

SPEAKING OF EVOLUTION: THE HISTORICAL CONTEXT OF *KITZMILLER v. DOVER AREA SCHOOL DISTRICT*¹

By: Joan DeFattore

I. INTRODUCTION

In the fall of 2005, the small town of Dover, Pennsylvania, found itself embroiled in a federal trial that caught the attention of the nation.² At the center of the controversy was a policy requiring high school science teachers to read a statement to their students prior to instruction involving evolution. The statement noted unspecified "gaps and problems" in evolution theory and offered an alternate explanation, intelligent design (ID).³ Eleven parents and teachers who opposed this form of instruction sued the school district. The suit generated a test case for the constitutionality of ID in the public-school science curriculum.⁴

Decisions in earlier cases prohibited the teaching of creationism or creation-science in public schools on the ground that such instruction violates the Establishment Clause.⁵ Despite the defense witnesses' claim that ID is significantly different from those earlier alternatives to

1. *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707 (M.D. Pa. 2005).

2. See Laurie Goodstein, *Evolution Lawsuit Opens with Broadside Against Intelligent Design*, N.Y. TIMES, Sept. 27, 2005, at A17; Martha Raffaele, *Witness: Teaching Wasn't Discussed*, PHILADELPHIA INQUIRER, Sept. 30, 2005, at B5; Bill Sulon, *"Smoking Gun" Unveiled in Intelligent Design Trial*, BAPTIST JOINT COMMITTEE FOR PUBLIC AFFAIRS NEWSLETTER, Oct. 6, 2005; Celeste Biever, *God Goes to Court in All But Name: The Insider's Guide to the Court Battle Over What U.S. Schoolchildren Should be Taught About the Origin of Life*, NEW SCIENTIST, Oct. 29, 2005, at 6; Mike Weiss, *War of Ideas Fought in Small-Town Courtroom: Intelligent Design Theory vs. the Science of Evolution at Center of Pennsylvania Trial*, S.F. CHRON., Nov. 6, 2005, at A1; Margaret Talbot, *Darwin in the Dock: Intelligent Design Has Its Day in Court*, THE NEW YORKER, Dec. 5, 2005, at 66-77.

3. *Kitzmiller*, 400 F. Supp. 2d at 731.

4. Complaint, *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707 (No. 4:04-CV-02688) (M.D. Pa. 2005), available at http://www2.ncseweb.org/kvd/all_legal/2004-12-14_Kitzmiller_v_DASD_Complaint_filed.pdf.

5. *Daniel v. Water*, 515 F.2d 485 (6th Cir. 1975); *McLean v. Ark. Bd. of Educ.* 529 F. Supp. 1255, (E.D. Ark. 1982); *Edwards v. Aguillard*, 482 U.S. 578 (1987).

evolution,⁶ the *Kitzmiller* court ruled that its inclusion in the Dover science curriculum was unconstitutional because it is based on religion, not on science.⁷

This Article focuses on three of the central issues raised by *Kitzmiller*:

- To what extent are ID proponents justified in claiming that it is science?
- To what extent are ID proponents justified in claiming that it is not religion?
- Do religion and Darwinism necessarily conflict?

In addressing these questions, this Article discusses *Kitzmiller* in the context of the ongoing debate over teaching evolution in public schools. Section II presents the testimony, arguments, and decision in the case, while subsequent sections divide its historical background into three phases. Section III deals with early conflicts over evolution, including attacks and defenses by Darwin's contemporaries as well as the first lawsuit over the teaching of evolution in American public schools: *Scopes v. State*.⁸ Section IV discusses attempts to exclude evolution or to include creationism after the Supreme Court had declared that the Establishment Clause applies not only to Congress, but also to the states. The cases considered in this section are *Epperson v. Arkansas*, *Daniel v. Waters*, *McLean v. Arkansas*, and *Edwards v. Aguillard*. Section V focuses on the claim that it is possible to include the concept of a creator or designer in a formulation that qualifies as science. This section discusses two lawsuits regarding antievolution disclaimers — *Freiler v. Tangipahoa Parish* and *Selman v. Cobb County*—as well as the (as yet) unlitigated dispute over state standards and tests in Kansas. Based on the material thus presented, Section VI explores the three issues listed above: the identification of ID as science or as religion and the feasibility of proposals for compromise.

II. DOING DARWIN IN DOVER

A. The Facts of the Case

At a school board retreat in the spring of 2002, newly elected board member Alan Bonsell raised the possibility of teaching creationism together with evolution.⁹ During the next

6. Transcript of Trial Proceedings, Day 20 PM, at 40, *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707 (No. 4:04-CV-02688) (M.D. Pa. 2005) (test. of Scott Minnich) (all trial transcripts are available at <http://www.aclupa.org/legal/legaldocket/intelligentdesigncase/dovertrialtranscripts.htm>) [hereinafter Transcript].

7. *Kitzmiller*, 400 F. Supp. 2d, at 720-21.

8. *Scopes v. State*, 154 Tenn. 105 (1927).

9. Transcript, *supra* note 6, Day 4 AM, at 17 (test. of Carol Brown); Transcript, *supra* note 6, Day 18 AM, at 72 (test. of Alan Bonsell); Transcript, *supra* note 6, Day 13 PM, at 22 (test. of Richard Nilsen); Transcript, *supra* note 6, Day 14 PM, at 81 (test. of Michael Baksa).

two years, he and another board member, William Buckingham, met with school district officials and high school science teachers in an effort to realize this goal.¹⁰ The science teachers repeatedly explained how they taught evolution, emphasizing that science does not address the ultimate origins of life.¹¹ They described themselves as religious people and denied that evolution and religion are in conflict. These exchanges became increasingly testy as the teachers tried unsuccessfully to refute the board members' misconceptions about evolution and to explain what the theory actually says. The head of the science department, Bertha Spahr, later testified, "[I]n utter frustration I looked at Mr. Buckingham and I said, 'If you say man and monkey one more time in the same sentence, I'm going to scream.' He did not do that, and I didn't have to."¹²

Matters came to a head in June 2004, when the board took up the science teachers' long-standing request for new biology books. The teachers recommended *Biology*, co-authored by Kenneth Miller and Joseph Levine; Bonsell and Buckingham expressed a preference for a textbook that would combine evolution with creationism, although they did not suggest any titles at that time.¹³ Protesting that *Biology* was "laced with Darwinism,"¹⁴ Buckingham said, among other things, that "It is inexcusable to have a book that says man descended from apes and nothing to counterbalance it . . . I challenge you [the audience] to trace your roots to the monkey you came from."¹⁵ He also stated that "2,000 years ago someone died on a cross. Can't someone take a stand for him?"¹⁶

Americans United for Separation of Church and State¹⁷ (AU) and the American Civil Liberties Union of Pennsylvania (ACLU-PA)¹⁸ threatened a lawsuit.¹⁹ In response, Buckingham

10. Transcript, *supra* note 6, Day 13 PM, at 29-32 (test. of Richard Nilsen); Transcript, *supra* note 6, Day 14 PM, at 81 (test. of Michael Baksa); Transcript, *supra* note 6, Day 7 AM, at 100-18 (test. of Jennifer Miller).

11. Transcript, *supra* note 6, Day 18 AM, at 117 (test. of Alan Bonsell).

12. Transcript, *supra* note 6, Day 7 PM, at 15 (test. of Bertha Spahr).

13. Transcript, *supra* note 6, Day 16 AM, at 38-39 (test. of William Buckingham); Transcript, *supra* note 6, Day 4 AM, at 50 (test. of Carol Brown). See KENNETH MILLER, *BIOLOGY* (2002).

14. Transcript, *supra* note 6, Day 16 AM, at 38.

15. *Id.* at 71. If Mrs. Spahr carried out her threat to scream, it appears to have gone unnoticed in the uproar.

16. Transcript, *supra* note 6, Day 7 PM, at 68. See Transcript, *supra* note 6, Day 7 AM, at 132; Transcript, *supra* note 6, Day 4 AM, at 37. See also Transcript, *supra* note 6, Day 16 AM, at 71 (stating that he had made the remark with respect to "under God" in the Pledge, not evolution).

17. Americans United for Separation of Church and State defines itself as a nonpartisan, ecumenical grassroots organization whose sole purpose is to defend separation of church and

spoke with representatives of two advocacy groups that were likely to be sympathetic to his position.²⁰ One was the Discovery Institute,²¹ and the other was the Thomas More Law Center (TMLC).²²

In July 2004, following Buckingham's conversations with the advocacy group attorneys, the focus of the debate changed abruptly from creationism to ID.²³ Buckingham, Bonsell, and their allies on the board never defined what they meant by ID, even when testifying at trial.²⁴ Instead, they asserted that although they did not fully understand it, they were determined to add it to the curriculum as an alternative to evolution.²⁵ Specifically, they focused on having the science teachers use the textbook *Of Pandas and People (Pandas)*.²⁶ According to *Pandas*, "Intelligent design means that various forms of life began abruptly through an intelligent agency with their distinctive features already intact: Fish with fins and scales, birds with feathers, beaks, and wings, etc."²⁷ While avoiding religious terminology and employing such phrases as "It may

state. Americans United for Separation of Church and State. *See* Americans United, <http://www.au.org/site/PageServer?pagename=aboutau> (last visited Oct. 28, 2007).

18. This is the Pennsylvania affiliate of the national ACLU, which defines itself as "a nonprofit, nonpartisan organization dedicated to defending and protecting our individual rights and personal freedoms." American Civil Liberties Union of Pennsylvania, <http://www.aclupa.org/home/abouttheaclu/> (last visited Oct. 28, 2007).

19. Transcript, *supra* note 6, Day 4 AM, at 40-41.

20. Transcript, *supra* note 6, Day 16 AM, at 131; Transcript, *supra* note 6, Day 18 PM, at 115-22; *Kitzmiller*, 400 F. Supp. 2d at 750.

21. The Discovery Institute's Center for Science and Culture defines its mission as supporting work that discredits Darwinism and promotes ID. *See* Discovery Institute, <http://www.discovery.org/csc/aboutCSC.php> (last visited Oct. 28, 2007).

22. The Thomas More Law Center defines itself as "a not-for-profit public interest law firm dedicated to the defense and promotion of the religious freedom of Christians." *See* Thomas More Law Center, <http://www.thomasmore.org/about.html> (last visited Oct. 28, 2007).

23. *Kitzmiller*, 400 F. Supp. 2d at 753.

24. *Id.* at 758.

25. *Id.* at 758-59.

26. PERCIVAL DAVIS & DEAN H. KENYON, *OF PANDAS AND PEOPLE: THE CENTRAL QUESTION OF BIOLOGICAL ORIGINS* (2d ed. 1993).

27. *Id.* at 99-100.

be assumed" and "Even if it is true that,"²⁸ *Pandas* includes concepts and attitudes ordinarily associated with religion.²⁹ As an example, it asserts that even if we assume that the designer had a good reason for designing every characteristic of every organism, we as humans should not expect to comprehend what all those reasons were.³⁰

Through its president and chief counsel, Richard Thompson,³¹ TMLC offered to provide legal representation if the district were sued for using *Pandas*.³² The board's solicitor, Stephen Russell, advised Superintendent Richard Nilsen that, in his opinion, ID is creationism under a different name. If it were injected into the curriculum, he warned, any resulting lawsuit would be difficult to win. Nilsen sent the board copies of Russell's message, which also pointed out that although TMLC was offering its own services free of charge, the district might be liable for any attorneys' fees awarded to the plaintiffs.³³ Nevertheless, the board accepted TMLC's offer.³⁴

Buckingham persuaded a bare majority of the board not to approve the purchase of *Biology* unless *Pandas* were added as a supplemental text.³⁵ At the last minute, however, one member suddenly changed her vote, and the board approved purchasing *Biology* without *Pandas*.³⁶ Buckingham then solicited donations at his church to fund the purchase of *Pandas*, and sixty copies of the book were funneled to the district through Bonsell's father as a private gift.³⁷ In a subsequent board meeting and in their depositions, Bonsell and Buckingham denied knowing the source of the donation, although they admitted it at trial.³⁸

28. See generally PANDAS, *supra* note 26.

29. *Kitzmiller*, 400 F. Supp. 2d at 718.

30. PANDAS, *supra* note 26, at 125.

31. See Laurie Goodstein, *In Pennsylvania, It Was Religion vs. Science, Pastor vs. Ph.D., Evolution vs. the Half-Fish*. N.Y. TIMES, Oct. 2, 2005, Reporter's Notebook at 14. Goodstein notes that Thompson was the former Michigan prosecutor who had lost his position after repeatedly failing to convict Dr. Jack Kevorkian. He had established TMLC with funding from Thomas Monaghan, founder of Domino's Pizza. *Id.*

32. *Kitzmiller*, 400 F. Supp. 2d at 754.

33. *Id.*

34. *Id.*

35. Transcript, *supra* note 6, Day 16 AM (test. of William Buckingham); Transcript, *supra* note 6, Day 4 AM, at 56; Transcript, *supra* note 6, Day 17 PM, at 166 (test. of Heather Geesey).

36. Transcript, *supra* note 6, Day 13 PM, at 70.

37. Transcript, *supra* note 6, Day 16 PM, at 49-53; Transcript, *supra* note 6, Day 18 AM (test. of Alan Bonsell).

38. *Kitzmiller*, 400 F. Supp. 2d at 756. The court stated that

After a protracted argument, the teachers reluctantly agreed to place *Pandas* in the science classrooms as a reference book.³⁹ For lack of classroom shelf space, multiple copies were later moved to the library.⁴⁰ Bonsell and Buckingham then set about revising the science curriculum to ensure that ID was at least mentioned to students as an alternative to evolution.⁴¹ Contrary to the normal procedures of the Dover school district, only the board's own curriculum committee, chaired by Buckingham, was involved in this initiative.⁴² A broader advisory committee on curriculum, which included teachers and community members, was merely informed of the proposed change shortly before the board vote.⁴³ Similarly, the board did not follow its usual practice of discussing a proposal first at its planning meeting early in the month, and then at its action meeting in the middle of the month.⁴⁴ Science teachers were consulted only to the extent of being invited to work separately on their own curriculum revision, which was subsequently ignored.⁴⁵

On October 18, 2004, the board voted 6-3 in favor of the following amendment to the biology curriculum: "Students will be made aware of gaps/problems in Darwin's theory and [be made aware] of other theories of evolution including, but not limited to, intelligent design. Note:

[T]he inescapable truth is that both Bonsell and Buckingham lied at their January 3, 2005 depositions about their knowledge of the source of the donation for *Pandas* This mendacity was a clear and deliberate attempt to hide the source of the donations by the Board President and the Chair of the Curriculum Committee to further ensure that Dover students received a creationist alternative to Darwin's theory of evolution. We are accordingly presented with further compelling evidence that Bonsell and Buckingham sought to conceal the blatantly religious purpose behind the ID policy.

