers to each of these methods in his arguments, his proposed information measure, “complex specified information,” demonstrates none of the elegance and rigor of either Shannon information or algorithmic information theory. He argues that natural selection’s ability to generate “complex specified information” is strictly bounded, but his arguments are deeply flawed and lack force. See DEMBSKI, *supra* note 118, at 153–83 (concerning ID as information theory); see also DEMBSKI, *supra* note 135, at 141, 144, 153, 159. *But see* VICTOR STENGER, HAS SCIENCE FOUND GOD?, at ch. 4 (2003); Elsberry & Shallit, *supra* note 135 (concerning Dembski’s misuse of information theory). For a lucid explanation of information theory, see Richard Dawkins, *The “Information Challenge”*, 7 SKEPTIC No. 2, at 64, 64–69 (1999).

146. *John* 1:1, 4 (King James).

147. See Dembski, *supra* note 84, at 13.

148. See Fred Heeren, *The Lynching of Bill Dembski*, AM. SPECTATOR, Nov. 2000, at 44, 51; see also William A. Dembski, *Commentary on Eugenie Scott and Glenn Branch’s “Guest Viewpoint: ‘Intelligent Design’ Not Accepted by Most Scientists”*, 7/2/02, at http://www.designinference.com/documents/2002.07.Scott_and_Branch.htm (last visited Mar. 6, 2004). Dembski’s audiences for these denials should be noted. The *Spectator* audience was conservatives who would sympathize with ID supporter Heeren’s casting Dembski as a young Baylor University researcher being harassed by Baylor’s establishment. He was trying to rehabilitate Dembski’s reputation after Dembski was relieved of his directorship of the Polanyi Center, an ID think tank he established there. See FORREST & GROSS, *supra* note 88, at 207–10, 307 (concerning the Polanyi Center). Heeren cast Dembski as a martyr to academic freedom, “a mild-mannered mathematician more at home with probability theory than with politics,” persecuted for “set[ting] about developing mathematical methods for detecting intelligent design . . . in nature. That’s all.” Heeren, *supra* note 148. The audience in his response to Scott and Branch is school boards, whom Scott and Branch warn about lawsuits against schools teaching ID: “ID proponents may argue that a neutral-sounding ‘intelligence’ is responsible for design, but it is clear from the ‘cultural renewal’ aspect of ID that a deity—in particular, God as He is conceived of by certain conservative Christians—is envisioned as the agent of design.” Eugenie C. Scott and Glenn Branch, *Guest Viewpoint: “Intelligent Design” Not Accepted by Most Scientists*, SCH. BOARD NEWS (Nat’l Sch. Boards Ass’n), Jul. 2, 2002, at http://www.nsba.org/site/doc_sbn.asp?TrackID=&SID=1&DID=8127&CID=310&VID=58 (last visited Mar. 6, 2004). Since the Scott-Branch article was aimed at school boards, we may assume Dembski wrote his response also for that audience, which includes ID supporters.

establishment.¹⁴⁹ His topic sets the context for his argument that “it is legitimate within scientific discourse to entertain questions about supernatural design” and that “a complete understanding of the world . . . apart from God” is only a “pretension.”¹⁵⁰

[I]s there anything that has, could, or might happen in the world from which . . . to conclude that God had acted? Are there . . . any facts in the world for which an appeal to God is the best explanation?

. . . What are the conditions for . . . discovering design (i.e., *supernatural intervention*, nonmaterial interference, divine meddling . . .) in the actual world?¹⁵¹

Dembski sets up a “thought experiment” he calls “[t]he incredible talking pulsar” to correct the misconception that the world “cannot even in principle produce events that would evidence design.”¹⁵² The pulsar communicates with humans in Morse code, calling itself “the mouthpiece of Yahweh, the God of both the Old and the New Testaments, the creator of the universe.”¹⁵³ It conveys God’s instructions for curing AIDS, solving intractable mathematical problems, etc. Dembski contends that natural science would be unable to explain the source of the messages because they outreach nature’s empirical resources and thus the explanatory reach of science, forcing one to look to the supernatural for explanations. Notably, Dembski does *not* consider the messages’ source to be an extraterrestrial being. Not only does the pulsar example constitute *in effect* his disavowal that the source can be an extraterrestrial, but he also stipulates that the source must be a *supernatural* entity.¹⁵⁴

[I]t is hard to conceive how any naturalistic explanation will ever account for the pulsar’s behavior.

. . . [W]e are dealing with . . . a super-intelligence . . . I don’t mean . . . a *super-human intelligence that might nevertheless be realized in some finite rational material agent embedded in the world* (. . . an

149. Scientific naturalism refers to science’s search for natural explanations of natural phenomena. Since the rejection of naturalism is the most important factor identifying ID as a religious belief, we discuss this later.

150. William A. Dembski, *The Incompleteness of Scientific Naturalism*, in *DARWINISM: SCIENCE OR PHILOSOPHY?* (Jon Buell & Virginia Hearn eds., 1994), at <http://www.leaderu.com/orgs/ftc/darwinism/chapter7.html> (last visited Jan. 26, 2004) (emphasis added).

151. *Id.*

152. *Id.*

153. *Id.*

154. An extraterrestrial communicating with humans, in ways they could detect, would be a natural entity, even if much more powerful than humans.

extraterrestrial intelligence or a conscious super-computer) I mean *a supernatural intelligence* . . . surpassing anything . . . humans or finite rational agents . . . are capable of even in principle.¹⁵⁵

Dembski's pulsar is an analogy, but he uses it to illuminate a real phenomenon that he says also exhausts science's explanatory resources: the "origin of life," which he says could not have occurred naturally because of the "staggering" mathematical improbability.¹⁵⁶ The lesson of the pulsar is that life's origin has only a supernatural explanation. To salvage the possibility of a naturalistic explanation, he says one must either adopt a "metaphysical hypothesis that postulates a lot more naturalistic stuff than science can sanction" or opt for "an entirely different . . . metaphysical hypothesis—God."¹⁵⁷ Disavowing an intention to "pitch metaphysical hypotheses," he does precisely that: "[W]hen its empirical resources are exhausted, science itself closes the door to naturalistic explanation."¹⁵⁸ (This early rejection of naturalism marks ID as a supernaturalist, thus religious, belief.)

Dembski is clearly not referring to mere extraterrestrials or "space aliens."¹⁵⁹ Neither can he point to the "telic process inherent in the universe" as the designer's identity.¹⁶⁰ An "inherent" process would be an intrinsic, or *immanent*, feature of the universe, not an external supernatural process. But Dembski specifies that the designer is transcendent. An "inherent telic process" would by definition be exclusively immanent and, by his own stipulations, could not be the designer. He stipulates that "God both

155. Dembski, *supra* note 150 (emphasis added).

156. *Id.* The "origin of life" is not synonymous with evolution, but creationists typically treat it as such, or as if scientists' inability to explain it also taints their explanation of evolution. YEC Henry Morris, like Dembski, argues against a natural explanation of life's origin, and for the same reason—its supposed mathematical improbability. He purports to calculate the improbability of life's originating by natural means. See SCIENTIFIC CREATIONISM 46, 59–69 (Henry M. Morris ed., 1974).

157. Dembski, *supra* note 151.

158. *Id.*

159. Contrast Dembski's position with that of the Raëlians, who believe a natural, extraterrestrial entity created humans:

On the 13th of December 1973, French journalist Rael was contacted by a visitor from another planet, and asked to establish an Embassy to welcome these people back to Earth. The extraterrestrial was about four feet in height, had long dark hair, almond shaped eyes, [and] olive skin. . . . He told Rael that: "[W]e were the ones who made all life on earth." . . . The messages dictated to Rael explain how life on Earth is not the result of random evolution, nor the work of a supernatural "God." It is a deliberate creation, using DNA, by a scientifically advanced people who made human beings literally "in their image."

The Raëlian Message: Scientists from Another Planet Created All Life on Earth Using D.N.A., at http://www.rael.org/english/pages/summary/sum_quicksummary.html (last visited Jan. 26, 2004).

160. See Dembski, *supra* note 148.

transcends creation and is immanent in it.”¹⁶¹ As mere process, such a designer would also lack the personal character on which he insists (recall his adamancy that God is male).¹⁶² He even rejects process theology, in which God, though personal in character, is more limited than traditional theism’s omnipotent, interventionist deity. In short, he rejects all modern theologies that try to assimilate modern scientific findings and methodology.¹⁶³

Since Dembski does not think science can explain life’s origin naturalistically, he clearly thinks science must admit *supernatural* explanations; this is logically entailed by his rejection of naturalism.¹⁶⁴ Disguising his supernaturalism with rhetorical sleight-of-hand is thus futile, though he tries to do so by creating this false dichotomy: “In arguing that . . . natural causes cannot account for certain features of the natural world, I am placing natural causes in contradistinction to intelligent causes.”¹⁶⁵ He says that “[l]ogically, the only alternative [to naturalistic evolution] is intelligent

161. William A. Dembski, *Transcendence*, in NEW DICTIONARY OF CHRISTIAN APOLOGETICS (forthcoming 2005), available at http://www.designinference.com/documents/2003.10.Transcendence_NDOCApol.pdf (last visited Apr. 15, 2004). Van Till dismisses Dembski’s extraterrestrial: “Who designed ET?” Of the telic process, he says, “Dembski’s attempt to argue that ‘telic principles’ are a real option strike me as hollow, given his arguments in *No Free Lunch* that the designing intelligence must be *interactive*. . . . How would any telic principle function interactively with the universe?” Howard Van Till, *Howard Van Till’s Response to William Dembski’s Remarks* (Oct. 18, 2002), available at <http://www.aas.org/spp/dser/evolution/perspectives/vantillresponse.pdf> (last visited Jan. 22, 2004).

162. See *supra* note 132 and accompanying text.

163. Process theology is rooted in the process philosophy of Alfred North Whitehead and Charles Hartshorne, who “reject the traditional doctrine of divine power, according to which God . . . can interrupt [the world’s] basic causal processes—a doctrine that . . . conflicts with the assumption of scientific naturalism that no such interruptions can occur.” See David Ray Griffin, *Process Philosophy*, in ROUTLEDGE ENCYCLOPEDIA OF PHILOSOPHY 711, at 714 (Edward Craig ed., 1998). Responding to criticism by Van Till (an evangelical Christian), Dembski attacks him as “steeped in process theology”:

Instead of intelligence and nature working in tandem, Van Till limits intelligence (increasingly a process God) to endowing nature with purely natural capacities. . . . To keep this from degenerating into deism, Van Till invokes the vocabulary of process theology, which describes God as guiding or persuading creation. But all such talk is empty.

William A. Dembski, *Naturalism’s Argument from Invincible Ignorance*, at http://www.designinference.com/documents/2002.09.Van_Till_Response.htm (last visited on Mar. 6, 2004). But see *Howard Van Till’s Response*, *supra* note 161.

164. Dembski takes the same position concerning “complex specified information” (CSI). As he intends for it to apply to biology, CSI is genetic or molecular information that is (1) complex, i.e., could not have occurred by chance and thus has a very small probability, and (2) specified, i.e., exhibits a pattern understandable according to a prior, independent system of meaning. CSI is genetic or molecular information so complicated, yet intelligible, that it must have been intentionally designed. Dembski asserts that natural processes cannot, even in principle, create CSI, but only transmit existing information. Only a designer can create the information. See Dembski, *supra* note 118, at 127–39, 160, 167–79; see also DEMBSKI, *supra* note 135, at 149.

165. William A. Dembski, *Is Intelligent Design a Form of Natural Theology?* (2001), at http://www.designinference.com/documents/2001.03.ID_as_nat_theol.htm (last visited Mar. 6, 2004).

design.”¹⁶⁶ But in explaining phenomena and events *within* the natural order, whether they occur naturally or are intelligently produced, there is no basis for his distinction between natural causes and intelligent causes. Both kinds of causes occur *within* the natural order, so the proper distinction is between intelligent and *unintelligent* causes. If Dembski wants to make “natural” one of only two explanatory alternatives, the other must be “supernatural,” referring to events whose causes are *outside* the natural order. Once natural explanation is disallowed, the supernatural is the sole alternative. Rejecting naturalism makes supernaturalism the essence of ID, thus rendering it an inescapably religious belief, even if the words “supernatural” and “religion” are never uttered.

4. ID’s Rejection of Naturalism

ID leaders’ total rejection of naturalism is the core conceptual issue identifying it as a religious belief in its very substance. In the face of their denials, their anti-naturalism is the “smoking gun.” It immediately and irrefutably unmasks ID as supernaturalism, not science, and is thus crucially important: it destroys their claim that ID is exempt from the prohibitions of *Edwards*.¹⁶⁷

ID’s anti-naturalism rests on two chief complaints: (1) that scientists arbitrarily force upon science an a priori naturalism, i.e., “methodological naturalism,” and (2) that methodological naturalism (“MN”) logically entails philosophical naturalism (“PN”, also called “ontological” or “metaphysical” naturalism), a comprehensive metaphysics denying any reality beyond nature and natural laws, thus precluding a creator. Dembski declares MN the “functional equivalent of a full-blown metaphysical naturalism.”¹⁶⁸ Wedge member Beckwith, reflecting his ID colleagues’ anti-naturalism, claims that “many citizens” object to “the methodological naturalism that evolution presupposes and the ontological materialism it entails,” the point of this (mistaken) objection being his assertion that “the existence of God . . . is *inconsistent* with materialism.”¹⁶⁹ (ID proponents equate “naturalism” and

166. DEMBSKI, *supra* note 118, at 119.

167. DeWolf, Meyer & DeForrest, *supra* note 87, at 93.

168. DEMBSKI, *supra* note 118, at 119.

169. Beckwith, *supra* note 136, at 493. Beckwith is wrong on this point. “Entailment” is the strongest logical relationship and would mean that MN and PN are conceptually inseparable. However, not only are MN and PN *conceptually* separate, but MN is in fact accepted by many theists. See Barbara Forrest, *Methodological Naturalism and Philosophical Naturalism*, PHILO, Fall–Winter 2000, at 7 (concerning MN’s non-entailment of PN) [hereinafter Forrest, *Methodoligical Naturalism*]; see also Barbara Forrest, *A Defense of Naturalism as a Defense of Secularism*, in SIDNEY HOOK RECONSIDERED (Matthew J. Cotter ed., 2004) [hereinafter Forrest, *A Defense of Naturalism*]; Francis

“materialism,” but the latter is a more limited term.¹⁷⁰) The objection, in effect, is that evolutionary theory is tantamount to atheism, a perennial ID charge.

Johnson’s anti-naturalism was central to his anti-evolutionism even before the Wedge’s formation.

[E]volutionary biologists all agree. . . . [that] *naturalistic* evolution . . . rules out any miraculous or supernatural intervention

. . . Creationists are disqualified from making a positive case, because science by definition is based upon naturalism. The rules of science also disqualify . . . negative argumentation designed to dilute the persuasiveness of the theory of evolution. Creationism is thus [ruled] out of court and . . . the classroom—before any consideration of evidence. . . .

When pressed about the unfairness of disqualifying their opponents *a priori*, naturalists sometimes portray themselves as merely insisting upon a proper definition of “science,”

By skilful manipulation of categories and definitions, the Darwinists have established philosophical naturalism as educational orthodoxy

[S]cientific naturalism as a worldview . . . [transforms] a sound methodological premise of natural science . . . into a dogmatic statement about the nature of the universe. . . .

The assumption of naturalism is in the realm of speculative philosophy, and the rule against negative argument is arbitrary.¹⁷¹

J. Beckwith, Fellow-CSC, at <http://www.discovery.org/scripts/viewDB/index.php?command=view&id=43&isFellow=true> (last visited Jan. 23, 2004) (regarding Beckwith’s CSC fellowship).

170. “ID creationists typically use . . . ‘naturalism’ interchangeably with ‘materialism,’ even though metaphysical naturalism is a richer concept that says that nature and its laws are all that exist, but allows that nature may not be limited to matter per se. More importantly, they regularly conflate these *metaphysical* concepts with the related *methodological* norms that are actually employed by science.” Robert T. Pennock, *God of the Gaps: The Argument from Ignorance and the Limits of Methodological Naturalism*, in *SCIENTISTS CONFRONT CREATIONISM* (A. J. Petto & L. R. Godfrey eds., rev. ed. forthcoming 2005).

171. Phillip E. Johnson, *Evolution as Dogma: The Establishment of Naturalism*, FIRST THINGS, Oct. 1990, <http://www.arn.org/docs/johnson/pjdogma1.htm> (last visited Apr. 13, 2004). Johnson’s remarks are noteworthy because (1) his objection to scientists’ refusal to invoke the supernatural clearly indicates that ID is religious, and (2) his defense of the “creationist” view makes no distinction between it and ID, thus supporting our contention that ID is creationism.

Beckwith echoes Johnson's anti-naturalism:

ID proponents maintain that there is a fundamental reason why evolution seems to most scholars . . . to be the only real legitimate explanation for the origin of the universe and life: a prior commitment to methodological naturalism . . . ID proponents maintain that MN is a necessary presupposition for the veracity of the evolutionary edifice and entails ontological materialism (OM) as a worldview, but is . . . not necessary for the practice of science qua science

[D]esign theorists argue that . . . [at] times . . . an intelligent designer better accounts for certain phenomena than do material causes. And if that is the case, then the naturalist's appeal to possible future materialist accounts of the phenomena is driven, not by the data, but by MN

Thus, the real question, according to design theorists, is whether their arguments for ID work, not whether ID conflicts with MN or OM [I]f the ID arguments work and . . . conflict with MN, then . . . MN is not a necessary precondition of natural science . . . and . . . an a priori commitment to OM cannot be employed to exclude positions contrary to it. For to exclude non-materialist (or ID) accounts of natural phenomena by merely defining science as requiring MN (and/or entailing OM) does not count either as a philosophical argument against ID or an argument for MN (or OM); it is at best, circular reasoning, and at worst, intellectual imperialism.¹⁷²

The Wedge's anti-naturalism strategy is thus three-pronged. The first prong is to accuse evolutionary scientists of an a priori commitment to MN and of manipulating the definition of science, making it naturalistic by decree. They aim to convince supporters and potential recruits that science's naturalism is arbitrary, lacking foundation in the pragmatic necessities of scientific explanation. This makes scientists appear dogmatic and conspiratorial, concerned only to keep creationists' putatively competitive explanation of "origins" from assuming its rightful scientific status. This approach appeals to Americans' desire that each side of an issue be heard. The second prong is to conflate MN and PN. The rationale is that if scientists restrict evolutionary biology a priori to MN, and MN entails PN, then evolutionary theory necessarily implies atheism.¹⁷³ Most Americans are

172. Beckwith, *supra* note 136, at 466–69 (citations omitted).

173. The second prong points to the Wedge's complaint that teaching only evolution causes moral relativism, which they consider synonymous with moral confusion at best and outright immorality at

theists, which explains ID proponents' use of this strategy.¹⁷⁴ The third prong is to reject naturalism without straightforwardly admitting that their alternative is *supernaturalism*, a tactic exemplified by Beckwith's use of euphemisms like "non-natural" and "non-materialist" rather than "supernatural."¹⁷⁵

ID proponents' anti-naturalism strategy ignores the historical reasons for science's transition from supernatural to natural explanations, the difference between methodological and philosophical naturalism, and the reasons intrinsic to both naturalism and supernaturalism for science's embrace of MN. Finally, the fact that ID's anti-naturalism logically implies its supernaturalism requires proponents to use thinly veiled euphemisms to disguise its supernatural foundation—a verbal maneuver enabling them to speak to their Christian audience while simultaneously arguing for legal purposes that ID is non-religious and therefore legal.¹⁷⁶ All three prongs of this strategy are based upon significant misunderstandings and errors.¹⁷⁷

worst. This is a variant of the creationist line that "if you tell children they are descended from monkeys, they will act like animals." Johnson typifies the complaint:

[A]bsolutism in evolutionary science and relativism . . . in morals . . . reflects the established religious philosophy of . . . America. Naturalism . . . provides the foundation for liberal rationalism in morals, by keeping . . . divine authority . . . out of the picture. . . . The schools . . . teach that humans *discover* the . . . truth of evolution but . . . *invent* moral standards and can change them as human needs change.

JOHNSON, *supra* note 106, at 166.

174. George Bishop, director of the University of Cincinnati's Graduate Certificate Program in Public Opinion and Survey Research, provides figures relevant to Americans' theistic beliefs and views on evolution:

[N]early half (47%) of adult Americans believes in th[e] literalist, creationist account. Another 40% believes that, while human beings may have evolved over millions of years from less advanced forms of life, God guided this process. Barely one in ten (9%) believes the naturalistic position of modern science that human evolution has occurred without divine intervention.

George Bishop, *Back to the Garden*, PUB. PERSP., May/June 2000, at 21.

175. Beckwith, *supra* note 136, at 467, 469.

176. Though ID proponents often do not bother to disguise their appeals to the supernatural, they adjust their terminology to fit their audiences.

177. Criticisms of naturalism come almost exclusively from *non-scientists* like Johnson and Beckwith. Johnson disingenuously refuses to explain how supernaturalism would function in his own discipline, law. He recalls nostalgically when law was based on religion: "For much of Western history, lawmakers assumed that authoritative moral guidance was available to them in the Bible . . ." JOHNSON, *supra* note 106, at 39. As a law professor, he asserted that holding criminals accountable requires grounding law in religion and criticized the law's naturalistic methodology:

During the last two centuries, the dominant intellectual culture has discarded a theistic understanding of human nature and replaced it with a naturalistic understanding

We might have expected such an intellectual revolution to affect the criminal law, and it has

Whatever scientific naturalists . . . say, criminal law has found it necessary to assume that humans are moral agents created . . . with a . . . knowledge of God's moral order When . . . dealing with human beings, naturalism is a bust—especially as a methodology.

Phillip E. Johnson, *Those Madcap Menendez Boys*, BOOKS & CULTURE, Nov.–Dec. 1997, <http://members.iinet.net.au/~sejones/pjmdcpmb.html> (last visited Apr. 13, 2004). Pennock discusses

a. Error 1: MN as Arbitrary and A Priori

By charging that scientists arbitrarily impose an a priori naturalistic methodology upon science, ID proponents in effect accuse scientists of relying on MN with neither epistemological nor methodological warrant. But there is ample warrant for science's naturalism. Though specific sciences use variants of MN based on their relative appropriateness for gathering and explaining data (i.e., developing theories) in their respective investigations, all sciences are naturalistic *as a matter of pragmatic necessity*. An a priori stipulation that science *must* use MN (if it were actually made) would mean that scientists make science naturalistic *merely by definition*, as Johnson charges.¹⁷⁸ However, the correct explanation of why science is defined as naturalistic is important to understand.

MN is science's universal *procedural* protocol requiring natural explanations for natural phenomena. Comprising the empirical and logical procedures by which scientists test explanations, it is nothing more than what is known less controversially as "scientific method." This protocol is not arbitrary, and contrary to ID proponents' accusations, requires no a priori *metaphysical* commitments.¹⁷⁹ The only commitment is to an empirical methodology, which scientists use with good reason: it works. Natural explanations are scientifically successful; supernatural ones are not. The commitment to MN is thus pragmatic and provisional, not ideological. If a

how MN is today recognized to be as essential in the law as in science. Contra Johnson's nostalgia for a time when lawyers assumed that the Bible gave authoritative moral guidance and were not constrained by MN, he discusses the evidential problems that arose when laws "incorporated the scriptural command that one not suffer a witch to live." Neither science nor law can incorporate the possibility of the supernatural, since there is no way to detect its supposed interventions. Pennock challenged Johnson to specify whether "divine interventions [are] occurring today" and how to detect them, but Johnson tellingly refuses. Pennock notes that "despite Johnson's preaching to scientists to incorporate the 'possibility' of supernatural interventions . . . , it is . . . not very surprising that he never incorporates these in his own professional texts on criminal law." See PENNOCK, *supra* note 91, at 294–300.

178. See Johnson, *supra* note 171. Johnson reveals his own apriorism in his preferred definition of science, requiring a naïve empiricism in which "science is . . . the unbiased examination of experimental evidence . . . free from any philosophical . . . or political . . . or religious prejudice." He ignores science's need for broader explanations which necessarily move beyond immediate data (while remaining naturalistic). His charge that the naturalistic definition of science is deceptive exposes his bias toward a supernatural definition: "[Science's assumptions are] concealed. . . . The deceit comes in by concealing the fact that there are two definitions [of science], and pretending that you are following the evidence wherever it goes when . . . you've decided before you even looked at the evidence that . . . [it] will exclude God" His criticism proves Johnson wants God in the definition. See Tal Brooke, *An Interview in Berkeley*, 24–25 SCP J., 1999, <http://www.scp-inc.org/publications/journals/J2404/PhilJohnsonInt.html> (last visited Mar. 12, 2004) (Spiritual Counterfeits Project) (interview of Phillip Johnson).

179. See Robert T. Pennock, *Naturalism, Evidence and Creationism: The Case of Phillip Johnson*, 11 BIOLOGY & PHIL. 543, 543–59 (1996); see also PENNOCK, *supra* note 91, at 276–308.

better methodology were devised, science would adopt it and adjust the definition of science to reflect its use, but humans have no recognized cognitive faculties for knowing the supernatural. Consequently, despite other ways in which people claim to know things (intuition, revelation, etc.), naturalistic methodology is the only *intersubjective, public* way of knowing nature.¹⁸⁰ MN's success has eliminated rivals such as the centuries-old effort to explain nature in a way consistent with the Bible. Its success makes it unlikely to be replaced except by a better methodology, and none now exists. But MN's success was acknowledged slowly and with resistance within science itself. ID's accusation that MN is arbitrary and a priori would be legitimate if it were true, but it contradicts historical fact.

It is well known that pre-modern science was hampered methodologically by efforts to explain nature according to scriptural constraints. Such constraint was a genuine apriorism with practical consequences for science: it did not work. Copernicus's heliocentric theory and Darwin's theory of natural selection more successfully explained phenomena in the natural world and were adopted for their greater explanatory adequacy.¹⁸¹ Both Darwin, an agnostic, and American scientist Asa Gray, a Christian who endorsed Darwin's work, recognized the need for natural rather than supernatural explanations:

As early as 1838 Darwin had concluded that attributing the structure of animals to "the *will* of the Deity" was "no explanation—it *has not the character of a physical law* & is therefore utterly useless." As Asa Gray put it, the great strength of evolution appeared "on comparing it with the rival hypothesis . . . of immediate creation, which neither explains nor pretends to explain any [facts]."¹⁸²

Evolutionary biologist Ernst Mayr explains the difference between religious apriorism and the explanatory needs of science in terms of the

180. See Forrest, *A Defense of Naturalism*, *supra* note 169:

[N]aturalistic methodology . . . [is] what is done generally, *but not exclusively*, in science: the search for natural explanations of what we experience . . . using the . . . cognitive faculties . . . we know humans to have and that therefore make experience intersubjective.

[It] . . . is *any* way of doing things that does not . . . require the invocation of supernaturalist beliefs to get them done. Such methodology . . . is nothing other than what *both theists and nontheists already commonly do* . . .

[It] is . . . the *extension into science* . . . of ways of solving problems and constructing explanations . . . proven successful *outside* science.

181. See JOHN HERMAN RANDALL, JR., *THE MAKING OF THE MODERN MIND*, chs. XI & XVIII (1940) (concerning science's gradual abandonment of supernaturalism).

182. R. L. NUMBERS, *DARWINISM COMES TO AMERICA* 47 (1998). Numbers gives an excellent account of American science's shift away from supernaturalism toward MN.

relative value not only of revealed dogma and scientific explanation, but of one scientific explanation as opposed to another:

A fundamental difference between religion and science . . . is that religion usually consists of a set of dogmas, often “revealed” . . . , to which there is no alternative nor much leeway in interpretation. In science, by contrast, there is . . . a premium on alternative explanations and a readiness to replace one theory by another The goodness of a scientific idea is judged only to a minor degree by criteria extrinsic to science because it is on the whole judged entirely by its efficacy in explanation and, sometimes, prediction.¹⁸³

Noting the necessary (but naturalistic) methodological diversity in the physical and biological sciences, Mayr locates their unity in a common effort to explain the world: “When confronted by mythology or religion, science offers a unified front. All sciences, in spite of manifold differences, . . . endeavor to understand the world. Science wants to explain, . . . generalize, and . . . determine the causation of things, events, and processes. To that extent . . . there is a unity of science.”¹⁸⁴

ID proponents’ contention that science imposes MN upon science arbitrarily therefore reflects either ignorance or deliberate distortion of the history of science. Scientific naturalism has nothing to do with a crass desire for explanatory (or political) hegemony. Scientists exclude the supernatural because they are unable to construct explanations that require access to a reality beyond the cognitive faculties and sources of knowledge humans are known to have. As philosopher of science Robert Pennock explains, “Methodological naturalism is not a dogmatic ideology that simply is tacked on to the principles of scientific method; it is essential for the basic standards of empirical evidence.”¹⁸⁵

183. ERNST MAYR, *THE GROWTH OF BIOLOGICAL THOUGHT* 22 (1982). The history of science reveals the extent to which biology rejected even the apriorism of another *science*, i.e., physics. Mayr explains why biologists could not meet physicists’ expectation that biology, like physics, should aspire to mathematical certainty. *Id.* at 36–43.

184. *Id.* at 32. Ernst Mayr, along with T. Dobzhansky, G.G. Simpson, Julian Huxley, Ronald Fisher, Sewell Wright, and J.B.S. Haldane, formulated the “New Synthesis” of Darwinian biology with modern genetics and population biology. His ideas about the nature of species and speciation remain at the center of evolutionary science. He has been one of the world’s most eminent biologists since the 1930s. See MENNO SCHILTHUIZEN, *FROGS, FLIES AND DANDELIONS* (2001) (concerning Mayr’s work on clarifying the concept of *species*).

185. PENNOCK, *supra* note 91, at 196. Pennock explains the need to limit science to naturalistic explanations:

The moment one . . . opens the door to supernatural interventions . . . explanatory chaos breaks

Two preeminent scientists in disciplines relevant to creationist claims have addressed this issue. Arthur Strahler, noted for contributions both to geology and the evolution/creation issue, explains why science is limited to MN:

[S]upernatural forces . . . cannot be observed, measured, or recorded by the procedures of science—that’s . . . what . . . “supernatural” means. There can be no limit to the . . . supernatural forces . . . the human mind is capable of conjuring up Scientists therefore have no alternative but to ignore claims of . . . supernatural forces and causes. This . . . basic position . . . must be stoutly adhered to by scientists or their entire system of evaluating and processing information will collapse.¹⁸⁶

Nobelist Christian de Duve (1974, *Physiology or Medicine*) explains why, concerning the origin of life, scientists proceed naturalistically. De Duve’s position is not the dogmatism of which ID proponents accuse evolutionary scientists, but the mainstream scientific view.

[A]ll that we have seen so far supports a naturalistic explanation of the origin of life If . . . [amino acids and other organic substances] represent the chemical seeds from which life developed, . . . at least the first step in the birth of life was the outcome of natural processes.

But this is only a first step in . . . a very long succession One may well wonder . . . whether this . . . is naturally explainable.

In the view of most scientists interested in the problem, one can but answer . . . affirmatively, at least as a working hypothesis. . . . To assume the opposite amounts to denying the possibility of finding an explanation for the phenomenon one studies and thus declaring one’s research futile [S]cience must proceed on the assumption that the problems it approaches are soluble. There will always be time to call on “something else” after all attempts at finding a natural explanation have failed. In . . . the origin of life, this is still far from . . . the case.¹⁸⁷

loose, since there are no known constraints upon processes that transcend natural laws. A supernatural force could be called upon to “explain” any event in any circumstance; . . . However, the concept of a transcendent designer or other miraculous force that can explain any event under any set of conditions is no explanation at all.

Pennock, *supra* note 170.

186. ARTHUR N. STRAHLER, *UNDERSTANDING SCIENCE* 13–14 (1992); *see also* ARTHUR N. STRAHLER, *SCIENCE AND EARTH HISTORY* (1999). Many such statements from other scientists could be provided here.

187. CHRISTIAN DE DUVE, *LIFE EVOLVING* 50–51 (2002). De Duve, criticizing Behe and Dembski, says that “[c]ontrary to what is sometimes claimed, a naturalistic view of the origin of life

Explanations by scientists and philosophers of science as to why science is naturalistic should be contrasted with the views of Dembski, a mathematician/philosopher/Christian apologist but not a scientist, when he chastises Christian theologian/physicist Ian Barbour for constructing a theology that accommodates science:

Barbour has built his “theology of nature” . . . on Darwinian theory and the naturalistic philosophy that undergirds it. . . .

. . . Traditional theologies—whether Jewish, Christian, Muslim, or even Mormon—take as their basic datum divine revelation . . . in inspired and authoritative texts that have an objective sense and . . . are binding on believers.

But divine revelation is not the decisive factor for Barbour Instead, the decisive factor is how the divine is “understood from the religious experience of a historical community.” . . . [I]n putting the emphasis on our current understanding of religious experience as opposed to our obligation to align ourselves with an objective revelation, Barbour opens the door to radical re-understandings of the divine as the religious experience of the community of faith evolves.¹⁸⁸

Requiring that science be bound by “divine revelation” in “authoritative texts” is precisely the pre-modern apriorism science was forced to abandon. Yet such apriorism is proposed by ID’s leading intellectual.

b. Error 2: MN’s Supposed Entailment of PN (and Atheism)

“Methodological naturalism” is a fairly recent term that distinguishes it more precisely from philosophical naturalism. ID proponents wrongly charge that MN entails and is thus equivalent to PN. However, MN is not just a procedural protocol, but an epistemology, employing the cognitive faculties and reasoning capabilities we know humans to have: the ability to survey phenomena available to the senses, gather empirical data and reflect critically upon it, and draw conclusions using established rules of logic and evidence. Not only scientists but also laymen, even theistic laymen, do this all the time; it is the only way to navigate the natural world.

PN, however, is a comprehensive *metaphysics*, comprising beliefs about what exists and what does not. Though PN “is a *substantive* world view built

does not necessarily exclude belief in a Creator.” *Id.* at 51–53 (criticizing ID).

188. Dembski, *supra* note 165.

on the cumulative *results* of methodological naturalism,” i.e., on scientific knowledge, PN itself is not a part of science.¹⁸⁹ Science simply uses any methodology that affords explanatory and predictive success, and only MN does this. MN’s epistemological reach is coextensive only with human sensory faculties and inferences derived from empirical data. It need not, nor does it, assume a priori that MN is the *only* source of truth and that claims purportedly derived from intuition and revelation are false, but neither is there any known methodology for intersubjectively calling upon intuition and revelation to explain the natural world. Any putatively scientific claim that is beyond the reach of empirical data and data-based inferences is unverifiable, both procedurally and in principle.¹⁹⁰ Some humans may be privileged with divine revelation about the origin of life and the universe, but while the *content* of claimed revelations is in principle verifiable (if they are about the natural world), the *process* of revelation is neither sharable nor verifiable. Lacking reliable indications that intuition and revelation are genuine cognitive faculties, as well as ways to achieve consensus on what they convey, we also lack sharable epistemological advances attributable to them. Science uses the only methodology capable of *both* establishing consensus and advancing knowledge of science’s limited field of inquiry.