Id.

39. *Id.* at 758.

40. Transcript, *supra* note 6, Day 18 AM, at 133; Transcript, *supra* note 6, Day 7 AM (test. of Jennifer Miller); Transcript, *supra* note 6, Day 14 PM, at 42-43; Transcript, *supra* note 6, Day 7 PM, at 91; Transcript, *supra* note 6, Day 8 AM at 43-44 (test. of Bertha Spahr).

41. *Kitzmiller*, 400 F. Supp. 2d at 757.

42. *Id.*

43. Transcript, *supra* note 6, Day 16 AM (test. of William Buckingham); Transcript, *supra* note 6, Day 4 AM, at 79-83; Transcript, *supra* note 6, Day 4 PM at 77-80 (test. of Jeffrey Brown).

44. *Id.*

45. Transcript, *supra* note 6, Day 7 AM, at 139-45.

Origins of Life is not taught.”⁴⁶ Although curricular changes were normally approved a year in advance, the new policy took effect immediately.⁴⁷ It was to be implemented by having the teachers read the following statement to their ninth-grade biology classes before beginning the study of evolution:

The Pennsylvania Academic Standards require students to learn about Darwin's Theory of Evolution and eventually to take a standardized test of which evolution is a part.

Because Darwin's Theory is a theory, it continues to be tested as new evidence is discovered. The Theory is not a fact. Gaps in the Theory exist for which there is no evidence. A theory is defined as a well-tested explanation that unifies a broad range of observations.

Intelligent Design is an explanation of the origin of life that differs from Darwin's view. The reference book, *Of Pandas and People*, is available for students who might be interested in gaining an understanding of what Intelligent Design actually involves.

With respect to any theory, students are encouraged to keep an open mind. The school leaves the discussion of the Origins of Life to individual students and their families. As a Standards-driven district, class instruction focuses upon preparing students to achieve proficiency on Standards-based assessments.⁴⁸

Each paragraph of this statement drew criticism. Among other things, opponents protested that almost all instruction is driven by state standards and tests, but nowhere does the district make a similar disclaimer about any other topic.⁴⁹ Moreover, the statement that “The Theory is not a fact” implies that evolution lacks credibility,⁵⁰ whereas no scientific theory ever grows up to be a fact.⁵¹ Similarly, the statement refers to undefined gaps in evolution⁵² without

46. *Kitzmiller*, 400 F. Supp. 2d at 708.

47. *Id.* at 761.

48. *Id.* at 708-09.

49. *Id.* at 725.

50. Kenneth R. Miller, Expert Statement, at 8, *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707 (No. 4:04-CV-02688) (M.D. Pa. 2005), available at <http://www2.ncseweb.org/kvd/experts/miller.pdf>.

51. *Id.* at 8-9.

acknowledging that it is normal for scientific theories to have areas that remain to be explained.⁵³ Having warned students about flaws in evolution theory, the statement recommends ID without reservation⁵⁴—even after defining it as “an explanation of the origin of life,” a topic ostensibly forbidden by the underlying policy. Cumulatively, the statement appears to forbid scientific explanations of the origins of life while encouraging students to explore religious alternatives.⁵⁵

The board further provided that teachers were not to discuss this statement with their students, nor were they to answer questions about it.⁵⁶ Subsequent testimony by school officials suggested that they expected the policy to hold up better in court if it merely made students aware of ID but did not teach it.⁵⁷ Opponents, pointing out that nowhere else in the curriculum were teachers forbidden to explain the material they presented, suggested that discussion of ID would not be prohibited if it were truly a scientific theory.⁵⁸ Moreover, they noted, the board’s stated purpose for the new policy was to encourage critical thinking, but ID was not only recommended uncritically but also protected from any examination of its validity.⁵⁹

With the backing of their union, the science teachers refused to read the statement to their classes.⁶⁰ In a letter to the board, they resorted to simple declarative sentences and block

52. *Id.* at 10. See Brian Alters, Expert Witness Report at 58, *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707 (No. 4:04-CV-02688) (M.D. Pa. 2005), available at <http://www2.ncseweb.org/kvd/experts/alters.pdf>.

53. Alters, *supra* note 52, at 4.

54. Miller, *supra* note 50, at 10; Alters, *supra* note 52, at 58.

55. Alters, *supra* note 52, at 4.

56. See Transcript, *supra* note 6, Day 14 PM, at 23-24. See also JOAN DELFATTORE, THE FOURTH R: CONFLICTS OVER RELIGION IN AMERICA’S PUBLIC SCHOOLS 31, 34-35, 84, 86, 87-88 (2004) THE FOURTH R discusses the historical antecedents of the ban on discussing the disclaimer. In particular, this policy recalls the nineteenth- and early twentieth-century practice of reading the King James Bible “without note or comment.” Protestants viewed this practice as a guarantee that the religious or irreligious views of teachers would not creep into a practice that they described as nonsectarian and even nonreligious. The Catholic Church opposed it on the ground that individual interpretation without guidance was a distinctively Protestant practice. Moreover, like the Dover disclaimer, this practice was open to the criticism that nowhere else in the curriculum were teachers absolutely forbidden to tell students what the material they had just heard meant.

57. Transcript, *supra* note 6, Day 14 PM, at 37-39.

58. Alters, *supra* note 52, at 4-5.

59. *Id.*

60. *Kitzmiller*, 400 F. Supp. 2d at 761.

capitals: "INTELLIGENT DESIGN IS NOT SCIENCE. INTELLIGENT DESIGN IS NOT BIOLOGY. INTELLIGENT DESIGN IS NOT AN ACCEPTED SCIENTIFIC THEORY."⁶¹ The teachers added that students hearing the statement would "believe that Intelligent Design is a valid scientific theory, perhaps on par with the theory of evolution. That is not true."⁶² Accordingly, the superintendent and assistant superintendent, not the teachers, read the statement to the biology classes.⁶³

B. "Eppur Si Muove:"⁶⁴ The Scientific Arguments

On December 14, 2004, eleven parents of children in Dover public schools filed suit.⁶⁵ They were represented by AU and ACLU-PA, while TMLC represented the school officials.⁶⁶ The trial lasted for twenty-one days, approximately nine of which focused on the claims of ID to be classified as science.⁶⁷ Since school boards have wide latitude to determine curriculum, the crucial question was not whether ID is necessarily *good* science but whether a reasonable observer would perceive its inclusion in the curriculum to be something other than an endorsement of religion. The plaintiffs' position was that the Dover policy represented the most recent step in a long history of attempts to eliminate or dilute the teaching of evolution for religious reasons.⁶⁸ The defendants' response was that ID is valid science and is not religion.⁶⁹ Despite the school board's progression from advocating creationism to requiring the mention of ID, the defense made every effort to distance ID from any creationist antecedents.⁷⁰

The task of showing that ID is science rested largely on the shoulders of expert witnesses who challenged the validity of evolution theory and offered arguments in support of ID. The

61. *Id.*

62. *Id.*

63. *Id.*

64. "And yet it moves." This quotation, which is probably apocryphal, is attributed to Galileo Galilei, who allegedly said it in response to the Vatican's insistence that the Earth stands still in the center of the universe. Galileo Galilei, <http://www.crystalinks.com/galileo.html> (last visited Oct. 28, 2007).

65. *Kitzmiller*, 400 F. Supp. 2d at 709.

66. *Id.* at 707.

67. For the Trial Chronology and Transcripts, *see supra* note 6.

68. Transcript, *supra* note 6, Day 1 Am, at 10 (Plaintiffs' Opening Statement).

69. *Id.* at 22 (Defense's Opening Statement).

70. *Id.* at 23.

plaintiffs' expert witnesses contradicted those claims and presented their own arguments against classifying ID as science. To convey the gist of this testimony, which was crucial to the outcome of the case, this Article will list five of the most important arguments in favor of teaching ID as science and five against it. Following this sampling of specific issues relating to ID is a discussion of broader questions pertaining to the definition and scope of science itself, including the kinds of observation, experimentation, argumentation, and publication that constitute scientific endeavor.

C. Five Arguments in Favor of Teaching ID as Science

1. The exclusively natural and material mechanisms proposed by evolution theory, such as natural selection and random mutation, are insufficient to explain the complexity of biological organisms. As defined by Professor Scott Minnich,⁷¹ ID "holds that the deep complexity and clearly evident design in organisms is the result of an intelligent agent."⁷² To say that natural causes could produce a complex life form is like saying that a tornado tearing through a junkyard could randomly assemble a jet plane,⁷³ or that a watch could arise on its own from its component parts.⁷⁴ On the contrary, by far the most logical and defensible explanation of the world around us is that, like a mousetrap or a cell phone, life was the result of deliberate design.⁷⁵
2. Claims on behalf of evolution theory are exaggerated and unsupported.⁷⁶ As an example, the biology textbook recommended by the Dover teachers states that some areas

71. Fed. R. of Civ. Pro., Rule 26, Disclosure of Expert Test., Scott Minnich, at 1, *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707 (No. 4:04-CV-02688) (M.D. Pa. 2005), available at <http://www2.ncseweb.org/kvd/experts/minnich.pdf>. Scott Minnich is an associate professor of microbiology at the University of Idaho.

72. *Id.*

73. Expert Report, Kevin Padian, Paleontologist, at 7, *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707 (No. 4:04-CV-02688) (M.D. Pa. 2005), available at <http://www2.ncseweb.org/kvd/experts/padian.pdf>.

74. WILLIAM PALEY, *NATURAL THEOLOGY* 50 (1847).

75. Transcript, *supra* note 6, Day 12 AM, at 104 (test. of Michael Behe); Transcript, *supra* note 6, Day 12 PM, at 49, (test. of Michael Behe).

76. Transcript, *supra* note 6, Day 12 AM, at 20 (quoting his book saying that "[T]he assertion of Darwinian molecular evolution is merely bluster."). See Fed. R. of Civ. Pro. 26, Disclosure of Expert Test., Michael Behe, at 20, *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707 (No. 4:04-CV-02688) (M.D. Pa. 2005), available at <http://www2.ncseweb.org/kvd/experts/behe.pdf>; Michael Behe, Rebuttal Analysis of Kenneth Miller's Statement at 2, *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707 (No. 4:04-CV-02688) (M.D. Pa. 2005), available at http://www2.ncseweb.org/kvd/experts/behe_rebuttal_to_miller.pdf.

of the study of evolution are "incomplete and unfinished."⁷⁷ Professor Michael Behe⁷⁸ testified, "This is a telling admission. If evolutionary theory is 'incomplete and unfinished,' if it has not explained speciation and the origin of life, if it has uncertainties, then those areas remain open, and possible answers to those questions cannot be artificially restricted to the ones that Kenneth Miller⁷⁹ or other Darwinists would prefer."⁸⁰ In addition, there are large gaps in the fossil record,⁸¹ including an absence of intermediate forms providing direct evidence of the emergence of one species from another.⁸² Since no one has ever witnessed either sudden creation or the emergence of one species from another, the latter is no more scientifically provable than the former.

3. Evolution theory promotes a materialist philosophy in direct conflict with a religious view of life.⁸³ Most notably, evolutionist Richard Dawkins has written, "[A]lthough atheism might have been *logically* tenable before Darwin, Darwin made it possible to be an intellectually

77. Quoted in Behe, Rebuttal Analysis, *supra* note 76, at 5.

78. Behe is a professor of biochemistry at Lehigh University. A disclaimer on his department's website states in part, "While we respect Prof. Behe's right to express his views, they are his alone and are in no way endorsed by the department. It is our collective position that intelligent design has no basis in science, has not been tested experimentally, and should not be regarded as scientific." Lehigh University, <http://www.lehigh.edu/~inbios/news/evolution.htm> (last visited Oct. 28, 2007).

79. Kenneth Miller, a professor of biology at Brown University and co-author of the textbook in question, was also an expert witness for the plaintiffs. *See* Miller, *supra* note 50, at 1.

80. Behe, Rebuttal Analysis, *supra* note 76, at 5.

81. PANDAS, *supra* note 26, at 22, 24-26, 28, 39, 86-87, 92, 94, 96-98, 100, 104, 106, 122.

82. *See* PANDAS, *supra* note 26, at 88, 93-94, 100, 106; Phillip E. Johnson, *Evolution as Dogma*, in INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS 62 (2001); Stephen C. Meyer, Marcus Ross, Paul Nelson, and Paul Chien, *The Cambrian Explosion: Biology's Big Bang*, in DARWINISM, DESIGN, AND PUBLIC EDUCATION 325-26 (2003). *See also* Miller, *supra* note 50, at 11. Pandas says that there are no intermediate forms between land mammals and whales, but since the first edition of Pandas was published, three intermediate ancestors have been discovered. PANDAS, *supra* note 26, at 22. Padian confirms Miller's statement and adds that some such evidence existed even before Pandas was published, "[I]f you rest your case on a lack of evidence, and the evidence emerges, not only does your case against the science collapse, but your case for an alternative becomes weaker." Padian, *supra* note 73, at 11.

83. PHILLIP E. JOHNSON, DARWIN ON TRIAL 114 (1993) (arguing that science has purposely confused the issue of personal belief as opposed to scientific evidence, and that Darwinism must be atheistic.)

fulfilled atheist."⁸⁴ Statements of this kind explain why "so much effort goes into explaining away design in nature."⁸⁵ They also support the argument that evolution is different from other scientific theories because "No one today claims that, say, electromagnetic theory allows a person to be 'an intellectually fulfilled atheist,' but that claim has been made for Darwin's theory."⁸⁶ Accordingly, there is no principled justification for excluding ID on the basis of its supporters' statements of religious faith when Darwinism is taught despite its supporters' atheistic intent.

4. ID presents several claims that are capable of being tested by natural means.⁸⁷ The example discussed most fully at trial was irreducible complexity, which rests on the demonstrable fact that if any essential protein is removed from certain complex biological mechanisms, such as the bacterial flagellum, the mechanism does not function.⁸⁸ The hypothesis asserts that irreducibly complex mechanisms could not have evolved gradually because they would have served no function in their earlier stages, and thus they would not have survived under the rules of natural selection.⁸⁹ "If [the mechanism in question] is the summation of all the parts that provide function, and the loss of a single component renders the machine useless (much like the 'invented' machines we make) *then natural selection has nothing upon which to select.*"⁹⁰

5. ID offers well-reasoned, observation-based inductive arguments⁹¹ that are at least as valid as the materialist views of evolutionists.⁹² Science may not be able to prove supernatural

84. RICHARD DAWKINS, *THE BLIND WATCHMAKER: WHY THE EVIDENCE OF EVOLUTION REVEALS A UNIVERSE WITHOUT DESIGN* 6 (1996); Minnich, *supra* note 71, at 6; Transcript, *supra* note 6, Day 3 AM, at 65 (test. of Dr. Robert Pennock); Transcript, *supra* note 6, Day 2 AM at 8-12 (test. of Kenneth Miller); Transcript Day 7 AM, *supra* note 10, at 32; Transcript, *supra* note 6, Day 8 PM, at 55 (test. of Brial Alters).

85. Minnich, *supra* note 71, at 6.

86. Behe, *supra* note 76, at 7.

87. Transcript, *supra* note 6, Day 9 AM, at 66-69, 97-98 (additional arguments against evolution theory include punctuated equilibrium, which relates to gradual change over time, and specified complexity). See Miller, Expert Report, *supra* note 50, at 15-18; Kevin Padian, Expert Report, *supra* note 73, at 6-7; Fed. R. of Civ. Pro. 26, Expert Report, Jeffrey Shallit, *available at* <http://www2.ncseweb.org/kvd/experts/shallit.pdf>.

88. Transcript, *supra* note 6, Day 12 AM, at 69-63; Minnich, *supra* note 71, at 4-12. See MICHAEL BEHE, *DARWIN'S BLACK BOX: THE BIOCHEMICAL CHALLENGE TO EVOLUTION* 39-45, 72, 73 (1996).

89. Transcript, *supra* note 6, Day 12 AM, at 59-63; Minnich, Expert Report, *supra* note 71, at 6-7.

90. Minnich, *supra* note 71, at 7 (emphasis in original).

91. Transcript, *supra* note 6, Day 12 PM, at 28.

explanations, but neither is it able to disprove them.⁹³ The mainstream science community is thus in no position to demand to retain its intellectual monopoly on science instruction, as it attempts to do by defining science in terms of peer-reviewed publications and then excluding from such publications anything that challenges accepted beliefs.⁹⁴ ID is on the cutting edge of science, offering a revolutionary new way of accounting for things that evolution is unable to explain.⁹⁵ It does not serve students well to exclude the true answer to these questions solely because of the intellectual monopoly of a materialist scientific orthodoxy.⁹⁶

D. Five Arguments Against Teaching ID as Science

1. Sophisticated devices such as cell phones, mousetraps, and jet planes were indeed designed, but the analogy between them and complex biological mechanisms fails because of the essential differences between living and non-living things.⁹⁷ A scratched cell phone does not heal itself, and a broken mousetrap does not mend itself. Most importantly, mechanical objects cannot reproduce, nor do they mutate or struggle for survival. Consequently, the fact that mechanical devices are inherently incapable of having arisen in any way other than by

92. *Id.* See also Transcript, *supra* note 6, Day 12 AM, at 48, 104.

93. Transcript, *supra* note 6, Day 11 PM.

94. Frank J. Tipler, *Refereed Journals: Do They Insure Quality or Enforce Orthodoxy?* in UNCOMMON DISSENT: INTELLECTUALS WHO FIND DARWINISM UNCONVINCING 115-30 (2004). Contrary to the evolutionists' accusation that creationists want to use polls or populism to define science, DeWolf argues under the heading "A Majoritarian Approach" that peer review is a popularity contest for ideas. David K. DeWolf, *Academic Freedom After Edwards*, 13 REGENT U.L. REV. 447, 473 (2000-01). "The least defensible approach to deciding whether a theory is scientific is to suggest that a theory must acquire a certain standing in the scientific community before it can be considered scientific . . ." *Id.*

95. Defendants' Proposed Findings of Fact and Conclusions of Law, at 25, *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707 (No. 4:04-CV-02688) (M.D. Pa. 2005), available at http://www2.ncseweb.org/kvd/all_legal/2005-11-23_post-trial_FoF/2005-11-23_Ds_FoF-CoL_all.pdf. "DASD's statement actually promotes good science education by making students aware of a theory that shows promise but has not been accepted by the mainstream scientific community." *Id.* See, Transcript, *supra* note 6, Day 21 PM, at 61-62 (defense's closing argument) (stating that it improves science education to expose students to "a new and fledgeling [sic] science movement" that "may be the next great paradigm shift in science, a wholly new vista that does service to the children of the district by allowing them to put together scientific fields in a new and exciting way which is ultimately productive of scientific progress.").

96. Transcript, *supra* note 6, Day 11 PM, at 112.

97. Transcript, *supra* note 6, Day 12 PM, at 49-50.

intentional design says nothing about the potential for evolution in living things. Moreover, the unsupported assertion that one explanation seems more plausible or persuasive than another is not scientific proof of anything.⁹⁸

2. It is the nature of a scientific theory to remain open to refinement and change based on new evidence.⁹⁹ To say that the current state of work on evolution manifests gaps and problems is not to invalidate it as a scientific theory, but to define it as one.¹⁰⁰ Moreover, ID proponents ignore solid evidence supporting evolution and instead demand impossible proofs that are based on a caricature of what evolution actually says;¹⁰¹ examples include direct observation of evolution in progress and the discovery of fossil forms that are part one species and part another. An example of the obduracy of ID advocates arose during the trial, when Behe testified that there is no evidence of the evolution of the immune system.¹⁰² Even when the plaintiffs' attorney surrounded him with fifty-six books and articles providing such evidence, he continued to maintain that the matter had not been demonstrated to his satisfaction, although he conceded that he had not read many of the works whose inadequacy he asserted.¹⁰³

3. Statements of personal beliefs, whether religious or atheistic, are irrelevant to science.¹⁰⁴ What matters is the demonstrable validity of a given theory's scientific content, not the religious or philosophical conclusions any individual draws from it. Accordingly, the salient difference between evolution theory and ID is not whether their respective advocates believe in God as creator; indeed, many evolutionists share that faith, and nothing in evolution theory

98. Miller, *supra* note 50, at 12; Padian, *supra* note 73, at 4.

99. Transcript, *supra* note 6, Day 9 PM, at 100-02; Transcript, *supra* note 6, Day 8 PM, at 21-27; Miller, Expert Report, *supra* note 50, at 3, 5. For an opposing viewpoint, see JOHNSON, *supra* note 83, at 112 (describing the claim of scientific openness as "a philosophical snow job" because science is not open to new evidence, but is locked into its own orthodoxy).

100. Transcript, *supra* note 6, Day 9 PM, at 102; Transcript, *supra* note 6, Day 8 PM, at 21-27; Miller, Expert Report, *supra* note 50, at 3, 5; Pennock, Expert Report, *supra* note 84, at 10.

101. See Transcript, *supra* note 6, Day 9 PM, at 111, 130-31; Miller, Expert Report, *supra* note 50, at 22-23; Kevin Padian, Expert Report, *supra* note 73, at 8-11. See also Johnson, *Evolution as Dogma*, *supra* note 82, at 65 ("Scientists cannot observe complex biological structures being created by random mutations and selection in a laboratory or elsewhere.").

102. Transcript, *supra* note 6, Day 12 PM, at 16.

103. Transcript, *supra* note 6, Day 12 PM, at 16-19.

104. Transcript, *supra* note 6, Day 3 AM, *supra* note 84, at 63-65; Transcript, *supra* note 6, Day 6 PM, at 76, 97, 101 (test. of Barbara Forrest); Transcript, *supra* note 6, Day 7 AM, at 32-34; Transcript, *supra* note 6, Day 8 PM, at 36; Transcript, *supra* note 6, Day 21 PM, at 49 (plaintiffs' closing arguments) (stating that "intelligent design is unconstitutional because it is an inherently religious proposition, a modern form of creationism. It is not just the product of religious people, it does not just have religious implications, it is, in its essence, religious").

excludes it as a possibility.¹⁰⁵ The difference is that evolution theory seeks empirical evidence to explain the development of life since its inception, without reference to its ultimate cause;¹⁰⁶ whereas ID starts with the premise that the ultimate cause of life is an intelligent designer¹⁰⁷ and selectively seeks evidence to support that belief. The existence of an intelligent designer, on which ID stands or falls, is incapable of being proven or disproven by natural means and thus does not fall within the realm of science.¹⁰⁸

4. The only testable assertions made by ID have not in fact been tested, and since they consist largely of criticisms of evolution, they are incapable of affirmatively demonstrating the validity of ID under any circumstances.¹⁰⁹ Moreover, the claims of ID are based on inaccurate premises. For instance, the argument of irreducible complexity fails because evolving structures can, in their early stages, fulfill some adaptive function other than the one they presently serve.¹¹⁰ Examples of this form of development have in fact been found. The error is inherent in the ID methodology, since removing parts from an existing mechanism and declaring that it does not work is not an effective way to determine whether it could have evolved in the first place.¹¹¹

105. Transcript, *supra* note 6, Day 8 PM, at 45.

106. KENNETH R. MILLER, *FINDING DARWIN'S GOD: A SCIENTIST'S SEARCH FOR COMMON GROUND BETWEEN GOD AND EVOLUTION* 267-68 (1999) [hereinafter MILLER, GOD]. "What science cannot do is to assign either meaning or purpose to the world it explores. This leads some to conclude that the world as seen by science is devoid of meaning and absent of purpose. It is not. What it does mean is that our human tendencies to assign meaning and value must transcend science, and ultimately must come from outside of it." *Id.*

107. Transcript, *supra* note 6, Day 2 AM, at 20-21.

108. Transcript, *supra* note 6, Day 1 PM, at 42-43.

109. *Id.* at 92. See Pennock, Expert Report, *supra* note 84, at 16, 18; Padian, Expert Report, *supra* note 73, at 4; Transcript, *supra* note 6, Day 9 PM, at 97-98; Barbara Forrest, Expert Witness Report at 15, *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707 (No. 4:04-CV-02688) (M.D. Pa. 2005), available at http://www2.ncseweb.org/kvd/experts/Forrest_supplemental_report.pdf.

110. Transcript, *supra* note 6, Day 9 PM, at 5 (defining "exaptation" as the principle that a structure that performs a particular function in an organism can be modified so that it carries out a different function in later versions of the organism). See Transcript, *supra* note 6, Day 12 AM, at 63; Transcript, *supra* note 6, Day 21 AM, at 7-8 (test. of Scott Minnich); NIAL SHANKS, *GOD, THE DEVIL AND DARWIN: A CRITIQUE OF INTELLIGENT DESIGN THEORY* 161-71 (2004); Alan D. Gishlick, *Evolutionary Paths to Irreducible Systems*, in *WHY INTELLIGENT DESIGN FAILS: A SCIENTIFIC CRITIQUE OF THE NEW CREATIONISM* 58-71 (2004); Ian Musgrave, *Evolution of the Bacterial Flagellum*, in *WHY INTELLIGENT DESIGN FAILS: A SCIENTIFIC CRITIQUE OF THE NEW CREATIONISM* 72-84 (2004).

111. Miller, *supra* note 50, at 12-15; Padian, *supra* note 73, at 5.

5. There is no conflict within mainstream science about evolution *per se*.¹¹² Disagreements concern its mechanisms and specific details, not its essential validity,¹¹³ which rests on a century and a half of experimentation, observation, and refereed publication. The proportion of scientists who support ID is miniscule, and most of them are in fields other than paleontology or the relevant areas of biology. ID proponents have never published scientific evidence of their claims in any peer-reviewed venue because, as indicated above, they can produce no data to support them. The claim that relevant work has indeed appeared in peer-reviewed publications is incorrect. In some instances, the publications of ID advocates in their non-ID fields of expertise are treated as if they were publications about ID. In other instances, the peer-reviewed work of evolutionists such as Stephen Jay Gould, Niles Eldredge,¹¹⁴ and Bruce Alberts¹¹⁵ is distorted in order to make it appear to support ID. Moreover, in addressing non-scientific audiences, ID advocates treat such things as commercial books or presentations on college campuses as if they were equal to true peer review. Accordingly, when Professor Kevin Padian¹¹⁶ was asked whether he thought that ID "refutes the claim that life has changed over time,"¹¹⁷ he replied, "I don't think intelligent design refutes anything in science that I'm aware of."¹¹⁸

112. Alters, Expert Report, *supra* note 52, at 43, 46. See MILLER, GOD, *supra* note 106, at 106 (Citing the National Academy of Sciences as indicating that it is no longer possible to deny evolution using scientific arguments.)

113. Transcript, *supra* note 6, Day 8 PM, at 45-46.

114. MILLER, GOD, *supra* note 106, at 83-89 (Gould and Eldredge argued that species remain the same for a long time and then change abruptly, thus challenging Darwin's interpretation of the fossil record. Antievolutionists claim this as support for ID, whereas even scientists who disagree with Gould and Eldredge could easily demonstrate that their ideas have nothing to do with ID.)

115. Bruce Alberts, Letter to the Membership of the National Academy of Sciences (2005), *available at* http://www.nasonline.org/site/PageServer?JServSessionIdr011=gisrtr2qx2.app1a&pagename=N_EWS_letter_president_03042005_BA_evolution (protesting that Michael Behe has misrepresented Alberts' use of analogies to describe the complexity of cellular life as evidence in favor of ID.)

116. Kevin Padian is a professor of integrative biology at the University of California, Berkeley; Curator of Paleontology at the University of California Museum of Paleontology. See, http://www.ucmp.berkeley.edu/museum/profiles/padian/padian_profile.html (last visited Oct. 28, 2007).

117. Transcript, *supra* note 6, Day 9 PM at 88.

118. *Id.*

E. What's It All About, Alfie?

Underlying these specific arguments about the scientific status of ID is a broader disagreement about the nature of science itself. The conflict arises because the ID movement rejects the mainstream scientific community's insistence that replicable, falsifiable, empirical observation and experimentation -- which ID proponents call "methodological naturalism"¹¹⁹ -- is the gold standard of scientific research.¹²⁰ If science is limited to those methods, ID advocates argue, then the results must be artificially confined to natural explanations.¹²¹ Thus, if the truth about the origin and complexity of life lies in a supernatural explanation, it will be excluded in favor of falsehoods or partial truths merely to satisfy the materialistic, if not atheistic, mindset and interests of mainstream scientists.¹²² As Behe observed in an op-ed piece for the *New York Times*, "I don't want the best scientific explanation for the origin of life; I want the correct explanation."¹²³ In order to open the door to supernatural explanations, ID advocates maintain

119. An informal survey of ten University of Delaware colleagues in physics, chemistry, biology, and engineering shows that none of them had ever heard the term "methodological naturalism." When provided with a definition, their response was that it sounded like a politicized version of what they know as the scientific method.