Given the intersubjectivity of empirical claims, MN yields knowledge of the natural world that provides the *foundation* for PN insofar as the latter, in its modern form, is grounded in knowledge yielded by science. But MN does not entail PN. Neither does MN disprove the supernatural’s existence; it has neither means nor obligation to do so. (Those making supernatural knowledge claims bear the epistemological and methodological burdens of proof.) Proving the non-existence of the supernatural using naturalistic methodology, by the nature of the task, is impossible: “[T]he attempt to prove a *negative* existential claim . . . makes no sense: nothing can count as *positive* evidence of non-existence.”¹⁹¹ MN therefore precludes the denial of

189. Forrest, *Methodological Naturalism*, *supra* note 169, at 21.

190. Knowledge claims are procedurally verifiable when scientists, in addition to their cognitive faculties, have the means of acquiring the data to do so, e.g., technology (e.g., electron microscopes) or opportunities for field observations. Even when the means are unavailable, claims are verifiable in principle as long as they *could* be verified if the means were at hand. For example, claims about life in other galaxies, though not yet procedurally verifiable, are verifiable in principle—if we could travel there and collect data, we could find out if life exists. Conclusions extending beyond the reach of known cognitive faculties and any procedures we could implement are unverifiable *in principle*, thus beyond the reach of science. Such so far are conclusions about the supernatural, e.g., an intelligent designer, if that designer is not intersubjectively accessible. And if it were, verification by means of our natural faculties would mean the designer is a natural, not supernatural, entity. This does not mean it cannot be known; revelation is a logical possibility. But no one has identified an intersubjective procedure for verifying such occurrences. *See id.* at 10.

191. *Id.* at 15.

the supernatural, since this would constitute the epistemologically arrogant claim that human cognitive faculties are sufficient to survey the whole of reality. Barbara Forrest discusses this:

[T]he theist can consistently view . . . [MN] as a way of understanding . . . a divinely created universe. The philosophical naturalist's reasons for *not* seeing the world this way do not stem merely from reliance upon . . . [MN], but from . . . the *absence* of any methodology for detecting the supernatural, the problem of evil, etc. . . . [PN] is a product not of . . . mere . . . naturalistic methodology, but of inferences based on the knowledge it yields *in combination with* other considerations. Reflecting *philosophically* upon what . . . [MN] yields, the believer may . . . conclude that the universe is the product of . . . an "intelligent designer." The philosophical naturalist will view this . . . not as a logical inconsistency, but . . . a[n] . . . evidentially unsupported *ontological* category.

. . . And because it does not nullify the logical possibility of theism . . . [MN] . . . preserves for theism an ontological category unavailable to atheism—the supernatural . . . albeit without the benefit of scientific evidence

. . . [MN] leaves the theistic question on the table . . . absolv[ing] the naturalist of the . . . charge that the supernatural is ruled out *a priori*

. . . [MN], therefore, is not . . . *antireligious* or *atheistic* . . . but a *non-religious*, that is, a *secular*, methodology . . . [F]ar from spelling the *a priori* negation of religious belief, . . . [MN] . . . [preserves] it by leaving a space for it to exist

[MN] . . . leaves theists the option to make whatever additional, logically coherent ontological commitments they choose (although they also have the *political* freedom to make even logically *incoherent* commitments).¹⁹²

The naturalistic methodology and epistemology upon which PN relies thus precludes *a priori* denial of the supernatural, since such a denial ignores an essential element of PN: respect for evidence. Even ID proponents in effect admit the need for empirical justification of factual claims (e.g., their supernatural designer's causal interventions) by declaring ID empirically

192. Forrest, *A Defense of Naturalism*, *supra* note 169.

detectable.¹⁹³ But philosophical naturalists' assertions of the designer's non-existence are provisional in the absence of omniscience. Contrary to ID proponents' charge that MN logically entails PN, they are not, as Dembski charges, "functionally equivalent." Consequently, MN is not tantamount to atheism: "It actually preserves a metaphysical 'neutral zone,' while being necessary in a practical sense because of the lack of a methodology for testing supernatural claims."¹⁹⁴ MN actually preserves a logical space for *personal* religious belief, even by scientists. And in a secular, constitutional democracy, whether personal religious belief is consistent with science is irrelevant. Supernaturalism represents a commitment that steps beyond the constraints of empirical data. Because the choice is personal, the reasons for it are not a matter of public concern—until those making such commitments seek government sanction for them as science, to be taught in a public school science curriculum.

ID proponents, however, show no respect for evidential requirements. Not only do they reject MN, but they have also produced no ID science through any other workable methodology. More than a decade since the Wedge's founding, scientists charged with doing the science that *The Wedge Strategy* specifies as central to its cultural goals—Paul Chien, Michael Behe and Douglas Axe—have not done so (though all publish standard science articles, using MN, independently of their ID affiliation).¹⁹⁵ Nor has Wells, a scientist who does no science but promotes ID full-time.¹⁹⁶ Surveys of scientific databases where peer-reviewed ID publications are indexed have yielded no articles using ID as a scientific theory.¹⁹⁷ And Dembski, admitting ID's lack of scientific progress, prefers to cultivate political influence without it.¹⁹⁸

193. Ironically, by insisting that ID is empirically detectable, proponents naturalize God. See PENNOCK, *supra* note 91, at 304–07. Nonetheless, Dembski claims that "[W]hen science points to a transcendent reality, it can do so as science and not merely as religion. . . . [D]esign . . . is empirically detectable and . . . the claim that natural systems exhibit design can have empirical content." Dembski, *supra* note 86.

194. Forrest, *A Defense of Naturalism*, *supra* note 169.

195. See FORREST & GROSS, *supra* note 88, at chs. 3 & 4; see also *The Wedge Strategy*, *supra* note 88.

196. FORREST & GROSS, *supra* note 88, at 88–112.

197. *Id.* at 41–44, 64–66, 68–72; see also George W. Gilchrist, *The Elusive Scientific Basis of Intelligent Design*, REP. OF THE NAT'L CENTER FOR SCI. EDUC., May–June 1997, at 14, 14–15. Responding to criticism of ID proponents' failure to publish peer-reviewed science articles, Dembski commissioned physicist and ID supporter Frank Tipler to write an article devaluing scientific peer-review: "[T]he referee . . . [T]he referee is . . . often not as intellectually able as the author whose work he judges. We have pygmies standing in judgment on giants Another possibility is that the increasing centralization of scientific research has allowed powerful but mediocre scientists to suppress any idea that would diminish their prestige." Frank Tipler, *Refereed Journals: Do They Insure Quality or Enforce Orthodoxy?*, in UNCOMMON DISSENT (William A. Dembski ed., 2004), available at http://www.iscid.org/papers/Tipler_PeerReview_070103.pdf (last visited Apr. 16, 2004); see also William A. Dembski, *The Myths of Darwinism*, in UNCOMMON DISSENT, *supra*, available at

ID needs to succeed as a scientific enterprise to succeed as a cultural and political enterprise But this is . . . different from requiring that . . . [ID] attain . . . maturity and acceptance in the scientific world before it may . . . legitimately influence public opinion

Any rule-setting about what [ID] must accomplish in the scientific sphere before it may legitimately influence the political sphere is arbitrary and betrays a naiveté about the actual workings of science

. . . We have done amazingly well in creating a cultural movement, but we must not exaggerate ID's successes on the scientific front. . . .

Because of ID's . . . success at gaining a cultural hearing, the scientific research . . . is now lagging behind¹⁹⁹

If ID proponents were confident of its scientific value, Wedge scientists would use it professionally, reaping the rewards of superior scientific scholarship. But without supporting data, only their criticisms of evolution and superficially scientific assertions remain. In published critiques, philosophers and scientists in the relevant fields have evaluated their work and found it wanting.²⁰⁰ Their consensus is that ID's criticisms of evolution

http://www.designinference.com/documents/2003.09.UncDiss_Intro_Contribs.pdf (last visited Apr. 16, 2004) (concerning Tipler's article).

198. Politics is a constant in American creationism, especially ID. See FORREST & GROSS, *supra* note 88, at ch.8.

199. William A. Dembski, *Becoming a Disciplined Science*, Address at the Research and Progress in Intelligent Design Conference (Oct. 25, 2002), available at http://www.designinference.com/documents/2002.10.27.Disciplined_Science.htm (last visited Jan. 5, 2004) [hereinafter Dembski, *Disciplined Science*]. In 2003, Dembski tried to influence the selection of Texas science textbooks. He gave the Texas Board of Education a FAQ listing "peer-reviewed publications supporting intelligent design in biology." See William A. Dembski, *Three Frequently Asked Questions About Intelligent Design*, at http://www.designinference.com/documents/2003.09.ID_FAQ.pdf (last visited Apr. 9, 2004). But all the publications are by ID supporters, and none uses "intelligent design" as a descriptor. Qualified scientists say none support ID in biology. See *Nat'l Center for Sci. Educ., Textbooks Approved in Texas*, at http://www.ncseweb.org/resources/news/2003/TX/682_textbooks_approved_in_texas_11_7_2003.asp (concerning textbook controversy); see Steven Schafersman, *Frequently Asked Questions About the Texas Science Textbook Adoption Controversy*, at <http://www.txscience.org/files/faqs.htm>; Jeffrey Shallit, *Letters to the Editor*, 7 *SCI. INSIGHTS* 27, 27-28 (Nov. 2003) (concerning the articles' non-support of ID). Dembski included his book *The Design Inference* in his handout; only two months before, he wrote that "the book didn't address the implications of the design inference for biology." Posting of William A. Dembski, William_Dembski@baylor.edu, to ISCID Forums (July 2, 2003), at http://www.iscid.org/boards/ubb-get_topic-f-6-t-000386.html; see Wesley R. Elsberry, *The Design Inference*, REP. OF THE NAT'L CENTER FOR SCI. EDUC., Mar.-Apr. 1999, at 32, 32-35 (book review).

200. The list of ID critiques by scientists and philosophers of science is long and growing. The longest criticisms of Behe are KENNETH R. MILLER, *FINDING DARWIN'S GOD* 129-64 (1999) and PENNOCK, *supra* note 91, at 166-72, 248-49, 263-72. Other scientists have criticized Behe. See Neil

W. Blackstone, *Argumentum ad Ignorantiam*, 72 Q. REV. BIOLOGY 445, 445–47 (1997); Jerry A. Coyne, *God in the Details*, 383 NATURE 227, 227–28 (1996); Jerry A. Coyne, *More Crank Science*, 22 BOSTON REV., Feb.–Mar. 1997; Russell F. Doolittle, *A Delicate Balance*, 22 BOSTON REV., Feb.–Mar. 1997; Robert Dorit, *A Review of “Darwin’s Black Box: The Biochemical Challenge to Evolution,”* AM. SCIENTIST, Sept.–Oct. 1997, at 474; Douglas J. Futuyma, *Miracles and Molecules*, 22 BOSTON REV., Feb.–Mar. 1997; Richard E. Lenski et al., *The Evolutionary Origin of Complex Features*, 423 NATURE 139, 139–44 (2003); H. Allen Orr, *Darwin v. Intelligent Design (Again)*, 21 BOSTON REV., Dec.–Jan. 1996–97; Robert T. Pennock, *Whose God? What Science?*, REP. OF THE NAT’L CENTER FOR SCI. EDUC., May–Aug. 2001, at 16; Niall Shanks & Karl H. Joplin, *Redundant Complexity: A Critical Analysis of Intelligent Design in Biochemistry*, 66 PHIL. OF SCI., 268, 268–82 (1999); Richard H. Thornhill & David W. Ussery, *A Classification of Possible Routes of Darwinian Evolution*, 203 J. THEORETICAL BIOLOGY 111, 111–16 (2000); David W. Ussery, *A Biochemist’s Response to “The Biochemical Challenge to Evolution,”* 70 BIOS 40, 40–45 (1999); Terry M. Gray, *Complexity—Yes! Irreducible—Maybe! Unexplainable—No!: A Creationist Criticism of Irreducible Complexity*, at http://www.asa3.org/evolution/irred_compl.html (last visited Mar. 8, 2004); John H. McDonald, *A Reducibly Complex Mousetrap*, at <http://udel.edu/~mcdonald/mousetrap.html> (last visited Mar. 11, 2004); Robert T. Pennock, *Lions and Tigers and APES, Oh My!: Creationism vs. Evolution in Kansas*, PLENARY PAPERS FOR SCIENCE TEACHING AND THE SEARCH FOR ORIGINS (2000), at <http://www.aaas.org/spp/dser/evolution/perspectives/pennock.shtml> (last visited Mar. 11, 2004); Mark Perakh, *Irreducible Contradiction*, at <http://www.talkreason.org/articles/behe2.cfm> (last visited Mar. 4, 2004). Scientists have also critiqued Jonathan Wells. See Kevin Padian & Alan D. Gishlick, *The Talented Mr. Wells*, 77 Q. REV. BIOLOGY 33, 33–37 (2002); Massimo Pigliucci, *Intelligent Design Theory*, 51 BIOSCIENCE 411, 411–14 (2001); Eugenie C. Scott, *Fatally Flawed Iconoclasm*, 292 SCI. 2257, 2257–58 (2001); David W. Ussery, *The Stealth Creationists*, SKEPTIC, Vol. 8, No. 4, 2001, at 72, 72–74; Alan D. Gishlick, *Icons of Evolution? Why Much of What Jonathan Wells Writes About Evolution is Wrong*, NAT’L CENTER FOR SCI. EDUC., at <http://www.ncseweb.org/icons/icons.pdf> (last visited Mar. 4, 2004). Critiques of Dembski are especially numerous. See PENNOCK, *supra* note 91, at 94–96, 250–63; Branden Fitelson et al., *How Not to Detect Design*, 66 PHIL. SCI. 472, 472–88 (1999); Robert T. Pennock, *Mystery Science Theatre: The Case of the Secret Agent*, NATURAL HISTORY, Apr. 2002, at 77; Robert T. Pennock, *The Wizards of ID: Reply to Dembski*, in INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS 645 (Robert T. Pennock ed., 2001) [hereinafter Pennock, *The Wizards of ID*]; Elsberry, *supra* note 199; H. Allen Orr, *Book Review: “No Free Lunch”*, 27 BOSTON REV. (Summer 2002); Jason Rosenhouse, *Probability, Optimization Theory, and Evolution*, 56 EVOLUTION 1721, 1721–22 (2002); Jeffrey Shallit, *Book Review: “No Free Lunch”*, 66 BIOSYSTEMS 93, 93–99 (2002); Andrea Bottaro, *Dr. Dembski’s Compass: How to Lose One’s Way While Looking for Misdirection*, at <http://www.talkreason.org/articles/compass4.cfm> (last visited Mar. 4, 2004); Eli Chiprout, *A Critique of “The Design Inference”*, at <http://www.talkreason.org/articles/Chiprout.cfm> (last visited Mar. 4, 2004); Wesley Elsberry, *The “Algorithm Room”: Can the “Design Inference” Catch a Cheater?*, at <http://www.talkreason.org/articles/Algorithm.cfm> (last visited Mar. 5, 2004); Wesley Elsberry, *What Does “Intelligent Agency by Proxy” Do for the Design Inference?*, at http://www.talkreason.org/articles/wre_id_proxy.cfm (last visited Mar. 5, 2004); Elsberry & Shallit, *supra* note 135; Gert Korthof, *On the Origin of Information by Means of Intelligent Design*, at <http://home.wxs.nl/~gkorthof/kortho44.htm> (last visited Mar. 5, 2004); Mark Perakh, *A Consistent Inconsistency*, at <http://www.talkreason.org/articles/dembski.cfm> (last visited Mar. 5, 2004); Mark Perakh, *The No Free Lunch Theorems and Their Application to Evolutionary Algorithms*, at <http://www.talkreason.org/articles/orr.cfm> (last visited Mar. 4, 2004); Van Till, *supra* note 135; David Wolpert, *William Dembski’s Treatment of the No Free Lunch Theorems Is Written in Jello*, at <http://www.talkreason.org/articles/jello.cfm> (last visited Mar. 4, 2004); Matt Young, *How to Evolve Specified Complexity by Natural Means*, PAC. COAST THEOLOGICAL SOC’Y J., at <http://www.pcts.org/journal/young2002a.html> (last visited Mar. 5, 2004); see also Forrest & Gross, *supra* note 88, at chs. 3, 4 & 5 (scientists’ critiques of ID). Although Johnson is a lawyer, scientists and philosophers of science have reviewed his writings because of his anti-science offensive. See PENNOCK, *supra* note 91; Robert T. Pennock, *Naturalism, Creationism, and the Meaning of Life*, CREATION/EVOLUTION, Winter 1996, at 10, 10–30; Pennock, *supra* note 179; Robert T. Pennock, *Reply to Johnson: Johnson’s “Reason in the Balance”*, 11 BIOLOGY & PHIL. 565, 565–68 (1996);

are either misunderstandings or distortions of science and its methodology. Only ID's supernaturalism and its proponents' doctrinal loyalties remain to constitute its clearly theistic foundation.

c. Error 3: A Thinly Disguised Supernaturalism

Having rejected MN, ID advocates must develop another scientifically workable methodology and explanation of natural phenomena if they are to do "theistic science." Doubts about the supernatural as a scientific explanation would vanish were they to produce (1) an epistemology for intersubjective knowledge of the supernatural and (2) a workable methodology for producing original data and constructing explanations of it. In Intelligent Design, Dembski does offer a replacement for MN. It hardly meets either criterion and certainly does not qualify as science, but he has little else to which to appeal. In the contest between Christian theism and scientific naturalism, theism wins: Dembski proposes using "Christology" to judge a scientific explanation's "conceptual soundness."²⁰¹ ("Christology is the study of the Person and attributes of Christ, in particular the union in Him of divine and human natures."²⁰²) He means that science must include Christ in its conceptual framework, confirming that ID's presupposition of religion, enunciated by Meyer, is not only sectarian but explicitly Christian.

Robert T. Pennock, *The Science Pages*, BOOK & CULTURE, Sept.–Oct. 1999; Stephen Jay Gould, *Impeaching a Self-Appointed Judge*, SCI. AM., July 1992, at 118, 118–21, available at http://www.stephenjaygould.org/reviews/gould_darwin-on-trial.html (last visited Mar. 8, 2004); Wesley R. Elsberry, *An Extended Review of Phillip E. Johnson's "Darwin on Trial"*, at http://www.antievolution.org/people/wre/evc/biid/dot/pej_dot.html (last visited Mar. 8, 2004); Terry M. Gray, *The Mistrial of Evolution: Review of Phillip E. Johnson's "Darwin on Trial"*, at http://www.asa3.org/gray/evolution_trial/dotreview.html (last visited Mar. 8, 2004); Eugenie C. Scott, *Darwin on Trial: A Review*, at <http://www.ncseweb.org/resources/resources/165252685546.asp> (last visited Mar. 8, 2004). For a critique of Meyer, see Pennock, *supra* note 117. For general critiques of ID, see INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS (Robert T. Pennock ed., 2001); MILLER, *supra*; PENNOCK, *supra* note 91; MARK PERAKH, UNINTELLIGENT DESIGN (2003); NIAL SHANKS, GOD THE DEVIL, AND DARWIN (2004); WHY INTELLIGENT DESIGN FAILS (Matt Young & Taner Edis eds., 2004); Robert T. Pennock, *Creationism and Intelligent Design*, 2003 ANN REV. GENOMICS & HUM. GENETICS, at 143, 143–63 [hereinafter Pennock, *Creationism and Intelligent Design*]; Robert T. Pennock, *Creationism's War on Science*, ENVTL. REV., Feb. 1998, at 7; Pennock, *supra* note 170; Robert T. Pennock, *The Prospects for a Theistic Science*, 50 PERSP. SCI. & CHRISTIAN FAITH 205, 205–09 (1998); Robert T. Pennock, *Should Creationism Be Taught in Public Schools?*, SCI. & EDUC., Mar. 2002, at 111, 111–33; Jason Rosenhouse, *The Design Detectives*, SKEPTIC, Vol. 8, No. 4, 2001, at 59, 59–64; Elliott Sober, *Intelligent Design and Probability Reasoning*, at <http://www.talkreason.org/articles/iD&PRW.pdf> (last visited Mar. 4, 2004); Victor J. Stenger, *Intelligent Design: The New Stealth Creationism*, at <http://www.talkreason.org/articles/Stealth.pdf> (last visited Mar. 4, 2004). This is only a sample of published ID critiques.

201. DEMBSKI, *supra* note 118, at 209.

202. J. J. Walsh & W. P. Loewe, *Christology*, in 3 NEW CATHOLIC ENCYCLOPEDIA 559, 559 (2d ed. 2003).

Apart from saying that “when Christ is the lens through which we survey the world . . . we should expect the christological lens to focus on Christ as well,”²⁰³ Dembski leaves unspecified the particulars of *how* Christology can be *used* to safeguard science’s conceptual soundness, but he does not doubt Jesus’s centrality to science: “Christ, as the completion of our scientific theories . . . renders all our studies the study of himself.”²⁰⁴

If we take seriously the . . . Christology of Chalcedon (. . . Christ is fully human and fully divine) and view Christ as the *telos* toward which God is drawing . . . creation, then any view of the sciences that leaves Christ out . . . must be . . . deficient. . . .

. . . If Christ enters substantively into our scientific theories, must not their scientific status be . . . compromised? . . . [T]here need never be any worry about smuggling Christ into our scientific theories [because] Christ can enter substantively into a scientific theory without violating its integrity.

. . . [T]he conceptual soundness of a scientific theory cannot be maintained apart from Christ. . . . [A] scientist, in trying to understand some aspect of the world, is . . . concerned with that aspect as it relates to Christ . . . regardless of whether the scientist acknowledges Christ. . . .

Christ is indispensable to any scientific theory, even if its practitioners don’t have a clue about him.²⁰⁵

Dembski’s proposal to constrain science according to fifth-century Christian orthodoxy confirms ID’s religious foundation in a way that Beckwith’s superficially non-religious euphemisms are not sufficient to conceal.

5. *ID’s Religious Motivation and Goals*

Since Christian theism is ID’s foundation, the movement’s religious motives and goals are unsurprising. Proponents reject not only naturalism, but also secularism—their admitted aim is to de-secularize America, though Johnson denies favoring theocracy:

203. DEMBSKI, *supra* note 118, at 207.

204. *Id.* at 210.

205. *Id.* at 206–10 (citations omitted). The Christology of Chalcedon is the orthodox Catholic doctrine of Jesus as “perfect God and man, . . . one sole being in two natures, without division or separation and without confusion or change,” affirmed at the Council of Chalcedon in 451 A.D. See P. T. Camelot, *Chalcedon, Council of*, in 3 NEW CATHOLIC ENCYCLOPEDIA 363, 365 (2d ed. 2003); see also Pennock, *The Wizards of ID*, *supra* note 200 (discussing Dembski’s fusion of science and Christology).

I would oppose a theocracy of any kind, including a Christian theocracy, not in spite of the fact that I believe Christian theism to be the correct religious worldview, but *because* I believe the Christian teaching about the sinful heart of man [T]heocrats wielding absolute power will not long remain Christians in any sense that I can recognize.

. . . Acceptance of religious pluralism—separation of church and state in American constitutional jargon—is one of the important ways in which Christianity differs from Islam . . . or from Marxist-Leninism²⁰⁶

But his other comments make his denial unconvincing. He suggests that he defines theocracy narrowly, as the result of force: “Whether a specific religious worldview is correct is one question. Whether and to what extent anyone would use force to ensure that his own religious worldview predominates over the others is a separate question.”²⁰⁷ Yet the manner in which a theocracy is effected is irrelevant. A theocracy could result from changes to a political system from *within* by using the system’s legitimate mechanisms, winning either enough political power or sufficient public approval (or both) to minimize effective resistance. ID’s Wedge Strategy and political maneuvering point to this scenario. The strategy “seeks nothing less than the overthrow of materialism and its cultural legacies” and “[t]o see design theory permeate our religious, cultural, moral and political life.”²⁰⁸ Such thorough permeation by a religious view points threateningly toward theocracy.²⁰⁹ If ID proponents convince federal courts that teaching “the

206. JOHNSON, *supra* note 92, at 169–70 (emphasis in original); *see also* *The “Wedge Document”: So What?*, at <http://www.discovery.org/scripts/viewDB/filesDB-download.php?=109> (last visited May 22, 2005) (stating the Discovery Institute’s disavowal of theocracy); *see also* Forrest & Gross, *supra* note 88, at 259–64, 270–73; Barbara Forrest & Paul R. Gross, *The Wedge of Intelligent Design: Retrograde Science, Schooling and Society*, in *SCIENTIFIC VALUES AND CIVIC VIRTUES* (Noretta Koertge ed., forthcoming 2005) (discussing the Wedge’s theocratic leanings).

207. JOHNSON, *supra* note 111, at 170.

208. *The Wedge Strategy*, *supra* note 88; *see also* FORREST & GROSS, *supra* note 88, at 239–55 (discussing the Wedge’s political influence at the national level).

209. Theocracy has taken different forms and has several meanings. According to *The Encyclopedia of Religion*, “Theocracy . . . refers to a type of government in which God or gods are thought to have sovereignty, or to any state so governed.” Dewey D. Wallace, Jr., *Theocracy*, in 14 *ENCYCLOPEDIA OF RELIGION*, *supra* note 113, at 427. Although the concept has no rigorous definition in social science or the history of religion and does not denote a specific political system (as does “monarchy,” for example), it “designates a certain kind of placement of the ultimate source of state authority, regardless of the form of government.” *Id.* There are four types: “hierocracy, or rule by religious functionaries; royal theocracy, or rule by a sacred king; general theocracy, or rule in a more general sense by a divine will or law; and eschatological theocracy, or future rule by the divine.” *Id.* The meaning we intend here is general theocracy, “wherein ultimate authority is considered to be

controversy” is legal, they will have moved the country closer to theocracy by means of the judicial system, undermining secular government using the system itself. Meyer highlighted one aspect of such a strategy even before the Wedge’s formation, commenting on a creationist defeat in the early stages of *Edwards*: “The lawyers representing creationism have already submitted an appeal in the U.S. Court of Appeals. The creationist strategy, in general, remains the waging of a war of attrition. They plan to *keep* creation-science alive in appeal until conservative Reagan appointees begin to stock the courts in greater numbers.”²¹⁰

Johnson’s constant drumbeat against academic and political secularism suggests that Christian theocracy is precisely his goal. He mourns American universities’ transition “from Protestant establishment to established nonbelief” and Yale’s subordination of its “Christian atmosphere” to “the secular enlightenment values of freedom of inquiry, political equality, and public service.”²¹¹ He accuses “secularized intellectuals” of “apostasy,” asserting that “[theists] need to help the public . . . understand that the nihilism permeating contemporary life is the inevitable consequence of apostasy.”²¹² Calling naturalism America’s “established religion,” he strongly implies that the Christian majority’s views deserve government sanction and that religious neutrality is wrong:

vested in a divine law or revelation, mediated through a variety of structures or polities,” which embodies an ideal shared by John Calvin, Oliver Cromwell, and the Massachusetts Puritans: “a holy community on earth in which the sovereignty was God’s and in which the actual law should reflect the divine will and the government seek to promote the divine glory.” *Id.* at 429. In Cromwell’s England and the Massachusetts Bay Colony, “there was both a hearkening after Old Testament theocratic patterns and a sense of the importance of government entrusted to truly regenerate persons—or the saints—in an effort to create a holy commonwealth,” in which “rule was exercised . . . more through a godly laity than through the clergy.” *Id.* This is closest to what ID leaders seem to favor. For example, when Johnson observes that scientific naturalists “will tolerate Christianity provided that Christian doctrines are confined to private life and not proposed as a basis for lawmaking or employed in public education,” he clearly believes law and public education should be free from such constraints. See JOHNSON, *supra* note 92, at 121. The subtitle of his book, *Reason in the Balance: The Case Against Naturalism in Science, Law and Education*, names the “structures and polities” through which he believes divine law should be mediated. Though he speaks nostalgically of biblically based law (see *supra* note 177), he disapproves of “modernist culture [which] retains the prohibition of theft and murder, retains the sabbath merely as a secular day of recreation, discards the admonition to have ‘no other gods before me’ . . . , and regards ambivalently the prohibition of adultery and the command to honor parents.” JOHNSON, *supra* note 106, at 39. Elsewhere, his dislike of secular law and longing for a God-based legal system pervades his entire discussion. See Phillip E. Johnson, *Nihilism and the End of Law*, FIRST THINGS, Mar. 1993, at 19 [hereinafter Johnson, *Nihilism*].

210. Meyer, *supra* note 138, at n.1 (Mar. 1986). Creationists continue to rely upon the federal courts’ increasing conservatism.

211. Phillip E. Johnson, *What (If Anything) Hath God Wrought?*, ACADEME, Sept.–Oct. 1995.

212. Johnson, *Nihilism*, *supra* note 209.

Government [and] lawmaking . . . presuppose the viewpoint of . . . [agnostics]. . . . Their view is that God is real if that idea works for you.

So that's the viewpoint on God . . . throughout public life in the United States. . . . This . . . is presupposed in public life, and . . . is why . . . tolerance has become central. In this way of thinking, true religion means that you never interfere with somebody else's belief system and that all of these are relative systems good only for the person who holds that belief, so government should presuppose none of these beliefs.

That means . . . that the agnostic position . . . becomes the neutral position which governs the country. This is what the Supreme Court has effectively enacted and imposed in its religious-liberty decisions.²¹³

At a 1996 ID conference, he spoke longingly of days before *Engel v. Vitale*, when "America was unified by the concept that people of different races and religious traditions all worship . . . the God of the Bible," and regretfully of post-*Engel* America, which "has declared its independence from God."²¹⁴

Its early nomenclature (Center for the *Renewal* of Science and Culture) indicates that the CSC is working aggressively for a cultural renewal fueled by evangelical religion. Johnson characterizes ID's strategy:

Christians in the 20th century have been . . . fighting a defensive war to defend what they have It never turns the tide. . . . [W]e're trying to do . . . something entirely different . . . to go into enemy territory . . . and blow up the ammunition dump. What is their ammunition dump in this metaphor? It is their version of creation.²¹⁵

ID proponents hope to de-secularize American society, which can only mean that they hope to move the country toward theocracy. In the Catholic *Crisis* magazine, CSC fellow Benjamin Wiker predicts an ID-fomented cultural de-secularization:

213. Jerry Aust, *Creation and Evolution*, GOOD NEWS, July–Aug. 1998, at <http://www.gn-magazine.org/issues/gn17/gn98ja.pdf> (last visited Jan. 24, 2004).

214. Phillip E. Johnson, *How to Sink a Battleship: A Call to Separate Materialist Philosophy*, REAL ISSUE, Nov.–Dec. 1996, at <http://www.leaderu.com/real/ri9602/johnson.html> (last visited Apr. 14, 2004).

215. Steve Benen, *Science Test*, CHURCH & ST., July–Aug. 2000, at 8–9.

Secularized science has as its aim the reduction of apparent design . . . to the unintelligent interplay of chance and brute necessity Secularized science . . . supports secularized philosophy, . . . the . . . mouthpiece of the alliance.

The ID movement seeks to restore sanity to science, philosophy, and hence culture by investigating the possibility that nature . . . can only be understood as the effect of an Intelligent Designer [S]ecularized philosophy will be forced to confront the scientific evidence that truth is not . . . a mere human artifact Soon enough, secularized culture will be compelled to realign.²¹⁶

Moreover, the logic of Dembski's anti-naturalism points inexorably toward theocracy. He declares that scientific naturalism is idolatry, i.e., to exclude God from science is to worship nature.²¹⁷ If secular science is idolatrous, then a secular political system protecting science and public education is also idolatrous. The only remedy would be the de-secularization of science, government, and education.²¹⁸

The Wedge Strategy spells out the "cultural renewal" program. Science—or public understanding of it—is only the *first* target: "Design theory promises to reverse the stifling dominance of the materialist worldview, and to replace it with a science consonant with Christian and theistic convictions."²¹⁹ But the strategy includes "Twenty Year Goals" encompassing "psychology, ethics, politics, theology and philosophy . . . the

216. Benjamin D. Wiker, *Does Science Point to God?: The Intelligent Design Revolution*, CRISIS, Apr. 7, 2003, at <http://www.crisismagazine.com/april2003/feature1.htm> (last visited Apr. 14, 2004).

217. See *supra* note 130 and accompanying text.

218. This logic reflects Johnson's arguments in *Reason in the Balance*, *supra* note 106. The Wedge has received money from Howard F. Ahmanson, who for many years funded and was on the board of the Christian Reconstructionist Chaldeon Institute, which aims to reorganize American culture and government according to "Biblical law." See FORREST & GROSS, *supra* note 88, at 265–67; see also Max Blumenthal, *Avenging Angel of the Religious Right*, SALON, Jan. 6, 2004, at <http://www.salon.com/news/feature/2004/01/06/ahmanson/print.html> (last visited Apr. 10, 2004). Ahmanson is now on the Discovery Institute's board of directors. See Discovery Institute, *About Discovery*, at <http://www.discovery.org/fellows> (last visited Apr. 10, 2004).

219. *The Wedge Strategy*, *supra* note 88. The ID movement will not alter the way science is done; science is merely its cultural vehicle. Johnson admits, "This isn't really, and never has been, a debate about science. . . . It's about religion and philosophy." Jay Grelen, *Witnesses for the Prosecution*, WORLD, Nov. 30, 1996. The Wedge aims to persuade a significant segment of the public and politicians that ID, as an alternative to evolution, should be taught as public school science. Their vehicle is well chosen: Americans' high levels of religious and political conservatism and low science literacy are well documented. See *Science and Technology: Public Attitudes and Public Understanding*, in SCI. & ENGINEERING INDICATORS 2002, at <http://www.nsf.gov/sbe/srs/seind02/pdf/c07.pdf> (last visited Apr. 14, 2004); see also *Religion and Politics: Contention and Consensus*, July 24, 2003, at <http://pewforum.org/publications/surveys/religion-politics.pdf> (last visited Mar. 6, 2004).

fine arts [and] . . . religious, cultural, moral and political life.”²²⁰ Behe sees ID as the antidote to the “materialism” infecting modern culture and as an evangelical counter-weapon against attacks on Christianity:

[S]cientific evidence of design means a lot for Christians First, . . . understanding . . . God’s creation allows us to . . . delight in his works [W]e . . . appreciate his power and . . . realize that our lives are in strong hands.