120. Transcript, *supra* note 6, Day 21 PM, at 70 (defense's closing arguments) (stating that scientists should not be expected to "all fall in line and work by the guidelines established in a dominant theory"). See Alvin Plantinga, *Methodological Naturalism?*, in INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS: PHILOSOPHICAL, THEOLOGICAL, AND SCIENTIFIC PERSPECTIVES 339-62 (2000); FRANCIS J. BECKWITH, LAW, DARWINISM, AND PUBLIC EDUCATION: THE ESTABLISHMENT CLAUSE AND THE CHALLENGE OF INTELLIGENT DESIGN 13 (2003); WARREN A. NORD, RELIGION AND AMERICAN EDUCATION: RETHINKING A NATIONAL DILEMMA 285-86 (1995); Michael Ruse, *Methodological Naturalism Under Attack*, in INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS: PHILOSOPHICAL, THEOLOGICAL, AND SCIENTIFIC PERSPECTIVES 363-86 (2000).

121. See Transcript, *supra* note 6, Day 21 PM, at 86 (defense's closing arguments) (stating that opening science to "the possibility of causation, which some might classify as supernatural, at least in light of current knowledge, does not place intelligent theory beyond the bounds of science").

122. They also reiterated that ID is not published in scientific journals because of the bias of the journals, not because of any inherent lack of merit in its concepts. They attempted to turn the tables by claiming that any religious bias shown in this case was on the part of those who objected to the inclusion of a plausible scientific alternative simply because it arose from a religious context they do not like. See Defendant's Findings of Fact, at part 1., *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707 (No. 4:04-CV-02688) (M.D. Pa. 2005), available at http://www2.ncseweb.org/kvd/all_legal/2005-11-23_post-trial_FoF/2005-11-23_Ds_FoF-CoL_all.pdf.

123. Transcript, *supra* note 6, Day 11 PM, at 112.

that science should include inductive reasoning based on such evidence as systematic observations, analogies, and logical interpretations of existing data.¹²⁴ As Section II will demonstrate, they are correct in asserting that science was once done that way; the question is whether it is practicable or desirable to return to a Renaissance conception of scientific methodology.

A practical application of this disagreement about the nature of science may be found in the ID proponents' refusal to take responsibility for producing data to support their views. Rather, they state that if evolutionists do not like ID, it is up to them to prove it wrong.¹²⁵ Similarly, they reverse the normal scientific significance of ID's lack of falsifiability. To mainstream scientists, a belief that is not subject to testing is not science.¹²⁶ By contrast, ID proponents argue that if evolutionists concede that they cannot disprove the existence of an intelligent designer, then there is no scientific justification for excluding that concept from public-school classes as a possible explanation for the origin of life.¹²⁷

Consistent with this conflict over the meaning of science is an attempt on the part of ID supporters to change the understanding of what constitutes a scientific theory. According to the National Academy of Sciences¹²⁸ ("NAS"), a scientific theory is "a well-substantiated explanation of some aspect of the natural world that can incorporate facts, laws, inferences, and

124. Transcript, *supra* note 6, Day 3 AM, at 24-107. See Alvin Plantinga, *Evolution, Neutrality, and Antecedent Probability*, in INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS: PHILOSOPHICAL, THEOLOGICAL, AND SCIENTIFIC PERSPECTIVES *supra* note 120, at 219-32; Matthew J. Brauer and Daniel R. Brumbaugh, *Biology Remystified*, in INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS: PHILOSOPHICAL, THEOLOGICAL, AND SCIENTIFIC PERSPECTIVES, *supra* note 120, at 291-324; Michael Ruse, *Methodological Naturalism under Attack*, in INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS: PHILOSOPHICAL, THEOLOGICAL, AND SCIENTIFIC PERSPECTIVES, *supra* note 120, at 363-83; Phillip E. Johnson, *Creator or Blind Watchmaker?*, in INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS: PHILOSOPHICAL, THEOLOGICAL, AND SCIENTIFIC PERSPECTIVES, *supra* note 120, at 435-49.

125. Transcript, *supra* note 6, Day 21 AM, at 47.

126. Transcript, *supra* note 6, Day 1 PM, at 40-43.

127. Alvin Plantinga, *Creation and Evolution: A Modest Proposal*, in INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS: PHILOSOPHICAL, THEOLOGICAL, AND SCIENTIFIC PERSPECTIVES, *supra* note 120, at 779-91. See Transcript, *supra* note 6, Day 11 PM; Transcript, *supra* note 6, Day 12 AM, at 34-41.

128. The National Academy of Sciences, an honorific society of distinguished scientists elected to membership in a highly competitive process, is generally recognized as the nation's most prestigious scientific organization. Among other things, it advises the various branches of government on scientific matters. About the NAS, available at http://www.nasonline.org/site/PageServer?pagename=ABOUT_main_page (last visited Oct. 28, 2007).

tested hypotheses."¹²⁹ Professor Behe suggested two alternate definitions: "a proposed explanation for a set of facts"¹³⁰ and "a proposed explanation which focuses or points to physical, observable data and logical inferences."¹³¹ Similarly, Professor Minnich suggested that a scientific theory should be "Well-tested or consistent with the information that we have."¹³² Under either of these definitions, ID would rank as a scientific theory because "it is based entirely on empirical, observable facts about biology plus logical inferences."¹³³ Conceding that ID would not fit the NAS definition because "I can't point to external—an external community that would agree that it was well substantiated,"¹³⁴ Behe argued that it is nonetheless scientific because its explanations—which are logical if not natural, verifiable, or substantiated—are based on observations of physical entities.¹³⁵

The very fact of advocating these redefinitions demonstrates that science would have to be substantially reconceptualized in order to encompass supernatural explanations based on inductive arguments. The defense witnesses in *Kitzmiller* attempted to make this a strength by arguing that the mainstream scientific community's resistance to such redefinitions constitutes censorship and the imposition of an orthodoxy of thought on classroom discussions of the origins of life.¹³⁶ Appealing to fairness and academic freedom, they maintained that their views should not be excluded solely because they fail to meet the specifications of the self-appointed gatekeepers of science.¹³⁷ To the defense witnesses, the fact that the understanding of science has changed significantly over time does not exclude their view; rather, it demonstrates that it is not unscientific to seek to change the rules of science. By that standard, they maintained, ID is not outside science but on its cutting edge.¹³⁸

129. Science and Creationism: A View from the National Academy of the Sciences, *available at* <http://fermat.nap.edu/books/0309064066/html/2.html> (last visited Oct. 28, 2007).

130. Behe, Expert Report, *supra* note 76 at 11.

131. Transcript, *supra* note 6, Day 11 PM, at 38.

132. Transcript, *supra* note 6, Day 21 AM, at 81.

133. Behe, Expert Report, *supra* note 76, at 11.

134. Transcript, *supra* note 6, Day 11 PM, at 36.

135. Behe, Expert Report, *supra* note 76, at 11.

136. *See* BECKWITH, *supra* note 120, at 145-77 (arguing that evolution advances a materialistic world view and that ID is being censored although it deals with the same subject matter as evolution); NORD, *supra* note 120, at 283-84.

137. Transcript, *supra* note 6, Day 12 AM, at 17-20, 34-41; Transcript, *supra* note 6, Day 21 PM, at 85-88.

138. Defendants' Findings of Fact and Conclusions of Law, *supra* note 95, at Part 7, p. 2 ("ID is not nonscience simply because it might call for a scientific revolution or change in the ground

F. About the Intelligent Designer . . .

Underlying ID's claim to scientific status was the crucial need to demonstrate a non-religious reason for including it in the science curriculum. If the plaintiffs could make good their assertion that ID is nothing but naked creationism attempting to cover itself with a few rags of scientific terminology,¹³⁹ they would prevail on Establishment Clause grounds under the precedent of *Edwards v. Aguillard*. Conversely, if they failed to prove that the Dover policy advanced a religious view, then the school board's broad discretion to determine curriculum was likely to carry the day.

The plaintiffs presented three main arguments to support their assertion that the Dover policy violated the Establishment Clause: the nature of ID,¹⁴⁰ the history of attempts to use the public schools to promote belief in a creator,¹⁴¹ and the Dover board's statements and actions.¹⁴² Based on the scientific arguments summarized above, the plaintiffs argued that the very characteristic that disqualifies ID from being considered science—its promotion of belief in supernatural causation—makes it inherently religious.¹⁴³ They also asserted that the ID movement had arisen after *Edwards v. Aguillard* as a transparent attempt to evade the Supreme

rules of science as currently conceived"). Plaintiffs' Findings of Fact and Conclusions of Law at 29, *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707 (No. 4:04-CV-02688) (M.D. Pa. 2005), available at http://www2.ncseweb.org/kvd/all_legal/2005-11-23_post-trial_FoF/2005-11-23_Ps_FoF_CoL_04cv2688-334.pdf ("Science cannot be defined differently for Dover students than it is defined in the scientific community as an affirmative action program for a view that has been unable to gain a foothold within the scientific establishment.").

139. See Brief in Support of Plaintiffs' Proposed Findings of Fact and Conclusions of Law, at 11, *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707 (No. 4:04-CV-02688) (M.D. Pa. 2005), available at http://www2.ncseweb.org/kvd/all_legal/2005-11-23_post-trial_FoF/2005-11-23_Ps_Brief_FoF_CoL_04cv2688-334a.pdf. "[I]ntelligent design is nothing more than warmed-over creationism, invoking God not by name but tacitly, with a wink and a nod." *Id.* "Intelligent design is, in other words, just the next chapter in the anti-evolution movement by religious fundamentalists that began even before *Scopes* and evolved in response to what Professor Behe might call the 'selective pressures' of the *Epperson*, *McLean*, and *Edwards* decisions." *Id.* at 60

140. See *supra* notes 97-118, and accompanying text. See also Transcript, *supra* note 6, Day 21 PM, at 39-45.

141. *Id.* at 38. See Brief in Support of Plaintiffs' Proposed Findings of Fact and Conclusions of Law, *supra* note 139, at 43-50.

142. Transcript, *supra* note 6, Day 21 PM, at 29-38. See *Kitzmiller*, 400 F. Supp. 2d at 748-62.

143. Brief in Support of Plaintiffs' Proposed Findings of Fact and Conclusions of Law, *supra* note 139, at 51-56.

Court's ban on teaching creation-science.¹⁴⁴ In their view, ID's omission of explicit references to religion did nothing to change the underlying message, which was not only religious but specifically Judeo-Christian.¹⁴⁵ Finally, they pointed to the Dover board's actions, which paralleled in miniature those of the creationist/ID movement.¹⁴⁶ To the plaintiffs, the board's attempts to promote the teaching of creationism, which ended abruptly with the introduction of ID, made it plain that ID and creationism were functionally similar even if differently expressed.¹⁴⁷

Perhaps the most significant testimony about the creationist character of ID was offered by Barbara Forrest, professor of philosophy at Southeastern Louisiana University, who was challenged by a defense attorney as "a card carrying member of the ACLU."¹⁴⁸ She testified that ID includes "virtually all the elements of traditional creationism,"¹⁴⁹ which she identified as belief in supernatural creation,¹⁵⁰ opposition to evolution on ideological grounds,¹⁵¹ rejection of mainstream scientific methodology,¹⁵² and "the explicit or implicit grounding of anti-evolutionism in scripture."¹⁵³ Most compellingly, she compared earlier versions of *Pandas* with the 1993 edition that was at issue in *Kitzmiller*. This comparison revealed dozens of instances in which the term "intelligent design" or its cognates had been inserted in place of "creation"¹⁵⁴ and

144. *Id.* at 50-54.

145. *Id.* at 53-56.

146. Transcript, *supra* note 6, Day 21 PM, at 37-38.

147. Brief in Support of Plaintiffs' Proposed Findings of Fact and Conclusions of Law, *supra* note 139, at 50-56.

148. Transcript, *supra* note 6, Day 6 PM, at 59.

149. Forrest, Expert Report, *supra* note 109, at 1.

150. *Id.* at 26.

151. *Id.*

152. *Id.*

153. *Id.*

154. The Discovery Inst., The Wedge, <http://www.antievolution.org/features/wedge.pdf>. Barbara Forrest, Supplement to Expert Witness Report at 1, *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707 (No. 4:04-CV-02688) (M.D. Pa. 2005), available at http://www2.ncseweb.org/kvd/experts/Forrest_expert_report.pdf. See also BARBARA FORREST AND PAUL R. GROSS, CREATIONISM'S TROJAN HORSE: THE WEDGE OF INTELLIGENT DESIGN 153 (2004); Jay D. Wexler, *Of Pandas, People, and the First Amendment: The Constitutionality of Teaching Intelligent Design in the Public Schools*, 49 STAN. L. REV. 439 (1997).

"creationist"¹⁵⁵ without changing the sense of the text in any way.¹⁵⁶ Forrest's testimony was particularly devastating to the defense because legal precedents, notably *Epperson v. Arkansas*, *Daniel v. Waters*, *McLean v. Arkansas*, and *Edwards v. Aguillard*, had declared the promotion of creationism to be unconstitutional. Forrest also testified about a Discovery Institute statement called the Wedge Document, which "outlines the ID movement's plan to promote mainstream acceptance of ID creationism and, subsequently, the teaching of ID in public school science classes."¹⁵⁷

Expert witnesses for the defense retorted that ID does not mention creation, Genesis, or any other religious concept. They were particularly emphatic in asserting that ID does not identify the intelligent designer as God or even assert the supernatural character thereof. Consequently, they argued, ID should not be tied to creationism or to the history of creationist-evolution controversies. While acknowledging the religious character of some of the arguments offered by ID advocates, as well as the fact that ID is incompatible with disbelief in God,¹⁵⁸ they asserted that ID itself is not religious.¹⁵⁹ Once again, they compared the religious statements of ID supporters with the atheistic or humanistic views expressed by some evolutionists, claiming that both viewpoints should be treated equally.¹⁶⁰ In an attempt to marginalize the testimony of Forrest and other expert witnesses for the plaintiffs, the defense attorneys sought to limit the scope of the case to information that the Dover school board and school officials could be shown to have known.¹⁶¹ Since they claimed to know very little about ID, that would have excluded testimony about the goals of the ID movement, the definition of ID provided by national pro-ID organizations, the background of *Pandas*, and earlier cases involving religious-based attempts to eliminate or dilute the teaching of evolution.¹⁶²

155. Forrest, Supplement, *supra* note 154, at 1.

156. *Id.* at 2-8.

157. Forrest, Expert Report, *supra* note 109, at 1. See FORREST AND GROSS, *supra* note 154, at 25-33, 239-55; Colin McRoberts and Timothy Sandefur, *Piercing the Veil of Intelligent Design: Why Courts Should Beware of Creationism's Secular Disguise*, 15 KAN. J.L. & PUB. POL'Y 15, 19-25 (Fall 2005). See also Response of Discovery Institute, <http://www.discovery.org/scripts/viewDB/filesDB-download.php?id=349>.

158. *Kitzmiller*, 400 F. Supp. 2d at 720.

159. Transcript, *supra* note 6, Day 10 AM at 87; Transcript, *supra* note 6, Day 21 PM, at 85.

160. Transcript, *supra* note 6, Day 21 PM, at 88-90; Transcript Day, *supra* note 6, 10AM, at 55-57.

161. *Id.* at 719 n. 5.

162. *Id.* at 711-12.

G. Here Comes the Judge

Pointing out precedents in *McLean* and *Edwards*,¹⁶³ Judge John Jones found that the defense argument against using the background evidence "lacks merit legally and logically."¹⁶⁴ Accordingly, he assumed a reasonable observer who was aware of the history of the creationist/ID movement in general and of the Dover board's actions in particular. Based on this assumption, he concluded that a reasonable student or adult in the Dover community would interpret the board's actions as an endorsement of religion.¹⁶⁵

One reason offered in support of this conclusion is that ID itself is inherently religious. "Although proponents of the IDM [intelligent design movement] occasionally suggest that the designer could be a space alien or a time-traveling cell biologist," the decision noted, "no serious alternative to God as the designer has been proposed by members of the IDM, including Defendants' expert witnesses."¹⁶⁶ In response to the assertion that ID does not mention God, the court observed that the same was true of the creation-science formulations struck down in *McLean*¹⁶⁷ and *Edwards*.¹⁶⁸ According to the court, "ID's religious nature is evident because it involves a supernatural designer. The courts in *Edwards* and *McLean* expressly found that this characteristic removed creationism from the realm of science and made it a religious proposition."¹⁶⁹

Making extensive use of Forrest's testimony, the court found that the history of the ID movement in general and the development of *Pandas* in particular showed that ID arose out of creationism. "This word substitution [from earlier to later versions of *Pandas*] is telling, significant, and reveals that a purposeful change of *words* was effected without any

163. *Id.* at 716-17.

164. *Id.* at 719 n. 5.

165. *Id.* at 715. "[W]e conclude that the religious nature of ID would be readily apparent to an objective observer, adult or child." *Id.* at 718. See Kristi L. Bowman, *Seeing Government Purpose Through the Objective Observer's Eyes: The Evolution-Intelligent Design Debates* 29 HARV J.L. & PUB. POL'Y 417 at 417 (2005) (arguing against "the expanded role of the objective observer"). Objective observers are presumed to know more than is likely; in *Kitzmiller*, for instance, "the court-created reasonable observer had an even more extensive understanding of intelligent design than is presented here [in this article, which explains it at length]." *Id.* at 426.

166. *Kitzmiller*, 400 F. Supp. 2d at 718-19.

167. *Id.* at 717.

168. *Id.* at 718-19, (emphasis in original). The mere absence of explicit references to Genesis, young-earth theory, and a world flood is not sufficient to distinguish ID from creationism. *Id.* at 723.

169. *Id.* at 720.

corresponding change in *content*"¹⁷⁰ Of defense experts Behe and Minnich, the court said, "[T]heir testimony was primarily by way of bare assertion and it failed to directly rebut the creationist history of *Pandas* or other evidence presented by Plaintiffs showing the commonality between creationism and ID."¹⁷¹ Accordingly, the court described ID as "an inherently religious concept"¹⁷² and found that "the curriculum change has the effect of placing the government's imprimatur on the Board's preferred religious viewpoint."¹⁷³

Turning from the general to the specific, the court deconstructed the disclaimer paragraph by paragraph. This analysis revealed, among other things, that evolution was singled out for disfavored treatment as compared with other scientific theories taught in the curriculum,¹⁷⁴ and that *Pandas*, which was treated as if it were a scientific text,¹⁷⁵ was recommended without the reservations and qualifications that applied to evolution theory.¹⁷⁶ The court also observed that the prohibition on discussing the disclaimer in class was not consistent with genuine instruction in science.¹⁷⁷ Above all, the court decried the "contrived dualism"¹⁷⁸ underlying the unproven assertion that there are only two ways to view the origins of life: evolution and creationism/ID.¹⁷⁹ "ID is at bottom premised upon a false dichotomy, namely, that to the extent evolutionary theory is discredited, ID is confirmed."¹⁸⁰

As the final step in determining whether the Dover policy constituted an endorsement of religion, the court set about considering ID's claim to be considered science. "While answering this question compels us to revisit evidence that is entirely complex, if not obtuse, after a six week trial that spanned twenty-one days and included countless hours of detailed expert witness presentations," the court observed drily, "the Court is confident that no other tribunal in the United States is in a better position than are we to traipse into this controversial area."¹⁸¹ Not

170. *Id.* at 721, (emphasis in original).

171. *Kitzmiller*, 400 F. Supp. 2d at 722.

172. *Id.* at 733.

173. *Id.* at 734.

174. *Id.* at 724-25.

175. *Id.* at 725.

176. *Kitzmiller*, 400 F. Supp. 2d at 725.

177. *Id.* at 727.

178. *Id.* at 725.

179. *Id.*

180. *Id.* at 738.

181. *Id.* at 735.

surprisingly, in view of what had gone before, the court declared that "while ID arguments may be true, a proposition on which the Court takes no position, ID is not science."¹⁸² Closely tracking the testimony of the plaintiffs' expert witnesses, the court found that ID fell outside the realm of science because of its invocation of supernatural causes, reliance on a contrived dualism between itself and evolution, unsubstantiated attacks on evolution theory, failure to produce peer-reviewed scientific publications, lack of testing or indeed testability, and inability to be refuted as new evidence arises.¹⁸³ Consequently, the court rejected the defense argument that ID was entitled to equal treatment with evolution in order to avoid viewpoint discrimination. "Science cannot be defined differently for Dover students than it is defined in the scientific community as an affirmative action program . . . for a view that has been unable to gain a foothold within the scientific establishment,"¹⁸⁴ the decision stated. It was similarly dismissive of the defendants' suggestion that in the name of academic freedom and critical thinking, science teachers should discuss the controversy between evolution and ID. "This tactic is at best disingenuous, and at worst a canard. The goal of the IDM is not to encourage critical thought, but to foment a revolution which would supplant evolutionary theory with ID."¹⁸⁵

Having concluded that the Dover policy constituted an endorsement of a religious view, the court turned to the *Lemon* test.¹⁸⁶ Since neither side had raised the issue of entanglement,¹⁸⁷ the court considered only the purpose and effect prongs. Whereas the earlier sections of the decision had focused on the expert witnesses' testimony, the *Lemon* analysis dealt primarily with the actions of the school board and school officials.¹⁸⁸ "The disclaimer's plain language, the legislative history, and the historical context in which the ID policy arose, all inevitably lead to the conclusion that Defendants consciously chose to change Dover's biology curriculum to advance religion,"¹⁸⁹ the decision stated. Moreover, the court asserted that there was no doubt

182. *Kitzmiller*, 400 F. Supp. 2d at 735.

183. *Id.* The court also discussed the definition of science provided by the National Academy of Sciences, listed the evidence purporting to show that ID is science, and rebutted each point. *Id.* at 735, 738-45.

184. *Id.* at 738.

185. *Id.* at 745.

186. *Id.* at 746. *See also*, *Lemon v. Kurtzman*, 403 U.S. 602, 612-13 (1971) (holding that a government activity is unconstitutional if it lacks a secular purpose, has a primary effect that either advances or inhibits religion, or excessively entangles government with religion).

187. *Kitzmiller*, 400 F. Supp. 2d at 707.

188. *Id.*

189. *Id.* at 747.

that the board "knew that ID is considered a form of creationism"¹⁹⁰ and embraced it for that reason.¹⁹¹

Among the testimony mentioned by the court was board president Alan Bonsell's statement regarding his interest in having creationism taught in the public school.¹⁹² Bonsell testified that he did not remember having said any such thing, but school officials and Bonsell's own attorney affirmed that he had done so.¹⁹³ "Simply put," the decision states, "Bonsell repeatedly failed to testify in a truthful manner about this and other subjects."¹⁹⁴ Similarly, the court characterized the testimony of William Buckingham as "largely inconsistent and non-credible."¹⁹⁵ More to the point, the court asserted that the two men's untruths, particularly their statement that they did not know how sixty copies of *Pandas* came to be donated to the district, constituted "further compelling evidence that Bonsell and Buckingham sought to conceal the blatantly religious purpose behind the ID policy."¹⁹⁶ The court added, "Defendants' previously referenced flagrant and insulting falsehoods to the Court provide sufficient and compelling evidence for us to deduce that any allegedly secular purposes that have been offered in support of the ID policy are equally insincere."¹⁹⁷ "It is ironic," the decision observes, "that several of these individuals, who so staunchly and proudly touted their religious convictions in public, would time and again lie to cover their tracks and disguise the real purpose behind the ID policy."¹⁹⁸

The court was particularly scathing in its analysis of the board's decision to include the ID disclaimer over the opposition of district science teachers¹⁹⁹ while claiming not to know what ID was.²⁰⁰ There was, the court noted, "absolutely no discussion of the concept of ID, no discussion of how presenting it to students would improve science education, and no justification offered by any Board member for the curriculum change."²⁰¹ Indeed, the court observed, the

190. *Id.* at 755.

191. *Id.* at 753.

192. *Id.* at 748.

193. *Kitzmiller*, 400 F. Supp. 2d at 749.

194. *Id.*

195. *Id.* at 751.

196. *Id.* at 756.

197. *Id.* at 763.

198. *Id.* at 765.

199. *Kitzmiller*, 400 F. Supp. 2d at 757-58.

200. *Id.* at 758.

201. *Id.*

board members "testified at trial that they had utterly no grasp of ID,"²⁰² and the same appeared to be true of Superintendent Nilsen.²⁰³ "Despite this collective failure to understand the concept of ID, which six Board members nonetheless felt was appropriate to add to the ninth grade biology class to improve science education," the decision states, "the Board never heard from any person or organization with scientific expertise about the curriculum changes, save for consistent but unwelcome advices from the District's science teachers who uniformly opposed the change."²⁰⁴ Based on this evidence, the court found that the board had done none of the things it should have done if it had been genuinely concerned about improving science instruction and critical thinking.²⁰⁵ Instead, it had relied solely on the legal advice of the Discovery Institute and the Thomas More Law Center, "two organizations with demonstrably religious, cultural, and legal missions"²⁰⁶ Accordingly, the court concluded, the Dover policy failed the purpose prong of the *Lemon* test.²⁰⁷

Although failing the purpose prong was sufficient to doom the policy, the court went on to consider the effect prong.²⁰⁸ Here, the failure of ID proponents to convince the court that ID is science cost them dearly, as the court ruled that "since ID is not science, the conclusion is inescapable that the only real effect of the ID policy is the advancement of religion."²⁰⁹ Specifically, it advantages a religious explanation of the origins of life by unjustifiably denigrating evolution theory and it directs students toward a religious alternative.²¹⁰

Judge Jones ended the decision with the rueful prediction that its opponents would brand him a judicial activist, although in his view it was not he, but the board members, who had acted to make new law.²¹¹ The judge proved to be a good prophet. In her January 2006 newsletter,

202. *Id.* at 759. The court stated that the board members who voted for the policy "conceded that they still do not know, nor have they ever known, precisely what ID is. To assert a secular purpose against this backdrop is ludicrous." *Id.* at 763.

203. *Id.* at 759.

204. *Id.*

205. *Kitzmiller*, 400 F. Supp. 2d at 763.

206. *Id.*

207. *Id.*

208. *Id.* at 764.

209. *Id.*

210. *Kitzmiller*, 400 F. Supp. 2d at 764.

211. *Id.* at 765.

Phyllis Schlafly, founder and president of the Eagle Forum,²¹² pointed out that Jones had been appointed to the federal bench by President George W. Bush. Asserting that Bush had been elected president with the help of conservative Christian voters, Schlafly wrote, "[T]his federal judge, who owes his position entirely to those voters and the Bush who appointed him, stuck the knife in the backs of those who brought him to the dance in *Kitzmiller v. Dover Area School District*."²¹³ Jones, she added, had "denigrated several officials because they 'staunchly and proudly touted their religious convictions in public.'"²¹⁴ Although judges rarely respond to criticism, Judge Jones was stung into a response. "'The implication was that I should throw one for the home team,' Jones said."²¹⁵

III. BACK TO THE FUTURE

The significance of the issues raised in *Kitzmiller* can best be understood by placing it in the context of the long process of which it is, not the culmination, but the best example of the current status. At its simplest level, this analysis will flesh out the historical background of the ID movement, on which the *Kitzmiller* decision was partially based. Beyond that, however, this section will show how the major themes underlying *Kitzmiller*, particularly the dispute over the meaning of science and the struggle to reconcile religious and scientific truth, may be traced back to the period between the 1859 publication of Darwin's *On the Origin of Species* and the 1925 ruling in *Scopes v. State*.

A. Enter Darwin

Even 1859 is a late start for a discussion of evolution theory, since that general idea may be found in such early sources as the writings of Empedocles in the fifth century B.C.E.²¹⁶ and

212. According to its website, the Eagle Forum's mission is "to enable conservative and pro-family men and women to participate in the process of self-government and public policy making so that America will continue to be a land of individual liberty, respect for family integrity, public and private virtue, and private enterprise." Eagle Forum, *available at* <http://www.eagleforum.org/misc/descript.html> (last visited Oct. 28, 2007).

213. Phyllis Schlafly, *Judge's Unintelligent Rant Against Design*, <http://www.eagleforum.org/column/2006/jan06/06-01-04.html> (last visited Oct. 28, 2007).