Second, Christians live in the world with non-Christians. We want to share the Good News . . . and to defend the faith against attacks. Materialism is . . . a weapon that . . . antagonists use against Christianity and a stumbling block to some who would otherwise enter the church. To the extent that the credibility of materialism is blunted, . . . showing the reasonableness of the faith is . . . easier.²²¹

However, the Christian convictions that the ID movement promotes are quite regressive (and do not reflect the broader, more tolerant Christian community). Dembski and CSC fellow Jay Wesley Richards define them unambiguously in *Unapologetic Apologetics*, which contains essays they wrote in the mid-1990s as Princeton Theological Seminary students. Dembski and Richards wrote these essays after the Wedge’s formation, at approximately the time of the CRSC’s establishment, so they can be seen as ID’s theological framework. In the foreword, Johnson affirms that behind their anti-evolution student movement at PTS stands a “movement that will bear fruit in the coming century,” i.e., ID.²²² Dembski believes Christian apologetics is crucial to ID’s agenda: “The job of apologetics is to . . . clear obstacles that prevent people from coming to . . . Christ [I]f . . . anything . . . has blocked . . . people accepting the Scripture and Jesus Christ, it is the Darwinian naturalistic view”²²³

Dembski and Richards’s vision of a culturally renewed, Christian America is not only theocratic but also disturbingly exclusionary. They speak nostalgically of “the sixth century up to the Enlightenment,” when “the West was thoroughly imbued with Christian ideals and . . . intellectual elites were

220. *The Wedge Strategy*, *supra* note 88.

221. Michael J. Behe, *Tulips and Dandelions*, BOOKS & CULTURE, Sept.–Oct. 1998, at <http://web.archive.org/web/20030622153241/http://www.christianitytoday.com/bc/8b5/8b5034.html> (last visited Apr. 14, 2004).

222. One of the *Wedge Strategy*’s objectives is “Seminaries increasingly recognize & repudiate naturalistic presuppositions.” *The Wedge Strategy*, *supra* note 88. See FORREST & GROSS, *supra* note 88, at 157 (concerning PTS student organization).

223. Benen, *supra* note 215, at 14.

overwhelmingly Christian,” when “[f]alse ideas that undermined the . . . Christian faith (e.g., denying the resurrection or the Trinity) were swiftly challenged and uprooted.”²²⁴ They disavow “inquisitorial” methods but lament allowing “the collective thought of the world to be controlled by ideas that prevent Christianity from being regarded as anything but a harmless delusion.”²²⁵ Declaring a mandate to “[bring] every aspect of life under the influence of . . . [Christ],” despite such a mandate’s “elitism and intrusiveness,” they insist, “humans must decide their allegiances.” Jesus says that we are either for him or against him. There is no middle ground.”²²⁶ Dembski then surpasses even these regressive sentiments by proposing to revive the transgression of heresy, even at the cost of peaceful coexistence:

Within . . . North American Christianity, *heresy* has become an unpopular word. Can’t we all just get along and live together in peace? Unfortunately the answer is no. Peace cannot be purchased at the expense of truth. . . . There is an inviolable core to the Christian faith. Harsh as it sounds, to violate that core is to place ourselves outside the Christian tradition. This is the essence of heresy, and heresy remains a valid category for today²²⁷

Dembski’s exclusionism is echoed by Johnson, who dismisses the faith even of other Christians, as he did of evolutionary biologist and Behe critic Kenneth Miller, like Behe a devout Catholic:

The only reason I have to believe that Kenneth Miller is a Christian is that he says so. *Maybe* he’s sincere. But *I* don’t know that. If he is, I *can* say this: you often find the greatest enemies of Christ in the church [T]here is a kind of person who may be sincere in a way, but . . . goes into church . . . to save it from itself by bringing it into concert with evolutionary naturalism [T]hese are . . . people . . . more dangerous than an outside atheist So I am not impressed that somebody *says* that he is a Christian . . . and believes that evolution is our creator. . . . [S]uch people often do a great deal of damage within the church.²²⁸

224. See William A. Dembski & Jay Wesley Richards, *Reclaiming Theological Education*, in UNAPOLOGETIC APOLOGETICS 11, 20 (William A. Dembski & Jay Wesley Richards eds., 2001); see also Forrest & Gross, *supra* note 206 (concerning ID proponents’ religious exclusionism).

225. Dembski & Richards, *supra* note 224, at 19.

226. *Id.* at 18.

227. William A. Dembski, *The Task of Apologetics*, in UNAPOLOGETIC APOLOGETICS 31, 43 (William A. Dembski & Jay Wesley Richards eds., 2001).

228. Interview by Hank Hanegraaff with Phillip Johnson, *Bible Answer Man* (Christian Res. Inst. online broadcast, Feb. 21, 2003) (transcript on file with Barbara Forrest).

Miller's religiosity would be irrelevant if ID were about science. Johnson's disparagement of Miller's faith reeks of intolerance. He also directs his exclusionism against Islam, placing his comments within the context of the 2001 World Trade Center attack:

This isn't the same country we were in the previous decades [T]he country is almost cringing in fear of these Muslim terrorists from the Middle East. I see professors afraid to discuss the subject because they're afraid of . . . the Muslim students I never thought our country would descend to this level.

We are afraid to search the truth and to proclaim it. *We once knew who the true God was and were able to proclaim it frankly. But since about 1960 we've been hiding from that. We've been trying to pretend that all religions are the same.*²²⁹

The Wedge's vision of cultural renewal devalues religious views that do not coincide with the controlling Christian viewpoints of its leaders. Such religious exclusionism not only identifies the ID movement as sectarian, but brands it as a radically peripheral Christian sectarianism.

Dembski and Johnson thus make plain their mission's urgency: America needs ID's culturally regenerative message, and the Wedge Strategy's goals must be pursued where that message can take root most deeply and comprehensively: the minds of public school students. Thus, establishing a beachhead in public schools is the first priority—so urgent, in fact, that Dembski wants ID taught despite lacking any science to legitimate it.

Mike [Gene] . . . takes the "high road" that ID must first be developed further as a scientific and scholarly program before it may be . . . taught in public school science curricula But I've come to reject this view entirely

Why should ID supporters allow the Darwinian establishment to indoctrinate students at the high school level, only to divert some of

229. Dick Staub, *The Dick Staub Interview: Phillip Johnson*, CHRISTIANITY TODAY, Dec. 3, 2002, at <http://www.christianitytoday.com/ct/2002/147/22.0.html> (last visited Jan. 27, 2004) (emphasis added). Dembski and Johnson make such comments despite at least one Wedge's member being Jewish (David Berlinski) and ISCID's having a Muslim fellow (Muzaffar Iqbal of the Center for Islam and Science). But diversity is negligible in the Wedge; it is a conservative Christian movement. The implication of Dembski and Johnson's theology regarding their non-Christian fellows raises the question of whether the Wedge is using them opportunistically. See Nancy Pearcey, *We're Not in Kansas Anymore*, CHRISTIANITY TODAY, May 22, 2000, at 47 (concerning Berlinski); Int'l Soc'y for Complexity, Info. & Design, *Society Fellows*, at <http://www.iscid.org/fellows.php> (last visited Jan. 27, 2004) (concerning Iqbal).

the brightest to becoming supporters of . . . evolution, when by presenting ID at the high school level some of these same students would go on to careers trying to develop ID as a positive research program? If ID is going to succeed as a research program, it will need workers, and these are best recruited at a young age.²³⁰

Speaking of ID's failure to become a "disciplined science," Dembski noted schools' importance for ID recruiting:

For scientific ideas to prosper (. . . whether . . . correct or ultimately mistaken . . .), they must be . . . taught within the educational mainstream. This is the only way to win the next generation of scholars to intelligent design. Without a presence in the science curriculum, [ID] will limp along, merely winning stragglers here and there.

. . . Without a significant presence in the educational mainstream, . . . [ID] will . . . be marginalized and never attain its full potential. A design-theoretic curriculum is therefore indispensable to the success of . . . [ID] as a scientific and intellectual movement.²³¹

A presence in public education is vital to spreading ID and reversing the damage of secularism, which Johnson sees as incompatible with Christianity.²³² He is confident of victory: "[I]t is nearly inevitable that 'teach the controversy' will become public policy."²³³ And the Wedge is being helped by powerful Christian organizations that see ID as a way to advance

230. William A. Dembski, *Then and Only Then: A Response to Mike Gene*, at http://www.designinference.com/documents/2002.07.Mike_Gene.htm (last visited Apr. 14, 2004). "Mike Gene" is a pseudonymous ID supporter. See FORREST & GROSS, *supra* note 88, at 331. ID advocates also cultivate followers in higher education, seeing a presence there as crucial to influencing public education. Academic supporters are used as a selling point when approaching school boards. See *id.* at 165, 199–201, 296–314.

231. Dembski, *Disciplined Science*, *supra* note 199. Two ID advocates have been more forthright (publicly) about teaching ID in public schools. Paul Nelson says, "[ID] isn't a fully fledged theory—there isn't yet enough there to actually teach." See Colin Barry, "Intelligent Design" May Underlie Life, DARTMOUTH ONLINE (Feb. 21, 2003), at <http://www.thedartmouth.com/article.php?aid=2003022101040> (last visited Jan. 27, 2004). Bruce Gordon, Dembski's Polanyi Center partner, stated that "[ID] has been prematurely drawn into discussions of public science education where it has no business making an appearance without broad recognition from the scientific community." Bruce Gordon, *Intelligent Design Movement Struggles with Identity Crisis*, RES. NEWS & OPPORTUNITIES IN SCI. & THEOLOGY (Templeton Found.), Jan. 2001, at 9; see also Blair Martin, *Polanyi Center's Future Is Unclear*, BAYLOR LARIAT, Oct. 24, 2000 (concerning Gordon and the Polanyi Center).

232. See Aust, *supra* note 213.

233. Phillip E. Johnson, *Wells Hits a Home Run at Harvard*, WEEKLY WEDGE UPDATE, Dec. 2, 2001, at http://www.arn.org/docs/pjweekly/pj_weekly_011202.htm (last visited Mar. 6, 2004).

their own efforts to breach the constitutional wall between church and state.²³⁴

Johnson thus sees the Wedge Strategy's success as Christianity's victory—in education, lawmaking, and restoring America's Christian foundations:

“Secular society, and particularly the educational institutions, . . . assumed throughout the 20th century that the Christian religion is . . . a hangover from superstitious days,” Johnson said. “With . . . [ID's] success . . . we're going to understand that . . . Christians have been right . . . at least on . . . major elements . . . like divine creation.”

As a result, Johnson says, it will no longer be plausible to argue that “Christian ideas have no legitimate place in public education, in public lawmaking, in public discussion generally.”

. . . [S]cientific materialism . . . lead[s] to bad consequences for society [M]aybe we had a better grasp of the truth when we were a Christian country than . . . when Christian truths were spurned.”²³⁵

This anti-secularism is not confined to the CSC, but permeates an institution that Johnson calls a model for “prepar[ing] students to meet the intellectual challenges of evolutionary naturalism”—Biola University's Torrey Honors Institute.²³⁶ Named by ID auxiliary Access Research Network (“ARN”) as one of two “ID Colleges,” Biola promotes ID actively.²³⁷ Torrey is a distinctly anti-secular model for ID's entry into public education, as its director, CSC fellow John Mark Reynolds, affirms: “Torrey . . . is at war with the modern culture. Torrey does not want to ‘get along’ with materialism, secularism, naturalism, post-modernism, radical feminism, or spiritualism. We want to win over through service every facet of the culture, from the arts to the sciences, for the Kingdom of Christ.”²³⁸ Reynolds' comments reflect Wedge Strategy goals precisely.

234. See FORREST & GROSS, *supra* note 88, at 270–73.

235. Mark Hartwig, *The Meaning of Intelligent Design*, BOUNDLESS, July 18, 2001, at <http://www.boundless.org/2000/features/a0000455.html> (last visited Mar. 6, 2004).

236. See *Biola University: Torrey Honors Institute*, at <http://www.arn.org/colleges/biola.htm> (last visited Mar. 6, 2004).

237. The other college is Oklahoma Baptist University. See *ID Colleges*, at <http://www.arn.org/college.htm> (last visited Jan. 24, 2004). Biola made ID even more integral to its curriculum by adding a master's degree in religion and science: “This program is a component of the educational wing of the ID movement, which also includes Biola's Torrey Honors Institute.” See *Intelligent Design Theory and Biola University*, at <http://www.biola.edu/id/about.cfm> (last visited Mar. 12, 2004).

238. John Mark Reynolds, *Origin of Torrey*, at <http://www.biola.edu/academics/torrey/about/reynolds.cfm> (last visited Mar. 6, 2004).

B. ID as Traditional Creationism

In 1996, when the CRSC needed to build its religious support base, Wells, one of its first fellows, openly called ID proponents creationists: “The most vocal advocates of design in the creation-evolution controversies . . . are creationists . . . such as . . . Phillip E. Johnson . . . [who] charg[e] evolutionists with misusing science as a platform for their atheistic beliefs.”²³⁹ But with a secure base and financial support, the Wedge must now portray ID as constitutional; hence Dembski’s denial on Metanexus, a website for a broader, more diverse audience, that ID is creationism.²⁴⁰ In an interview by D. James Kennedy, when Dembski tried to disconnect ID from creationism and religion, Kennedy got the point quickly:

Kennedy: . . . Darwinian advocates use the term [intelligent design] differently than those . . . actually associated with the movement. How is it used by Darwinians? What’s the difference?

Dembski: Well, the phrase “intelligent design,” you mean. I think the Darwinians will want to identify intelligent design with creationism. . . . [T]here’s a crucial distinction. . . . Intelligent design is . . . friendly to the Christian doctrine of creation, but they’re not identical. . . .

Kennedy: Well, . . . there are several advantages to that. . . . [I]t keeps them [Darwinian advocates] from throwing intelligent design out . . . of the courts as being merely religious, which they have frequently done, in Arkansas and the Supreme Court, saying creation is religious and evolution is scientific.²⁴¹

As the ID movement assumes a more public profile and is more subject to the hoped-for legal challenge, its strategy has evolved. Certain of a challenge

239. Jonathan Wells, *Issues in the Creation-Evolution Controversies*, WORLD & I, Jan. 1996, <http://www.worldandI.com/public/1996/january/ar6.cfm> (last visited Apr. 14, 2004).

240. See Dembski, *supra* note 86.

241. Radio interview by D. James Kennedy with William A. Dembski, *Truths that Transform* (Feb. 25, 2002). Kennedy’s Coral Ridge Ministries mission is “to evangelize, nurture Christian growth through biblical instruction, and act in obedience to the Cultural Mandate by applying the truth of Scripture to all of life, including civic affairs.” *Coral Ridge Ministries: About Coral Ridge Ministries*, at http://www.coralridge.org/about_crm.htm (last visited Mar. 6, 2004). Kennedy has begun his own “creation evangelism” program in partnership with the Creation Studies Institute (CSI) and is actively promoting ID. See *Coral Ridge Ministries Launches Creation Outreach*, IMPACT (Coral Ridge Ministries), May 2004, at http://www.crministries.org/impact/2004_May_Pg1.htm (last visited May 26, 2004); see also *Creation Studies Institute*, at <http://www.creationstudies.org> (last visited May 26, 2004); *Intelligent Design in the Classroom*, FASTFACTS: CREATION V. EVOLUTION (Ctr. for Reclaiming Am., Ft. Lauderdale, FL.), at http://www.reclaimamerica.org/pages/fastfacts/creation_evolution.pdf (last visited May 26, 2004) (Kennedy’s promotion of ID).

if a gullible or politically unscrupulous school board can be persuaded to teach ID, proponents now use semantic subterfuge toward this end: Both ID leaders and supporters sanitize their language, cleansing it of references to God and even to ID itself. Denying that ID is creationism, they use seemingly innocuous euphemisms for “intelligent design,” knowing the term will now arouse opposition from lawsuit-wary (or principled) board members. Ohio is an exemplary case of such linguistic chicanery.

ID proponents’ Ohio strategy began with infiltrating the science standards writing team and promoting ID as “*intelligent design*” to the Ohio Board of Education. John Calvert of Intelligent Design Network (IDnet), a Wedge auxiliary, urged the standards committee to allow teaching the “Design Hypothesis.”²⁴² Ohio ID supporter Robert Lattimer joined the writing team to make sure ID was considered: “Our main contention is that these standards . . . leave no room for the possibility that part of nature can be designed.”²⁴³ Lattimer and Calvert urged that “intelligent design . . . be included in the curriculum.” Board member Michael Cochran wanted ID in the standards: “Mr. Cochran recommended that *alternative standards* . . . include . . . intelligent design theory.”²⁴⁴ But facing opposition, Stephen Meyer suddenly offered a “compromise,” asking the board merely to “permit” teachers to “teach the controversy” about evolution rather than require ID. The board compromised by allowing a benchmark requiring students to know how scientists “critically analyze aspects of evolutionary theory,” a euphemism for teaching ID criticisms of evolution.²⁴⁵ (Johnson confirmed Wells’s early candor by declaring the concession a victory for “divine creation.”²⁴⁶) ID supporters were then allowed to write a lesson for the benchmark and used this opportunity to structure ID into the lesson.²⁴⁷ Since ID is not in

242. See John H. Calvert, Remarks to the Standards Committee of the Ohio State Board of Education (Jan. 13, 2002), at <http://www.IntelligentDesignNetwork.org/ohioboardtalk.htm> (last visited Mar. 15, 2004).

243. See David Lore, *Ohio Closer to Standards for Teaching of Evolution*, COLUMBUS DISPATCH, Jan. 31, 2002, at 4C (concerning Lattimer on the writing team).

244. See Robert Lattimer & John Calvert, *Intelligent Design is a Matter of Academic Freedom*, CLEVELAND PLAIN DEALER, Jan. 18, 2002 (concerning intelligent design curriculum); see also Science Excellence for All Ohioans, *The Ohio Firestorm of 2002*, at <http://www.sciohio.org/firestorm.htm> (last visited Mar. 16, 2004) (concerning Cochran). SEAO is the Ohio affiliate of IDnet, thus an ID advocacy organization.

245. See Stephen C. Meyer, *Teach the Controversy*, CINCINNATI ENQUIRER, Mar. 30, 2002 (concerning Meyer’s proposal); Kenneth R. Miller, *Goodbye, Columbus*, REP. OF THE NAT’L CENTER FOR SCI. EDUC., Jan.–Apr. 2002, at 6. The board inserted a disclaimer after this benchmark, but it failed to deter ID supporters. See *infra* notes 424–30 and accompanying text.

246. See Phillip E. Johnson, *A Step Forward in Ohio*, TOUCHSTONE, Jan.–Feb. 2003; see also FORREST & GROSS, *supra* note 88, at 227–38 (concerning Ohio).

247. See *infra* notes 424–30 and accompanying text; see also Ohio Dep’t. Educ., CRITICAL ANALYSIS OF EVOLUTION, GRADE 10, at http://www.ode.state.oh.us/academic_content_

legitimate science sources, students would nonetheless find such “evidence” easily—a Google search for “evidence challenging evolution” yields a wealth of ID material. Despite Ohio Citizens for Science’s efforts to delete the lesson, the board approved it. Knowing a legal challenge loomed, Lattimer kept his public response aligned with the new strategy: “Our opposition has . . . paint[ed] this lesson as something that promotes religion—intelligent design, creationism or both It . . . has no content that is religious at all. It’s totally science.”²⁴⁸ Yet Lattimer had earlier termed the “critical analysis” compromise as a victory for which “the real credit goes to God.”²⁴⁹

Focus on the Family had sent letters to 128,000 Ohioans supporting the Wedge’s effort to alter the standards. The Religious Right now applauded again, seeing the true implications but preserving the verbal façade, as long-time Religious Right activist Phyllis Schlafly did: “There is nothing religious, or about creationism, or even about intelligent design in the new Ohio standards The new lesson encourages students to consider both supporting and ‘challenging’ evidence for evolution.”²⁵⁰ Such support shows that, in the long run, the ID movement comprises far more than the Wedge. It is broad and deep, with supporters from Georgia to California, from the national to the local level. All view the movement as religious.

Yet despite the semantic dissembling, ID fits *all* the criteria of creationism:

standards/sciencesboe/pdf_setA/L10-H23_Critical_Analysis_of_Evolution_Mar_SBOE_changes.pdf (last visited Mar. 18, 2004). Other euphemisms are “objective origins,” in a policy that was almost adopted in Darby, Montana, and Discovery Institute’s pleas in Texas for teaching evolution’s “strengths and weaknesses.” See Michael Moore, *Darby Schools OK “Objective Origins,”* MISSOULIAN, Feb. 3, 2004, at <http://www.missoulia.com/articles/2004/02/03/news/top/news01.txt> (last visited Apr. 14, 2004); see also Bruce Chapman, *How Should Schools Teach Evolution? Don’t Forget Weaknesses in Theory,* DALLAS MORNING NEWS, Sept. 21, 2003, <http://www.discovery.org/scripts/viewDB/index.php?program=CRSC&command=view&id=1574> (last visited Apr. 14, 2004); Michael Moore, *Darby Rejects “Objective Origins” Supporters,* MISSOULIAN, May 5, 2004, <http://www.missoulia.com/articles/2004/05/05/news/mtregional/news06.txt> (last visited May 26, 2004). Still another is in a Minnesota bill calling for state science standards to require students to know how “new evidence can challenge . . . accepted theories and models including . . . [the] theory of evolution.” H.F. 2558, 83rd Leg., Reg. Sess. (Minn. 2003–2004) (emphasis added).

248. Jim Brown, *Ohio Schools Adopt Curriculum Critically Challenging Evolution,* AGAPE PRESS, Mar. 12, 2004, at <http://headlines.agapepress.org/archive/3/122004b.asp> (last visited Mar. 19, 2004).

249. Clem Boyd, *Loosening Darwin’s Grip,* CITIZEN (Focus on the Family), Mar. 2003, <http://family.org/cforum/citizenmag/coverstory/a0024918.cfm> (last visited Apr. 14, 2004).

250. Phyllis Schlafly, *Ohio Lesson Plan Pleases Parents, Irks Apostles of Darwin,* HUM. EVENTS, Mar. 18, 2004, at <http://www.humaneventsonline.com/article.php?id=3305> (last visited Mar. 18, 2004); see also Boyd, *Loosening Darwin’s Grip,* *supra* note 249. These responses typify Religious Right support of ID.

(1) belief in . . . creation . . . by a supernatural designer and . . . the designer's *continuing intervention* . . . ; (2) . . . anti-evolutionism . . . on theological, moral, ideological, and political, but never scientific grounds; (3) criticism of . . . methodologies underpinning . . . scientific evidence for . . . evolution . . . without presenting for peer-review any competing theory . . . ; and (4) . . . grounding of anti-evolutionism in . . . scripture. (citation omitted) And . . . the . . . *political* effort to influence and . . . rewrite school science curricula.²⁵¹

ID thus interfaces seamlessly with traditional creationism. All of Dembski's key arguments were prefigured by Norman Geisler, a creationist witness in the 1981 Arkansas trial.²⁵² Forrest and Gross show that ID grew directly out of 1980s progressive creationism ("PC"), epitomized in a 1984 article, *The Trustworthiness of Scripture in Areas Relating to Natural Science*, by CRSC fellows Walter Bradley and Charles Thaxton. Dembski's complex specified information and Behe's "molecular machines" are also prefigured in PC.²⁵³

ID is also continuous with the most *regressive* creationism: Dembski's anti-evolutionism mirrors that of YECs Duane Gish and Henry Morris. He lists as "intractable" problems for natural selection and "any other undirected natural process"

the origin of life, . . . the genetic code, . . . multicellular life, [and] . . . sexuality, the absence of transitional [fossil] forms . . . , the [Cambrian] biological big bang, . . . the development of complex organ systems and . . . irreducibly complex molecular machines.²⁵⁴

Gish and Morris cited the same putative problems in 1978 and 1974, respectively. Further, ID's anti-naturalism is presaged in Gish's attacks on science's "materialistic, naturalistic explanation for the origin of all living things."²⁵⁵ Both ID and YEC also charge that teaching only evolution violates academic freedom, and both market creationist textbooks as scientific supplements to public school texts.²⁵⁶ Moreover, Johnson's definition of creationism is virtually identical to Morris's. Morris calls the

251. FORREST & GROSS, *supra* note 88, at 283–90.

252. See PENNOCK, *supra* note 91, at 250–52; Pennock, *The Wizards of Id*, *supra* note 200, at 650; *see also* Trial Transcript, *McLean v. Arkansas Bd. of Educ.*, 529 F. Supp. 1255 (E.D. Ark. 1982), *available at* http://www.antievolution.org/projects/mclean/new_site/index.htm (last visited Mar. 6, 2004).

253. See FORREST & GROSS, *supra* note 88, at 276–81 (concerning ID and PC).

254. Dembski, *supra* note 84, at 13, 22–23.

255. See Pennock, *Creationism and Intelligent Design*, *supra* note 200, at 143, 155.

256. See FORREST & GROSS, *supra* note 88, at 284–87. Morris's book is *Scientific Creationism* (1974) and the ID book is *Of Pandas and People* (1993). See *supra* notes 66, 156.

“creation model . . . (1) supernaturalistic; (2) externally directed; (3) purposive, and (4) completed.”²⁵⁷ Johnson defines creationism as belief that “a supernatural Creator not only initiated this process [of creation] but in some meaningful sense *controls* it in furtherance of a purpose.”²⁵⁸ Johnson’s control is Morris’s external direction. And since Johnson rejects macroevolution, allowing “microevolution” only *within* species, he, like Morris, views creation as completed.

Johnson’s minimalist definition may appear to include theistic evolution (“TE”), the view that God created life through evolution, but this inclusiveness is deceptive, since he applies the definition selectively. ID *rejects* TE, definitively marking it as creationism. Johnson speaks dismissively of well-known theistic evolutionists and charges, “Theistic evolutionists generally accept the entire Darwinian scientific picture, but say that God was invisible and undetectably behind it.”²⁵⁹ ID, however, insists upon the designer’s *empirical detectability*. He calls TE “a false dream that we can . . . give in to the world, and yet still hold a little bit of Christianity.”²⁶⁰ Dembski rejects TE even more emphatically. Employing his well-known hedging and self-contradiction, he declares ID “compatible with everything from . . . discontinuous creation (e.g., God intervening at every conceivable point to create new species) to the most far-ranging evolution (e.g., God seamlessly melding all organisms together into one great tree of life)”—i.e., theistic evolution.²⁶¹ He then retreats, equating TE with atheism: “That said, intelligent design is incompatible with . . . ‘theistic evolution’ . . . [which] is no different from atheistic evolution. . . . Within theistic evolution, God is a master of stealth who . . . eludes our . . . efforts to detect him empirically.”²⁶² In 1995, he proclaimed, “*Design theorists are no friends of theistic evolution*. . . . [TE] is American evangelicalism’s ill-conceived accommodation to Darwinism.”²⁶³ He has also called TE ID’s “most implacable foe.”²⁶⁴ But there is no more religiously acceptable reconciliation

257. SCIENTIFIC CREATIONISM, *supra* note 156, at 11.

258. Johnson, *Darwin on Trial*, *supra* note 73, at 4 n.1. This definition is the minimalist creationism that Johnson says unites believers in a Creator. It dates from the early 1990s, when Johnson was not yet treating ID and creationism as distinct, but distinguishing between creationism and naturalism. See FORREST & GROSS, *supra* note 88, at 282–84.

259. See JOHNSON, WEDGE OF TRUTH, *supra* note 73, at 65, 89.

260. Interview by Hank Hanegraaff, *supra* note 228.

261. DEMBSKI, *supra* note 118, at 109.

262. *Id.* at 110. Despite superficial attempts to cast ID as mainstream science, Dembski must always reveal his true position so as not to alienate ID’s creationist supporters.

263. William A. Dembski, *What Every Theologian Should Know About Creation, Evolution and Design*, PRINCETON THEOLOGICAL REV., Mar. 1996, available at http://www.arn.org/docs/dembski/wd_theologn.htm (last visited on Mar. 6, 2004).

264. Dembski, *supra* note 163. Rejecting TE is part of Dembski’s objection to “this tendency to lump [design theorists] with fundamentalism as opposed to placing them squarely within the

of evolution and theism than TE; most Christians and Jews endorse it.²⁶⁵ Since ID proponents obviously do not reject theism, rejecting TE equals rejecting evolution. Johnson confirms this outright, declaring both that “evolution is not true” and that “evolution is basically a hoax.”²⁶⁶

1. ID's Creationist Supporters

Another significant indication of ID's creationist identity is support by other creationists, who recognize it as creationism and share its goals. Despite differences, YECs are ID's (sometimes uneasy) allies and promoters; they would not do this unless the Wedge Strategy advanced their own agenda. Ashby Camp, of the Creation Research Society, acknowledges advantages in an ID-YEC partnership:

If the science establishment can be forced to acknowledge . . . intelligent design, theism will become part of the ‘post-Christian’ cultural air . . . [A] new set of options will open . . . one of which will be biblical creation. If ID is successful in changing the culture, the presumption against the supernatural will be eliminated. . . . I definitely see the ID movement as an ally.²⁶⁷

ID supporter Hal Ostrander, in the Feb./Mar.1998 SBC Life, spoke with what appeared to be firsthand knowledge of an early version of *The Wedge Strategy* and referred to Wedge members by name as “Creationists, one and all.”²⁶⁸ Bob Marsh of the YEC Creation Science Fellowship of Pittsburgh praised Johnson in CSF's newsletter.²⁶⁹ Henry Morris's successor John Morris, while suspicious that ID does not go far enough by promoting

mainstream of American evangelicalism,” indicating his preference for the latter. See Dembski, *supra* note 263.

265. See Eugenie C. Scott, *Creationism, Ideology, and Science*, in THE FLIGHT FROM REASON, 775 *Annals of the New York Academy of Sciences* (June 24, 1996), available at http://www.ncseweb.org/resources/articles/5200_creationism_ideology_and_sci_6_24_1996.asp (last visited July 8, 2005); National Center for Science Education, *Statements from Religious Organizations*, in VOICES FOR EVOLUTION, at http://www.ncseweb.org/resources/articles/7445_statements_from_religious_org_12_19_2002.asp (last visited July 8, 2005).

266. Johnson made these statements, respectively, in Peter Hastie, *Designer Genes*, AUSTRALIAN PRESBYTERIAN, Oct. 2001, at 7, and an interview by Hank Hanegraaff, *supra* note 228.

267. Ashby Camp, *The Intelligent Design Movement: An Ally?*, CREATION MATTERS (Creation Res. Soc'y), Nov.–Dec. 1999, at 8. This newsletter also contains an article by Wells and other ID-related pieces.

268. See Hal Ostrander, *Intelligent Design Theory: A Powerful Tool in Confronting Darwinism*, SBC LIFE, Feb.–Mar. 1998 (on file with the National Center for Science Education).

269. See Bob Harsh, *The Wedge of Truth: The Beginning of the end for Neo-Darwinism's Cultural* [sic], ORIGINS INSIGHT, Mar. 2001, available at <http://web.archive.org/web/20010817021310/http://www.csfpittsburgh.org/Mar01.PDF> (last visited July 8, 2005).

Christianity (we refute this), calls ID a “major player” and supports its efforts.²⁷⁰ Carl Baugh, notorious even among other creationists for intellectual dishonesty, publicly championed ID, hosting Dembski at a YEC event: “Intelligent design is an honest, bona fide, unbiased, academic research program. . . . If we . . . want answers for the data . . . , intelligent design embraces the potential for eternity.”²⁷¹ There are many such examples.

ID’s religious, creationist identity is clear. Its constitutional protection derives only from the Free Exercise Clause’s protection of private religious preference, but the Establishment Clause prohibits teaching it in public school science classes.

III. A BRIEF INTRODUCTION TO THE SCIENTIFIC CLAIMS OF INTELLIGENT DESIGN

Any evaluation of ID must take its dual nature—both as a putative direction for scientific inquiry and as an organized political movement—into account. William Dembski recognizes this when he acknowledges that the movement’s explanatory program does not exist beyond its political and cultural context:

Two animating principles drive intelligent design. The more popular by far takes intelligent design as a tool for liberation from ideologies that suffocate the human spirit, such as reductionism and materialism. The other . . . principle, less popular but more intellectually compelling, takes intelligent design as the key for opening up fresh insights into nature. The first of these . . . principles is purely instrumental—it treats intelligent design as a tool for attaining some other end (like defeating materialism). Presumably if other tools could more effectively accomplish that end, intelligent design would be abandoned.²⁷²

When he discusses “intelligent design as the key for opening up fresh insights into nature,” to what is Dembski referring? The evidence for ID as a tool for achieving a political goal could hardly be stronger. Is there similar evidence for any scientific content to ID?

270. John Morris, *Cracks Are Widening in Evolution’s Dam!*, ACTS AND FACTS (Institute for Creation Research), May 2002, available at <http://www.icr.org/pdf/af/af0205.pdf> (last visited July 9, 2005).

271. For documentation of these alliances and YEC support, see FORREST & GROSS, *supra* note 88, at 290–95.

272. Dembski, *supra* note 199.

The central scientific assertions of the ID movement are: (1) that a purposeful agent is necessarily involved in certain natural processes and (2) that there are objective methods for detecting design in nature. The first claim is concerned with features of the natural world not adequately explained by modern science, and assumes that those features will remain inexplicable without invoking a designer. (In this regard ID resembles a “god-of-the-gaps” argument.) The second claim is that methodologies have been developed that can unambiguously detect the presence of this designer in natural processes. There are no specific scientific claims for ID beyond these. The vagueness of this position allows the movement to include among its ranks those that believe in an earth that is 6000 years old as well as those that accept a modern cosmological model, and everyone in between.²⁷³

In spite of this vagueness the leaders of the ID movement work hard to convince the public that there is some content to ID beyond its politically motivated “instrumental principle,” and that the claims of ID may be brought into the scientific mainstream. In a recent review, DeWolf, Meyer, and DeForrest emphasized this when they identified three salient questions about a hypothetical curriculum addressing the “Origins Controversy” from an ID perspective.²⁷⁴ The first and most important was: Is the ID curriculum scientific?²⁷⁵

The questions DeWolf, Meyer, and DeForrest posed are founded on at least three unsupported assumptions. First, they assume that there *is* in fact a scientific “origins controversy.” Second, they assume that ID can contribute to the resolution of the controversy in a manner consistent with good scientific practices. Finally, they assume that teaching ID is currently possible and that an ID science curriculum is more than a hypothetical case study.²⁷⁶ As we shall see, all three of their assumptions are false.

273. In fact the ID “hypothesis” is so scrupulously vague that it cannot distinguish between the science-fiction origins scenarios of the Raelians and the literal six-day creation story of Genesis.

274. See DeWolf, Meyer & DeForrest, *Teaching the Origins Controversy*, *supra* note 87, at 45–46.

275. The other questions addressed are whether the content of the curriculum religious in nature and whether such a curriculum would be considered protected speech. *Id.*

276. William Dembski and Paul Nelson acknowledge that there is currently nothing to teach. See *supra* note 231 and accompanying text.

A. *What Constitutes Controversy?*

In an important sense, it is the very existence of controversy that drives scientific progress.²⁷⁷ The scientifically useful controversy generates new ideas, models, or approaches. Controversies are similarly important to the teaching of science as a dynamic and vital process: pedagogically useful controversies illustrate the salient points in the curriculum and generate interest among the students. Not every controversy is necessarily useful however. Many conflicts do not contribute to greater understanding, but serve to confuse rather than illuminate.

The distinction between controversies that are productive and those that are trivial can best be understood by briefly examining some examples. The first of these is from twentieth century evolutionary biology, and shows how controversies are handled in that field specifically. This controversy challenged a basic tenet of evolutionary theory as it was then understood, and during the course of the dispute a large amount of dialog took place in the scientific literature. The debate has led to a more complete view of the evolutionary process.

A second example is the medical “controversy” about the causative agent of human Acquired Immune Deficiency Syndrome (“AIDS”). Though not a question in evolutionary biology, this controversy is included because it shares several elements with the “origins controversy”. After a brief recounting of these two controversies, we examine the “origins controversy” to determine its status and potential for influence within science.

1. *The “Endosymbiosis” Controversy*

Lynn Margulis’ theory of endosymbiosis also seemed to challenge the neo-Darwinian “Modern Synthesis.”²⁷⁸ In Margulis’ theory, many complex subcellular structures in eukaryotic cells had a mutualistic (or cooperative symbiotic) origin.²⁷⁹ She argued that complex organelles, such as mitochondria, might not have evolved from simpler cellular structures along a pathway of gradually increasing complexity.²⁸⁰ Rather, Margulis’ insight

277. See THOMAS S. KUHN, *THE STRUCTURE OF SCIENTIFIC REVOLUTIONS* (1970). This idea has fueled countless conspiracy theories, and “overturning the dominant paradigm” has become the philosophical justification for almost every modern “crank science” advocate. For a discussion of how the ID movement misrepresents and misappropriates Kuhn’s, see PENNOCK, *supra* note 91, at 206–14.

278. See Lynn Sagan, *On the Origin of Mitosing Cells*, 14 *J. THEORETICAL BIOLOGY* 255–74 (1967); see also LYNN MARGULIS, *ORIGIN OF EUKARYOTIC CELLS* (1970).

279. Eukaryotes are complex cells that have “organelles,” specialized membrane-bound substructures. Examples include fungi, paramecia, and the cells of unicellular and multicellular plants and animals (including humans). They are contrasted with simple prokaryotic cells, such as bacteria.

280. MARGULIS, *supra* note 278, at 2.

was that mitochondria and other cellular structures resemble degenerate prokaryotic cells, and that they could well have originated when one primitive cell encapsulated another.²⁸¹ Thus, in a sudden leap in complexity, a fundamentally new type of cell originated.²⁸²

Such an endosymbiotic event could not be explained by quantitative population genetics; its proposal fell far outside the simple gradualist model by which evolutionary change was then described. Margulis was vehemently opposed for many years.²⁸³ However, initial skepticism was overcome by several strongly suggestive observations. The subcellular structure of certain organelles does indeed resemble that of prokaryotic cells.²⁸⁴ More importantly, several classes of organelles were discovered to have their own genomes—DNA that they use to code for certain proteins specific to their function.²⁸⁵ These genomes have the structure one would expect of degenerate prokaryotes.²⁸⁶ Finally, many other clear instances of endosymbiosis have since been discovered.²⁸⁷ In the light of such evidence, all of her former critics have been won over.

That Margulis' astonishing hypothesis was initially rejected should not be surprising. However, neither should its eventual acceptance as irrefutable data accumulated. The reason endosymbiosis theory became part of the understanding of the evolutionary process is that Margulis proposed a *specific, testable* hypothesis with significant, practical implications. That is, she committed herself and her theory to a specific outcome. Her hypothesis was not a vague statement of the inadequacy of current evolutionary science to explain certain patterns (although this would in some sense have been true). Rather, it was a robust statement, entailing a definite outcome, that could be and was tested. When the tests matched the prediction, endosymbiosis became part of the expanded understanding of evolution.²⁸⁸

As with other legitimate controversies, endosymbiosis has commanded great scientific interest, much being written both pro and con. This is apparent in the citation index for Margulis' 1970 book outlining the theory:

281. *See id.* at ch.2.

282. *See id.*

283. For a review of the controversy's history, see JOEL B. HAGEN ET AL., *DOING BIOLOGY* (1996).

284. *See supra* note 281.

285. *See id.*

286. *See id.*

287. Hajime Ishikawa, *Insect Symbiosis: An Introduction*, in *INSECT SYMBIOSIS* (Thomas A. Miller ed., 2003); Geoffrey Ian McFadden, *Primary and Secondary Endosymbiosis and the Origin of Plastids*, 37 *J. PHYCOLOGY* 951 (2001).

288. *See supra* note 283.

751 citations, peaking in 1981 with 44, with a long commanding presence in the literature.²⁸⁹

2. *The “HIV/AIDS” Controversy*

The controversy over endosymbiosis commanded the attention of large numbers of researchers for a long period of time. The second example illustrates a different kind of controversy. Although it had a biomedical subject, the controversy quickly became independent of any particular line of scientific questioning. Rather, the “HIV/AIDS” controversy moved into the sphere of public debate and turned upon issues of academic freedom and research priorities.²⁹⁰

The main proponent of the idea that the human immunodeficiency virus (“HIV”) is not the causative agent of acquired immune deficiency syndrome (“AIDS”) has been Peter Duesberg, a successful and well-respected researcher in cancer biology. In 1987 he published a paper in *Cancer Genetics* that included his views that HIV was a benign “passenger virus” that simply happened to associate with cases of AIDS.²⁹¹ At the time little was known about either the virus or AIDS epidemiology, and Duesberg’s proposal was not particularly far-fetched. However, the majority of scientific researchers soon came to believe that the evidence was strong for a causal link between HIV and AIDS.

By 1988, the controversy had escaped the bounds of the scientific community, and Duesberg was using the popular press to attack his research colleagues as part of the “AIDS establishment.”²⁹² To most AIDS researchers, Duesberg’s arguments were “constructed by selective reading of the scientific literature, dismissing evidence that contradict[ed] his theses, requiring impossibly definitive proof, and dismissing outright studies marked by inconsequential weaknesses.”²⁹³ At the same time, it was noted that the AIDS reappraisal movement had attracted several participants in the “culture wars,” including the journalist Tom Bethell (also a skeptic of relativity and evolution) and prominent advocates of ID Phillip E. Johnson and Jonathan C. Wells, of the Discovery Institute.²⁹⁴ (Wells’s publisher, Regnery Press, also

289. Science Citation Index search conducted Feb. 14, 2004.

290. The HIV/AIDS controversy is reviewed in Jon Cohen, *The Duesberg Phenomenon*, 266 SCIENCE 1641–44 (1994).

291. Peter H. Duesberg, *Retroviruses as Carcinogens and Pathogens: Expectations and Reality*, 47 CANCER RES. 1199 (1987).

292. See *supra* note 290.

293. *Id.*

294. See Johnson’s and Wells’ signatures on the statement by “The Group” at *The Group for the Scientific Reappraisal of the HIV-AIDS Hypothesis*, at <http://www.virusmyth.net/aids/group.htm> (last visited Feb. 26, 2004) [hereinafter The Group].

published Duesberg's book, which contended that the HIV explanation for AIDS is the result of a massive government and industrial conspiracy.²⁹⁵) The reappraisers made little headway among scientists, but took their message directly to the public; for example, issuing petitions questioning the link between HIV and AIDS.²⁹⁶

The HIV-AIDS deniers have not made a convincing case for any particular alternative cause (i.e., other than HIV) for AIDS. The deniers contend that in Africa and other developing nations, AIDS is the result of malnutrition and unspecified "tropical diseases".²⁹⁷ They propose that in the US and other developed nations, it is the result of "lifestyle" decisions (such as drug use or sexual behavior) or even that it is caused by anti-retroviral drugs.²⁹⁸ Such *ad hoc* explanations do not strengthen the deniers' case, but they do further frustrate researchers who are already poorly disposed to the purely negative argument that HIV does not cause AIDS.

The HIV/AIDS controversy became very visible in the public sphere, but it has had little presence in the scientific world. Although it is conceivable that this relative absence may be due to censorship by the biomedical establishment, as Duesberg has claimed,²⁹⁹ it is more likely, as his critics contend, that the scientific work presented by HIV reappraisers is simply not rigorous or interesting enough to warrant a response. Whatever the reason, Duesberg's HIV skepticism has not been a significant *scientific* controversy. All that can be said is that there remains a very small group of hard-core skeptics. While the HIV/AIDS "controversy" makes interesting reading in philosophy or sociology, Duesberg's scientific beliefs are clearly not significant enough to be part of a biology course.

3. The "Origins Controversy"

How does the "Origins Controversy" compare to genuine scientific controversies? Has there been any scientific impact of the ID movement's seminal publications as compared to legitimate controversies? Examining the literature one finds that the "Origins Controversy" has a less significant scientific presence than even the "HIV does not cause AIDS" controversy.³⁰⁰

295. PETER H. DUESBERG, *INVENTING THE AIDS VIRUS* (1997).

296. *See supra* note 290.

297. *See id.*

298. *See id.*

299. *See id.*

300. Science Citation Index and PubMed searches for citations of Behe, *Darwin's Black Box*; Dembski, *The Design Inference: Eliminating Chance Through Small Probabilities*; Dembski, *No Free Lunch*; and Denton, *Evolution: A Theory in Crisis* were compared with citations to Duesberg's 1987

Michael Behe's *Darwin's Black Box* is perhaps the seminal work of the modern ID movement. Although its primary audience is the general public, it is the work most cited in the scientific literature, and its author is a tenured biochemist at a research university.³⁰¹ The book incorporates Behe's idea of "Irreducible Complexity," which has become a fundamental ID concept, cited as being of major importance by nearly every ID advocate.³⁰²

In the eight years since publication, *Darwin's Black Box* has been cited 50 times in the scientific literature. Its peak citation rate (to date) was ten citations each in 2002 and 2003.³⁰³ This rate is not declining but does not increase at anywhere near the scale seen in other controversies: *Darwin's Black Box* has not even been cited in the scientific literature as much as Duesberg's paper. Its citation rate is almost an order of magnitude smaller than that of legitimate controversies. More significantly, the content of these papers does not indicate a vibrant scientific controversy. A large number of the papers that cite Behe's book are refutations, rather than incorporations or applications of the ideas he proposes.³⁰⁴ Several others cite the book specifically in the context of the political and cultural controversy. The other "seminal works" of ID are likewise lacking in the scientific literature. In fact, the combined citation rates for four foundational works of ID³⁰⁵ had fewer than half of the citations generated by Margulis' single paper over a similar period.

Searching the scientific literature for concepts and terms specific to ID yields sparse results. From the two major databases of scientific literature no more than 17 papers came up that used any of four ID-specific terms in an ID-specific sense.³⁰⁶ Of these, at least five were critical reviews of the ID program and two were Behe's responses to criticism. This result contrasts with that of a keyword search for a genuine controversy in evolutionary biology: the term "endosymbiosis" yielded 369 references.³⁰⁷

Lack of scientific attention need not imply anything about an idea's truth or falsity. The only conclusion that can be drawn is that scientists, rightly or wrongly, have not generally discussed that particular idea—implying that

paper in *Cancer Research*, *supra* note 291. Search conducted February 14, 2004.

301. Department of Biology, Lehigh University. See *Michael J. Behe, Ph.D.*, at <http://www.lehigh.edu/~inbios/behe.html> (last visited Aug. 2, 2005).

302. See FORREST & GROSS, *supra* note 88, at 78.

303. Science Citation Index search conducted February 14, 2004

304. See *supra* notes 289, 300.

305. BEHE, *supra* note 72; DEMBSKI, *supra* note 135; WILLIAM A. DEMBSKI, *THE DESIGN INFERENCE: ELIMINATING CHANCE THROUGH SMALL PROBABILITIES* (1998); MICHAEL DENTON, *EVOLUTION: A THEORY IN CRISIS* (1985).

306. BIOSIS and PubMed searches for the terms "Intelligent Design," "Complex Specified Information," "Specified Complexity" and "Irreducible Complexity" conducted February 14, 2004.

307. See *supra* notes 289, 300.

there is no significant controversy. If it exists, the “origins controversy” does not appear in scientific discourse. The scientific claims of the ID movement’s claims must therefore be considered, charitably, as provisional.³⁰⁸

What, then, can be said about the “origins controversy”? The basis of this supposed controversy lies in a hodge-podge of dissatisfactions with various aspects of neo-Darwinian evolutionary theory, origin-of-life research, and even modern cosmology and astrophysics. Of the examples discussed, the “origins controversy” most closely resembles the dispute that questions HIV as the primary cause of AIDS.³⁰⁹ Like the HIV-AIDS debate, the “origins controversy” exists only on the fringes of established science. Both controversies survive by seizing upon unresolved details and magnifying their impact out of all reasonable proportion. And both are almost entirely invisible in the scientific forum, contributing nothing to the understanding of their respective fields.

The “controversy” about origins is *cultural and political* rather than scientific or medical.³¹⁰ In order to press the case for preferential treatment in science classes, though, advocates in the ID movement must attempt to convince the courts and public that a true scientific controversy exists.

4. *Inventing a Controversy*

As we have seen, the “origins controversy” does not exist in the scientific literature. Now let us look at how ID proponents, led by the Discovery Institute, are misrepresenting science to try to make it appear otherwise, using petitions and commissioned polls, magazine and law review articles, popular books, and bibliographies.

308. It might be argued that the “origins controversy” exists as a scientific controversy in a more diffuse form than the group selection controversy, i.e., the founding document (analogous to Wynne-Edwards’ 1962 book) may not have been written yet. See V. C. WYNNE-EDWARDS, *ANIMAL DISPERSION IN RELATION TO SOCIAL BEHAVIOR* (1962). Although Wells advances the idea that there is a general, vague dissatisfaction with evolutionary theory, no single research group is competent to challenge the entire multidisciplinary paradigm.

309. The Discovery Institute circulated a statement challenging Darwinian evolution: “We are skeptical of claims for the ability of random mutation and natural selection to account for the complexity of life. Careful examination of the evidence for Darwinian theory should be encouraged.” See *A Scientific Dissent from Darwinism*, at <http://www.discovery.org/articleFiles/PDFs/100ScientistsAd.pdf>. This statement is very similar to that circulated by the HIV/AIDS reappraisers:

It is widely believed by the general public that a retrovirus called HIV causes the group diseases called AIDS. Many biochemical scientists now question this hypothesis. We propose that a thorough reappraisal of the existing evidence for and against this hypothesis be conducted by a suitable independent group. We further propose that critical epidemiological studies be devised and undertaken.

See *The Group*, *supra* note 294.

310. See PENNOCK, *supra* note 91, at 37–42.

To begin with a recent example, DeWolf, Meyer, and DeForrest claim that there is an “origins controversy” on the following grounds:

(1) The currently known mechanisms of modern evolutionary biology, including random mutation, recombination, migration and other effects of population structure, symbiosis, sexual selection, natural selection, genetic drift, etc., are inadequate to explain biological process and pattern. Furthermore, no possible future mechanisms will ever be able to account for this process and pattern so long as these mechanisms exclude the possibility of supernatural intervention.

(2) There is so much significant scientific dispute about these ideas that an overhaul of basic scientific methodology is warranted.³¹¹

They buttress these claims with footnotes referring to the primary scientific literature. For example, they argue that “[t]he neo-Darwinian mechanism of natural selection acting on random variations does not seem sufficient to produce . . . novel organs and morphological structures (such as wings, feathers, eyes, echo location, the amniotic egg, skin, nervous systems and multicellularity).”³¹² They cite H.A. Orr and J.A. Coyne’s paper with the provocative title *The Genetics of Adaptation: A Reassessment* as evidence for this claim.³¹³ Should the reader believe that Orr and Coyne doubt the ability of neo-Darwinian mechanisms to produce novel structures? Not if one actually reads the paper, which stands in *direct contradiction* to this interpretation. Orr and Coyne wrote about an altogether separate controversy in evolutionary biology—the average size of mutational effects during the course of adaptation. They conclude that mutations of large effect might play a bigger role in adaptive processes than once thought.³¹⁴ They are indeed discussing a controversy, but the fact that it is not germane to the “origins controversy” that DeWolf, Meyer, and DeForrest have in mind does not deter the latter from presenting it as though it were. DeWolf, Meyer, and DeForrest give the work of Stephen Jay Gould, Niles Eldredge, Douglas Futuyma, Jaques Monod, and many other evolutionary biologists the same mistreatment.³¹⁵ Their criterion for citing a scientific paper appears to be the extent to which the title suggests a controversy—and apparently any controversy will do.³¹⁶

311. See DeWolf, Meyer & DeForrest, *supra* note 87, at 50–56.

312. *Id.* at 50–51.

313. H. Allen Orr & Jerry A. Coyne, *The Genetics of Adaptation: A Reassessment*, 140 AM. NATURALIST 725 (1992).

314. See *id.* at 738.

315. See DeWolf, Meyer & DeForrest, *supra* note 87, at 55.

316. This improper use of scientific citations is not limited to Discovery Institute fellows. In an

The Discovery Institute frequently engages in this kind of misrepresentative “quote-mining.” During a fractious dispute over teaching ID in March 2002, the Discovery Institute submitted to the Ohio Board of Education a “Bibliography of Supplementary Resources for Ohio Science Education.”³¹⁷ The document’s introduction suggested that the papers referenced were genuinely contrary to modern evolutionary theory: “The publications represent dissenting viewpoints that challenge one or another aspect of neo-Darwinism (the prevailing theory of evolution taught in biology textbooks), discuss problems that evolutionary theory faces, or suggest important new lines of evidence that biology must consider when explaining origins.”³¹⁸ However, a much different story emerged when the authors of the papers were contacted. A survey of authors by the National Center for Science Education revealed that DI had seriously misrepresented the publications’ significance and conclusions. NCSE reported that *none* of the survey respondents (representing 34 of the 44 publications in the Bibliography) considered their work to provide scientific evidence for ID or against evolution.³¹⁹ Furthermore, more than half of the respondents considered the summaries in the DI Bibliography to be “inaccurate and tendentious.”³²⁰ Only after these inaccuracies were published did the Discovery Institute add a disclaimer to its bibliography: “The publications are not presented either as support for the theory of intelligent design, or as indicating that the authors cited doubt evolution.”³²¹

In addition to misquotes and misinterpretations, several claims made by ID advocates cannot be rigorously evaluated because either they are not clearly defined or are not derived from an identifiable scientific field. According to proponents of the “origins controversy,” the neo-Darwinian mechanism—an ID euphemism for natural selection—cannot account for “novel specified genetic information” or “irreducibly complex,” or

egregious instance of quote-pruning, Behe misrepresents Orr and Coyne by citing only the first half of a particular sentence, the remainder of which completely changes the argument’s conclusions. See Matthew J. Brauer & Daniel R. Brumbaugh, *Biology Remystified: The Scientific Claims of the New Creationists*, in INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS: PHILOSOPHICAL, THEOLOGICAL, AND SCIENTIFIC PERSPECTIVES 289–334 (Robert T. Pennock ed., 2001).

317. Press Release, National Center for Science Education, CRSC Claims Intelligent Design Scientists Author Bibliography Papers (Apr. 7, 2002), at http://www.ncseweb.org/resources/news/2002/OH/627_crsc_claims_intelligent_design_4_7_2002.asp (last visited Aug. 2, 2005).

318. See Nat’l Ctr. for Sci. Educ., *Analysis of the Discovery Institute’s Bibliography of Supplementary Resources for Ohio Science Instruction*, at <http://www.ncseweb.org/media/Analysis-of-the-Discovery-Institute.pdf> (last visited May 22, 2005).

319. See *supra* note 317.

320. *Id.*

321. *Id.*

‘functionally integrated’ molecular machines and systems.”³²² It is difficult to know what to make of this claim, since it is founded entirely on an idiosyncratic vocabulary with no standard biological meaning. The citation for “irreducible complexity,” for example, is from Behe’s *Darwin’s Black Box*,³²³ written for a general audience. The term appeared only five times in a recent search of the BIOSIS scientific database; two entries were Behe’s responses to his critics.³²⁴ Behe has revised the definition of “irreducible complexity” several times since introducing it in 1996, partly in response to criticisms that it employs an argument of “truth by definition.”³²⁵ Despite his acknowledgement of the concept’s inappropriateness for addressing evolutionary questions,³²⁶ Behe and other ID advocates proceed unhindered in promoting the idea’s validity.

With their invented controversy, ID advocates claim to be pushing the frontiers of scientific exploration. The implicit assumption is that the controversy is useful, that it is not merely a political controversy, and that the ID movement can have a productive role in its resolution. The following sections examine the scientific credibility of the approaches the ID movement takes to address their self-styled and hypothetical “origins controversy.” It is quite apparent that even if there *were* a scientific “origins controversy,” the ID movement would not be scientifically equipped to address it in any meaningful way.

B. Intelligent Design’s Contributions to the “Origins Controversy”

1. Retreat from Objectivity: The Pseudo-scientific Methodology of ID

ID asserts that the simple “appearance of design” can be used as evidence for the historical presence of design and for the resulting inference of the designer’s existence. The modern incarnation of ID attempts to refine this ancient idea by attempting to formalize the meaning of “appearance of design,” conceding that some things look designed but aren’t. The criterion for design thus requires that an object look *very* designed, that there be a quantitative scale of the appearance of design, and that objects at the extreme end of that scale are, in fact, designed artifacts.³²⁷ The only method that ID

322. See DeWolf, Meyer & DeForrest, *supra* note 87, at 51.

323. BEHE, *supra* note 72.

324. BIOSIS search done 14 February 2004

325. PENNOCK, *supra* note 91, at 266.

326. Michael Behe, *Reply to My Critics: A Response to Reviews of Darwin’s Black Box*, 16 *BIOLOGY & PHILOSOPHY* 685–709 (2001).

327. The success or failure of the modern program rides on this point, for without it only the imagery and rhetoric of Paley’s arguments from analogy remain.

advocates have devised for identifying these objects is in the form of a negative argument by elimination. That is, they rely on the false assertion that either some current naturalistic model for the origin of an object is correct, or that their “intelligent design” inference is.³²⁸ This negative argumentation has substantial problems, not least of which is that it relies upon a false dichotomy. Even if all currently known mechanisms for an object’s origin are not convincing, other undiscovered scenarios are certainly possible.

With what he calls his “explanatory filter,” Dembski claims to have provided a methodology for “rigorously” testing design in an object or event.³²⁹ He proposes that this method is immune to “false positives”; that is, if it indicates that something is designed, then it actually is.³³⁰ The argument is based upon the filtering of an event or object through a hierarchy of questions. The first asks if the phenomenon is the product of regularity; that is, whether the phenomenon arises as the inevitable outcome of deterministic physical laws.³³¹ For example, a phenomenon that meets the “regularity” test is a planet’s elliptical orbit around its sun. If the phenomenon is the product of *regularity*, it is not designed.

Second, if a phenomenon is *not* the product of the inevitable operation of natural laws, might it be the product of stochastic factors, i.e., chance? For example, a single die roll coming up with a six would not be a product of natural law, but *would* be considered an event occurring with some reasonable probability. That event, the product of *chance*, would not be considered designed.

Of course, very rare events do happen. This leads to the explanatory filter’s third criterion: if an event is “specified” as well as having very low probability, then the filter will conclude that the event is the product of design.³³² By “specification,” Dembski means that object or event has some prior determinable characteristic that identifies it as somehow unique among all other possible outcomes.³³³ Although 25 coin flips all coming up heads is no less likely than any other particular sequence, there is something unique about the outcome.

There are fundamental technical and conceptual problems with this approach to determining the “designedness” of a phenomenon, a few of

328. See PENNOCK, *supra* note 91, at ch.4.

329. See DEMBSKI, *supra* note 305.

330. See DEMBSKI, *supra* note 135, at 25.

331. See DEMBSKI, *supra* note 118, at 134.

332. See *id.*

333. See *id.*

which will be addressed here.³³⁴ First, there is no objective method of evaluating whether it is “specified.” Dembski implies that a biological system that has a function analogous to that of a human artifact is specified. However, the “functions” of biological systems depend on the context in which they are evaluated. Is the “function” of a rainforest to produce oxygen, to maintain high levels of global biodiversity, or to provide land and employment for impoverished farmers? Furthermore, our understanding of “specification” will change with a change in our knowledge. The geological formation known as the “face on Mars” looks uncannily like a human face in the early *Viking* orbiter photos.³³⁵ More recent photographs show that the face-like shape was an illusion.³³⁶ Does this mean that the “face on Mars” was a “specified” phenomenon until recently? If so, then the “explanatory filter” could conceivably have labeled it “designed,” only to reverse that judgment when the new photographs arrived. This scenario contradicts the “no-false-positives” claim.

A second problem with the filter is that its concept of design is profoundly idiosyncratic and limited. In Dembski’s filter, “design” does not have its usual meaning, but rather is defined negatively as “the set-theoretic complement of the disjunction of regularity-or-chance.”³³⁷ This means that design is *by default* anything that is not the product of either regularity or chance.

This constricted definition is problematic for scientists, for the simple reason that it appropriates as “designed” everything that is neither wholly random nor completely inevitable.³³⁸ More specifically, Dembski’s filter

334. For additional criticism, see PENNOCK, *supra* note 91, at 94–96, 250–63; Brandon Fitelson et al., *How Not to Detect Design*, in INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS 597–615 (Robert T. Pennock ed., 2001); Peter Godfrey-Smith, *Information and the Argument From Design*, in INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS 575–96 (Robert T. Pennock ed., 2001); Robert T. Pennock, *Creationism and Intelligent Design*, 4 ANN. REV. GENOMICS & HUM. GENETICS 143 (2003); Robert T. Pennock, *Mystery Science Theater: The Case of the Secret Agent*, NAT. HIST. 77 (Apr. 2002); Robert T. Pennock, *The Wizards of ID*, in INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS 645 (Robert T. Pennock ed., 2001); Howard J. Van Till, “Intelligent Design” Theory: Two Viewpoints, 34 ZYGON 667 (1999); John S. Wilkins & Wesley R. Elsberry, *The Advantages of Theft Over Toil: The Design Inference and Arguing from Ignorance*, 16 BIOLOGY & PHIL. 709 (2001); David Wolpert, *William Dembski’s Treatment of the No Free Lunch Theorems is Written in Jello*, at <http://www.talkreason.org/articles/jello.cfm> (last visited May 22, 2005).

335. See NASA, *Unmasking the Face on Mars: New High-resolution Images and 3D Altimetry from NASA’s Mars Global Surveyor Spacecraft Reveal the Face on Mars for What it Really Is: A Mesa*, at http://science.nasa.gov/headlines/y2001/ast24may_1.htm (last visited Aug. 2, 2005).

336. *Id.*

337. DEMBSKI, *supra* note 305, at 36.

338. The definition is problematic even for other design theorists. Del Ratzsch offers a thorough critique of Dembski’s notion of design in the appendix of *Nature, Design and Science: the Status of Design in Natural Science*. See DEL RATZSCH, NATURE, DESIGN AND SCIENCE: THE STATUS OF DESIGN IN NATURAL SCIENCE 153–68 (2001). Ratzsch’s criticisms have yet to be substantively addressed.

classifies as “intentionally designed” *every complex phenomenon that is the product of interactions between chance and regularity*—a set that explicitly includes nearly all evolutionary phenomena!³³⁹ This is nothing less than conceptual sleight-of-hand. Following Dembski’s filter for any complex biological system will result in a decision of “designed,” no matter how extensive the evidence that the system arose through the interactions of mutation, genetic drift, and natural selection.

Even ignoring these problems, there is another serious problem that arises in implementing this method: it is extremely difficult to objectively determine the probability that even a relatively simple phenomenon arises by chance. For example, suppose one wanted to calculate the probability that solar eclipses visible from Earth could occur. In order for us to see a solar eclipse, several conditions must be met that relate the sun and moon’s size and distance from Earth.³⁴⁰ We might need to calculate the probabilities for:

1. a moon of some size being formed by some primordial event;
2. the moon’s moving away from the Earth at some rate; and
3. our happening to exist at a time, determined by the moon’s size and rate of retreat, during which the moon’s apparent size is roughly equal to the sun’s apparent size.

The number and variety of circumstances that need to be considered for even this simple, non-biological case are astronomical. And there are many other possible scenarios to account for the visibility of solar eclipses from Earth. The probability we assign to the phenomenon depends crucially on which of these models we choose for its origin. If we are not relatively certain of the mechanism by which the phenomenon actually originated, we cannot assign a probability to the phenomenon’s origination.

How does Dembski propose to calculate the probability of a phenomenon arising by chance? In his only biological example of the explanatory filter in action, he argues that, despite an ignorance of the causal processes leading to the bacterial flagellum, the uniform probability distribution is sufficient.³⁴¹

339. Analogously, no psychologist believes that intelligence is due *either* to nature *or* to nurture. Instead, it is well understood that intelligence is the product of multiple interactions between genetics and environment. For a critique (with references) of Dembski on this point, see FORREST & GROSS, *supra* note 88, at 122–41.

340. The precise conditions for a solar eclipse will be discussed in any basic college astronomy textbook. A good online explanation is Fred Espenak, *Solar Eclipse for Beginners*, at <http://www.mreclipse.com/Special/SEprimer.html> (last visited Aug. 2, 2005).

341. In the solar eclipse example, this would be equivalent to calculating the probability that the diameters of two disks drawn at random would happen to be very close in size.

This approach is disturbingly naïve, for it ignores the models evolutionary biologists have proposed for the evolutionary origins of such structures. In essence, Dembski's method says, in effect: "Draw random proteins from a pool, stick them together, and count how often you get a flagellum."³⁴² If the probability of getting a flagellum from this process is sufficiently low, then the flagellum must have been designed.³⁴³ But no biologist thinks that this is how the flagellum actually evolved! Dembski ignores known processes that have been invoked to explain evolutionary complexity. He then demonstrates that his own contrived and simplistic model of flagellar evolution is unlikely—and hence that the structure must have been designed!³⁴⁴

The methodology of Dembski's "explanatory filter" is unworkable for adherents to its assumptions as for those who find its arguments specious. Tellingly, the "explanatory filter" has been applied to a real-world problem in biology precisely *once*: in Dembski's book, *No Free Lunch*. Even very simple real-world examples (such as snowflakes or terrain features) have proven intractable to analysis by the filter. Dembski has rationalized his failure to apply the filter to real problems by claiming that only certain kinds of problems are amenable to treatment by the filter.³⁴⁵ This tactic severely undermines his claim that the filter will not attribute design where there is none (the "no false positives claim").³⁴⁶ By excluding from analysis any phenomenon that is known to be natural but appears designed, ID advocates stack the deck in favor of the filter. And, as with the application of the filter generally, no objective method is given for determining which phenomena are "unsuitable" for the filter.

DeWolf, Meyer, and DeForrest claim that "[Dembski's] 'explanatory filter' constitutes, in effect, a scientific method for detecting the effects of intelligence"³⁴⁷ is simply wrong. It cannot be applied with any objectivity or precision. And, according to its author, all it "detects" is a phenomenon's placement in a set that excludes the strictly random and the completely determined.

342. This account is a simplified but fundamentally accurate statement of Dembski's method of calculation.

343. See DEMBSKI, *supra* note 135, at 289.

344. *Id.*

345. For example, those problems for which a naturalistic explanation has not yet been discovered.

346. See RATZSCH, *supra* note 338, at 153–68.

347. See DeWolf, Meyer & DeForrest, *supra* note 87, at 61.

2. *Retreat from Rigor: The Vagueness of ID Theories*

If, as ID purports, it is more than just a 200-year-old rehash of Reverend Dr. Paley's design arguments, then it must do more than simply restate in info-jargon terms that "if it really looks designed, it probably is." Yet ID's major intellectual conceits reduce to precisely this vague criterion.

Examination of the primary "argument from design" shows why incorporating the formal propositions of ID into a scientific research program will be an exercise in frustration. According to DeWolf, Meyer, and DeForrest, a scientific investigator who wants to develop a research program within an ID framework should make use of the following sort of argument:

- (1) High information content (or specified complexity) and irreducible complexity constitute strong indicators or hallmarks of past intelligent design.
- (2) Biological systems have a high information content (or specified complexity) and utilize subsystems that manifest irreducible complexity.
- (3) Naturalistic mechanisms or undirected causes do not suffice to explain the origin of information (specified complexity) or irreducible complexity.
- (4) Therefore, [intelligent design] constitutes the best explanation for the origin of information and irreducible complexity in biological systems.³⁴⁸

However, the would-be ID scientist will find that several terms in this list need elucidation: "specified complexity," which is more or less equivalent to "high information content," and "irreducible complexity," which is somehow related to specified complexity. Unless those neologisms define something more specific than the trait "*appears designed*," ID distills merely to the conjecture that this *appearance* of design is a reliable metric for evaluating *actual* design.

The second term, "irreducible complexity" ("IC"), is actually the older sibling of "specified complexity." Although complexity is traditional creationist parlance, Michael Behe first described IC at length as applying to the molecular level.³⁴⁹ His idea as presented in *Darwin's Black Box* was that

348. *Id.* at 95 (citations omitted).

349. See BEHE, *supra* note 72; see also HENRY M. MORRIS, SCIENTIFIC CREATIONISM 59 (1974) (a 30-year-old young-earth creationist discussion of irreducible complexity).

some complex structures might exhibit a property whereby the removal of any of its parts destroys its function.³⁵⁰ Behe's favorite analogy of this property is a mousetrap. Take away any part (spring, latch, or trigger) and the mousetrap no longer functions, he claims. If the function of a complex molecular structure is sensitive to such a removal, it also shows IC. The idea behind IC is that it supposedly prohibits a stepwise accumulation of parts. If IC is present at any point in a structure's development, then by definition the structure at an earlier stage can not function. This fact, Behe argues, introduces an impenetrable barrier to the evolution of complex biochemical structures. If these structures cannot have evolved, they must have been designed.

The concept of IC seems straightforward, but it suffers from fundamental misunderstandings of how evolution is thought to occur. In particular, an IC function is a problem for evolution only if structures evolve by improving the self-same pre-existing function. Most biologists do not think evolution operates solely in this simple, direct way.³⁵¹ Selection acts on the variation available at that time, which will typically involve different functions. The result is a process that can be exquisitely *indirect*. Behe concedes that his definition of IC precludes only a particular kind of direct evolution.³⁵² He responds that indirect evolution is unlikely, so the argument still holds.³⁵³ However, as he has never presented any argument against indirect evolutionary pathways, his treatment amounts to two sentences of mere assertion. In light of the vast evidence for indirect evolutionary pathways and the many plausible models for this process, Behe's denial seems willfully contrarian.³⁵⁴ It also reduces his argument to one of personal incredulity.³⁵⁵

Like Behe, Dembski presents shifting targets to critics and would-be ID students alike. The first term in DeWolf, Meyer, and DeForrest's exposition of ID ("specified complexity," "complex specified information," or "CSI") is a familiar one: it is the foundation for Dembski's "explanatory filter." Objects exhibit CSI if they are unlikely to occur by chance (i.e., they are

350. See BEHE, *supra* note 72, at 39.

351. See PENNOCK, *supra* note 91, at 266.

352. See Behe, *supra* note 326.

353. *Id.*

354. For reviews and citations of counterexamples, see Richard H. Thornhill & David W. Ussery, *A Classification of Possible Routes of Darwinian Evolution*, 203 J. THEORETICAL BIOLOGY 111 (2000); Matt Inlay, *Evolving Immunity: A Response to Chapter 6 of Darwin's Black Box*, available at http://www.talkdesign.org/faqs/Evolving_Immunity.html (last visited May 22, 2005); Nicholas J. Matzke, *Evolution in (Brownian) Space: A Model for the Origin of the Bacterial Flagellum*, available at <http://www.talkdesign.org/faqs/flagellum.html> (last visited May 22, 2005).