214. *Id.*

215. Amy Worden, *Judge in Dover Case Still Fighting*, PHILADELPHIA INQUIRER, June 5, 2006, at A1.

216. RANDY MOORE, *EVOLUTION IN THE COURTROOM: A REFERENCE GUIDE* 151 (2002) [hereinafter Moore, *Evolution*]. Thomas Huxley, *The Interpreters of Genesis and the Interpreters of Nature*, 28 THE POPULAR SCIENCE MONTHLY, Feb. 1886, at 454.

those of Aristotle in the fourth century B.C.E.²¹⁷ In the introduction to *On the Origin of Species*, Darwin remarked that although Aristotle did not understand natural selection in any comprehensive sense, he touched on the basic concept.²¹⁸ Darwin noted, for instance, that Aristotle recognized that sharp teeth for biting and flat teeth for chewing had developed in accord with their respective uses.²¹⁹ Nor would it be accurate to suggest that the study of evolution in modern scientific terms originated with Darwin, since his work was preceded and accompanied by that of other scientists, notably the French botanist, Jean-Baptiste Lamarck;²²⁰ Darwin's grandfather, Erasmus Darwin;²²¹ and his contemporary, Alfred Wallace.²²² Darwin's contribution, and the source of the furor surrounding his work, was his description of the specific mechanism of evolution: natural selection, including the struggle for existence and the survival of the fittest. This view of the origin of species struck many of his contemporaries as mechanistic, dehumanizing, and above all atheistic in its substitution of what they saw as random chance and brutality for a divine plan. As *Kitzmiller* amply demonstrates, that reaction has by no means run its course even after the world has had more than a century and a half to get used to Darwin's ideas.

As soon as *On the Origin of Species* was published, a debate about its relationship to religious faith erupted among four groups: Darwinists, including Darwin himself, who believed that even if natural selection does not definitively disprove the existence of God, at the very least it eliminates the need to postulate an intelligent Creator;²²³ creationists who denied evolution in its entirety; evolutionists who challenged natural selection in favor of more Bible-friendly explanations of the mechanism by which evolution works; and theistic evolutionists who believed in both natural selection and God as Creator. The intellectual descendants of three of those groups participated in *Kitzmiller*: atheistic or agnostic Darwinists, creationists, and theistic

217. See Moore, *Evolution*, *supra* note 216, at 114; GEORGE E. WEBB, THE EVOLUTION CONTROVERSY IN AMERICA 1 (1994).

218. CHARLES DARWIN, THE ORIGIN OF SPECIES, *in* THE WORKS OF CHARLES DARWIN, Vol. 16, at xiii, n.1 (Paul H. Barret & R.B. Freeman ed., 1988) (1876).

219. *Id.*

220. See Jean-Baptiste Lamarck, <http://www.ucmp.berkeley.edu/history/lamarck.html> (last visited Oct. 28, 2007).

221. Moore, *Evolution*, *supra* note 216 (that Erasmus Darwin suggested that species evolved by adapting to the environment and that acquired traits were inheritable).

222. Moore, *Evolution*, *supra* note 216 (that Alfred Wallace arrived independently at the theory of natural selection at the same time as Darwin was writing *Origin*).

223. CHARLES DARWIN, AUTOBIOGRAPHY, 49-67 (1974) (tracing his loss of faith in God as a result of his discovery of natural selection). Darwin wrote that he "must be content to remain an Agnostic." *Id.* at 54

evolutionists. The continued existence of non-Darwinian evolutionists was acknowledged at trial, but none of them testified.

This section will address the debate about the religious implications of Darwinism by focusing on the topics that are particularly relevant to the lines of thought that arose in *Kitzmilller*: the accusation that the theory of evolution is just a guess; the attempts of non-scientists to interpret imperfectly understood scientific findings as support for certain religious beliefs; calls for a return to an earlier scientific model in which non-experts could more easily participate; the demand for absolute certainty in science; the definition of acceptable scientific evidence; and concerns over the moral effects of teaching evolution. The purpose of this discussion is not simply to identify correspondences between the nineteenth-century debate and *Kitzmilller*, although some of them are striking. Rather, it is to lead to a discussion of the issues underlying *Kitzmilller* as informed by a historical perspective on their development and persistence. Accordingly, with the exception of an observation about monkey jokes over the centuries, this section will not keep pointing out that the arguments made immediately after the publication of *On the Origin of Species* closely resembled those in *Kitzmilller*. The point is that all of them did.

To begin with the monkey jokes: the first major confrontation over Darwin's theory took place in 1860,²²⁴ less than a year after the publication of *On the Origin of Species*.²²⁵ At a meeting of the British Association for the Advancement of Science, Reverend Samuel Wilberforce, bishop of Oxford, "used his considerable speaking ability to make Darwin's theory appear to be no more than an absurd guess, establishing a tradition that would characterize the antievolution movement for decades."²²⁶ The bishop was not an expert on science, and his ridicule of Darwinism was based on its failure to comport with his own theological beliefs.²²⁷ In that debate, he mockingly asked Thomas Huxley, a biologist whose support of Darwin's theory led to the sobriquet "Darwin's Bulldog,"²²⁸ whether he was descended from an ape on his grandfather's side or on his grandmother's side.²²⁹ There are several versions of Huxley's reply, but he himself recalled having said, "If then, said I, the question is put to me would I rather have a miserable ape for a grandfather or a man highly endowed by nature and possessed of great means of influence & yet who employs these faculties & that influence for the mere purpose of

224. See KARY DOYLE SMOUT, *THE CREATION/EVOLUTION CONTROVERSY: A BATTLE FOR CULTURAL POWER*, 33-44 (1998) (summarizing the debate between Wilberforce and Huxley).

225. WEBB, *supra* note 217, at 5.

226. *Id.*

227. *Id.*

228. Thomas Henry Huxley, available at <http://www.ucmp.berkeley.edu/history/thuxley.html> (last visited Oct. 28, 2007).

229. WEBB, *supra* note 217, at 5, 11 (Francis Bowen, a Harvard philosophy professor, caricatured Darwin's theory of the origin of mankind as saying "that the monkey is his brother, -- and the horse his cousin, and the oyster his remote ancestor.").

introducing ridicule into a grave scientific discussion, I unhesitatingly affirm my preference for the ape."²³⁰

A similar caricaturing of the creation/evolution debate as a choice between a brutish perception of humanity (represented by apes) and a more spiritual view may be found in a remark by Benjamin Disraeli, who twice served as England's Prime Minister.²³¹ Asked whether evolution is necessarily atheistic, Disraeli mused, "Is man an ape or an angel? I, my lord, I am on the side of the angels. I repudiate with indignation and abhorrence those newfangled theories."²³²

There is no indication that Dover school board member William Buckingham was aware of these Victorian debates, but like Wilberforce, Disraeli, and many other makers of monkey jokes since then, he misunderstood what evolution says about common descent and thus ridiculed his own misconception. His remark at a school board meeting, "I challenge you [the audience] to trace your roots to the monkey you came from," came uncannily close to Wilberforce's formulation. The same is true of his opponents' spontaneous response as compared with Huxley's; consider, for example, science department chair Bertha Spahr's testimony: "[I]n utter frustration I looked at Mr. Buckingham and I said, 'If you say man and monkey one more time in the same sentence, I'm going to scream.'"²³³

Not all of the scientific laymen who collided with the first generation of Darwinists ridiculed either the theory itself or the personal ancestry of its adherents, but they did try to massage it into something that would comport with their views. A prominent example was William E. Gladstone—ironically, Disraeli's chief political opponent—who served four terms as Prime Minister.²³⁴ Gladstone attempted to reconcile evolution with Genesis by suggesting that first aquatic creatures, then birds and insects, then land mammals, and finally man evolved in that order, thus paralleling the biblical account and introducing an element of design into the equation.²³⁵ Using a table showing the actual chronological order of fossils, Huxley ridiculed Gladstone's scientifically naïve attempt to use religion-based logic aimed at supporting a preconceived answer rather than following wherever the evidence leads. Gladstone, having changed his theory as much as possible to answer Huxley's criticisms, conceded that he could not

230. Huxley, *supra* note 228.

231. Benjamin Disraeli, available at <http://www.britannia.com/bios/disraeli.html> (last visited Oct. 28, 2007).

232. MOORE, EVOLUTION, *supra* note 216, at 163.

233. Transcript, *supra* note 6, Day 8 AM, at 15 (test. of Bertha Spahr).

234. William Ewart Gladstone, <http://www.britannia.com/gov/primes/prime36.html> (last visited Oct. 4, 2007).

235. Thomas H. Huxley, *The Interpreters of Genesis and the Interpreters of Nature*, 28 THE POPULAR SCIENCE MONTHLY 449 (February 1886). William E. Leverette, JR.'s *E. L. Youmans' Crusade for Scientific Autonomy and Respectability*, 17 AMERICAN QUARTERLY 12 (Spring, 1965), offers a detailed study of the lengthy debate over religion and science carried out in The Popular Science Monthly in this period.

show that a consensus of scientists agreed with him.²³⁶ Nonetheless, he continued to assert, without explanation, that the ideas he was presenting were scientific.²³⁷ He then went through Genesis showing how scientific terminology could be used to explain each part of it,²³⁸ much as the advocates of creation-science later did in *McLean* and *Edwards*.

Among American critics of Gladstone's efforts was Andrew Dickson White, founding president of Cornell University.²³⁹ In Dickson's view, attempts to use science to prove Genesis were not only doomed but inane, and likely to proceed only from ignorance.²⁴⁰ Gladstone had conceded that he had no scientific background, and White noted acerbically that "his argument soon showed that this confession was entirely true."²⁴¹ Alluding to Huxley's refutation of Gladstone's suggested chronology of evolution, White added that Gladstone's only scientific source was an old one, and his claim that a modern geologist supported him was based on a misinterpretation of that man's work.

As Huxley's debates with Wilberforce and Gladstone demonstrate, by the middle of the nineteenth century science had become so complex that nonscientists were at a distinct disadvantage in discussing evolution.²⁴² Indeed, this issue had already manifested itself a few decades earlier, as evidenced by an early nineteenth-century movement known as Scottish Common Sense Realism.²⁴³ This movement reacted against the secularism of the Enlightenment period by calling for a return to a purely inductive view of scientific method, in which anyone could offer reasonable arguments without necessarily possessing a great deal of technical knowledge.²⁴⁴ Proclaiming that God's truth is unitary, Scottish Common Sense Realists

236. William E. Gladstone, *Proem to Genesis: A Reply to Professor Huxley*, 28 THE POPULAR SCIENCE MONTHLY 622 (February 1886).

237. *Id.* at 623.

238. *Id.*

239. Andrew Dickson White, http://en.wikipedia.org/wiki/Andrew_Dickson_White (last visited Oct. 4, 2007).

240. Andrew Dickson White, *New Chapters on the Warfare of Science*, 32 THE POPULAR SCIENCE MONTHLY, 599 (February 1888). *See also* ANDREW DICKSON WHITE, A HISTORY OF THE WARFARE OF SCIENCE WITH THEOLOGY IN CHRISTENDOM, Vol.2, 1 (1960).

241. White, *New Chapters*, *supra* note 240, at 607.

242. JAMES R. MOORE, THE POST-DARWINIAN CONTROVERSIES: A STUDY OF THE PROTESTANT STRUGGLE TO COME TO TERMS WITH DARWIN IN GREAT BRITAIN AND AMERICA 1870-1900, 213 (1979). *See* WEBB, *supra* note 217, at 64.

243. WEBB, *supra* note 217, at 16.

244. *Id.*

maintained that anyone with common sense could reach the correct conclusions by comparing a direct observation of nature with the revealed truths in the Bible.²⁴⁵

Although Darwin was by no means the first scientist to deviate from the inductive method—Isaac Newton is an obvious earlier example²⁴⁶—his critics were and are perfectly correct in asserting that he was a leader in establishing the current scientific method, including its tolerance for change, uncertainty, and incompleteness.²⁴⁷ "From Plato and Aristotle until Darwin," historian James Moore remarked, "the mainstream of western philosophers explained the orderliness and stability of the biological world by positing an immutable 'nature,' 'form,' or 'essence' for every organism that naturally breeds true."²⁴⁸ The approach most commonly referenced in this respect was that of Sir Francis Bacon,²⁴⁹ who recommended examining an indeterminate number of examples of a class in order to reach and test general axioms about that class.²⁵⁰ Using this method, "The outcome of repeated inductions would be a series of propositions, decreasing in number, increasing in generality, and culminating in 'those laws and determinations of absolute actuality' which can be known to be certainly true,"²⁵¹ whereas a single exception would disprove the general axiom.²⁵² It was on this basis that adherents of the inductive scientific method, which guarantees certainty and tolerates no exceptions, maintained that identifying any flaw in the theory of evolution would render the entire theory suspect.

The antievolutionists' repeated calls for a return to the Baconian inductive method rested in part on the belief that biological organisms are fixed in their characteristics and limited in their numbers.²⁵³ If this were so, it would be possible to encompass all of them in a Baconian scheme of identification and classification whose results would be absolutely certain. However, "unrestricted or indefinite change in the facts of nature and their relations can only be expressed in theories which have more or less probability. Darwin submitted his theory as a probable explanation of organic diversity because its material basis was the unlimited variation of plants and animals. Anti-Darwinians could demand that the theory be made absolutely certain because

245. *Id.*

246. *Id.* at 13.

247. MOORE, *CONTROVERSIES*, *supra* note 242, at 204-06. *See* WEBB, *supra* note 217, at 1-2, 13-14.

248. MOORE, *CONTROVERSIES*, *supra* note 242, at 206.

249. Francis Bacon, <http://plato.stanford.edu/entries/francis-bacon/> (last visited Oct. 4, 2007).

250. *Id.*

251. MOORE, *CONTROVERSIES*, *supra* note 242, at 194.

252. Francis Bacon, <http://plato.stanford.edu/entries/francis-bacon/> (last visited Oct. 4, 2007).

253. MOORE, *CONTROVERSIES*, *supra* note 242, at 214-15.

they believed in the fixity of biological species."²⁵⁴ Consequently, as Moore observed, "The conviction that ultimate certainty is the desirable and attainable product of inductive inference—that to be acceptable, a theory has to be proved, and to be proved it has to explain all the facts—this conviction forms one of the philosophical premises that underlay the anger, confusion, and theological pettifogging of Christian Anti-Darwinism."²⁵⁵

Despite the arguments raised by antievolutionists, not all Victorian religious writers shared the belief in the literal truth of the Bible that helped to fuel the demand for certainty in science.²⁵⁶ Reverend Howard MacQueary, for instance, argued that although the Bible was inspired by God, it was not dictated word-for-word, and it is not meant to be interpreted literally.²⁵⁷ He also asserted that although evolution does not disprove the possibility of miracles, it does reveal natural causes for what had been considered supernatural.²⁵⁸ For his efforts, Reverend MacQueary won the dubious distinction of being the first person to be tried for heresy in the Episcopal Church²⁵⁹ and subsequently deposed "from the offices of priest and deacon."²⁶⁰

Among Darwin's secular defenders who also suffered for their beliefs was Alexander Winchell, professor of geology at Vanderbilt University, who was fired in 1878 "for holding questionable views on Genesis,"²⁶¹ for saying "that humans existed before Adam,"²⁶² and for arguing that it was impossible for human life to have existed for as short a time as the Bible states.²⁶³ More fortunate was John Burroughs, a noted nineteenth-century ecologist,²⁶⁴ who

254. *Id.* at 206.