355. The problems discussed here represent just a few of the many recent criticisms of Behe's contributions to the ID movement by scientists and philosophers of science. See *supra* note 200 for an extensive list of references.

improbable according to some distribution function) and if they have some “pre-defined” characteristic making them worthy of notice.³⁵⁶ Problems with the concept of CSI go beyond the difficulties inherent in trying to use it objectively with the “explanatory filter.” Among the most problematic is the fact that CSI is not necessarily related to either complexity *or* information. Dembski at times seems uncertain about what he himself means by the term: at times he applies it as a quantitative measure, and at others as a discrete property.³⁵⁷

Quite frequently, he introduces novel concepts from disparate fields in idiosyncratic (and often incorrect) ways. For instance, the title of one of his recent books alludes to his assertion that a proof from computer science bolsters his claims for the necessity of design in biological systems.³⁵⁸ The “No Free Lunch” theorems Dembski appropriates are technical statements about specific kinds of heuristic and evolutionary computational searches.³⁵⁹ They have stringent sets of assumptions that are unlikely to hold in real instances of organismal evolution. In his review of Dembski’s book, one of the originators of the theorems says this about their applicability:

Indeed, throughout there is a marked elision of the formal details of the biological processes under consideration. Perhaps the most glaring example of this is that neo-Darwinian evolution of ecosystems does not involve a set of genomes all searching the same, fixed fitness function, the situation considered by the NFL theorems. Rather it is a co-evolutionary process. Roughly speaking, as each genome changes from one generation to the next, it modifies the surfaces that the other genomes are searching. And recent results indicate that NFL results do not hold in co-evolution.³⁶⁰

Indeed, recent, particularly elegant computational studies demolish Dembski’s claims that evolution can do no better than random searches and that complex specified information cannot arise by natural processes.³⁶¹

In another remarkably grandiose argument, Dembski goes so far as to claim for himself the discovery of a new physical law: the “Law of

356. DEMBSKI, *supra* note 135, at 142.

357. See Elsberry & Shallit, *supra* note 135; Godfrey-Smith, *supra* note 334, at 575–96.

358. See DEMBSKI, *supra* note 135.

359. See David H. Wolpert & William G. MacReady, *No Free Lunch Theorems for Search*, 1 IEEE TRANSACTIONS ON EVOLUTIONARY COMPUTATION 67 (1997).

360. Wolpert, *supra* note 334.

361. See Richard E. Lenski et al., *The Evolutionary Origin of Complex Features*, 423 NATURE 139 (2003).

Conservation of Information.”³⁶² In its particulars, this “law” relies upon a flawed analogy between the development of biological complexity and communications theory, and suffers from the persistent lack of objective definitions.³⁶³ In general, it merely enshrines that old creationist intuition that complexity cannot increase without purposeful intervention.³⁶⁴ Dembski’s putative “Law of Conservation of Information,” in contrast to the three laws of thermodynamics, has no useful role in developing any productive scientific theory.

DeWolf, Meyer, and DeForrest cite Dembski’s and Behe’s works to assert that “the propositional content of design theory differs significantly from that of scientific creationism.”³⁶⁵ In this they are correct up to a point, but not for the reasons that they might argue. Contrasting their propositions of ID with those to which “creation science” is committed is instructive:

- (1) There was a sudden creation of the universe, energy, and life from nothing.
- (2) Mutations and natural selection are insufficient to bring about the development of all living kinds from a single organism.
- (3) Changes in the originally created kinds of plants and animals occur only within fixed limits.
- (4) There is a separate ancestry for humans and apes.
- (5) The earth’s geology can be explained via catastrophism, primarily by the occurrence of a worldwide flood.
- (6) The earth and living kinds had a relatively recent origin (on the order of ten thousand years ago).³⁶⁶

These propositions do indeed differ in some respects from those advanced by ID. However, it is not because the latter has added any substantive content. Instead, ID has differentiated itself from “creation science” only by purging

362. This trait—proposing new physical laws of one’s own discovery—has been identified by some as a hallmark of the crackpot. See Robert L. Park, *The Seven Warning Signs of Bogus Science*, CHRON. HIGHER EDUC., Jan. 31, 2002, available at <http://chronicle.com/prm/weekly/v49/i21/21b02001.htm> (last visited May 22, 2005); see also FORREST & GROSS, *supra* note 88, at 140–41 (noting Dembski’s citation of a biblical origin for his Law of Conservation of Information).

363. See Mark Perakh, *A Consistent Inconsistency: How Dr. Dembski Infers Intelligent Design*, available at <http://www.talkreason.org/articles/dembski.cfm> (last visited May 22, 2005).

364. An alternative view is that all information currently existing in all organisms was placed in the universe at the beginning of time.

365. DeWolf, Meyer & DeForrest, *supra* note 87, at 94.

366. *Id.* (quoting RONALD NUMBERS, *THE CREATIONISTS*, at x (1991)).

its propositions (at least overtly) of troubling religious content, leaving only the first two points.³⁶⁷

Despite their precise-sounding technical jargon, the modern ID movement's assertions are instead *less specific* and therefore less subject to testing than those of the scientific creationists. And while it can admit many features of modern evolutionary theory, the core constituency of ID can just as easily admit the entirety of the "creation science" paradigm.³⁶⁸ ID is a thus loosening of limits to such an extent that a concept like descent with modification is on equal scientific footing with a literal six-day creation. By resorting to vagueness, ID becomes merely "creationism lite," a weaker version of its predecessor, young-earth creationism. A theory of origins that does not distinguish between an Earth that is 4 billion years old and one that is one-millionth of that age does not deserve the label "scientific."³⁶⁹

3. *Retreat from Exposure: How ID Shields Itself from Scientific Criticism*

Since the methodological and theoretical content of ID is nil, it should not be surprising that scientists associated with the movement are unwilling (or unable) to present any kind of research—empirical or otherwise—to the broader scientific community. ID researchers' retreat from the normal venues of scientific conversation is by itself damning evidence of ID's lack of utility or scientific credibility.

This is not to say that ID-friendly scientists have made no substantive contributions to the scientific literature, but that their published manuscripts in rigorously reviewed scientific journals do not substantially use any ID ideas or methods.³⁷⁰ Instead, ID advocates' peer-reviewed output comprises thoroughly standard experiments in biochemistry or cell biology from the labs of two or three researchers.³⁷¹ In a few cases, ID advocates' publications have been *claimed* as contributing evidence for design. However, closer examination (e.g., of papers Jonathan Wells co-authored) reveals no such thing.³⁷²

367. DeWolf, Meyer, and DeForrest's rejection of "naturalistic mechanisms" as insufficient to explain the origin of information indirectly invokes a supernatural explanation. See *supra* note 297.

368. See FORREST & GROSS, *supra* note 88, at 275–87.

369. In this regard ID is *less* scientific than "scientific creationism," which at least makes specific and testable (if wrong) claims such as that of the Earth's young age.

370. For example, the body of Behe's research—as distinct from his philosophical writings—contains no reference to Intelligent Design.

371. This is due, in part, to the fact that most of the publicly-active ID advocates are not practicing scientists.

372. See, e.g., Brian A. Rowning et al., *Microtubul-mediated Transport of Organelles and*

ID leaders know the benefits of submitting their work to independent review and have established at least two purportedly “peer-reviewed” journals for ID articles.³⁷³ However, one has languished for want of material and quietly ceased publication, while the other has a more overtly philosophical orientation. Both journals employ a weak standard of “peer review” that amounts to no more than vetting by the editorial board or society fellows.³⁷⁴

Dembski and Behe have explicitly declared their intent to *avoid* the peer-review process, as the *Chronicle of Higher Education* relates:

Mr. [Kenneth] Miller also wonders why Mr. Behe, a member of the American Society for Biochemistry and Molecular Biology, has never presented his ideas at its annual conference, which is his right. “If I thought I had an idea that would completely revolutionize cell biology in the same way that Professor Behe thinks he has an idea that would revolutionize biochemistry,” he says, “I would be talking about that idea at every single meeting of my peers I could possibly get to.”

Mr. Behe responds that he prefers other venues. “I just don’t think that large scientific meetings are effective forums for presenting these ideas,” he says.

Baylor’s Mr. Dembski also has little interest in publicizing his research through traditional means. “I’ve just gotten kind of blasé about submitting things to journals where you often wait two years to get things into print,” he says. “And I find I can actually get the turnaround faster by writing a book and getting the ideas expressed

Localization of B-catenin to the Future Dorsal Side of Xenopus Eggs, 94 PROC. NAT’L ACAD. SCI. U.S. OF AM. 1224 (1997); Carolyn A. Larabell et al., *Confocal Microscopy Analysis of Living Xenopus Eggs and the Mechanism of Cortical Rotation*, 122 DEV. 1281–89 (1996).

373. Other “peer-reviewed,” overtly sectarian journals (such as *Creation Research Society Quarterly* and the Geoscience Research Institute’s *Geoscience Reports*) are not included here.

374. Access Research Network’s online journal, *Origins and Design*, has had no new issues since Spring 2000. See Access Research Network, *Origins and Design*, at <http://www.arn.org/odesign/odesign.htm> (last visited May 22, 2005). *Progress in Complexity, Information and Design* (“PCID”) is published by Dembski’s International Society for Complexity, Information, and Design (“ISCID”), founded in 2001. ISCID fellows are drawn almost exclusively from ID proponents. Papers are submitted through ISCID’s online archive for discussion in its “Brainstorms” forum “for discussing novel intuitions, speculations, hypotheses, conjectures, arguments, and data related to complex systems that have yet to be developed into full-fledged research projects.” See ISCID, at <http://www.iscid.org/boards> (last visited May 22, 2005). It is open to the public with registration and permits pseudonymous discussants. Submissions can be published in PCID on the recommendation of only one of ISCID roughly fifty fellows, who comprise the editorial board. See *ISCID Forums*, at <http://www.iscid.org/boards> (last visited May 22, 2005); see also *PCID*, at <http://www.iscid.org/pcid.php> (last visited May 22, 2005).

there. My books sell well. I get a royalty. And the material gets read more."³⁷⁵

These attitudes are inimical to the traditional peer-review mechanism of scientific publishing, which remains the standard way of communicating results within the scientific community. Instead of seeking a source of royalties or trying to communicate with a wide general audience, scientists publish in professional scientific journals in order to submit their ideas and work to scrutiny by other scientists. Often these other scientists are competitors, who may be ambivalent or even hostile to the author's claims. This speeds up the progress of science: if a manuscript passes muster with scientists outside the author's circle of friends, chances are improved that unintentional bias or wishful thinking will be purged from the work.

A similar process happens in scientific meetings: the scientist stands before an audience of discriminating peers and describes his or her work and conclusions. Questions are often fierce and probing. The experience can sometimes be unpleasant, but the work is usually improved through such interactions with critical audiences. That Dembski, Behe, and others think their work is not ready for widespread critical evaluation is not particularly surprising. But this hesitance by ID's leading advocates reveals the fundamental weaknesses of their putative scientific program—namely, that it does not actually exist.

Given the practical criteria for good science, how should ID be judged? Is there a clear methodology available to those who would practice "ID science"? Are ID's research findings open to criticism and evaluation by capable peers who have no stake in the outcome? Have the ideas and concepts been thoroughly tested and calibrated against actual, not merely hypothetical, empirical cases? Finally, is there coherent, freely available literature on ID's experimental and theoretical results?

The answer to all of these questions is "no." In the end ID does not measure up to any standard for a scientific theory. It is a *conjecture* or, more precisely, a set of mutually exclusive and incompatible conjectures. The closest ID gets to a coherent body of theory are the ideas embodied in the terms "irreducible complexity" and "complex specified information." Even here, though, as we have seen, key elements of the concepts are distressingly pliable.

375. See Beth McMurtrie, *Darwinism Under Attack*, CHRON. HIGHER EDUC., Dec. 21, 2001, available at <http://chronicle.com/free/v48/i17/17a00801.htm> (last visited May 22, 2005). The article devaluing peer-review that Dembski commissioned Frank Tipler to write is an attempt to evade criticism for ID advocates' failure to publish in mainstream science journals. See *supra* note 197.

C. A Vast Scientific Wasteland

1. Why teach ID?

The key ideas and artifices of “Intelligent Design Theory” are all but absent in modern scientific literature. The motivating problem for ID, the “origins controversy,” likewise can barely be found in scientific journals and books. ID’s major proponents are neither seen nor heard at scientific conferences where their specialties are discussed and debated. Since ID is a no-show at the scientific roundtable, why would any science educator take seriously an ID curriculum (if it existed)? Dembski provides his reasons:

- (1) Evolutionary biology has been so hugely unsuccessful as a scientific theory in accounting for the origin of life and the emergence of biological complexity that it does not deserve a monopoly regardless what state of formation ID has reached.
- (2) ID is logically speaking the only alternative to evolutionary biology. Either material mechanisms can do all the work in biological origins or some telic process is additionally required.
- (3) Why should ID supporters allow the Darwinian establishment to indoctrinate students at the high school level, only to divert some of the brightest to becoming supporters of a mechanistic account of evolution, when by presenting ID at the high school level some of these same students would go on to careers trying to develop ID as a positive research program . . . [If ID is going to succeed as a research program,] it will need workers, and these are best recruited at a young age. The Darwinists understand this. So do the ID proponents. There is a sociological dimension to science and to the prospering of scientific theories, and this cannot be ignored if ID is going to become a thriving research program.³⁷⁶

In this passage, notable for its candor, Dembski admits that the decision to teach from ID-based curricula in high school science classes *is and should be* independent of ID’s scientific achievements. But looking beyond Dembski’s stated motivations (i.e., using an ID curriculum as an ID indoctrination and recruitment tool), one faces the conundrum of how to implement this educational plan. If ID cannot yet offer to a high school science curriculum even a “thriving research program,” not to mention a body of settled science, what *can* it offer? Dembski’s first two points summarize what is available to

376. Dembski, *supra* note 230; see also Barry, *supra* note 231.

those who would teach ID as science: (1) evolutionary biology is unsuccessful; and (2) ID is the only logical alternative to evolutionary biology. These points (with minor conceptual frills) constitute the totality of the ID research program and, by extension, of the ID science curriculum.

The first point contains the scientific (though vague and incorrect) claim that evolutionary biology has been unsuccessful at explaining biological diversity. Dembski's second point, though, contains a logical fallacy frequently committed by ID advocates and other creationists. He equates "evolutionary biology" with the sum of all possible naturalistic or materialistic explanations. Thus, it is not true that "ID is logically speaking, the only alternative to evolutionary biology," as Dembski claims.³⁷⁷ The Darwinian paradigm of natural selection taught in biology class is just one of many possible mechanisms by which biological change might occur.³⁷⁸ Prior to Darwin, many competing theories of organic change existed.³⁷⁹ In order to correct the fallacy, Dembski might have said: "Either natural processes are sufficient, or supernatural processes are required." In the end, this is no different than the fallacious "dual-model" argument advanced by classic creation science.³⁸⁰ In any case, it is difficult to see how these claims could possibly form the foundation of a science curriculum.

2. *How to teach ID?*

Dembski's insistence that, in ID's case, a curriculum may precede development of the discipline makes teaching ID problematic for even the most ardent supporters. The paucity of theoretical content and the outright absence of empirical content in the ID research program is reflected in the absence of quality teaching materials on which to base a scientific curriculum. Dembski recognized this absence in his October 2002 call for "basal biology" textbooks and other ID curriculum materials.³⁸¹ The few educational texts available are either religious in nature, riddled with scientific error, or so rhetorical or apologetic in stance as to be completely inappropriate for high school science students.³⁸² The remainder of this

377. See Dembski, *supra* note 230.

378. Examples of these include the unsuccessful—for example, theories of Lamarckian inheritance, see MICHAEL RUSE, *THE DARWINIAN REVOLUTION* 5 (1979)—as well as the successful—for example, endosymbiosis, see *supra* note 281.

379. See RUSE, *supra* note 378, at 132–59.

380. See PENNOCK, *supra* note 91, at 181–83.

381. See Dembski, *Disciplined Science*, *supra* note 199.

382. The standard text presented as a model for an ID curriculum is DAVIS & KENYON, *supra* note 66. Extensive critiques (some longer than the book itself) are available through the National Center for Science Education. See Nat'l Ctr. for Sci. Educ., *Resources*, at <http://www.ncsewelb.org/article.asp?>

section examines one of the less overtly religious books that is considered the basis for an ID curriculum.

Jonathan Wells' *Icons of Evolution* has been promoted as a possible supplement to high school and college biology texts.³⁸³ In it Wells claims that evolutionary biology depends on a few key examples—the “icons” of his title—and that, since these examples are flawed, evolution should not be taught as fact. For these icons Wells presents caricatures of actual research results, and he frequently misrepresents and misunderstands the research findings.³⁸⁴ More disturbingly, he bases much of his analysis on alleged errors and simplifications in the treatment of evolutionary topics in—of all things—high school and undergraduate textbooks.³⁸⁵ The problems that distress Wells are trivial to non-existent, but he uses his invented errors to conclude that the presentation of evolution in most textbooks is flawed.³⁸⁶ From this he further concludes that atheist-materialist conspirators are intentionally teaching fraudulent science to students and exhorts his readers to political activism.³⁸⁷ The book is a long, negative argument against various aspects of evolutionary science. Wells proposes no new models or possible means of reconciling observed discrepancies. He makes no attempt at synthesis and advances no argument of positive value.

In addition to its crankish, conspiratorial conclusions, *Icons* seriously distorts the nature of scientific inquiry and evidence. While real science integrates evidence into a coherent explanatory model, Wells presents science as simply a grouping of unconnected facts that can be challenged individually if they become inconvenient to one's starting assumptions. To Wells, there is no need to integrate ideas and evidence in order to perceive the whole scope of the model. This is *precisely* the wrong way to teach science. In this way *Icons of Evolution* is part of an *anti-curriculum*: the effect of this deceptive work on students' understanding and enjoyment of science is wholly negative.

Teaching scientific controversies can be difficult, even when there is a clear paper trail of the development and resolution of the arguments. The controversies often require great technical expertise to fully appreciate their depth and scope. For this reason, many of the most controversial subjects in

category=21 (last visited Aug. 2, 2005).

383. See WELLS, *supra* note 77.

384. See James R. Hofmann & Bruce H. Weber, *The Fact of Evolution: Implications for Science Education*, 12 SCI. & EDUC. 729 (2003); Kevin Padian & Alan D. Gishlick, *The Talented Mr. Wells*, 77 Q. REV. BIOLOGY 33 (2002); Alan D. Gishlick, *Icons of Evolution?: Why Much of What Johnathan Wells Writes About Evolution is Wrong*, Nat'l Ctr. for Sci. Educ., available at <http://www.ncseweb.org/icons/pdfs.html> (last visited May 22, 2005).

385. See Gishlick, *supra* note 200.

386. See *id.*

387. See *id.*

science are presented to high school (and even lower division college) students in their simplest form, if at all.³⁸⁸ The “origins controversy” would not be a natural candidate for teaching in the science class. It is vague and imprecise. Its theoretical basis is needlessly complicated and subjectively applied. It has developed nothing in the way of useful methodology and it has no curriculum. Most importantly, the controversy as such has no scientific content.

D. Science in the Subjunctive Mood

This examination of ID’s scientific relevance opened with a review of questions asked by DeWolf, Meyer, and DeForrest³⁸⁹ In that review, the authors presented a hypothetical scenario in which a fictional science teacher “John Spokes” (a parody of the 1925 trial defendant John Scopes) is confronted with the question of how to teach ID. The rhetorical device of an imaginary ID proponent is fitting, for it highlights the fact that to virtually all practicing scientists, ID is itself an imaginary science. An ID science curriculum can be taught only if the ID program produces what other scientific disciplines produce. At the minimum, this includes a testable model with supporting evidence and substantial peer-review. ID has accomplished nothing towards these goals.

Advocacy groups and legislators in favor of teaching ID imply that it is on the verge of a scientific and conceptual breakthrough.³⁹⁰ However, in the present real world, no such results have appeared. The scientific literature on ID is non-existent, and ID advocates publish almost entirely in the popular press and in philosophical and theological publications. The most charitable conclusion about ID’s scientific accomplishments is that the field is not ready for scientific prime time. This may conceivably change. However, until then, the answers to the unasked questions of DeWolf, Meyer, and DeForrest must clearly be negative:

Is there a scientific “origins controversy”?

Absolutely not.

388. See Andrew J. Petto & Laurie R. Godfrey, *Why Teach Evolution?*, in SCIENTISTS CONFRONT CREATIONISM (2004).

389. *Supra* note 275 and accompanying text.

390. Consider, for example, Dembski’s repeated claims that “Darwinism” is meeting its Waterloo because of the successes of the Intelligent Design program. See, e.g., William A. Dembski, *Kansas I—“Land of the Born Again Boneheads,”* UNCOMMON DESCENT, Apr. 28, 2005, at <http://www.uncommondescent.com/index.php/archives/27> (last visited Aug. 2, 2005).

Is ID equipped to contribute meaningfully to scientific questions about biological processes and patterns?

Again, no.

Is there any basis for a scientific curriculum that is based on ID?

None at all.

Until Mr. Spokes can point to objective, compelling evidence that a body of ID-based science exists, he should not be allowed to teach what is still no more than a new brand of creationism in his science classroom.

IV. THE CONSTITUTIONAL FLAWS OF “INTELLIGENT DESIGN”

The analysis of intelligent design creationism in the two previous sections can be summed up as follows: The theory is religion, not science. In light of the Supreme Court’s refusal to permit public schools to incorporate previous versions of creationism into the science curriculum, the intelligent design variation of creationism has little chance of withstanding constitutional scrutiny under the *Edwards* and *Epperson* analysis.

A. *Intelligent Design and the Epperson/Edwards Schematic*

Recall that the Court relied upon three factors in its constitutional analysis of creationism in *Edwards* and *Epperson*: the religious implications of creationist theory as an indication of the legislature’s impermissible religious intent,³⁹¹ the conclusion that critiques of evolution were based on the government’s desire to prohibit theories perceived as hostile to religion,³⁹² and the focus on God or a Supreme Being as the central defining characteristic of a religious legal mandate.³⁹³

As for the first component of the Court’s analysis, although both of the Supreme Court’s creationism opinions technically relied on the Court’s finding that the states in question had enacted their creationism mandates with impermissible religious purposes, it is significant that there was little direct evidence of the impermissible purpose in either case.³⁹⁴ In lieu of direct evidence of the impermissible intent, the Court relied on its analysis of key characteristics of creationist theory itself.³⁹⁵ The Court focused on two characteristics in particular. First, the Court concluded that legal mandates to

391. See *supra* notes 25–32 and accompanying text.

392. See *supra* note 33 and accompanying text.

393. See *supra* notes 61–64 and accompanying text.

394. See *supra* notes 20–44 and accompanying text.

395. See *supra* notes 32–33 and accompanying text.

teach creationism did nothing to advance the cause of academic freedom because the open and unregulated field of academic science already permitted consideration of alternative theories.³⁹⁶ Legal mandates to include creationism were not necessary to protect academic freedom because the free market in scientific ideas had already considered creationism and rejected it on the merits.³⁹⁷ Second, the Court took note of the long history of strong links between creationist theory and certain fundamentalist religious sects.³⁹⁸ These two elements led the Court to conclude that the argument of a secular purpose for creationism was a “sham.”³⁹⁹

From this perspective, the theory of intelligent design presents the same problem as previous manifestations of creationism. As with the first and second-generation versions of creationism at issue in *Epperson* and *Edwards*, the theory of intelligent design has virtually no standing within the mainstream scientific community. Intelligent design proponents lack scientific credibility in part because they have failed to articulate their affirmative case in the appropriate forums. Aside from sniping at random details of evolutionary theory, intelligent design proponents have failed to offer testable hypotheses or produce viable methods to demonstrate the existence of an Intelligent Designer. The simple fact is that intelligent design theory has produced nothing of value to any scientific discipline. The absence of peer-reviewed research or journal articles advancing the intelligent design cause is just one of many indicators that the theory has roughly the same status in the scientific community as previous versions of creationism.

Likewise, as discussed in detail in Section II *supra*, the strong links between evangelical and fundamentalist religious sects and those advancing the cause of intelligent design indicate the same religious impetus as the one motivating earlier creationist movements. Intelligent design is viewed by many of its most prominent advocates as a crucial tool in rebutting scientific evidence that in their view contradicts the fundamentalist claim that the world was created and organized by a transcendent being according to a divine plan. There is nothing wrong with teaching this theory as part of a comparative religions course,⁴⁰⁰ along with other theological perspectives on

396. See *supra* notes 45–47 and accompanying text.

397. *Id.*

398. See *supra* notes 49–60 and accompanying text.

399. *Edwards v. Aguillard*, 482 U.S. 578, 586–87 (1987).

400. As Justice Powell wrote in his *Edwards* concurring opinion:

As a matter of history, schoolchildren can and should properly be informed of all aspects of this Nation’s religious heritage. I would see no constitutional problem if schoolchildren were taught the nature of the Founding Father’s religious beliefs and how these beliefs affected the attitudes of

human origins; but, intelligent design theory cannot be made part of a public school curriculum or state-mandated student assessment scheme because in that context the “purpose of the [theory’s] use is to advance a particular religious belief.”⁴⁰¹ Intelligent design proponents want access to science classrooms both to obtain the imprimatur of government-certified science as an “objective” validation of their religious views, and as a forum for proselytizing impressionable youngsters. This is a direct violation of the principles set forth in *Epperson* and *Edwards*.

The second component of the Court’s constitutional analysis in *Epperson* and *Edwards* is the proposition that the Constitution prohibits negative legal mandates in this area as well as positive legal mandates. In other words, the Court held that the Constitution not only prohibits the government from introducing the religious theory of creation into the public schools; the Constitution also prohibits the government from restricting or disparaging scientific theories perceived as hostile to a dominant religious doctrine. “[The Constitution] forbids alike the preference of a religious doctrine or the prohibition of theory which is deemed antagonistic to a particular dogma.”⁴⁰² This principle extends even to “equal time” legal mandates such as the one held unconstitutional in *Edwards*. The essence of the Court’s holdings in this area is that the Constitution prohibits any attempt to use the legal and political process to impose on educational institutions a set of ideas that the scientific marketplace has repeatedly and definitively rejected on the merits.

This principle applies directly to recent efforts to use the political process to foist the theory of intelligent design on unwilling educators. As discussed below, this principle also applies to arguments recasting intelligent design mandates as efforts to protect the free speech rights of teachers and students. The flaw in these new arguments is the same as the flaw noted by the Court in *Edwards*: If the scientific community believed intelligent design theory had scientific merit, then the theory would already be a primary focus of scientific research and education. No government policy prohibits scientists from considering intelligent design; the problem for intelligent design proponents is that the scientific community has considered the theory and found it wanting. As in *Edwards*, mandating the inclusion of intelligent design theory into the public school science curriculum “does not advance academic freedom [and] does not grant teachers a flexibility that they did not already possess to supplant the present science curriculum with the

the times and the structure of our government. Courses in comparative religion of course are customary and constitutionally appropriate.

Id. at 606–07 (Powell, J., concurring).

401. *Id.* at 608.

402. *Epperson v. Arkansas*, 393 U.S. 97, 106–07 (1968).

presentation of theories, besides evolution, about the origin of life.”⁴⁰³ Using the political process to override the considered judgment of specialists in the field has nothing to do with protecting the marketplace of ideas; rather, these proposals attempt to skew the marketplace in order to favor a set of discredited ideas that happen to coincide with a specifically religious agenda. This is precisely what the Court in *Edwards* said the First Amendment prohibits.

The third component of the Court’s constitutional analysis in *Epperson* and *Edwards* is the most important link between the discredited first- and second-generation creationism mandates, and the new intelligent design version of the theory. In concluding that earlier generations of creationism mandates were impermissibly motivated by religion, the Court focused primarily on one key factor: the presence of God at the center of all creationist theory.⁴⁰⁴ As the majority opinion in *Edwards* noted, the theory of creationism advanced by the Louisiana Legislature’s “balanced treatment” statute “embodies the religious belief that a supernatural creator was responsible for the creation of humankind.”⁴⁰⁵ Justice Powell’s concurring opinion reinforced this conclusion by noting that “[C]oncepts concerning God or a supreme being of some sort are manifestly religious These concepts do not shed that religiosity merely because they are presented as a philosophy or as a science.”⁴⁰⁶ Based on this central fact Powell concluded: “From the face of the statute, a purpose to advance a religious belief is apparent.”⁴⁰⁷

For all the other changes in the presentation of creationism through the years, the existence of a supernatural creator is a constant theme in every variation of the theory, including the latest. The very name “intelligent design” indicates that the new version of creationism presents the same constitutional dilemma as its predecessors. The new theory is defined by the same characteristic identified by the Court in *Edwards* as quintessentially religious: the existence of a supernatural creator of the universe. No matter how intelligent design advocates try to finesse the issue, their theory posits some form of transcendent intelligence, and “concepts concerning God or a supreme being of some sort are manifestly religious.”⁴⁰⁸

403. *Edwards*, 482 U.S. at 587.

404. *See supra* notes 49–60 and accompanying text.

405. *Id.* at 592.

406. *Id.* at 598–99 (Powell, J., concurring) (citing *Malnak v. Yogi*, 440 F. Supp. 1284, 1322 (D.N.J. 1977), *aff’d per curiam*, 592 F.2d 197 (3d Cir. 1979) (internal quotation marks omitted)).

407. *Edwards*, 482 U.S. at 598–99.

408. *Id.*

When intelligent design theory is analyzed under the constitutional framework used by the Court to invalidate earlier creationist mandates, it is evident that legal requirements to teach intelligent design cannot satisfy the constitutional standard set forth in *Epperson* and *Edwards*. Every major aspect of intelligent design supports this conclusion: The absence of objective scientific support for intelligent design; the strong links between intelligent design and an evangelical religious agenda; the use of intelligent design to limit the dissemination of scientific theories that are perceived as contradicting religious teachings; and the fact that the irreducible core of creationist theory is the “manifestly religious” concept of a God or supreme being.⁴⁰⁹ Unless the Supreme Court is willing to abandon its own recent precedents and overrule *Epperson* and *Edwards*—and there is no evidence that a majority of the Court is inclined to do so—the various efforts to legally mandate the teaching of intelligent design are doomed from the outset.

Yet proposals to mandate the teaching of intelligent design theory in public schools are, if anything, proliferating at the local, state, and federal levels. Intelligent design proponents have proposed various legal arguments to avoid the clear implication of *Epperson* and *Edwards* that these proposals are unconstitutional. These proposals include: attempts to deny the linkage between intelligent design and earlier versions of creationism; an outright refusal to acknowledge the clear religious underpinnings of the intelligent design theory; claims that the Supreme Court has abandoned the constitutional basis of *Epperson* and *Edwards*; claims that the right to teach intelligent design in public schools is a matter of free speech; and attempts to articulate a vague legal notion of science into which intelligent design allegedly fits. The first two claims are factually disingenuous, and the last three are legally wrong. But before turning to the details of these arguments in subsection C *infra*, the next section will outline the different types of legal mandates proponents of intelligent design have crafted to advance their theory.

B. The New Legal Battlegrounds Over Intelligent Design Creationism

Proponents of intelligent design have opened four fronts in the battle to advance their theory through legal mandates: (1) efforts to include intelligent design in state science standards and achievement tests; (2) the federal version of this effort, known as the Santorum Amendment; (3) proposals to incorporate or add disclaimers to textbooks that include the theory of evolution; and (4) battles at the state and local level to include books

409. *See id.* at 599.

promoting the theory of intelligent design on state-approved textbook purchasing lists, or to dilute the teaching of evolution in approved textbooks.

1. Intelligent Design in State Science Standards and Achievement Tests

The most prominent battles over the adoption of state mandates to teach intelligent design involve attempts to incorporate the theory into statewide science curriculum and achievement test standards. Kansas and Ohio have been the sites of the most contentious battles so far, and at present, the intelligent design movement has had mixed success in convincing these states to adopt its agenda.

Kansas represented, for a brief period, one of the few major success stories for intelligent design advocates.⁴¹⁰ In August 1999, the State Board of Education voted to eliminate any mention of evolution from the State's recommended science curriculum and science achievement tests.⁴¹¹ The new policy immediately became the object of ridicule both inside and outside the state. One member of the Board of Education who opposed the changes argued that the new standards would make Kansas students "the laughing stock of the world,"⁴¹² and other leading state politicians—including the Republican governor and lieutenant governor—argued that the new standards would make the state an economic and educational embarrassment.⁴¹³ The governor called the Board's action "terrible, tragic, embarrassing."⁴¹⁴

410. For published academic treatments specifically addressing the Kansas decision, which unanimously conclude that the Kansas Board acted unconstitutionally, see Theresa Wilson, *Evolution, Creation, and Naturally Selecting Intelligent Design Out of the Public Schools*, 34 U. TOL. L. REV. 203 (2003); Marjorie George, Comment, *And Then God Created Kansas? The Evolution/Creationism Debate in America's Public Schools*, 149 U. PA. L. REV. 843 (2001); Coleen M. McGrath, Note, *Redefining Science to Accommodate Religious Beliefs: The Constitutionality of the 1999 Kansas Science Education Standards*, 45 N.Y.L. SCH. L. REV. 297 (2000-01); Deborah A. Reule, Note, *The New Face of Creationism: The Establishment Clause and the Latest Efforts to Suppress Evolution in Public Schools*, 54 VAND. L. REV. 2555 (2001); Diana M. Rosenberg, Note, *Monkey Business and Unnatural Selection: Opening the Schoolhouse Door to Religion by Discrediting the Tenets of Darwinism*, 9 J.L. & POL'Y 611 (2001); Douglas E. Stewart, Jr., Note, *Going Back in Time: How the Kansas Board of Education's Removal of Evolution From the State Curriculum Violates the First Amendment's Establishment Clause*, 20 REV. LITIG. 549 (2001).

411. See Pam Belluck, *Board for Kansas Deletes Evolution From Curriculum*, N.Y. TIMES, Aug. 12, 1999, at A1.

412. *Id.*

413. See Pam Belluck, *Necessary Knowledge: Science Expands, Religion Contracts*, N.Y. TIMES, Aug. 13, 2000, § 4, at 1. Belluck writes that

the idea that Kansas would fall behind academically and economically was one of the principal arguments used by evolution proponents in Kansas. Scientists and school board candidates—even the governor—said Kansas would seem embarrassingly backward if the new science standards

The Kansas Board's brief flirtation with intelligent design (and other forms of creationism) was doomed in August 2000 when Republican primary voters defeated three of the conservative members of the Board of Education who had voted in favor of the anti-evolution position.⁴¹⁵ On February 14, 2001, the new Board voted seven-to-three to reinstate the requirement that the State's students be taught and tested on evolution.⁴¹⁶ The new science standards are thorough and comprehensive, and include broad requirements that students learn both the theory and mechanics of evolutionary biological change. In one of the benchmarks to the twelfth grade life science standards, for example, Kansas now requires students to "understand the major concepts of the theory of biological evolution."⁴¹⁷ The standards further require that students be taught how evolution is used to explain biodiversity, the theory of natural selection, and the proposition "[t]hat evolution is a broad, unifying theoretical framework in biology."⁴¹⁸ Although the new standards reject the theory of intelligent design, they do contain a statement recognizing a distinction between the requirement that students "understand" evolutionary theory and the requirement that a student "believe" in the conclusions drawn by scientists:

"Understand" does not mandate "belief." While students may be required to understand some concepts that researchers use to conduct research and solve practical problems, they may accept or reject the scientific concepts presented. This applies particularly where students' and/or parents' beliefs may be at odds with current scientific theories or concepts.⁴¹⁹

These standards have been enforced and unchanged since they were adopted. However, this may not be the last word on the subject. In the 2002 elections, two conservatives won seats in western and southwestern Kansas, which has effectively created a five-to-five split on the ten-member Board.⁴²⁰

stayed in place. The lieutenant governor, Gary Sherrer, said that businesses considering relocating to Kansas had been "scared off" out of concern that their employees' children would not be getting a good education and that the work force would not be competitive.

Id.

414. Scott Stevens, *Kansas Town Lighted Fuse of Ohio Feud Over Origins*, CLEVELAND PLAIN DEALER, Aug. 12, 2002, at A1.

415. John W. Fountain, *Kansas Puts Evolution Back Into Public Schools*, N.Y. TIMES, Feb. 15, 2001, at A1.

416. *Id.*

417. KAN. STATE BD. OF EDUC., KANSAS SCIENCE EDUCATION STANDARDS 74 (2001).

418. *Id.* at 76.

419. *Id.*

420. Pete Goering, *Education Shouldn't be a Joke*, TOPEKA CAPITAL-JOURNAL, Jan. 21, 2003.

Depending on how this deadlock is resolved, the Kansas science standards may once again be challenged from within the Kansas Board of Education.⁴²¹

Soon after Kansas resolved its science standards controversy in favor of evolution, the Ohio Board of Education went through a similar process, with more ambiguous results. After suffering a bitter defeat in Kansas, intelligent design proponents took a more subtle approach with the Ohio Board of Education. After an extended battle over the issue, the Board adopted a compromise approach in its science academic content standards. On one hand, the Ohio state science standards require students to be able to “[e]xplain how natural selection and other evolutionary mechanisms account for the unity and diversity of past and present life forms.”⁴²² On the other hand, in a concession to the intelligent design advocates on the Board, the same section of the standards also includes language recognizing implicitly the arguments of anti-evolutionists. Thus, the same portion of the standards that requires students to learn the mechanisms of natural selection also includes an expectation that students “[d]escribe how scientists continue to investigate and critically analyze aspects of evolutionary theory.”⁴²³ To quell the fears of the scientific community that this language would encourage the teaching of intelligent design, the following disclaimer appears immediately following the “investigate and critically analyze” language: “The intent of this benchmark does not mandate the teaching or testing of intelligent design.”⁴²⁴

Despite the Board’s stated intent to avoid the teaching of intelligent design, the Board subsequently adopted a lesson plan to implement its science standards that was heavily infused with intelligent design concepts. A

421. In July 2003, the state’s education commissioner reminded the Board that a review of the standards is required by law. Citing both the likely controversy over the treatment of evolution and the need for his staff to deal with issues concerning compliance with the No Children Left Behind Act, the commissioner recommended less than a full-scale review. The Board deadlocked five-to-five, with the members who support evolution education favoring a full-scale review, apparently in the hope that it would rally support for moderate candidates in the Republican primaries in the next election. See John Hanna, *Board’s Darwin Defenders Seek to Revive Evolution Spat*, DODGE CITY DAILY GLOBE, July 14, 2003, available at http://www.dodgeglobe.com/stories/071403/sta_0714030011.shtml (last visited May 22, 2005). The Board finally reached a compromise in August, voting seven-to-three to conduct a full-scale review of the state’s science standards, but delaying appointing a review committee until August 2004, which renders it unlikely that the committee will finish its work until well after the 2004 general election. See John Hanna, *School Board to Review Evolution*, TOPEKA CAPITOL-JOURNAL, Aug. 13, 2003, available at http://www.cjonline.com/stories/081303/kan_evolution.shtml (last visited May 22, 2005).

422. OHIO STATE BD. OF EDUC., ACADEMIC CONTENT STANDARDS K–12 SCIENCE 37 (2002), available at http://www.ode.state.oh.us/academic_content_standards/ScienceContentStd/PDF/SCIENCE.pdf (last visited Mar. 24, 2004).

423. *Id.* at 37.

424. *Id.*

committee appointed by the Board drafted the lesson plan and guidelines for teachers to implement the standards.⁴²⁵ The controversial science section of the lesson plan was drafted by a seven-member subcommittee, three of whom were intelligent design proponents.⁴²⁶ One of these three subcommittee members actually wrote the initial draft of the plan, and had also testified at the Board's prior meetings in favor of inserting intelligent design into the curriculum.⁴²⁷ The subcommittee produced a draft plan whose structure and substance was drawn substantially from Jonathan Wells' book, *Icons of Evolution*. Early drafts of the plan specifically cited Wells' book and even included suggested links to intelligent design websites.⁴²⁸ Subsequent versions omitted the explicit intelligent design references, but left the substance of the intelligent design critique intact.⁴²⁹ Among other things, the Ohio Board's lesson plan provides sample answers that challenge evolution by suggesting that genetically related species may not have a common ancestry, and that examples of evolutionary change prove "microevolution" (i.e., relatively minor changes within species) but not "the ability of natural selection to produce new forms of life."⁴³⁰

In essence, the Ohio Board of Education science standards and lesson plan may simply have created a system in which the battle over evolution will be carried on interminably in localized skirmishes throughout the State. "[These standards] would appear to leave intelligent-design proponents free to lobby each of the 600 Ohio school districts to include intelligent design in the science classroom."⁴³¹ Ohio science teachers, meanwhile, are in the position once occupied by Susan Epperson: "cring[ing] at the thought of encouraging theories that are based more on religion than science."⁴³²

Kansas and Ohio are not the only states debating evolution in the context of state science standards. In Pennsylvania, the State Board of Education adopted recently science standards that expressly require comprehensive education in the theory of evolution.⁴³³ The Board adopted a strong stance in

425. Scott Stevens, *Science Standards Set, But the Teaching is Still Evolving*, CLEVELAND PLAIN DEALER, Dec. 29, 2002, at B1.

426. Scott Stephens, *How State Board Thinking Evolved on Biology Lesson*, CLEVELAND PLAIN DEALER, Mar. 14, 2004, at B1.

427. *Id.*

428. See OHIO BD. OF EDUC., CRITICAL ANALYSIS OF EVOLUTION—GRADE 10 (December draft) (copy on file with author).

429. See OHIO BD. OF EDUC., CRITICAL ANALYSIS OF EVOLUTION—GRADE 10 (final version) (copy on file with author).

430. *Id.* at Attachment A, Aspects 1 & 3.

431. *Devolving Standards; Curriculum Guidelines Give Evolution's Foes Unfortunate Opening*, COLUMBUS DISPATCH, Dec. 12, 2002, at 18A; see also Forrest & Gross, *supra* note 88, at 227–39 (providing a detailed account of the debate over the Ohio standards).

432. Crystal Harden, *Science Teachers Wary*, CINCINNATI POST, Mar. 15, 2004, at A1.

433. See PA. DEP'T OF EDUC., ACADEMIC STANDARDS FOR SCIENCE AND TECHNOLOGY (2002),

favor of education about evolution after scientists objected to an earlier draft of the standards. The earlier standards “contained language requiring that students evaluate data that ‘supports and does not support’ the theory of evolution,” which was viewed by the objecting scientists as opening the classroom door to creationist and intelligent design theory.⁴³⁴ Other states are also grappling with these issues. In Michigan, state legislators are attempting to bypass the usual debate over comprehensive science standards by introducing legislation that either permits or requires public school science teachers to teach the “theory [of] intelligent design hypothesis” alongside evolution.⁴³⁵ In Minnesota, the state legislature recently approved state science standards that include the teaching of evolution, after defeating an amendment proposed by the state House of Representatives that was perceived “as an effort to discredit evolution and open the door to the teaching of religious creationism.”⁴³⁶ In Darby, Montana, a minister convinced a majority of the local school board to initially approve an objective origins science policy, a euphemism for intelligent design.⁴³⁷ After much controversy,⁴³⁸ the Board never adopted the final version of the proposal, and the proposal may now die after two proponents of teaching evolution were elected to the School Board.⁴³⁹ Other anti-evolution proposals have been considered during the last year by state legislatures in Alabama⁴⁴⁰ and Missouri.⁴⁴¹ Meanwhile, all the state debates on this subject are being informed (and sometimes misinformed) by the strange legacy of an

available at <http://www.pde.state.pa.us/k12/lib/k12/scitech.pdf> (last visited Aug. 10, 2003). Among other things, the Pennsylvania standards require tenth-grade students to “[e]xplain the mechanisms of the theory of evolution” and “analyze data from fossil records, similarities in anatomy and physiology, embryological studies and DNA studies that are relevant to the theory of evolution,” and require twelfth-grade students to “[a]nalyze the theory of evolution”; “[e]xamine human history by describing the progression from early hominids to modern humans”; and “apply the concept of natural selection as a central concept in illustrating evolution theory.” *Id.* at 13.

434. See Pamela R. Winnick, *Board Passes Teaching Standards; Evolution Focus of Science Classes*, PITTSBURGH POST-GAZETTE, July 13, 2001, at C4.

435. H.B. 4946, 92 Legis., Reg. Sess. (Mich. 2003) (requiring the teaching of intelligent design); see also H.B. 5005, 92 Legis., Reg. Sess. (Mich. 2003) (permitting the teaching of intelligent design).

436. Norman Draper, *Education Bill Awaits Governor*, MINNEAPOLIS STAR-TRIB., May 18, 2004, at B1.

437. See Michael Moore, *Darby Schools OK “Objective Origins”*, MISSOULIAN, Feb. 3, 2004, at 1, available at <http://www.missoulian.com/articles/2004/02/03/news/top/news01.prt> (last visited May 22, 2005).

438. See James Glanz, *Montana Creationism Bid Evolves Into an Unusual Fight*, N.Y. TIMES, Feb. 26, 2004, at 22.

439. See Jim Robbins, *Montana: A Victory for Darwin*, N.Y. TIMES, May 6, 2004, at 31.

440. See Jannell McGrew, *“Pledge” Bill, Others Out of Time*, MONTGOMERY ADVERTISER, May 18, 2004, at A1.

441. See James Goodwin, *Intelligent Design Bill Unlikely to be an Easy Sell*, SPRINGFIELD NEWS-LEADER, Mar. 14, 2004, at A1.

unsuccessful proposal to add an intelligent design mandate to federal educational legislation.

2. *The Defeat of the Santorum Amendment and its Aftermath*

The Santorum Amendment was proposed by Senator Rick Santorum of Pennsylvania as an amendment⁴⁴² to what would become the No Child Left Behind Act of 2001.⁴⁴³ The original amendment was entitled “Sense of the Senate Regarding Science Education,” and contained the following two provisions:

- (1) good science education should prepare students to distinguish the data or testable theories of science from philosophical or religious claims that are made in the name of science; and
- (2) where biological evolution is taught, the curriculum should help students to understand why this subject generates so much continuing controversy, and should prepare the students to be informed participants in public discussions regarding the subject.⁴⁴⁴

Intelligent design proponent Philip Johnson later took credit for crafting this language.⁴⁴⁵ Although the Senate approved the language as an

442. See H.R. 1, 107th Cong. (2001).

443. No Child Left Behind Act of 2001, Pub. L. No. 107-110, 115 Stat. 1425 (2001). For a good, detailed discussion of the educational and constitutional implications of the Santorum Amendment, see Jay D. Wexler, *Darwin, Design, and Disestablishment: Teaching the Evolution Controversy in Public Schools*, 56 VAND. L. REV. 751 (2003).

444. 147 CONG. REC. S6147-48 (daily ed. June 13, 2001) (reading Senator Santorum’s proposed Senate amendment no. 358).

445. Steve Benen, *Insidious Design: Disguising Dogma as Science, Religious Right Activists Have Created a New Scheme to Wedge Religion into Public Schools*, CHURCH & ST., May 1, 2002, at 8. Phillip Johnson discussed the strategy behind the Santorum amendment in an article for *BreakPoint Worldview*, the publication of Charles Colson’s Prison Fellowship Ministries. See Phillip E. Johnson, *Intelligent Design, Freedom, and Education*, BREAKPOINT WORLDVIEW, available at <http://www.pfm.org/AM/Template.cfm?section=BreakPointI&template=/CM/HTMLDisplay.cfm&contentID=11922> (last visited May 24, 2005). According to Johnson, “[t]he conference report is not itself part of the ‘No Child Left Behind’ Act signed by the president, but it is the primary resource a court would consider when it has to ascertain the intent of the Congress in order to interpret words like *science* and *education*, which are in the act.” *Id.* Johnson went on to chide creationists who sought to be more open about their motives in debates over the inclusion of creationist ideas in public school curriculums:

When citizens tell me that they want to present a proposal to administrators or school boards asking for more unbiased teaching of evolution, I advise them to use the precise language of the Santorum amendment and not add anything to it. Well-meaning citizens sometimes think that this language does not go far enough, and so they insist on petitioning the authorities to give classroom time to some theory other than evolution. This is a mistake, because whatever they say just gives biased journalists something to ridicule and distort.

The Santorum amendment gives advocates for truth all we really need to get started, and its language is difficult to distort or ridicule because of the huge bipartisan majority that approved it in the Senate and because it appeals so directly to liberal values of freedom of thought in

amendment to the proposed statute, the provision was later excised and nothing relating to evolution education or intelligent design appears in the final statute.⁴⁴⁶ The conference committee did include a version of the Santorum Amendment language in the conference report to the final statute; the full text of the conference report states:

The Conferees recognize that a quality science education should prepare students to distinguish the data and testable theories of science from religious or philosophical claims that are made in the name of science. Where topics are taught that may generate controversy (such as biological evolution), the curriculum should help students to understand the full range of scientific views that exist, why such topics may generate controversy, and how scientific discoveries can profoundly affect society.⁴⁴⁷

After he failed to get his amendment attached to the final statute, Senator Santorum took the unusual tack of treating the conference report language as if it were law. He introduced into the Congressional Record a statement asserting that by voting for the statute and adopting the conference report, Congress had in essence enacted his anti-evolution language into law:

I am very gratified that the House and Senate conferees included in the conference report of the elementary and secondary education bill the language of a resolution I introduced during the earlier Senate debate. That resolution concerned the teaching of controversies in science. It was adopted 91–8 by the Senate. By passing it we were showing our desire that students studying controversial issues in science, such as biological evolution, should be allowed to learn about competing scientific interpretations of evidence. As a result of our vote today that position is about to become a position of the Congress as a whole.⁴⁴⁸

Other intelligent design advocates quickly adopted Santorum's strange notion that a vote for a nonexistent provision of a bill can make that provision law. The same proposition was promptly incorporated into a letter two members of the House of Representatives sent to members of the Ohio Board of Education in conjunction with that Board's consideration of intelligent design challenges to the composition of the state's science

education and open public discussion of controversial subjects.

Id.

446. *See supra* note 443.

447. H.R. CONF. REP. NO. 107-334, at 703 (2001), *reprinted in* 2001 U.S.C.C.A.N. 1230, 1249.

448. 147 CONG. REC. S13377 (2001) (statement of Senator Santorum).

curriculum.⁴⁴⁹ The letter asserts that “the Santorum language is now part of the law. The Santorum language clarifies that public school students are entitled to learn that there are differing scientific views on issues such as biological evolution.”⁴⁵⁰

The tactic embodied in the final version of the Santorum Amendment is the notion that science educators should “teach the controversy” about evolution. This tactic attempts to skirt the constitutional difficulties with mandating the teaching of intelligent design as science, given the absence of any mainstream academic support for the theory. The tactic, as described by a representative of the anti-evolution Discovery Institute, is to teach science as one would teach contestable political values in social studies classes:

When two groups of experts disagree about a controversial subject that intersects the public school curriculum students should learn about both perspectives. In such cases teachers should not teach as true only one competing view, just the Republican or Democratic view of the New Deal in a history class, for example. Instead, teachers should describe competing views to students and explain the arguments for and against these views as made by their chief proponents. Educators call this “teaching the controversy.”⁴⁵¹

The problem with this tactic is that it treats an empirical science as if it involved essentially unprovable conclusions based on little more than personal predilection. In a social sciences class it is impossible to reach a definitive conclusion about whether the Republican or Democratic perspectives on any given issue is “correct.” On the other hand, in a science class certain conclusions are widely accepted as true because they conform to the empirical data assembled by experts in the field. We cannot see black holes, for example, but we know that they exist because astronomers have detected, in certain galaxies, compact, dark objects with a large mass concentrated in a small volume, and because the existence of such bodies conforms to what Einstein’s general theory of relativity tells us about gravity.⁴⁵² In the biological sciences, proponents of intelligent design have the same standing as those who would deny the existence of black holes, and “teaching the controversy” about either dispute would not only waste

449. Letter from Rep. John A. Boehner and Steve Chabot to Jennifer L. Sheets and Cyrus B. Richardson, Jr. (Mar. 15, 2002), available at <http://www.discovery.org/news/BoehnerChabotLetterToOhio.html> (last visited Aug. 8, 2003).

450. *Id.*

451. Stephen C. Meyer, *Teach the Controversy*, CINCINNATI ENQUIRER, Mar. 30, 2002. Meyer is the director of the Discovery Institute’s Center for Science and Culture.

452. See KIP S. THORNE, BLACK HOLES AND TIME WARPS: EINSTEIN’S OUTRAGEOUS LEGACY (1995).

precious time that could be devoted to education about real scientific issues, but would threaten to confuse naïve students for the sole purpose of making the students receptive to a particular religious agenda of groups that feel threatened by objective science.⁴⁵³

The “teach the controversy” tactic succeeded in Ohio, where the Board of Education based its evolution lesson plan on precisely this approach.⁴⁵⁴ Although the Ohio lesson plan omits any reference to an intelligent designer, the details of the lesson plan (which were drawn, as noted above, from Jonathan Wells’ intelligent design tome *Icons of Evolution*) cannot be understood outside the context of their intelligent design roots. The lesson plan includes, among other things, sample answers challenging evolution that contain assertions completely unsubstantiated by the mainstream scientific literature (such as the key intelligent design contentions that speciation cannot occur through natural processes, and that chimps and humans do not share a common ancestor).⁴⁵⁵ These contentions are motivated by religion to the same extent as the explicit claim that an intelligent designer intervened in the natural order, and, in fact, track many of the details of earlier versions of creationism.⁴⁵⁶ Thus, a government educational policy that is heavily infused with intelligent design and anti-evolution ideas, but omits reference to a creator or intelligent designer, still cannot survive constitutional scrutiny because: (1) the unscientific claims are unintelligible in the absence of the religious agenda; (2) the claims are a reaction to scientific theory that is perceived as hostile to religion; and (3) the claims are part of a larger body of theory that leads inevitably to the manifestly religious conclusion that a supernatural entity created the world in its present basic form.

453. For an explanation of why it is “scientifically inappropriate and pedagogically irresponsible to teach that scientists seriously debate the validity of evolution,” see Eugenie C. Scott & Glenn Branch, *Evolution: What’s Wrong with “Teaching the Controversy”*, 18 *TRENDS ECOLOGY & EVOLUTION* 499 (2003).

454. See *supra* notes 422–32 and accompanying text.

455. See OHIO BD. OF EDUC., *CRITICAL ANALYSIS OF EVOLUTION—GRADE 10*, *supra* note 429, at Attachment A (copy on file with author).

456. Compare the details of the intelligent design claims in the Ohio lesson plan with the details of creationism identified by the Supreme Court in *Edwards*. See *supra* note 67 and accompanying text. Three of the six identifying factors cited in *Edwards* are present in the Ohio lesson plan: the insufficiency of natural selection to explain the distribution of species; the insistence on changes only within originally created kinds of plants and animals; and separate ancestry of man and apes. See OHIO BD. OF EDUC., *CRITICAL ANALYSIS OF EVOLUTION—GRADE 10*, *supra* note 429, at Attachment A (copy on file with author). A fourth factor—the sudden creation of the earth from nothing (presumably by a supernatural creator)—is implicit in the premise that natural processes cannot explain the development of natural species in the world. The Ohio plan (and other “teach the controversy” schemes) thus omits only the two most inflammatory claims: that the world was created only 6,000 years ago and that the world’s geological structure can be explained entirely by a single divine flood.

For this reason, the “teaching the controversy” tactic of including intelligent design in the public school curriculum alongside empirical science poses just as many constitutional problems as efforts to inject intelligent design theory into the classroom in a more overt way. Despite its questionable pedigree, the “teach the controversy” tactic seems to have caught on in states such as Ohio as a politically expedient compromise. This may have the unfortunate effect of pushing the real fight over the teaching of intelligent design down to the local school board level, where the local authorities may not always be well qualified to distinguish fact from fantasy.

3. *Textbook Disclaimers*

Instead of battling to include, in the public school curriculum, intelligent design or a more explicit version of creationism, some public educational authorities have chosen simply to cast unwarranted doubts in students’ minds about the theory of evolution by placing disclaimers in the standard textbooks distributed to students. The state of Alabama has placed disclaimers in all biology textbooks used by the public schools since 1996.⁴⁵⁷ In November 2001, the Alabama State Board of Education voted to retain the disclaimer in books purchased for use during the next six-year textbook cycle.⁴⁵⁸ The Alabama disclaimer warns students: “The theory of evolution by natural selection is a controversial theory that is included in this textbook. It is controversial because it states that natural selection provides the basis for the modern scientific explanation for the diversity of living things.”⁴⁵⁹ After casting doubt on the notion that empirically observed minor evolutionary changes imply that larger evolutionary changes also occur, the disclaimer further admonishes students that “[i]nstructional material associated with controversy should be approached with an open mind, studied carefully, and critically considered.”⁴⁶⁰

No other state has adopted a statewide disclaimer, although the Oklahoma State Senate recently came within two votes of passing legislation that would have required public schools in that state to place an Alabama-style disclaimer in all science textbooks.⁴⁶¹ In the absence of state mandates, at least one local jurisdiction has adopted a disclaimer on its own. In Cobb County, Georgia, the school board voted to place a disclaimer in new science

457. *See Alabama Retains Disclaimer on Evolution*, N.Y. TIMES, Nov. 10, 2001, at A24.

458. *Id.*

459. ALABAMA ST. BD. OF EDUC., RESOLUTION (Nov. 8, 2001), available at http://www.alsde.edu/html/boe_resolutions2.asp?id=309 (last visited May 24, 2005).

460. *Id.*

461. John Greiner, *Bill Rejected for Educational Disclaimer*, DAILY OKLAHOMAN, May 7, 2003, at 9-A.

books stating: “This textbook contains material on evolution. Evolution is a theory, not a fact, regarding the origin of living things. This material should be approached with an open mind, studied carefully, and critically considered.”⁴⁶² The Cobb County school board did not stop at disclaimers. In August 2002, the school board took a Santorum-style “teach the controversy” approach to science education when it adopted a policy asserting the Board’s belief “that discussion of disputed views of academic subjects is a necessary element of providing a balanced education, including the study of the origin of the species.”⁴⁶³ Although the school board denied that it was advancing a religious agenda, one board member inadvertently underscored the problem with the new policy’s tone when he led his colleagues in prayer immediately after adopting the policy.⁴⁶⁴ Disclaimer policies are one of the few manifestations of intelligent design mandates that have been fully litigated. Most other intelligent design mandates have either been rejected politically (such as the excision of the Santorum Amendment from the No Child Left Behind Act and the overturning of the Kansas anti-evolution science policy), or are still early in the implementation process (for example, the ambiguous Ohio science standards policy). In *Freiler v. Tangipahoa Parish Board of Education*, the Fifth Circuit Court of Appeals held that the disclaimer in that case had the unconstitutional effect of advancing a particular religious viewpoint.⁴⁶⁵ The disclaimer in question (which teachers were required to read aloud) informed students and teachers that instruction in the “Scientific Theory of Evolution”:

should be presented to inform students of the scientific concept and not intended to influence or dissuade the Biblical version of Creation or any other concept.

462. Mary MacDonald, *The Origins of Life: A Textbook Case in Cobb County*, ATLANTA J.-CONST., Apr. 14, 2002, at 1F.

463. See Cobb County School District, *Theories of Origin* (Aug. 26, 2002), available at http://www.cobbk12.org/centraloffice/adminrules/I_Rules/Rule%20IDBD.htm (last visited May 24, 2005).

464. Kate Zernike, *Georgia School Board Requires Balance of Evolution and Bible*, N.Y. TIMES, Aug. 23, 2002, at A10. In response to complaints, the Board later issued guidelines that clarified its policy and essentially nullified the policy’s original anti-evolutionary implications. “The guidelines advise teachers to moderate class discussion carefully and if conflicts arise, ‘to promote a sense of scientific inquiry and understanding of scientific methods, and to distinguish between scientific and philosophical or religious issues.’” Mary MacDonald, *Cobb Issues Evolution Guidelines to Teachers*, ATLANTA J.-CONST., Jan. 9, 2003, at 1B. The Board chairman “shrugged off the criticism that the guidelines will not encourage discussion of alternate views of evolution, saying, ‘Encouraging discussion of that might be illegal.’” *Id.*

465. *Freiler v. Tangipahoa Parish Bd. of Educ.*, 185 F.3d 337 (5th Cir. 1999), *aff’d en banc*, 201 F.3d 602 (5th Cir.) (en banc).

It is further recognized by the Board of Education that it is the basic right and privilege of each student to form his/her own opinion and maintain beliefs taught by parents on this very important matter of the origin of life and matter. Students are urged to exercise critical thinking and gather all information possible and closely examine each alternative toward forming an opinion.⁴⁶⁶

Applying the three-part *Lemon* test, the court held that this disclaimer had the secular purposes of disclaiming any orthodoxy of belief and reducing offense to students caused by instruction in evolution.⁴⁶⁷ The court went on to hold, however, that the disclaimer had the impermissible nonsecular effect of “protect[ing] and maintain[ing] a particular religious viewpoint, namely belief in the Biblical version of creation.”⁴⁶⁸ The court was careful to note that “[w]e do not confront the broader issue of whether the reading of any disclaimer before the teaching of evolution would amount to an unconstitutional establishment of religion.”⁴⁶⁹ Instead, the court focused on “the interplay of three factors”:

(1) the juxtaposition of the disavowal of endorsement of evolution with an urging that students contemplate alternative theories of the origin of life; (2) the reminder that students have the right to maintain beliefs taught by their parents regarding the origin of life; and (3) the “Biblical version of Creation” as the only alternative theory explicitly referenced in the disclaimer.⁴⁷⁰

Although the Tangipahoa Parish disclaimer was slightly more explicit than the ones in Alabama and Cobb County (particularly in that it mentioned the Bible), it is unclear how any disclaimer could avoid a similar fate. All disclaimers have the same basic objective: to cast doubt on the scientific theory of evolution in order to bolster the alternative theory that at some point a Supreme Being created distinctive classes of living organisms and arranged them in essentially the same categories into which they fall today. The fact that a disclaimer does not specifically mention the Bible does not detract from the quintessentially religious nature of the ideas advanced by the disclaimer. Salvaging anti-evolution disclaimers therefore will require more than simply omitting an explicit reference to the religious source of the ideas protected by the disclaimer; salvaging disclaimers (and the other anti-evolution mechanisms discussed in this section) will require attacking the

466. *Id.* at 341.

467. *Id.* at 345.

468. *Id.* at 346.

469. *Id.* at 342.

470. *Id.* at 346.

basic constitutional doctrine itself. The next section will address these constitutional arguments.

4. *Textbook Adoption Controversies*

The final tactic of those seeking to challenge the theory of evolution in the classroom involves the selection of the textbooks themselves. In one sense, school boards that merely attach anti-evolution disclaimers to science textbooks are implicitly acknowledging that the theory of evolution permeates modern science. If the theory of evolution did not permeate science books, the disclaimers would serve no purpose. The disclaimers send a strange message to students, however. School boards are essentially telling students: We are going to teach you about this theory, but you really don't have to believe any of it if you don't want to. The clever student may come away with little more than an abiding skepticism about the whole educational process and the common sense of those who run it. From the anti-evolution perspective it would be far more effective to alter the curriculum by replacing the standard emphasis on evolutionary theory with a more theocentric approach. One way of accomplishing this is to change the curriculum as a whole, as creationists attempted to do in Kansas, Ohio, and through the federal Santorum Amendment. Another way of accomplishing the same goal is to alter the textbooks teachers use in the classroom by inserting material that advances alternative theories of biological origins and development, or by weakening the treatment of the mainstream scientific theory of evolution.

Intelligent design proponents recently used the latter approach in Texas. The Texas State Board of Education voted to reject an aggressive effort by intelligent design proponents to require publishers of science texts purchased by the state to dilute their emphasis on evolution and include criticism of the theory.⁴⁷¹ Because Texas is one of the biggest bulk purchasers of these books,⁴⁷² this debate has implications beyond the borders of Texas. If one of the largest purchasers were to demand changes to major science texts, those same expurgated texts would be marketed to other states as well—even if the

471. The Board of Education voted 11–4 to approve science textbooks that contained no references to intelligent design and retained extensive references to the scientific consensus supporting evolution. Janet Elliott, *Biology Book Battle Abates; Debate over Evolution Calms as 11 Texts get Go-ahead*, HOUS. CHRON., Nov. 7, 2003, at A29. The support for the science texts may have become a bit more tenuous since the vote. In the Republican primary a few months following the Board decision a fifth vote was added to the self-described group of social conservatives on the Board. See Jo Ann Zuniga, *Board of Education's Social Conservatives Gain Ground*, HOUS. CHRON., Mar. 15, 2004, at A11.

472. See Elliott, *supra* note 471.

local population in those other states would prefer to have their children taught mainstream science.⁴⁷³

The constitutional issues raised by textbook purchasing disputes are identical to the issues raised by the attempt to include creationist approaches in state science standards. The issues are also identical to those raised at the local school board level when local boards attempt to adopt creationist textbooks as alternatives to standard texts.⁴⁷⁴ The constitutional issue in each of these situations is whether it is permissible for a governmental body to condition the expenditure of public funds on compliance with a particular religious doctrine. Cast in this way, the answer to this constitutional question is largely spelled out in *Epperson* and *Edwards*. Buying books because the books state that God (in some guise) created the world is no different than introducing the Supreme Being into the curriculum via teachers or curriculum standards. Incorporating religious ideas into the curriculum is forbidden no matter what the mechanism.

In sum, as indicated in Section IV.A. *supra*, the intelligent design variation of creationism fails the *Epperson/Edwards* analysis to the same extent as previous versions of creationism, and each of the four methods recently employed to inject intelligent design theory into the public school curriculum is subject to the same analysis. Whether any of these methods can pass constitutional muster, therefore, turns on the question of whether the constitutional analysis used in *Epperson* and *Edwards* can still command a majority of the Supreme Court. Intelligent design proponents understand this, and have spent a great deal of energy crafting legal arguments to undermine or circumvent the Court's present Establishment Clause jurisprudence concerning creationism. The next section addresses these arguments.

473. *Id.* For an instructive description of how textbook publishers respond to institutional censorship of this sort, and how the evisceration of textbooks affects the educational process in general, see DIANE RAVITCH, *THE LANGUAGE POLICE: HOW PRESSURE GROUPS RESTRICT WHAT STUDENTS LEARN* (2003). Religious objections to secular science education are only one aspect of this problem, of course. Other pressures imposed on textbook publishers include left-wing objections to literary texts perceived as racist or sexist, patriotic objections to depictions of less honorable aspects of American history, and the general squeamishness of educational politicians about any material that may be deemed controversial or upsetting to any child, parent, or community group. All of these disparate objections get filtered through what Ravitch calls the "[m]ad, [m]ad, [m]ad [w]orld of [t]extbook [a]doptions." *Id.* at 97. At the moment, the particular form of madness that has gripped Texas pertains to evolution and its adversaries.

474. See Wexler, *supra* note 66 (recounting the battle in Plano, Texas over the adoption of the early intelligent design text *Of Pandas and People*).

C. *The Intelligent Design Plan for Circumventing Edwards and Epperson*

As noted in Section IV.A. *supra*, the plan to incorporate the intelligent design version of creationism into the public school science curriculum has little chance of surviving scrutiny under a routine application of *Edwards* and *Epperson*. The only hope for intelligent design proponents, therefore, is to argue that for some reason *Edwards* and *Epperson* do not apply to intelligent design. Intelligent design proponents have crafted several arguments to reach this conclusion. These arguments can be divided into three categories: (1) the argument that intelligent design is not religion and therefore does not violate the Establishment Clause of the First Amendment; (2) the argument that teaching intelligent design is free speech, and therefore is protected by the Free Speech Clause of the First Amendment; and (3) the argument that intelligent design is “science” to the same extent as the more generally accepted theory of evolution, and therefore should be included in science classes on the same terms. Despite their best efforts, the intelligent design proponents’ case for avoiding *Epperson* and *Edwards* is very weak. Their first argument is premised on a disingenuous presentation of intelligent design theory; their second argument is premised on a serious misunderstanding of First Amendment free speech jurisprudence; and their third argument does not address the constitutional claim at all, and even so is contradicted by the nonconstitutional precedents they cite in support of their position.

1. *If It Isn’t Religion, Then What Is It?*

The Establishment Clause prohibition of governmental endorsement of religion in the public schools is the primary constitutional obstacle preventing state and local governments from including intelligent design in the public school science curriculum and state science standards. The Supreme Court has routinely enforced this prohibition since it first invalidated the New York Regents Prayer in the 1962 decision *Engel v. Vitale*.⁴⁷⁵ One year after *Engel* the Court extended this prohibition to student Bible reading in public schools.⁴⁷⁶ In subsequent years the Court extended the principle of these cases even further to cover everything from moments of silence,⁴⁷⁷ to the posting of the Ten Commandments in public schools,⁴⁷⁸

475. 370 U.S. 421 (1962).