255. *Id.* at 205-06. Moore, a self-defined Christian Darwinist, takes issue with the notion that absolute truth is more "Christian" than is the uncertainty of modern scientific methodology. In his view, not only was Christian anti-Darwinism based on the false premise that living things are fixed and small enough in number to be comprehensively understood, but it is also presumptuous because it presupposes a high degree of human ability. *Id.*

256. *Id.* at 218-22. See WEBB, *supra* note 217, at 23.

257. HOWARD MACQUEARY, THE EVOLUTION OF MAN AND CHRISTIANITY 231-55 (1890).

258. *Id.* at 191-97.

259. MOORE, EVOLUTION, *supra* note 216, at 167.

260. 19 THE CHURCHMAN at 423 (Oct. 8, 1891).

261. MOORE, EVOLUTION, *supra* note 216, at 149.

262. *Id.*

263. WEBB, *supra* note 217, at 33.

264. John Burroughs, <http://www.ecotopia.org/ehof/burroughs/> (last visited Oct. 4, 2007).

challenged with impunity the antievolutionist insistence on unchanging truth in science. "Our theological professors make a mistake when they think they have weakened or parried the objections of science to their doctrines by pointing to the fact that science is constantly revising or even reversing its own conclusions,"²⁶⁵ he wrote. Rather, "it is precisely this active and inquiring spirit, this readiness to correct its errors, and this eagerness to reach a larger generalization, that makes it the enemy of traditional theology."²⁶⁶

In addition to disagreeing about the desirability of absolute certainty in science, Darwin's supporters and opponents clashed over other elements of the scientific method and the conclusions that may be drawn from it. In his role as Darwin's chief proponent, Huxley faced repeated challenges from creationists who, no matter how much evidence he presented, insisted that certain points had never been satisfactorily addressed. They also demanded forms of proof that evolutionists considered absurd.²⁶⁷ Prominent among such critics was Louis Agassiz, a Harvard geologist,²⁶⁸ who believed that science should be based on inductions resulting from the observation and classification of thousands of specimens of living things.²⁶⁹ Rejecting Darwin's methodology, he called the results "mere guesses"²⁷⁰ and described natural selection as "speculative and insufficiently inductive"²⁷¹ in the Baconian sense. Ironically, Agassiz was a founding member of the National Academy of Sciences,²⁷² which is now the most prestigious defender of modern scientific methodology and of evolution.

The clearest explanation of Agassiz's scientific objections to natural selection may be found in Chapter Three of the 1869 edition of his *Essay on Classification*.²⁷³ There, without reference to any of the specific arguments or evidence supporting natural selection, he comprehensively stated that Darwin had not explained how he could deny "the conviction that

265. John Burroughs, *The Natural versus the Supernatural*, 31 THE POPULAR SCIENCE MONTHLY 1 (May 1887).

266. *Id.*

267. Thomas H. Huxley, *Science and the Bishops*, 32 THE POPULAR SCIENCE MONTHLY 360 (January 1888).

268. Louis Agassiz, <http://www.ucmp.berkeley.edu/history/agassiz.html> (last visited Oct. 4, 2007).

269. *Id.*

270. WEBB, *supra* note 217, at 11.

271. *Id.*

272. Louis Agassiz, <http://www.ucmp.berkeley.edu/history/agassiz.html> (last visited Oct. 4, 2007).

273. Agassiz, *Darwinism – Classification of Haeckel*, available at <http://www.athro.com/general/atrans.html> (last visited Oct. 4, 2007).

dominated the science until the present time: knowledge, that the organized beings are reproduced, from generation to generation, with characters identical to the ones that they possessed during their first emergence."²⁷⁴ More specifically, Agassiz asserted that Darwin's theory lacked essential evidence, including living examples of evolution occurring in the present and fossil evidence of intermediate organisms that were part one species and part another.²⁷⁵ These assertions were popularized in America by George Ticknor Curtis, a lawyer who spread the belief that unless each link in the chain of evolution is clearly evident in the fossil record, the theory cannot be credited.²⁷⁶

Additional scientific challenges to Darwinism were offered by a well-known nineteenth-century biologist, Saint George Jackson Mivart,²⁷⁷ who proposed an idea that would later become known as irreducible complexity. There was, he asserted, no way to explain the evolutionary development of the giraffe's long neck by natural selection.²⁷⁸ A lengthening neck would create the need for a heavier body, he asserted, which would in turn require more food.²⁷⁹ But in its intermediate stages, the lengthening neck would not yet be long enough to reach significant new sources of food.²⁸⁰ Thus, until it reached its full length, it would be an obstacle rather than a help to the animal's survival, which caused Mivart to question whether the characteristic of a longer-than-average neck would persist in natural selection.²⁸¹ The same, Mivart suggested, could be said of long-stemmed pincers on the starfish or the sea urchin²⁸² or the organs of an orchid.²⁸³

Darwin's response to the argument of irreducible complexity was to point out that some specimens of a given species do in fact display intermediate stages of the mechanisms in

274. *Id.*

275. WEBB, *supra* note 217, at 11.

276. MOORE, *CONTROVERSIES*, *supra* note 242, at 203.

277. Saint George Jackson Mivart, <http://www.britannica.com/eb/article-9053066/Saint-George-Jackson-Mivart> (last visited Oct. 4, 2007). *See* <http://www.newadvent.org/cathen/10407b.htm> (last visited Oct. 4, 2007).

278. MOORE, *CONTROVERSIES*, *supra* note 242, at 132; DARWIN, *ORIGIN*, *supra* note 218, at 185-86.

279. DARWIN, *ORIGIN*, *supra* note 218, at 185-86.

280. MOORE, *CONTROVERSIES*, *supra* note 242, at 132; DARWIN, *ORIGIN*, *supra* note 218, at 186-87.

281. DARWIN, *ORIGIN*, *supra* note 218, at 186-187.

282. *Id.* at 199.

283. *Id.* at 203.

question; for instance, some present-day starfish have snappers that lack stems.²⁸⁴ He also suggested ways in which earlier stages of those complex structures could have been useful, even if not in their present function.²⁸⁵ More broadly, Darwin criticized Mivart for confining himself to criticism of natural selection rather than offering affirmative proof of his own ideas,²⁸⁶ which, as appears below, were a form of intelligent design. Finally, Darwin offered evidence to refute Mivart's claim that life forms had appeared abruptly,²⁸⁷ wryly commenting that believing in abrupt appearance would be "to enter into the realms of miracle, and leave those of science."²⁸⁸

As the preceding discussion illustrates, any comprehensive consideration of Victorian-era opposition to Darwinism must pay serious attention to the question of the relationship between religion and science. Nevertheless, as Moore²⁸⁹ and White²⁹⁰ explain in depth, the perception of a head-on, nonnegotiable conflict between religion and science is largely limited to fundamentalist Christians and confined to the undeniable statement that the theory of evolution does not bear out a literal reading of Genesis.²⁹¹ Greater scope for discussion is to be found in the more nuanced efforts of religious believers to offset such a confrontation by finding ways to reconcile evolution with the general idea of a Creator, if not with the specific details of Genesis.²⁹² Chief among these formulations was the notion of an intelligent designer who had set the wheels of evolution in motion.²⁹³ Still other thinkers, both religious and non-religious, denied that there is any need to reconcile religion and science. In their view, identifying the

284. *Id.* at 200.

285. *Id.* at 199-204.

286. DARWIN, ORIGIN, *supra* note 218, at 209.

287. *Id.* at 210-13.

288. *Id.* at 213.

289. MOORE, CONTROVERSIES, *supra* note 242, at 19-39.

290. WHITE, HISTORY, *supra* note 240, vol. 1, at 1-88.

291. *See* MOORE, CONTROVERSIES, *supra* note 242, at 19-39; WHITE, HISTORY, *supra* note 240, vol. 1, at 1-88. *See also* STEPHEN JAY GOULD, *Nonoverlapping Magisteria*, in INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS: PHILOSOPHICAL, THEOLOGICAL, AND SCIENTIFIC PERSPECTIVES, *supra* note 120, at 737-50 (arguing that religion and science do not overlap); MILLER, GOD, *supra* note 106 (arguing that belief in evolution is compatible with belief in God).

292. MOORE, CONTROVERSIES, *supra* note 242, at 213-55.

293. *See* MOORE, CONTROVERSIES, *supra* note 242, at 213-55; WEBB, *supra* note 217, at 16-31; MACQUEARY, *supra* note 257; ASA GRAY, DARWINIANA: ESSAYS AND REVIEWS PERTAINING TO DARWINISM 87-177, 252-82, 356-90 (1877); GLADSTONE, *supra* note 236; WHITE, HISTORY, vol. 1, *supra* note 240, at 596-610.

ultimate cause of life, and determining how humans relate to it, is central to religion and philosophy but extraneous to science.²⁹⁴

The most prominent intelligent design advocate of Darwin's generation was Agassiz, who believed that changes in biological forms had come about through a series of catastrophes, such as a worldwide flood.²⁹⁵ He also asserted that each race of humans resulted from a separate special creation, which later creationists have cited as a justification for racism.²⁹⁶ At the heart of his approach to science was the belief that the universe is the product of intelligent design, which Agassiz affirmed but did not explain beyond stating that it was the most logical explanation for what he saw around him.²⁹⁷ "It is surely not amiss," he declared in his *Essay on Classification*, 'for the philosopher to endeavor, by the study of his own mental operations, to approximate the workings of the Divine Reason, learning from the nature of his own mind better to understand the Infinite Intellect from which it is derived.'²⁹⁸

Agassiz's assertion that Darwinism was antagonistic to theistic belief was challenged by a Harvard colleague, Asa Gray, a botanist and an ardent evangelical Christian.²⁹⁹ Gray believed in intelligent design, but in his view, that belief fell outside the scope of science. To him, science dealt not with the ultimate cause of life but rather with the mechanisms by which biological entities had developed after they had come into existence.³⁰⁰ "Darwinian evolution . . . is neither theistical nor nontheistical," he wrote.³⁰¹ Similarly, he said of natural selection that "Its relations to the question of design belong to the natural theologian, or, in the larger sense, to the philosopher."³⁰² As this remark suggests, Gray regarded natural selection not as a competitor to belief in intelligent design, but as a basis for forming such a belief in one's personal, rather than

294. See Huxley, *supra* note 216, at 459-60; Thomas H. Huxley, *Science and Morals: A Reply*, 30 THE POPULAR SCIENCE MONTHLY 474, at 503-05 (February 1887); BURROUGHS, *supra* note 265.

295. Louis Agassiz, <http://www.ucmp.berkeley.edu/history/agassiz.html> (last visited Oct. 4, 2007). See MOORE, CONTROVERSIES, *supra* note 242, at 209.

296. MOORE, EVOLUTION, *supra* note 216, at 113.

297. Agassiz, Darwinism – Classification of Haeckel, <http://www.athro.com/general/atrans.html> (last visited Oct. 4, 2007). See MOORE, CONTROVERSIES, *supra* note 212, at 207-09; WEBB, *supra* note 217, at 12.

298. MOORE, CONTROVERSIES, *supra* note 242, at 208.

299. MOORE, EVOLUTION, *supra* note 216, at 125.

300. GRAY, *supra* note 293, at 379.

301. *Id.*

302. *Id.* at 379.

scientific, persona.³⁰³ If life is intelligently designed, he pointed out, it is hard to see why it should include such things as "abortive and useless organs"³⁰⁴ and the copious waste of millions of seeds and eggs that never become life.³⁰⁵ But by combining the explanations offered by natural selection with the assumption that natural selection was the mechanism chosen to carry out the work of design, the purpose becomes clear.³⁰⁶ "Darwinian teleology," he wrote, "has the special advantage of accounting for the imperfections and failures as well as for successes."³⁰⁷ Darwin himself described Gray as the person who best understood his theories,³⁰⁸ although he differed from Gray with respect to their religious implications. For instance, he wrote in his autobiography that "The old argument from design in nature, as given by Paley,³⁰⁹ which formerly seemed to me so conclusive, fails, now that the law of natural selection has been discovered."³¹⁰

Saint George Jackson Mivart made a similar point³¹¹ by suggesting that Darwin's theory has nothing to do with direct, original creation by God, but rather seeks to explain what Mivart calls "derivative creation."³¹² This he defines as "the formation of any thing by God derivatively; that is, that the preceding matter has been created with the potentiality to evolve from it, under suitable conditions, all the various forms it subsequently assumes."³¹³ In his view, "it is plain that physical science and 'evolution' can have nothing whatever to do with absolute or primary

303. *Id.* at 129-77.

304. *Id.* at 371.

305. GRAY, *supra* note 293, at 372.

306. *Id.* at 375-77.

307. *Id.* at 378.

308. MOORE, EVOLUTION, *supra* note 216, at 270.

309. *Id.* at 137. William Paley was an Anglican clergyman whose book, *Natural Theology: Or, Evidences of the Existence and Attributes of the Deity; Collected from the Appearances of Nature* (1802), is the source for many ID arguments. Among other things, Paley asserted that all biological organisms were created abruptly in their present form and could only have resulted from intelligent design, just as the existence of a watch necessarily demonstrates the existence of a watchmaker. *Id.*

310. DARWIN, AUTOBIOGRAPHY, *supra* note 223, at 50.

311. Modern History Sourcebook, Saint George Jackson Mivart, *On The Genesis Of Species* <http://www.fordham.edu/halsall/mod/1871mivart.html> (last visited Oct. 4, 2007).