476. *Abington Sch. Dist. v. Schempp*, 374 U.S. 203 (1963).

477. *Wallace v. Jaffree*, 472 U.S. 38 (1985).

478. *Stone v. Graham*, 449 U.S. 39 (1980).

to graduation prayer,⁴⁷⁹ and, only three years ago, to prayer at public school extracurricular events such as football games.⁴⁸⁰ The Court's *Epperson* and *Edwards* creationism decisions are part of this tradition.

To overcome the obstacle represented by this dense body of jurisprudence, intelligent design proponents have no choice but to argue that their theory is not religious. Their main tactic is to emphasize the differences between intelligent design and earlier versions of creationism. They focus especially on the absence of specific detail in intelligent design theory, in contrast to the explicit claims in earlier versions of creationism about such things as the age of the earth and the occurrence of a worldwide flood.⁴⁸¹ Similarly, unlike earlier creationists, intelligent design theorists are careful to avoid identifying their intelligent designer by name as God or even a Supreme Being. Having refrained from naming their designer, the intelligent design theorists then argue that none of the definitions of religion used by the courts in Establishment Clause cases apply to their theory.⁴⁸² Ergo, the argument goes, although *Epperson* and *Edwards* bar government from embracing earlier versions of creationism,⁴⁸³ the new, streamlined version of the theory survives Establishment Clause scrutiny unscathed and may be included in the state science curriculum.

The problem with this approach is that it is premised on a deeply disingenuous presentation of intelligent design theory.⁴⁸⁴ Although intelligent design proponents repeatedly disavow the most scientifically foolish claims characterizing earlier versions of creationism (such as the theory of the young earth), they are also unspecific about important parts of their own version.⁴⁸⁵ They return repeatedly to their one real affirmative claim—that nature is so “irreducibly complex” that it could not have happened by

479. *Lee v. Weisman*, 505 U.S. 577 (1992).

480. *Santa Fe Indep. Sch. Dist. v. Doe*, 530 U.S. 290 (2000).

481. *See, e.g.*, DeWolf, Meyer & DeForrest, *supra* note 87, at 94.

482. *Id.* at 80–87.

483. Intelligent design proponents specifically limit *Edwards* to statutes containing the details of earlier generations of creationism: “The Court reached this decision [in *Edwards*] in large part because the propositional content of scientific creationism closely mirrors the creation narrative in the book of Genesis.” *Id.* at 93.

484. As detailed in Section II, *supra*, intelligent design proponents are disingenuous only when they are presenting their theory to the uninitiated. When talking to fellow advocates, they are much more forthcoming about “how the Wedge program fits into the specific Christian gospel . . . and how and where questions of biblical authority enter the picture.” Johnson, *supra* note 73, at 16–17. Robert Pennock discusses intelligent design’s deep religious roots in examining the writings of intelligent design advocate Stephen C. Meyer. *See* Pennock, *supra* note 117. Pennock highlights the disingenuousness of intelligent design strategy by noting that although they aim “to bring death to materialism by reasserting the necessity of the God hypothesis . . . their political strategy leads them to deny God in the public square more often than Peter did.” *Id.*

485. *See supra* note 70.

accident and therefore must have been intentionally designed⁴⁸⁶—but they are notably silent about the identity and nature of the intelligent designer. It is a very odd theory that posits an intelligent designer, and then expresses no interest in the identity of the designer, the extent of its power, the degree to which it controls the actions of its creations as well as their physical manifestations, and so on. The intelligent designer is the seven-ton elephant sitting in the middle of the room, which intelligent design proponents barely acknowledge and steadfastly refuse to discuss. Yet without this creative intelligent designer, the theory of intelligent design would have no substance whatsoever. The entire intelligent design theory is predicated on the central claim that an active supernatural entity intentionally created the world according to a predefined plan.

The specific issues in what creationists tend to call the “debate over origins” are clear-cut: The biological world either arrived at its present composition through natural evolutionary processes, or the whole system was planned from the outset and is subject to creative intervention by a designer. Likewise, interspecies transmutation either occurs through evolutionary change or it does not happen at all because some creative entity designed species with finite and unchangeable boundaries. (Intelligent design proponents accept only “microevolution,” change *within* species boundaries, but not “macroevolution,” the evolution of a new species from an existing one.) For scientists, the successful description and explanation of observed natural evolutionary processes provide the ultimate measure of their guiding theory. The data and explanations produced under this theory are the mainstay of mainstream scholarly journals and conferences. To be considered a genuine scientific alternative to evolutionary theory, on the other hand, intelligent design proponents must explain the precise nature and degree of active participation by a Supreme Being capable of designing the world. Otherwise, there is little way of assessing the underlying characteristics of the intelligent design model of biology. The failure of intelligent design proponents to describe their intelligent designer robs the central feature of their theory of any real scientific substance, resulting in what Robert Pennock calls a “featureless hypothesis.”⁴⁸⁷

The problem, of course, is that the intelligent design proponents have not—and as time passes it seems increasingly clear that they cannot—present

486. See, e.g., DeWolf, Meyer & DeForrest, *supra* note 87, at 95.

487. See Pennock’s discussion of the explanatory deficiencies of a transcendent designer in Robert T. Pennock, *God of the Gaps: The Argument from Ignorance and the Limits of Methodological Naturalism*, in *SCIENTISTS CONFRONT CREATIONISM* (Andrew J. Petto & Laurie R. Godfrey eds., forthcoming 2004).

empirical evidence that their intelligent designer exists and has done its work in constructing the world in a particular way. In the absence of an empirically verifiable affirmative case, intelligent design proponents are left with a purely negative analysis of evolution, from which they then try to manufacture affirmative inferences about reality. These inferences, however, are little more than an unfortunate combination of a failure of scientific imagination and a theological leap of faith. Reduced to its essence, intelligent design theory essentially proceeds via a three-step analysis. Step one (the purely negative scientific analysis) is represented by the various intelligent design critiques of alleged mistakes and gaps in the evolutionary literature.⁴⁸⁸ Step two (the failure of scientific imagination) is an affirmative claim that the mistakes in evolutionary theory are inevitable due to the “irreducibly complex” nature of certain biological systems, which cannot be adequately described or explained by reference to natural processes. Step three (the leap of faith) is the claim that if natural selection is incapable of producing irreducible complexity (as William Dembski argues), then some transcendent being must be responsible.⁴⁸⁹

Once the government starts down this road, it has entered the land of religion, and once it has entered this territory, *Edwards* applies with full force: “[C]oncepts concerning God or a supreme being of some sort are manifestly religious These concepts do not shed that religiosity merely because they are presented as a philosophy or as a science.”⁴⁹⁰ The holdings of *Epperson* and *Edwards* cannot be limited by the details of earlier generations of creationism statutes. The empirically disproven specifics of young-earth creationism were not the main constitutional problem with the effort to incorporate those theories into the public school curriculum, although these absurd details did highlight the underlying problem with the theory. The real problem with earlier versions of creationist theory is that they replaced empirical analysis of the natural world with conclusions drawn from religious doctrine and based on faith in the actions of a Supreme Being who created the world according to His precise design. Although intelligent design theorists may have stripped away explicit references to most other aspects of early creationist theory, they cannot dispense with the one part of the theory that renders it “manifestly religious”—the final reliance on the

488. As the material in Section III, *supra*, demonstrates, many of these assertions are overblown or inaccurate, but at least they are assertions that can be tested in the real world and verified or falsified.

489. “High information content (or specified complexity) and irreducible complexity constitute strong indicators or hallmarks of past intelligent design.” DeWolf, Meyer & DeForrest, *supra* note 86, at 95.

490. *Edwards v. Aguillard*, 482 U.S. 578, 598–99 (Powell, J., concurring) (citing *Malnak v. Yogi*, 440 F. Supp. 1284, 1322 (D.N.J. 1977)).

actions of a Supreme Being rather than natural processes to explain life on earth.

In addition to emphasizing the lack of Biblical detail in their theory, intelligent design theorists also attempt to manipulate the legal definition of “religion” in a way that would deem their endorsement of a Supreme Being nonreligious. The argument is that having distanced themselves from earlier versions of creationism by denuding their theory of all details except the designer, then what is left of the theory is so general that the prevailing definitions of religion used by the courts do not apply.

Intelligent design theorists acknowledge that neither the Supreme Court nor the lower courts have ever adopted a universal definition of “religion.”⁴⁹¹ They also acknowledge that as a practical matter the courts are willing to recognize a broader range of beliefs as religious when a private individual’s free exercise of religion is at issue than when a case involves Establishment Clause concerns that the government is advancing religion.⁴⁹² Thus, in the famous conscientious objection cases beginning with *United States v. Seeger*, the Court interpreted the statutory definition of religion so broadly as to embrace even the views of agnostics and atheists.⁴⁹³ The case involved the portion of the Selective Service Act that granted conscientious objector status to individuals who objected to participation in war based on their “religious training and belief,” which the statute defined as “an individual’s belief in a relation to a Supreme Being involving duties superior to those arising from any human relation, but [not including] essentially political, sociological, or philosophical views or a merely personal moral code.”⁴⁹⁴ The Court interpreted this language to apply to individuals whose pacifism was premised on a “belief that is sincere and meaningful [and] occupies a place in the life of its possessor parallel to that filled by the orthodox belief in God of one who clearly qualifies for the exemption.”⁴⁹⁵ The Court later applied this interpretation even to individuals who denied that their views were religious at all.⁴⁹⁶ This interpretation distorted the literal meaning of the statutory language beyond recognition, but was necessary to protect the free exercise

491. See DeWolf, Meyer & DeForrest, *supra* note 87, at 82.

492. *Id.* at 81.

493. See *Welsh v. United States*, 398 U.S. 333 (1970); *United States v. Seeger*, 380 U.S. 163 (1965).

494. 50 U.S.C. § 456 (j) (1958).

495. *Seeger*, 380 U.S. at 166.

496. See *Welsh*, 398 U.S. at 343 (granting conscientious objector status to an applicant who denied that his beliefs were religious in any way).

interest in avoiding discrimination against anyone based on that person's religious beliefs (or lack of religious beliefs).⁴⁹⁷

When the analysis shifts to the Establishment Clause context, on the other hand, very different problems present themselves. In this context it is impossible to apply a broad free exercise-style definition of religion because such a definition can potentially convert virtually *any* set of beliefs into "religion." If a very broad definition of religion were combined with the Establishment Clause, then any deep commitment to a comprehensive social agenda—such as environmentalism, racial justice, or economic equality—could potentially be "religious" and therefore off-limits for government officials. Again, intelligent design proponents recognize this, and indeed attempt to use the courts' narrower Establishment Clause definition of religion to characterize intelligent design theory as "nonreligious." In one article, for example, intelligent design proponents employ "the three-part test" of religion used in several cases by the Ninth Circuit Court of Appeals.⁴⁹⁸ The three parts of the "test" are:

First, a religion addresses fundamental and ultimate questions having to do with deep and imponderable matters. Second, a religion is comprehensive in nature; it consists of a belief-system as opposed to an isolated teaching. Third, a religion often can be recognized by the presence of certain formal and external signs.⁴⁹⁹

Intelligent design proponents argue that under this "test" their theory is not "religion" because (1) intelligent design does not address "fundamental and ultimate questions" such as the "the characteristics and identity of the designing intelligence"⁵⁰⁰; (2) intelligent design does not offer a theory of morality or metaphysics or an afterlife⁵⁰¹; and (3) intelligent design does not have a formal liturgy, clergy, or holidays.⁵⁰² Intelligent design proponents argue that since their theory does not constitute "religion" under this "three-part test," *Edwards* and other Establishment Clause decisions relating to

497. See *Seeger*, 380 U.S. at 188 (Douglas, J., concurring) ("If I read the statute differently from the Court, I would have difficulties. For then those who embraced one religious faith rather than another would be subject to penalties; and that kind of discrimination . . . would violate the Free Exercise Clause of the First Amendment.")

498. See DeWolf, Meyer & DeForrest, *supra* note 87, at 84–85, (citing *Alvarado v. City of San Jose*, 94 F.3d 1223 (9th Cir. 1996); *Pelozo v. Capistrano Unified Sch. Dist.*, 37 F.3d 517 (9th Cir. 1994)).

499. *Alvarado*, 94 F.3d at 1229 (quoting *Africa v. Pennsylvania*, 662 F.2d 1025, 1032 (3d Cir. 1981)).

500. DeWolf, Meyer & DeForrest, *supra* note 87, at 85.

501. *Id.* at 86.

502. *Id.* For Francis Beckwith's rendition of these same three points, see Beckwith, *supra* note 136, at 494–96.

earlier forms of creationism cannot extend to the new streamlined variation on the creationist theme.

The intelligent design proponents are wrong on several aspects of this analysis, including the status of the “three-part test” supposedly adopted by the Ninth Circuit. Actually, the intelligent design rendition mischaracterizes the Ninth Circuit opinions in two respects. First, the Ninth Circuit does not refer to a formal “test” of religion, but rather to “three useful indicia” of religion,⁵⁰³ and second, the three factors in question are actually developed in two opinions by Judge Arlen Adams of the Third Circuit Court of Appeals.⁵⁰⁴ The Third Circuit opinions are instructive, because they provide a much deeper context for the “three useful indicia” of religion and explain why neither Judge Adams’ “indicia” nor the Ninth Circuit’s use of those indicia help the intelligent design cause.

Judge Adams devised his three indicia of religion in a case involving an Establishment Clause challenge to the use of a form of transcendental meditation in a public school. The school claimed that the particular form of transcendental meditation it used was not religious, in particular because it was not traditionally theist in the manner of traditional Western religions.⁵⁰⁵ Because the court was considering an unusual set of beliefs, Judge Adams found that many of the existing precedents did not apply directly to the particular facts of the case. Therefore, Judge Adams assembled various “indicia” to identify those traits in a non-theist set of beliefs that would render that set of beliefs analogous to a traditional, Western theist belief system.

The significant thing about this analysis for purposes of analyzing the theory of intelligent design is that the analysis of religious “indicia” starts from the proposition that a traditional theist beliefs were by definition religious. The central feature of intelligent design theory is identical to the key factor used by the Supreme Court in defining the traditional definition of religion: i.e., belief in a Supreme Being. As Judge Adams noted, “[t]he

503. See *Alvarado*, 94 F.3d at 1229 (quoting *Malnak v. Yogi*, 592 F.2d 197, 210 (3d Cir. 1979) (Adams, J., concurring)). The quoted phrase comes from the Third Circuit source of the “test.” The Ninth Circuit also notes the original author’s warning that “the indicia should not be regarded as a final ‘test’ for religion.” *Id.* at 1229 n.3 (quoting *Malnak*, *supra*, at 210). In contrast to the court’s qualifications and clear statement that the three factors are not a formal test of religion, the intelligent design proponents present the case as if the court arrived at the opposite conclusion: “Though the courts have generally resisted formulating definitions of religion, the Ninth Circuit test articulated in [*Pelozo*] and [*Alvarado*] stands as a clear exception to that rule.” DeWolf, Meyer & DeForrest, *supra* note 87, at 85.

504. See *Africa*, 662 F.2d at 1032; *Malnak v. Yogi*, 592 F.2d 197, 208–10 (3d Cir. 1979) (Adams, J., concurring).

505. *Malnak*, 592 F.2d at 213–14 (Adams, J., concurring).

original definition of religion prevalent in this country was closely tied to a belief in God.”⁵⁰⁶ Judge Adams’ “indicia” come into play in assessing how far away from a traditional belief in God the constitutional definition of “religion” can extend. These indicia are not necessary to assess the religious status of intelligent design because the assertion of a belief in a Supreme Being is *by definition* a religious proposition.⁵⁰⁷

The fact that an asserted belief in a Supreme Being renders a set of beliefs religious is evident from the beginning of the Supreme Court’s religion-in-school jurisprudence, of which the creationism cases are but one part. As Judge Adams notes in *Malnak*: “Both the prayer in *Engel* and the Bible readings in *Schempp* are unquestionably and uncompromisingly Theist. Even under the most narrow and traditional definition of religion, prayers to a Supreme Being and readings from the Bible would be considered ‘religious.’”⁵⁰⁸ In both of these early cases (as in the later school religion cases), there was little comprehensive theology expressed to the students. The brief religious exercises involved little more than the recognition of God’s existence and humanity’s dependence on him, which was enough to

506. *Id.* at 201.

507. Francis Beckwith attempts to avoid this conclusion by arguing that God is not an inherently religious concept. “‘God’ need not always be a religious concept, for ‘God’ can be employed as a theoretical postulate without being an object of worship.” Beckwith, *supra* note 136, at 517. It is unclear what Beckwith means here. If he means that a public school does not engage in forbidden religious practices when it stops short of forcing students to worship the government’s chosen religion, then Beckwith simply has the law wrong. None of the Court’s public school/religious endorsement cases involved forcible worship. In every case—including *Engel*—students could opt out of the religious activity and not participate at all. *See Engel v. Vitale*, 370 U.S. 421, 423 (1962). All of these cases involved very mild and usually ecumenical overtures to God and religion. *See Lee v. Weisman*, 505 U.S. 577, 581 (1992) (noting the school’s “nonsectarian” prayer composed under guidelines requiring “inclusiveness and sensitivity”) (internal quotations omitted). The Court nevertheless held that the government violated the Establishment Clause in each case simply by requiring the students to make the public choice not to participate. Thus, a formal requirement of worship is not a necessary component of Establishment Clause limits on the government’s endorsement of God as a religious figure.

If, on the other hand, Beckwith means that God may be a legitimate topic of discussion in some academic contexts in public schools, then he is clearly correct, but not in the way he suggests. Students at a public school may discuss the various religious traditions of the world, different cultures’ conflicting perspectives on deities, and even traditional philosophical proofs of God’s existence, but only in classes where it is clear the government is not putting forth a set of religious ideas as true. Thus, these concepts may be relevant to history, philosophy, or comparative religion courses in a public school and may be taught in these contexts without running afoul of the Constitution. But teaching intelligent design in a science class is different; in that context students are presented with a package of conclusions that has at its core the notion that God created the world in more or less its present form. In this context God is not being presented as a “theoretical postulate”; rather, He is being presented as the Lord your God, who created the world and presumably still controls it and is therefore worthy of deference. *See 10 Deuteronomy 14* (“Behold, to the Lord your God belong heaven and the heaven of heavens, the earth with all that is in it.”). If this is not a religious concept, it is difficult to imagine what would be.

508. *Malnak*, 592 F.2d at 203.

render the exercises unconstitutional. The absence of a full-blown worship service, or for that matter a specific mention of a particular faith, did not render the generic references to God nonreligious. From a constitutional perspective, there is no such thing as a secular God. The application of this recognition to various manifestations of creationism is unavoidable. As one of the Ninth Circuit decisions cited by intelligent design proponents bluntly concludes: “The Supreme Court has held unequivocally that while the belief in a divine creator of the universe is a religious belief, the scientific theory that higher forms of life evolved from lower forms is not.”⁵⁰⁹

The intelligent design proponents’ final point about the definition of religion asserts that evolutionary doctrine itself is “religious” to the same extent as intelligent design theory. “Contrary to the popular just-the-facts stereotype of science, many scientific theories have larger ideological and religious implications. . . . Theories about where the universe, life, and humanity came from invariably affect our perspectives about human nature, morality, and ultimate reality.”⁵¹⁰ This may be true, but only in the most general sense that any new knowledge may alter a person’s existing beliefs. The real question is not whether knowledge of evolutionary change will “invariably affect our perspectives,” but rather whether evolutionary theory is incompatible with a belief in God. If it *were* incompatible, then teaching evolution would be just as unconstitutional as teaching that God created humanity in His own image. But the overwhelming evidence is that evolutionary theory is not incompatible with deeply held religious beliefs. No less a religious authority than Pope John Paul II has attested in a formal statement to the Pontifical Academy of Sciences that “Fresh knowledge leads to recognition of the theory of evolution as more than just a hypothesis.”⁵¹¹ The Catholic Church has no problem endorsing evolution because, in essence, science and religion operate in different spheres. In the Pope’s words, “If the human body has its origin in living material which pre-exists it, the spiritual soul is immediately created by God.”⁵¹² Evolutionary theory can describe how natural processes work, but it cannot describe—and does not seek to, since it is not part of the theory’s concern—whether those processes were created or by whom, why the processes exist, or whether they are part of a larger metaphysical reality. Evolutionary theory leaves the latter questions to each individual’s own personal, religious, and philosophical

509. *Pelozo*, 37 F.3d at 521.

510. DeWolf, Meyer & DeForrest, *supra* note 87, at 88.

511. John Tagliabue, *Pope Bolsters Church’s Support for Scientific View of Evolution*, N.Y. TIMES, Oct. 25, 1996, at A1.

512. *Id.*

preferences. This describes what Stephen Gould labeled the “nonoverlapping magisteria” of science and religion.⁵¹³

In contrast to the evident compatibility between evolutionary theory and a diversity of religious thought, intelligent design theory is compatible with one, and only one approach to religion—i.e., the approach that depends on a Supreme Being who takes an active hand in shaping the world. Intelligent design theory is incompatible with the views of agnostics and atheists, obviously, but apparently also with Hindus, Buddhists, and at least since 1996, Catholics. Although intelligent design proponents are generally silent about their evolution-friendly co-religionists, they tend to lump evolutionary theory with atheism. Intelligent design proponents freely admit that the battle against philosophical naturalism provides much of their motivation for taking up the battle against the theory of evolution.⁵¹⁴ For intelligent design proponents, the conflict between evolutionary theory and intelligent design is a religious conflict.

Thus, an ID statute could be justified on the basis of neutrality by arguing that to teach only one theory of origins (evolution)—that presupposes a controversial epistemology (methodological naturalism), entails a controversial metaphysics (ontological materialism), and is antithetical to traditional religious belief—the state is in fact advocating, aiding, fostering, and promoting irreligion, which it is constitutionally forbidden from doing. The state is not merely teaching what some religious people find antagonistic or offensive to their faith, which would not be unconstitutional. Rather, it is promoting a point of view—a metaphysical perspective—that “occupies in the life of its possessor a place parallel to that filled by” traditional belief in God.⁵¹⁵

In what they view as the battle between religion and irreligion, intelligent design becomes a way of using the science classroom to secure the devotion of the faithful and proselytize to those who are not yet part of the flock.

Students who believe in a creator God may, therefore, find support for their faith from the evidence that supports design theory and may identify the designing intelligence allegedly responsible for biological

513. Stephen Jay Gould, *Nonoverlapping Magisteria*, in *INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS* 737 (Robert T. Pennock ed., 2001).

514. See Beckwith, *supra* note 136, at 467 (“This is why ID proponents maintain that [methodological naturalism] is a necessary presupposition for the veracity of the evolutionary edifice and entails ontological materialism as a worldview, but is arguably not necessary for the practice of science qua science.”) (internal footnote omitted).

515. *Id.* at 503 (internal footnote omitted).

complexity with the God of their religious belief. Alternatively, students with no religious convictions may find that evidence of design leads them to ask theological questions and to inquire into the identity of such a designing intelligence.⁵¹⁶

At least in candid statements like these, intelligent design proponents drop the guise that they are merely proposing a new theory to advance the empirical discipline of science. Religion, not science, is their primary concern, and proselytizing is the object of the exercise. Religious revivals serving this function are a longstanding part of the local culture in portions of this country; but they usually occur in tents, not science classes.

2. *Intelligent Design and the Problem of Religious Speech by the Government*

Intelligent design proponents do not stop at the argument that the Establishment Clause permits their theory to be presented to students in public school classrooms. They go on to argue that intelligent design *must* be introduced into public school classrooms because the theory is protected by the Free Speech Clause and barring it from public school classrooms would constitute impermissible viewpoint discrimination.⁵¹⁷ They make this free speech argument on three levels: First, they argue that the First Amendment gives school boards and state boards of education the discretion to define the public school curriculum in a way that includes intelligent design creationism. Second, they argue (inconsistently in light of their first argument) that under the First Amendment school boards do *not* have discretion to define the curriculum in a way that excludes from the public school curriculum or classrooms arguments relating to intelligent design. Third, they argue (again inconsistently with their first argument) that individual teachers have a First Amendment right to introduce the theory into the classroom even if the school board has defined the local science curriculum in a way that emphasizes only evolutionary theory. The intelligent design proponents' legal arguments for these propositions are surprisingly weak—even weaker than the intelligent design claims about the Establishment Clause. Indeed, all three versions of the intelligent design free speech claims are based on a serious misunderstanding of basic First Amendment free speech doctrine.

516. DeWolf, Meyer & DeForrest, *supra* note 87, at 87.

517. See Jeffrey F. Addicott, *Storm Clouds on the Horizon of Darwinism: Teaching the Anthropropic Principle and Intelligent Design in the Public Schools*, 63 OHIO ST. L.J. 1507, 1560–62 (2002); DeWolf, Meyer & DeForrest, *supra* note 87, at 97–109.

The foundation of the intelligent design proponents' free speech claim is that there has been a "revolution"⁵¹⁸ in First Amendment doctrine relating to religious speech due to the Supreme Court's decision in *Rosenberger v. Rector and Visitors of the University of Virginia*.⁵¹⁹ Intelligent design proponents argue that *Rosenberger* in effect supercedes *Edwards* by changing "the constitutional standard for deciding the permissibility of religiously-motivated speech."⁵²⁰ They note that in *Rosenberger* the Supreme Court holds that "the First Amendment prohibits the government from regulating speech 'based on its substantive content or the message it conveys,' even where the content of the speech is religious."⁵²¹ They view this holding as fundamentally changing the landscape of religious speech in public schools:

[I]f the Court has ruled [in *Rosenberger*] that the constitution allows funding religiously motivated speech—indeed speech of an explicitly religious character—in order to prevent viewpoint discrimination, then clearly the constitution must permit other forms of religiously-motivated expression, especially those forms of expression that address scientific evidence and are (at most) only religious in their implications. Thus, a teacher or school board that chooses to include presentations about design theory in the curriculum in order to prevent an imbalance in the presentation of scientific perspectives on biological origins, would enact a secular purpose every bit as compelling as the one the state university was required to demonstrate in *Rosenberger*.⁵²²

Intelligent design proponents are not quite sure where they want to go with this new principle of government-sponsored religious speech they attribute to *Rosenberger*. As noted above, they have three conflicting claims. On one hand, they often speak of a free speech right of public school boards to control their curriculum (by permitting the presentation of intelligent design to students). On the other hand, they assert that school boards cannot bar the inclusion of intelligent design in the public school science curriculum. Similarly, they argue in favor of free speech protection for individual public

518. DeWolf, Meyer & DeForrest, *supra* note 87, at 103; *see also* Addicott, *supra* note 517, at 1561.

519. 515 U.S. 819 (1995).

520. DeWolf, Meyer & DeForrest, *supra* note 87, at 97.

521. *Id.* at 103 (internal footnote omitted).

522. *Id.* at 97; *see also* Beckwith, *supra* note 136, at 489 (citing *Rosenberger* for the proposition that "forbidding the teaching of ID (or legitimate criticisms of evolution) in public schools because it lends support to a religion, while exclusively permitting or requiring the teaching of evolution, might be construed by a court as viewpoint discrimination").

school teachers who want to present the intelligent design “alternative” in the face of school board opposition. Thus, although they are in favor of school board curricular control by school boards friendly to their cause, intelligent design proponents argue that a school board oriented toward evolution does *not* have the right to control the local science curriculum. These contradictory claims are sometimes presented in adjacent sentences. In one article presenting the intelligent design free speech claims, for example, the authors assert that “the law not only permits [a teacher advocating intelligent design] to present alternatives, but it now forbids publicly funded viewpoint discrimination,” thus implying that a school board cannot prevent a teacher from presenting intelligent design to the teacher’s public school science class.⁵²³ In the very next sentence, however, the authors assert that “recent cases have provided a strong reaffirmation of the primary responsibility and authority reposed in school boards to decide upon their own curriculum,” a proposition the authors support with a citation to a case in which the Fourth Circuit Court of Appeals rejected a teacher’s First Amendment claim after she was sanctioned for introducing into her classroom material that the school board did not endorse.⁵²⁴

The intelligent design free speech argument can be reduced to the tendentious proposition that a school board has a First Amendment right to control its curriculum if it wants to include intelligent design, but is subject to a First Amendment challenge if it instructs teachers to limit class discussions to evolutionary theory. The only way to make sense of this confusion is to read it as sending a message to school boards and their lawyers that intelligent design activists intend to sue them if they do not include intelligent design in their classrooms. The authors say this several times. At one point they note pointedly: “Such rulings suggest that school boards that allow teachers (or their libraries) to present only one side of a controversial issue expose themselves to risk of litigation, especially if their decision to do so is ‘intended . . . to deny . . . access to ideas with which [they] disagreed.’”⁵²⁵ At another point they reiterate that “*Rosenberger* suggests that a school board would face far more exposure to litigation by preventing [a teacher favoring intelligent design creationism] from implementing his changes than by allowing him to do so.”⁵²⁶

523. *Id.* at 100.

524. *Id.* at 101 (citing *Boring v. Buncombe County Bd. of Educ.*, 136 F.3d 364, 371 (4th Cir. 1998)).

525. *Id.* at 102.

526. *Id.* at 108.

School boards are understandably averse to litigation, but these warnings should not strike fear into even the most litigation-averse board. There is little chance that any litigation based on the free speech claims set forth in intelligent design articles would survive a motion to dismiss. The problem with the intelligent design free speech argument is that it is based on a fundamental misunderstanding of *Rosenberger* and the longstanding free speech doctrine that *Rosenberger* applies.

The argument that excluding intelligent design from public school science classrooms would constitute viewpoint discrimination in violation of the First Amendment is premised on the most basic kind of interpretive mistake. Specifically, intelligent design proponents fail to recognize the difference between state and private action. Intelligent design proponents badly misread *Rosenberger*, and ignore repeated caveats in that decision emphasizing that the rule against viewpoint discrimination—which the Court applied to the private speech in that case—does not apply to internal curriculum decisions made by public educational authorities. The reason for these caveats is obvious: State action—that is, speech by the government—is governed by one set of First Amendment rules, and private action—that is, speech by private persons—is governed by a completely different set of First Amendment rules. The *Rosenberger* rules regarding viewpoint discrimination against speech (including religious speech) are applicable only to government regulation of speech by private actors—not to speech by the government itself. It is difficult to understand how intelligent design proponents could have missed this point, since *Rosenberger* states it explicitly: “A holding that the University may not discriminate based on the viewpoint of private persons whose speech it facilitates does not restrict the University’s own speech, which is controlled by different principles.”⁵²⁷

The principle that the government may advance its own ideas without violating the First Amendment free speech rights of private persons is not a new concept. The principle and its rationale were set forth at length in *Rust v. Sullivan*,⁵²⁸ a case cited several times in *Rosenberger*:

To hold that the Government unconstitutionally discriminates on the basis of viewpoint when it chooses to fund a program dedicated to advance certain permissible goals because the program, in advancing those goals, necessarily discourages alternate goals would render numerous government programs constitutionally suspect. When Congress established a National Endowment for Democracy to encourage other countries to adopt democratic principles, it was not

527. *Rosenberger v. Rectors & Visitors of Univ. of Va.*, 515 U.S. 819, 834 (1995).

528. 500 U.S. 173 (1991).

constitutionally required to fund a program to encourage competing lines of political philosophy such as Communism and Fascism. Petitioners' assertions ultimately boil down to the position that, if the government chooses to subsidize one protected right, it must subsidize analogous counterpart rights. But the Court has soundly rejected that proposition. Within far broader limits than petitioners are willing to concede, when the Government appropriates public funds to establish a program, it is entitled to define the limits of that program.⁵²⁹

When applied to the current controversy, this implies that the government is permitted to emphasize education in evolutionary theory without subsidizing the scientifically unsubstantiated claims of those who do not favor evolution.

The distinction between private and government speech is at the very heart of *Rosenberger*. Indeed, the *Rosenberger* majority emphasized that it rejected the dissent's Establishment Clause argument precisely because the religious speakers in *Rosenberger* were private individuals, rather than the government. "The distinction between the University's own favored message and the private speech of students is evident in the case before us."⁵³⁰ After noting previous decisions upholding private student speech on public university property, the Court noted that these cases had nothing to do with public schools' decisions to decide for themselves the nature of their own curriculum. After noting its previous recognition of the "right of the University to make academic judgments as to how best to allocate scarce resources,"⁵³¹ the Court elaborated on the relevance of this to the curriculum-setting decisions of public educational authorities:

The quoted language . . . was but a proper recognition of the principle that when the State is the speaker, it may make content-based choices. When the University determines the content of the education it provides, it is the University speaking, and we have permitted the government to regulate the content of what is or is not expressed when it is the speaker or when it enlists private entities to convey its own message. In the same vein, in *Rust v. Sullivan*, we upheld the government's prohibition on abortion-related advice applicable to recipients of federal funds for family planning counseling. There, the government did not create a program to encourage private speech but instead used private speakers to transmit specific information

529. *Id.* at 194 (internal citations omitted).

530. *Rosenberger*, 515 U.S. at 834.

531. *Id.* at 833 (quoting *Widmar v. Vincent*, 454 U.S. 263, 276 (1981)).

pertaining to its own program. We recognized that when the government appropriates public funds to promote a particular policy of its own it is entitled to say what it wishes. When the government disburses public funds to private entities to convey a governmental message, it may take legitimate and appropriate steps to ensure that its message is neither garbled nor distorted by the grantee.⁵³²

In light of these extensive statements in *Rosenberger*, there is nothing in the First Amendment that prevents public school authorities from seeing to it that their science classes are not “garbled or distorted” by the unsubstantiated claims of intelligent design creationism. The ominous suggestion of litigation against school boards “that allow teachers (or their libraries) to present only one side of a controversial issue”⁵³³ is therefore nothing more than an empty threat.

Rosenberger also illustrates a second way in which the state/private distinction applies to the decisions by school boards whether or not to permit intelligent design in public school classrooms. It is clear from the structure of the theory⁵³⁴ and from the statements of its proponents⁵³⁵ that intelligent design is a religious theory. As such, the Establishment Clause prohibits any public institution, including schools, from endorsing or advancing that theory. This is the holding of *Epperson* and *Edwards*, which, as described in the previous subsection, applies directly to intelligent design creationism. Therefore, public school boards barring the inclusion of intelligent design from their classrooms do not violate the Free Speech Clause of the First Amendment because they are simply complying with the Establishment Clause of the First Amendment. The program funding religious speech in *Rosenberger* was upheld by the Court because it “respect[ed] the critical difference ‘between *government* speech endorsing religion, which the Establishment Clause forbids, and *private* speech endorsing religion, which the Free Speech and Free Exercise Clauses protect.’”⁵³⁶ In *Rosenberger*, the Court emphasized that “‘the government has not fostered or encouraged’ any mistaken impression that the [religious] student[s] . . . speak for the University.”⁵³⁷ A school board endorsement of intelligent design, on the other hand, would convey just the opposite impression—that is, that religious ideas are being presented on behalf of the government. It is hard to

532. *Id.* (internal citations omitted).

533. DeWolf, Meyer & DeForrest, *supra* note 87, at 102.

534. *See supra* notes 475–516 and accompanying text.

535. *See supra* notes 84–271 and accompanying text.

536. *Rosenberger*, 515 U.S. at 841 (quoting Bd of Educ. of Westside Cmty. Sch. v. Mergens, 496 U.S. 226, 250 (1990) (opinion of O’Connor, J.)).

537. *Id.* (quoting Capitol Square Review and Advisory Bd. v. Pinette, 515 U.S. 753, 766 (1995)).

understand why intelligent design proponents emphasize *Rosenberger* so heavily, because not only does *Rosenberger* not support their position, it specifically precludes the result they are trying to achieve.

The short answer to the intelligent design First Amendment claims regarding school boards is that the government is not obligated to balance secular theory with religious doctrine in public classrooms because the government is not permitted to present religious doctrine in public school classrooms at all. Schools may not discriminate against the free speech rights of students who meet on school premises after hours to discuss religious doctrines in private groups or clubs,⁵³⁸ but free speech does not come into play when the school respects the boundary between secular and religious governmental action imposed by the First Amendment.

The final variation of the intelligent design free speech claim is the argument that teachers have an individual free speech right to teach intelligent design as science even if their school boards specifically prohibit them from doing so. This variation on the free speech theme combines the viewpoint discrimination point from *Rosenberger* with a vaguely defined notion of academic freedom to produce the conclusion that school boards may not require their science teachers to adhere to a defined curriculum organized around the scientific community's widely accepted understanding of evolutionary theory. Instead, intelligent design proponents argue that teachers have the right to introduce their own views of scientific theory, even if their views are rejected by virtually the entire mainstream scientific community. According to this argument: "If [a teacher] had offered to his students an alternative point of view, such as [intelligent design], and if his employer had then prohibited him from engaging in such speech during class time, he surely would have had a case with law in his favor."⁵³⁹ If some teachers are allowed to teach evolution, the argument goes, then it would violate the First Amendment rule against viewpoint discrimination to prohibit other teachers from teaching intelligent design. "The same freedoms that allow teachers to present Darwinian evolutionary theory would seem to allow teachers to teach students about the theory of intelligent design, even if their school boards oppose their pedagogy."⁵⁴⁰ And of course the specter of litigation is raised once again: "school boards that allow teachers (or their libraries) to present only one side of a controversial issue expose themselves

538. See *Widmar v. Vincent*, 454 U.S. 263 (1981); *Mergens*, 496 U.S. 226.

539. Francis J. Beckwith, *A Liberty Not Fully Evolved?: The Case of Rodney LeVake and the Right of Public School Teachers to Criticize Darwinism*, 39 SAN DIEGO L. REV. 1311, 1321 (2002).

540. DeWolf, Meyer & DeForrest, *supra* note 87, at 106.

to risk of litigation, especially if their decision to do so is ‘intended . . . to deny . . . access to ideas with which [they] disagreed.’”⁵⁴¹

The intelligent design proponents’ argument on behalf of individual teachers illustrates once again the weakness of their First Amendment analysis. Like the intelligent design proponents’ free speech arguments regarding the authority of school boards, their free speech arguments regarding individual teachers rests on an incomplete and deeply flawed rendition of current First Amendment doctrine. Also like their arguments regarding school boards, their conclusions regarding individual teachers’ free speech rights are stated at such a high level of generality that they fail even to address many important details of the very complex First Amendment jurisprudence pertaining to their claims.

Five problem areas are immediately evident in this variation of the intelligent design argument: First, intelligent design proponents rely on the concept of academic freedom, but the current status of academic freedom as a First Amendment right is by no means clear—and in some circuits has been rejected altogether. Second, even if the concept of academic freedom does exist as an independent First Amendment concept, it is doubtful that courts would apply that concept to protect public school teachers below the university level who seek to deviate from the school district’s standard curriculum. Third, on-the-job speech by public school teachers is usually analyzed under a category of First Amendment doctrine governing government employee speech generally, which intelligent design proponents address only incompletely and inaccurately. Fourth, even if public school teachers below the university level possess First Amendment academic freedom or employee speech rights, no conception of either right would protect a teacher presenting to his or her class theories that are rejected by virtually all qualified scholars in a particular field. Fifth, even if public school teachers below the university level possess free speech rights generally, those rights in no way undercut Establishment Clause rules restricting teachers from introducing religion into the classroom. Each of these issues is worthy of a full article unto itself, but even a brief review of these issues will reveal the serious inadequacy of the intelligent design free speech argument for teacher civil disobedience.

As for the concept of academic freedom, proponents of intelligent design repeatedly appeal to a vaguely defined notion of academic freedom to support their claim that renegade teachers can ignore school board instructions not to teach intelligent design as science.⁵⁴² Articles presenting

541. *Id.* at 102.

542. *See* Beckwith, *supra* note 136, at 507–14; Beckwith, *supra* note 539, at 1316–25; DeWolf,

this claim quote broad paeans to academic freedom from older Supreme Court cases,⁵⁴³ but fail to note that the Supreme Court has actually never held that an independent First Amendment right of academic freedom exists even at the university level, much less in elementary and secondary schools, where administrative control of curriculum and teaching is much more extensive.⁵⁴⁴ Moreover, at least one federal appellate court has held explicitly that “we do not find support to conclude that academic freedom is an independent First Amendment right.”⁵⁴⁵ Another court of appeals has held that to the extent any First Amendment right of academic freedom exists, it is merely a recognition of “an institutional right of self-governance in academic affairs,”⁵⁴⁶ not an individual right of professors at public universities “to determine for themselves the content of their courses and scholarship.”⁵⁴⁷

Even opinions that accept for the sake of argument that academic freedom at the university level has some First Amendment value are far less willing to grant such rights to teachers below the university level. On this score lower courts have followed the Supreme Court’s lead. Intelligent design proponents cite *Tinker v. Des Moines Independent School District*⁵⁴⁸ in support of their academic freedom claim, but do not seem to realize that in its more recent school speech cases the Supreme Court has restricted *Tinker* to the point that some now argue that much of *Tinker* has been effectively overruled.⁵⁴⁹ In

Meyer & DeForrest, *supra* note 87, at 100–09.

543. See, e.g., DeWolf, Meyer & DeForrest, *supra* note 87, at 101–02 (quoting Bd. of Educ., Island Trees Union Free Sch. Dist. No. 26 v. Pico, 457 U.S. 853 (1982); *Tinker v. Des Moines Indep. Cmty. Sch. Dist.*, 393 U.S. 503 (1969)).

544. The three early cases that are most frequently cited as supporting a First Amendment right of academic freedom do indeed have broad statements supporting that principle, but each case ultimately was decided on much narrower due process grounds. See *Keyishian v. Bd. of Regents*, 385 U.S. 589 (1967); *Sweezy v. New Hampshire*, 354 U.S. 234 (1957); *Weiman v. Updegraff*, 344 U.S. 183 (1952). Nothing said here should be taken as an endorsement of the Supreme Court’s failure to explicitly recognize a First Amendment right of academic freedom; the point is simply that intelligent design proponents have enlisted in their cause statements of legal rights that go far beyond what the courts have thus far been willing to recognize.

545. *Bishop v. Aronov*, 926 F.2d 1066, 1075 (11th Cir. 1991).

546. *Urofsky v. Gilmore*, 216 F.3d 401, 412 (4th Cir. 2000).

547. *Id.* at 414.

548. 393 U.S. 503, 506 (1969). For the use of *Tinker* by intelligent design proponents, see Beckwith, *supra* note 539, at 1324; DeWolf, Meyer & DeForrest, *supra* note 87, at 101.

549. See Erwin Chemerinsky, *Students Do Leave Their First Amendment Rights at the Schoolhouse Gates: What’s Left of Tinker?*, 48 *DRAKE L. REV.* 527, 535 (2000). Chemerinsky writes:

Tinker never has been expressly overruled or even openly questioned in later Supreme Court opinions. But its approach has also never been followed in cases involving elementary, middle school, and high school students. Indeed, the Supreme Court rulings subsequent to *Tinker* have almost all sided with school officials and appear to have followed an approach much closer to Justice Black’s [*Tinker* dissent] than the [*Tinker*] majority.

Id.; see also Nadine Strossen, *Students’ Rights and How They Are Wronged*, 32 *U. RICH. L. REV.* 457, 458 (1998) (noting the Court’s “back-sliding” on *Tinker*); S. Elizabeth Wilborn, *Teaching the New*

*Hazelwood School District v. Kuhlmeier*⁵⁵⁰ and *Bethel School Dist. No. 403 v. Fraser*⁵⁵¹ the Court significantly limited the scope of the free speech principles articulated in *Tinker*. *Hazelwood* is especially important, because in that case the Court describes the extensive leeway granted to school administrators in dictating the limits of speech undertaken in conjunction with the school's defined curriculum. In *Hazelwood* the school's principal censored student articles written for the school newspaper. In upholding the principal's authority to suppress the students' work, the Court referred to the "special characteristics of the school environment"⁵⁵² and concluded bluntly that "[a] school need not tolerate student speech that is inconsistent with its 'basic educational mission,' . . . even though the government could not censor similar speech outside the school."⁵⁵³ Although these cases all involved student speech, several appellate courts have applied this analysis to in-class speech by teachers as well.⁵⁵⁴

One alternative to the academic freedom defense of teacher speech is to apply the First Amendment standard for government employee speech generally. The problem with this approach is that the intelligent design proponents get this standard wrong, too. Francis Beckwith relies on this line of cases in developing one of his free speech arguments for individual teachers seeking to inject intelligent design into their classes. He focuses especially on the Supreme Court's decision in *Pickering v. Board of Education*,⁵⁵⁵ and therefore treats the standard as a pure balancing test, in which courts must balance the free speech interests of the teacher against the school's interest in operating an efficient and productive school system.⁵⁵⁶ *Pickering* is indeed part of the First Amendment standard applicable to government employee speech, but Beckwith does not seem to realize that *Pickering* is only the second part of the standard. The first part of the standard is derived from the post-*Pickering* decision *Connick v. Myers*.⁵⁵⁷ *Connick* holds that a court should not apply the *Pickering* balancing test unless the court first finds that the government employee claiming free speech rights was speaking on a matter of public concern, defined by the

Three Rs—Repression, Rights, and Respect: A Primer of Student Speech Activities, 37 B.C. L. REV. 119, 130–37 (1995) (describing the Court's "inexplicable retreat" from *Tinker*).

550. 484 U.S. 260 (1988).

551. 478 U.S. 675 (1986).

552. *Id.* at 266 (quoting *Tinker v. Des Moines Indep. Sch. Dist.*, 393 U.S. 503, 506 (1969)).

553. *Id.* at 266.

554. See *Silano v. Sag Harbor Union Free Sch. Dist. Bd. of Educ.*, 42 F.3d 719, 723 (2d Cir. 1994); *Ward v. Hickey*, 996 F.2d 448, 453 (1st Cir. 1993); *Bishop v. Aronov*, 926 F.2d 1066, 1074 (11th Cir. 1991); *Miles v. Denver Pub. Schs.*, 944 F.2d 773, 777 (10th Cir. 1991).

555. 391 U.S. 563 (1968).

556. See Beckwith, *supra* note 539, at 1318–19.

557. 461 U.S. 138 (1983).

Court as speech “fairly considered as relating to any matter of political, social, or other concern to the community.”⁵⁵⁸ *Connick* is problematic for the intelligent design case because appellate courts in two different federal circuits have held that a teacher’s decision to supplement the school board’s curriculum is not a matter of public concern and therefore is not subject to the *Pickering* balancing test.⁵⁵⁹ This approach undermines the intelligent design argument that teachers have a First Amendment right to personally add intelligent design materials to counteract a school board’s science curriculum that is devoted exclusively to evolutionary theory. The analysis of one circuit court addresses this sort of claim directly:

[P]ublic school teachers are not free, under the first amendment, to arrogate control of curricula. Parents, administrators, and elected officials also have a legitimate role in the process of selecting material that will advance educational goals, a role that cannot lightly be

558. *Id.* at 146.

559. *See* *Boring v. Buncombe County Bd. of Educ.*, 136 F.3d 364, 368–69 (4th Cir. 1998) (en banc); *Kirkland v. Northside Indep. Sch. Dist.*, 890 F.2d 794, 797–99 (5th Cir. 1989).

There is only one significant decision in which a court of appeals found that a teacher’s in-class speech constituted a matter of public concern. *See* *Cockrel v. Shelby County Sch. Dist.*, 270 F.3d 1036 (6th Cir. 2001). In that decision, however, the school authorities had initially given the teacher permission to present controversial material on industrial hemp production to the teacher’s fifth-grade class. *Id.* at 1042. Then, after media coverage of the incident produced parental protests, the school authorities initiated a vigorous review of the teacher’s performance, which led to the teacher being fired. *Id.* at 1043. The court of appeals held that the teacher’s speech was protected by the First Amendment, and that she was fired in retaliation for exercising those rights. *Id.* at 1060. The key factor in the court’s decision, however, was that the school authorities had themselves authorized the teacher’s controversial presentation:

While ordinarily we would give substantial weight to the government employer’s concerns of workplace efficiency, harmony, and discipline in conducting our balancing of the employee’s and employer’s competing interests, we cannot allow these concerns to tilt the *Pickering* scale in favor of the government, absent other evidence, when the disruptive consequences of the employee speech can be traced back to the government’s express decision permitting the employee to engage in that speech.

Id. at 1054–55. The holding in *Cockrel* will not help teachers in acting out the scenarios presented by intelligent design proponents. In these scenarios teachers are encouraged to present intelligent design theory even if “his employer had then prohibited him from engaging in such speech during class time. . . .” Beckwith, *supra* note 539, at 1321. Even if teachers in such situations advance beyond the *Connick* public concern analysis, the *Pickering* balancing test will be governed by the court’s willingness to give “substantial weight to the government employer’s concerns of workplace efficiency, harmony, and discipline.” *Cockrel*, 270 F.3d at 1054. Note also that the deference to school administrators announced by the Supreme Court in *Hazelwood* will also tilt the balance in favor of the administrators once a court engages in a *Pickering* balancing analysis of a teacher’s unauthorized speech. “The concern addressed in *Pickering*—the right of an employee to participate as other citizens in debate on public matters—is simply less forceful when considered ‘in light of the special characteristics of the school environment.’” *Miles v. Denver Pub. Schs.*, 944 F.2d 773, 777 (10th Cir. 1991) (quoting *Hazelwood Sch. Dist. v. Kuhlmeier*, 484 U.S. 260, 266 (1988); *Tinker v. Des Moines Indep. Cmty. Sch. Dist.* 393 U.S. 503, 506 (1969)).

assumed by teachers alone. Thus, when an administrative process is established to compile and amend officially approved material with input from parents, administrators, and educators, teachers must respect that process In summary, we conclude that [the teacher's supplemental] reading list does not present a matter of public concern and that this case presents nothing more than an ordinary employment dispute. Accordingly, [the teacher's] conduct in disregarding [the school's] administrative process does not constitute protected speech, and any inquiry into the reasons for the nonrenewal of his employment contract is unnecessary.⁵⁶⁰

In this legal atmosphere teachers who insist on inserting intelligent design into their class presentations against the contrary instructions of their school district are not likely to last long in the public school system. Articles by intelligent design proponents containing advice to the contrary disserve sympathetic teachers who may place their very livelihood at stake if they act on the unsound counsel.

The basic problem is that intelligent design proponents have simply misjudged the magnitude of First Amendment protection afforded public school teachers below the university level. As an abstract matter, there are many reasons to join intelligent design proponents in lamenting the courts' meager protection of free speech in the classroom. In the concrete context of the debate between intelligent design and evolution, on the other hand, even the strongest protection of academic freedom would not permit intelligent design proponents to introduce their theory into public school science classes. Even the strongest protection of academic freedom would not protect teachers who present material that is substantively inaccurate, or public school teachers who present material of a religious nature in class. Both of these characteristics rob efforts to introduce intelligent design of even hypothetical First Amendment protection.

Even the strongest advocate of academic freedom would not assert that the First Amendment protects a teacher who insists on presenting his or her class inaccurate information and outlandish theories. A teacher who insists that the sun revolves around the earth should not be allowed to remain at the head of an astronomy class. Academic freedom has never meant that anyone can say anything in any classroom without professional ramifications. The core meaning of the concept of academic freedom is that sanctions cannot be imposed on academic personnel whose work offends the ideological sensibilities of those outside the academy—primarily politicians and

560. *Kirkland*, 890 F.2d at 802.

government officials and the bureaucrats who do their bidding. Academic freedom does not mean that teachers are exempt from the normal standards of professional oversight. This formulation of academic freedom is the cornerstone of the American Association of University Professors' 1915 General Declaration of Principles,⁵⁶¹ which has been called "the single most important document relating to American academic freedom."⁵⁶² Under this conception of academic freedom:

Academic speakers can be held within the strictures of discourse established by their discipline; departure from the scientific model can be punished. Indeed, the Committee never argued that speech should be immune from adverse consequences. It contended only that the consequences be determined by competent professionals within the same discipline.⁵⁶³

Or, to put the matter more bluntly: "Error is tolerable; incompetence is not."⁵⁶⁴

The significance of this for the intelligent design movement is that the mainstream scientific community has judged their theory lacking on every score. It is not accepted as part of the governing model in any of the major sciences, while in contrast evolutionary theory provides a starting point and framework for any serious discussion in a range of different scientific disciplines. Section III *supra* discusses this point in great detail. Until intelligent design proponents can convince someone other than fellow intelligent design activists that their work is valid and important, the presentation of their work in a public school science class will not be protected by the principles of academic freedom.

The second reason free speech claims will not help the intelligent design case is the religious nature of intelligent design creationism. The religious nature of the theory has been detailed at length in Section II *supra*, and the legal implications of intelligent design as religion are discussed earlier in this section. At this point the only thing left to add is that free speech claims will not trump the Establishment Clause limits on teachers who seek to introduce religion into public school classrooms. There are many cases in which public school teachers have been sanctioned by school authorities for inserting

561. See Am. Ass'n of Univ. Professors, *General Declaration of Principles*, reprinted in 2 AMERICAN HIGHER EDUCATION: A DOCUMENTARY HISTORY 860 (R. Hofstadter & W. Smith eds., 1961).

562. J. Peter Byrne, *Academic Freedom: A "Special Concern of the First Amendment,"* 99 YALE L.J. 251, 276 (1989).

563. *Id.* at 277-78.

564. *Id.* at 276.

religious views into their classrooms during class time, and the courts have routinely held that these sanctions do not violate the teachers' First Amendment free speech or free exercise rights.⁵⁶⁵ A number of these cases involve teachers inserting creationism into the classroom, and the decisions in these cases have uniformly held that the teacher has no First Amendment claim.⁵⁶⁶ The reason for this uniform rejection of free speech claims goes back to the same distinction intelligent design proponents had such difficulties with in analyzing *Rosenberger*: the distinction between government speech and private speech. When serving in their capacities as instructional personnel in a public school system, teachers are engaging in speech on behalf of the government. "[A] teacher's [religious] speech can be taken as directly and deliberately representative of the school."⁵⁶⁷ The teachers may still engage in religious speech after hours or off the school premises, where their status as private individuals is clear to all concerned.⁵⁶⁸ In the classroom, on the other hand, they represent the state, and all the limitations that apply to state advancement of religion apply in full force to the teacher as well.

565. See, e.g., *Marchi v. Bd. of Coop. Educ. Servs. of Albany*, 173 F.3d 469 (2d Cir. 1999) (upholding school board's cease and desist order against a teacher who converted to Christianity and then modified his instructional program to discuss topics such as forgiveness, reconciliation, and God); *Doe v. Duncanville Indep. Sch. Dist.*, 70 F.3d 402 (5th Cir. 1995) (upholding injunction prohibiting public school teachers from participating in student-led religious exercises before, during, or after school-related sporting events); *Bishop v. Aronov*, 926 F.2d 1066 (11th Cir. 1991) (upholding university action requiring professor to refrain from injecting his religious views into an exercise psychology class, and also to refrain from holding "optional" classes to discuss the Christian perspective on academic matters); *Roberts v. Madigan*, 921 F.2d 1047 (10th Cir. 1990) (upholding school district directive prohibiting teacher from silently reading his Bible in a classroom during student reading time); *Downing v. West Haven Bd. of Educ.*, 162 F. Supp. 2d 19 (D. Conn. 2001) (rejecting a free speech challenge to a public school's action prohibiting a teacher from wearing in class during instructional time a t-shirt with the inscription "JESUS 2000-J2K").

566. See, e.g., *Helland v. S. Bend Cmty. Sch. Corp.*, 93 F.3d 327 (7th Cir. 1996) (upholding school district decision to remove teacher from substitute teacher list for discussing religion in class, including expressing his belief in creationism); *Pelozo v. Capistrano Unified Sch. Dist.*, 37 F.3d 517 (9th Cir. 1994) (upholding school requirement that teacher teach evolution in biology class and avoid talking with students during the school day about creationism and other religious topics); *Webster v. New Lenox Sch. Dist. No. 122*, 917 F.2d 1004 (7th Cir. 1990) (holding that public school teacher has no First Amendment right to teach creationism); *LeVake v. Independent School Dist. No. 656, 625 N.W.2d 502* (Minn. Ct. App. 2001) (upholding school board decision to reassign teacher who refused to teach evolution to a tenth-grade biology class).

567. *Bishop*, 926 F.2d at 1073.

568. See, e.g., *Wigg v. Sioux Falls Sch. Dist. 49-5*, 274 F. Supp. 2d 1084 (D.S.D. 2003) (upholding school district policy prohibiting teacher from attending after-hours religious meeting on the premises of the school where she taught, but overturning the part of the policy prohibiting the teacher from attending private religious meetings at other schools).

3. *Is it Science Yet?*

Much of what proponents write about the legal issues surrounding the theory of intelligent design is based on the assumption that if the theory can be denominated “science,” then no legal barrier can be erected to including the theory in public school classrooms.⁵⁶⁹ In part this is a response to a section of the Arkansas creationism decision *McLean v. Arkansas*,⁵⁷⁰ which intelligent design proponents routinely denounce.⁵⁷¹ *McLean* contains the most thorough substantive consideration of creationist theory yet to appear in any judicial opinion and therefore continues to influence the debate about various anti-evolution efforts, including intelligent design. As discussed in Section I *supra*, *McLean* held unconstitutional an Arkansas statute that required “balanced treatment to creation-science and evolution-science.”⁵⁷² One portion of the statute described the details of each theory to be given balanced treatment, and included in the definition of “creation-science” a number of specifically Biblical references to phenomena such as the occurrence of a world-wide flood and the “relatively recent inception of the earth.”⁵⁷³ In the course of holding that the statute violated the Establishment Clause by injecting religion into public school classrooms, the court noted that creation science as defined by the statute “is simply not science.”⁵⁷⁴ The court then set forth five criteria that, it said, typically define a scientific theory:

- (1) It is guided by natural law;
- (2) It has to be explanatory by reference to nature law;
- (3) It is testable against the empirical world;

569. “[I]f, arguably, design theory has both a theoretical basis and evidential support, and if it meets abstract definitional criteria of scientific status equally as well as its main theoretical rivals, then it seems natural to ask: on what grounds can design theory now be excluded from public school science curriculum?” DeWolf, Meyer & DeForrest, *supra* note 87, at 74.

570. 529 F. Supp. 1255 (D. Ark. 1982).

571. See Addicott, *supra* note 517, at 1568 (concluding that “Judge Overton’s simplistic definition of science has been soundly refuted by numerous legal and scientific commentators as woefully inadequate and unrealistic”); Francis J. Beckwith, *Science and Religion Twenty Years After McLean v. Virginia: Evolution, Public Education, and the New Challenge of Intelligent Design*, 26 HARV. J.L. & PUB. POL’Y 455, 494 (2003) (criticizing *McLean* and arguing that “Judge Overton’s criteria, at least as applied to creation-science, are seriously flawed”); DeWolf, Meyer & DeForrest, *supra* note 87, at 66–78 (critiquing *McLean* and concluding that its definition of science is “questionable”).

572. *McLean*, 529 F. Supp. at 1256.

573. *Id.* at 1264.

574. *Id.* at 1267.

- (4) Its conclusions are tentative, i.e. are not necessarily the final word;
and
- (5) It is falsifiable.⁵⁷⁵

Intelligent design proponents have several inconsistent responses to this list of criteria. On one hand, they argue that the entire effort to define “science” is impossible because “many philosophers of science have generally abandoned attempts to define science by reference to abstract demarcation criteria.”⁵⁷⁶ On the other hand, they cite some of the same criteria to argue that a definitive category called “science” does exist and creationism fits the definition as well as evolutionary theory. “[N]aturalistic and non-naturalistic origins theories (including both Darwinism and design theory) are ‘methodologically equivalent,’ both in their ability to meet various demarcation criteria and as historical theories of origin.”⁵⁷⁷ When these conflicting claims are reduced to their essence, the basic intelligent design argument is that no one has the ability to assess the scientific validity of their theory—especially experts in particular scientific fields who are not aligned with the intelligent design movement. To put it bluntly, they assert that the simple pretense of scientific validity should be enough to satisfy the legal standard for including the theory in the public school curriculum.

Since . . . no ruling body in science can determine when a minority scientific interpretation has attracted sufficient support to warrant discussion in the science classroom, the pedagogical debate will necessarily, and properly, devolve to individual teachers and local school boards. In any case, defining permissible science as co-extensive with majority scientific opinion erects a more restrictive standard than the law itself now recognizes in deciding the admissibility of expert scientific opinion.⁵⁷⁸

Political assessments of scientific validity, in other words, should trump assessments by the scientific community itself.

Intelligent design advocates have no choice but to take this odd route to academic acceptance. As the quote above indicates, intelligent design advocates implicitly acknowledge that their theory has virtually no standing among mainstream scholars. Their only option, therefore, is to argue that the

575. *Id.* at 1267.

576. DeWolf, Meyer & DeForrest, *supra* note 87, at 69; *see also* Addicott, *supra* note 517, at 1568 (arguing that the *McLean* definition has been “refuted by numerous legal and scientific commentators”); Beckwith, *supra* note 571, at 492–93 (describing *McLean* definition of science as “anachronistic” and “self-refuting”).

577. DeWolf, Meyer & DeForrest, *supra* note 87, at 72.

578. *Id.* at 75.

conclusions of a fringe movement is just as valid as the conclusions of the overwhelming majority of scholars in the field. They argue, in effect, that so long as a handful of advocates with plausible academic credentials announce their support for the theory, then that theory is sufficiently “scientific” to be granted access to public school classrooms. All science is created equal, they argue, so let students hear both sides.

There are serious flaws in this argument, and these flaws illustrate how intelligent design proponents mischaracterize *McLean* and other cases dealing with scientific matters. The central problem is that intelligent design proponents greatly overstate the extent to which the law is willing to recognize any theory—no matter how implausible—as “science.” It may be true that there is no infallible and universally applicable test for when a particular theory constitutes “science.” But it is also true that some theories are so inconsistent with current scientific understandings of the world that they cannot be reasonably construed as scientifically valid. It is irrelevant whether one calls such theories unscientific or merely “bad science.”⁵⁷⁹ There is simply no legitimate reason to include them in scientific discussions.

The very cases intelligent design proponents use to bolster their position in fact demonstrate why their theory should not be given the credibility they demand. Intelligent design proponents are fond of quoting in support of their position *Daubert v. Merrell Pharmaceuticals, Inc.*⁵⁸⁰—the Supreme Court’s recent decision regarding the standard for admitting scientific and other expert testimony.⁵⁸¹ In *Daubert* the Court modified its previous rules regarding the admissibility of scientific evidence under the Federal Rules of Civil Procedure. The Court interpreted the standard of Rule 401—“All relevant evidence is admissible”⁵⁸²—as liberalizing the prevailing standard prior to the adoption of the Rule. The pre-*Daubert* rule required scientific evidence introduced at trial to be “sufficiently established to have gained general acceptance in the particular field in which it belongs.”⁵⁸³ Intelligent

579. *See id.* at 73–74.

[E]ven many of those who previously wielded demarcation arguments as a way of protecting the Darwinist hegemony in public education, including the most prominent advocates of these arguments, have either abandoned or repudiated them. For example, Eugenie Scott of The National Center for Science Education (an advocacy group for an exclusively Darwinist curriculum) no longer seeks to dismiss creation science as pseudoscience or as unscientific; instead, she argues that it constitutes “bad science.”

Id.

580. 509 U.S. 579 (1993).

581. *See* Addicott, *supra* note 517, at 1569–70; Beckwith, *supra* note 571, at 491; DeWolf, Meyer & DeForrest, *supra* note 87, at 75.

582. FED. R. EVID. 402.

583. *Frye v. United States*, 293 F. 1013, 1014 (D.C. Ct. App. 1923).

design proponents argue that *Daubert* casts doubt on *McLean* because in *Daubert* the Court adopted a kind of anything-goes approach to accepting any theory that can claim any empirical basis:

This trend makes reliance upon the demarcation criteria in *McLean v. Arkansas* even more questionable. Since *Daubert* has made the question of scientific legitimacy turn on “evidentiary reliability,” the courtroom should be hospitable to competing theories provided each theory has an empirical basis. To exclude an interpretation simply because it has not yet achieved majority support usurps the function that juries ought to serve. By analogy, the debate over origins theory should not exclude a viewpoint at the outset because of the inability to command a majority of scientists; it should be the function of scientific inquiry itself to permit competing theories to argue, on the basis of empirical data, for wider acceptance.⁵⁸⁴

However, this badly misreads the Court’s holding in *Daubert*. The Court emphasized in *Daubert* that its opinion “does not mean . . . that the Rules themselves place no limits on the admissibility of purportedly scientific evidence. Nor is the trial judge disabled from screening such evidence. To the contrary, under the Rules, the trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable.”⁵⁸⁵ The Court emphasized that expert testimony must relate to “scientific knowledge,” which the Court emphasized “connotes more than subjective belief or unsupported speculation.”⁵⁸⁶ The Court then listed a series of pertinent considerations for judges to keep in mind when considering the proffer of scientific evidence. None of these should make intelligent design proponents comfortable. One “key question,” the Court noted, “will be whether [a theory] can be (and has been) tested.”⁵⁸⁷ Like the judge in *McLean*, the *Daubert* Court emphasized the critical element of falsification.⁵⁸⁸ Intelligent design proponents should keep this “key question”

584. DeWolf, Meyer & DeForrest, *supra* note 87, at 77–78; *see also* Addicott, *supra* note 517, at 1569–70 (“Under *Daubert*, the test for scientific legitimacy will be evaluated not on a bandwagon approach or by the fulfillment of a *McLean*-style set of arbitrary criteria. Instead, the Court will now evaluate the legitimacy of a new theory—even if a minority view—on the basis of a variety of factors, with emphasis on the actual empirical research.”); Beckwith, *supra* note 571, at 491 (“[The test of scientific legitimacy] is, very simply, now a matter of arguments and their soundness, not a matter of popularity.”).

585. *Daubert*, 509 U.S. at 589 (internal footnote omitted).

586. *Id.* at 589–90.

587. *Id.* at 593.

588. *See id.* at 593 (quoting KARL POPPER, CONJECTURES AND REFUTATIONS: THE GROWTH OF SCIENTIFIC KNOWLEDGE 37 (5th ed. 1989) (“[T]he criterion of the scientific status of a theory is its falsifiability, or refutability, or testability.”)).

in mind when devising the methodology for testing their central thesis that a Supreme Being created the world in more or less its present form. A second consideration noted by the Court is “whether the theory or technique has been subjected to peer review and publication.”⁵⁸⁹ The Court found the reason for relying on peer review obvious:

[S]ubmission to the scrutiny of the scientific community is a component of “good science,” in part because it increases the likelihood that substantive flaws in methodology will be detected The fact of publication (or lack thereof) in a peer reviewed journal thus will be a relevant, though not dispositive, consideration in assessing the scientific validity of a particular technique or methodology on which an opinion is premised.⁵⁹⁰

Finally, the Court emphasized that “general acceptance” is still very important in assessing the reliability of a scientific theory: “Widespread acceptance can be an important factor in ruling particular evidence admissible, and ‘a known technique which has been able to attract only minimal support within the community,’ may properly be viewed with skepticism.”⁵⁹¹

Daubert presents proponents of intelligent design creationism with a major dilemma: They advocate a theory whose central precept cannot be tested or falsified; they seldom if ever have their theoretical papers accepted for publication in peer-reviewed science journals; and their theory is rejected by virtually the entire scientific community. As science, therefore, their theory—in the words of a case they themselves frequently cite—“may properly be viewed with skepticism.”⁵⁹² For what it is worth, this is precisely the point made by the district court in *McLean*. During its discussion of the definition of science and descriptions of “what scientists do,” the *McLean* court noted: “The obvious implication of this description is that, in a free society, knowledge does not require the imprimatur of legislation in order to become science.”⁵⁹³ Or to put the matter another way, intelligent design creationism cannot use the political process to overcome its failures as science.

589. *Id.* at 593.

590. *Id.* at 593–94 (internal citations omitted).

591. *Id.* at 594 (quoting *United States v. Downing*, 753 F.2d 1224, 1238 (3d Cir. 1985)).

592. *Id.*

593. *McLean v. Ark. Bd. of Educ.*, 529 F. Supp. 1255, 1267 (E.D. Ark. 1982).

CONCLUSION

Much of the new battle between intelligent design and evolutionary theory is reminiscent of the old battle between creationism and evolution. This is not surprising, since intelligent design is merely a stripped-down version of its more explicitly Biblical predecessors. God is at the center of all versions of the theory, whether He is denominated as such, or is identified merely as the Supreme Being or intelligent designer. Given the similarities between all versions of the theory, the demarcation lines of the battle are already well drawn, and the conclusion to the legal aspect of the conflict is not in serious doubt. In sum, the proposal to incorporate intelligent design theory into the public school science curriculum cannot be reconciled with a consistent application of relevant Supreme Court precedents on the subject of creationism, and none of the alternative First Amendment theories intelligent design proponents offer in response can withstand even cursory analysis.

There is little question that intelligent design proponents have a serious dispute with the scientific community's virtually unanimous support for the proposition that evolution happens—in both micro and macro forms. But this dispute is at bottom a religious, not a scientific dispute. Both scientists and the government must respect the rights of private individuals to reject scientific conclusions on religious grounds in favor of intelligent design and other theocentric approaches to humanity's origins. But at the same time scientists must be allowed to do science and science teachers must be allowed to teach it—unconstrained by the objections of those who find science inconsistent with their religious beliefs. As Bertolt Brecht's Galileo noted, "the sum total of the angles in a triangle can't be changed to suit the requirements of the curia."⁵⁹⁴ The Court's Establishment Clause jurisprudence makes it clear that modern governments can't alter basic scientific conclusions to suit the requirements of politically powerful religious groups, either.

594. Bertolt Brecht, *Life of Galileo*, in 5 COLLECTED PLAYS 58 (1972).