312. *Id.*

313. *Id.*

creation. The Rev. Baden Powell³¹⁴ well expresses this, saying: 'Science demonstrates incessant past changes, and dimly points to yet earlier links in a more vast series of development of material existence; but the idea of a beginning, or of creation, in the sense of the original operation of the divine volition to constitute nature and matter, is beyond the province of physical philosophy.'³¹⁵ Mivart also distinguished between the evolution of the human body and the direct creation of each human soul.³¹⁶

Within the religious community, one of the best-known advocates of the use of evolution to celebrate intelligent design was the Reverend Henry Ward Beecher, a prominent Congregationalist clergyman.³¹⁷ "Who designed this mighty machine, created matter, gave to it its laws, and impressed upon it that tendency which has brought forth the most infinite results on the globe, and wrought them into a perfect system?" he asked. "Design by wholesale is grander than design by retail."³¹⁸

B. The Boys in Robinson's Drug Store

In the renewal of fundamentalist Christian zeal that followed World War I,³¹⁹ evolution was an obvious target for religious reformers.³²⁰ Out of this fervor arose the best-known evolution controversy in America, which took place in Dayton, Tennessee, in the summer of 1925.³²¹ Earlier that year, the State of Tennessee had passed a statute proclaiming that teachers

314. Baden Powell, <http://www.answers.com/topic/baden-powell-mathematician> (last visited Oct. 4, 2007) Powell, an Anglican cleric and Savilian Chair of Geometry at Oxford, supported Darwin's work. *Id.*

315. Modern History Sourcebook, St. George Jackson Mivart, *supra* note 311.

316. St. George Jackson Mivart, <http://www.newadvent.org/cathen/10407b.htm> (last visited Oct. 4, 2007).

317. Henry Ward Beecher, <http://www.bartleby.com/65/be/BeecherH.html> (last visited Oct. 4, 2007).

318. MOORE, CONTROVERSIES, *supra* note 242, at 221.

319. EDWARD J. LARSON, SUMMER FOR THE GODS: THE SCOPES TRIAL AND AMERICA'S CONTINUING DEBATE OVER SCIENCE AND RELIGION 32-37 (1997).

320. *Id.*

321. *Id.* See L. SPRAGUE DE CAMP, THE GREAT MONKEY TRIAL (1968); JOHN THOMAS SCOPES, THE WORLD'S MOST FAMOUS COURT TRIAL: THE TENNESSEE EVOLUTION CASE 1 (1925) (transcript of the trial); MARVIN OLASKY & JOHN PERRY, MONKEY BUSINESS: THE TRUE STORY OF THE SCOPES TRIAL (2005) (antievolutionist interpretation of the Scopes case); LESLIE H. ALLEN, ed., BRYAN AND DARROW AT DAYTON: THE RECORD AND DOCUMENTS OF THE 'BIBLE-EVOLUTION TRIAL (1925); MATTHEW CHAPMAN, TRIALS OF THE MONKEY: AN ACCIDENTAL MEMOIR (2001); H.L. MENCKEN, *The Monkey Trial*, available at

in publicly funded schools and universities could not "teach any theory that denies the story of the Divine Creation of man as taught in the Bible, and . . . teach instead that man has descended from a lower order of animals."³²² The fledgling ACLU advertised for a teacher willing to violate the law and thus precipitate a test case,³²³ and the men who regularly gathered in Robinson's Drug Store on Main Street saw this advertisement as a wonderful opportunity to bring attention and money to their town.³²⁴ They collared John Scopes, an easy-going teacher of general science who had been filling in for the biology instructor in the local high school, and he readily agreed to offer himself to the ACLU as a defendant.³²⁵

When word of the upcoming trial appeared in the newspapers, the World's Christian Fundamentals Association³²⁶ brokered an arrangement whereby William Jennings Bryan would assist in the prosecution of the case.³²⁷ Bryan, a three-time presidential candidate who had served as a congressman and as Woodrow Wilson's secretary of state, was well-known as a populist orator and creationist leader.³²⁸ With little experience as a courtroom lawyer, his chief role was to represent the flaws and dangers of evolution.³²⁹ Noted defense attorney Clarence Darrow, an outspoken agnostic,³³⁰ publicly offered his services as a counterweight to Bryan. To

<http://www.law.umkc.edu/faculty/projects/ftrials/scopes/menk.htm> (last visited Oct. 4, 2007);

John Thomas Scopes, Reflections -- Forty Years After,

<http://www.law.umkc.edu/faculty/projects/ftrials/scopes/scopesreflections.html> (last visited Oct. 4, 2007); WEBB, *supra* note 217, at 81-93; RANDALL BEZANSON, HOW FREE CAN RELIGION BE?, 80-81 (2006); SMOUT, *supra* note 225, at 45-102 (includes 1920s accounts and current interpretations of the Scopes case); Edward L. Rice, *Darwin and Bryan—A Study in Method*, 61 SCIENCE 243, 243-50 (March 6, 1925).

322. 1925 Tenn. Pub. Acts Ch. 27, 64th General Assembly, House Bill 185, *available at* <http://www.law.umkc.edu/faculty/projects/ftrials/scopes/tennstat.htm> (last visited Oct. 4, 2007).

323. DE CAMP, *supra* note 321, at 8-9; LARSON, *supra* note 319, at 82-83.

324. LARSON, *supra* note 319, at 89; DE CAMP, *supra* note 321, at 9.

325. LARSON, *supra* note 319, at 89-90; DE CAMP, *supra* note 321, at 13.

326. Robert Wuthnow, The World of Fundamentalism, <http://www.religion-online.org/showarticle.asp?title=230> (last visited Oct. 4, 2007).

327. DE CAMP, *supra* note 321, at 72; WEBB, *supra* note 217, at 86; LARSON, *supra* note 319, at 99-100.

328. William Jennings Bryan, <http://projects.vassar.edu/1896/bryan.html> (last visited Oct. 4, 2007); Doug Linder, William Jennings Bryan (1860-1925), <http://www.law.umkc.edu/faculty/projects/ftrials/scopes/bryanw.htm> (last visited Oct. 4, 2007).

329. LARSON, *supra* note 319, at 104.

330. *Id.* at 102.

the dismay of some ACLU officials who considered him too flamboyant and attention-seeking, the defendant accepted his representation.³³¹ "It was going to be a down-in-the-mud fight,' [Scopes] recalled, 'and I felt that situation demanded an Indian fighter rather than someone who graduated from the proper military academy.'"³³²

When the *Scopes* trial took place in 1925, the U.S. Supreme Court had not yet declared that the religion clauses of the First Amendment apply to the states as well as to the federal government by virtue of incorporation with the Fourteenth Amendment.³³³ As a result, the central question of *Kitzmiller*—whether the policy at issue endorsed religion—was irrelevant. Judge John Raulston opened court each day by inviting a fundamentalist preacher to pray,³³⁴ and at the start of the trial he read Genesis 1: 1-31 to the jury and told them that Tennessee law forbade instruction that contradicted what he had just read.³³⁵ In the second week of the trial, Darrow objected to the presence, just to the left of the jury, of "a large sign about ten feet long reading, 'Read Your Bible,' and a hand pointing to it."³³⁶ The prosecutor objected that if the time had come that one could not tell a man to read his Bible, "then is the time for us to tear up all of the Bibles, throw them in the fire, and let the country go to hell."³³⁷ The judge ordered the sign removed not as a requirement, but as a gesture of courtesy to the defense.³³⁸

In further contrast to *Kitzmiller*, scientific evidence was all but excluded from *Scopes*. Early in the proceedings, the prosecution considered trying to show not only that the Tennessee statute was constitutional, but also that the theory of evolution is flawed and dangerous.³³⁹ As a potential expert witness, they approached George McCready Price, a self-taught and self-proclaimed scientist whose formal education had been limited to two years in a religious college and a teacher-training course.³⁴⁰ Among other things, he claimed to be able to prove that no

331. *Id.* at 100-102; DE CAMP, *supra* note 321, at 78-80.

332. LARSON, *supra* note 319, at 102.

333. JOAN DELFATTORE, THE FOURTH R: CONFLICTS IN AMERICA'S PUBLIC SCHOOLS 63-64 (2004).

334. TENNESSEE EVOLUTION CASE, *supra* note 321, at 89-91.

335. *Id.* at 6.

336. *Id.* at 280.

337. *Id.* at 281.

338. *Id.* at 283.

339. LARSON, *supra* note 319, at 129.

340. WEBB, *supra* note 217, at 65.

fossil was older than any other.³⁴¹ In declining to testify, Price suggested that the prosecution should rely not on the scientific validity of creationism but on the divisive anti-Christianity of evolution.³⁴² The prosecution subsequently chose to characterize evolution themselves rather than calling witnesses for this purpose.³⁴³ They also attempted to exclude all scientific evidence, thus preventing the defense from attacking creationism as non-scientific.³⁴⁴

The defense, of course, wanted to link evolution with the established scientific community, but its most prominent members shied away from the carnival-like atmosphere of the trial and the religion-based antagonism between Bryan and Darrow.³⁴⁵ Eight scientists, none of whom was well-known, agreed to testify,³⁴⁶ but the judge allowed only one to take the stand, and that in the absence of the jury.³⁴⁷ The lone scientific witness was Maynard M. Metcalf, a zoologist doing research at Johns Hopkins University,³⁴⁸ who testified that all the "zoologists, botanists, and geologists"³⁴⁹ he knew accepted the general principle of evolution but differed about the mechanism by which it occurred.³⁵⁰ One of the prosecutors, Thomas Stewart, objected that the discussion of evolution should be confined to the definition given in the statute: that man had descended from lower animals. In his view, the meaning of evolutionary theory as evolutionists see it was irrelevant.³⁵¹ On the same basis, the prosecution successfully moved to exclude any testimony suggesting that there is no necessary conflict between evolution and religion,³⁵² or that it is possible for a good Christian to believe in evolution.³⁵³ One of the defense attorneys, Arthur Garfield Hays, then made a speech to that effect, adding that evolution

341. *Id.*

342. LARSON, *supra* note 319, at 130.

343. *See, generally*, TENNESSEE EVOLUTION CASE, *supra* note 321.

344. LARSON, *supra* note 319, at 133.

345. *Id.* at 135.

346. *Id.*

347. TENNESSEE EVOLUTION CASE, *supra* note 321, at 138.

348. *Id.* at 135.

349. *Id.* at 137.

350. *Id.*

351. *Id.* at 145.

352. TENNESSEE EVOLUTION CASE, *supra* note 321, at 147.

353. *Id.* at 223-24.

is no more or less in conflict with the Bible than are the theories of light, gravity, and electricity. The Bible, he maintained, is an allegory and not meant to be taken literally.³⁵⁴ The judge also permitted the defense to insert into the record written statements of scientists who defended the theory of evolution and argued that it did not conflict with religion.³⁵⁵

In view of the near-exclusion of scientific testimony and the contrasting personal beliefs of the two celebrity attorneys, it was inevitable that most of the case would deal with the clash between science and religion as viewed by fundamentalist creationists. This conflict was played out in Darrow's well-known interrogation of Bryan with respect to his belief in a literal reading of Genesis.³⁵⁶ Darrow started off by jabbing at the scientific improbability of Bryan's beliefs about the whale swallowing Jonah,³⁵⁷ the sun standing still for Joshua,³⁵⁸ the Great Flood,³⁵⁹ and the age of the earth.³⁶⁰ In a typical exchange, Darrow pointed out scientific evidence indicating that human civilization pre-dates the 5,000-year period covered in the Bible.³⁶¹ Bryan replied by requiring scientists to produce evidence of the exact date of the earliest civilization, not just a range of possible dates.³⁶² He then averred, "I am satisfied by no evidence, that I have found, that would justify me in accepting the opinions of these men [scientists] against what I believe to be the inspired Word of God."³⁶³ Occasionally going on the offensive, he called Darrow "the greatest atheist or agnostic in the United States"³⁶⁴ and accused him of preferring any explanation that would cast doubt on the Bible.³⁶⁵

Bryan's most comprehensive contribution to the case took the form of a proposed speech that he never delivered. It describes evolution as "millions of guesses strung together,"³⁶⁶

354. *Id.*

355. *Id.* at 231-80.

356. *Id.* at 284-304.

357. TENNESSEE EVOLUTION CASE, *supra* note 321, at 285.

358. *Id.* at 285-87.

359. *Id.* at 288-89.

360. *Id.* at 296-98.

361. *Id.* at 289.

362. TENNESSEE EVOLUTION CASE, *supra* note 321, at 289.

363. *Id.*

364. *Id.* at 299.

365. *Id.* at 291, 299, 301.

366. *Id.* at 323.

ridicules rather than answers its claims,³⁶⁷ and offers as evidence generalized statements, such as the assertion that chemistry is "one of the greatest of the sciences,"³⁶⁸ and if evolution were true, "chemistry would have detected it."³⁶⁹ Even more passionately, it argued for a populist, majoritarian view of the educational system. Earlier, Bryan had characterized teachers as "hired servants"³⁷⁰ and asserted that "the parents who pay the salary have a right to decide what shall be taught,"³⁷¹ implying that the wings of the teachers' intellectual pride needed to be severely clipped by the common people.³⁷²

This element of anti-intellectualism was strikingly exemplified in the public displays accompanying the trial, in which "Self-proclaimed Holy Rollers exhorted the crowd to avoid education, which was the surest path to hell."³⁷³ One of them shouted,

I ain't got no learnin' and never had none. Glory be to the Lamb! Some folks work their hands off up to their elbows to give their young-uns education, and all they do is send their young-uns to Hell. . . . I ain't let no newspaper into my cabin for nigh unto a year since the Lord bathed me in His blood I never sinned enough to look in one of these here almanacs. . . . I've eight young-uns in the cabin and three in glory, and I know they're in glory because I never learned 'em nothin'.³⁷⁴

Celebrated journalist H.L. Mencken, who covered the trial for the *Baltimore Evening Sun*, commented repeatedly on the association of intellect with disbelief and amorality.³⁷⁵ He explained that

367. TENNESSEE EVOLUTION CASE, *supra* note 321, at 323-24.

368. *Id.* at 324.

369. *Id.*

370. WEBB, *supra* note 217, at 69.

371. *Id.*

372. *Id.*

373. JOAN DELFATTORE, WHAT JOHNNY SHOULDN'T READ: TEXTBOOK CENSORSHIP IN AMERICA 92 (1992).

374. DE CAMP, *supra* note 321, at 170.

375. H.L. MENCKEN, HOMO NEANDERTHALENSIS (1925), *available at* <http://www.positiveatheism.org/hist/menck01.htm> (last visited Oct. 4, 2007).

I have hitherto hinted that an Episcopalian down here in the coca-cola belt is regarded as an atheist. It sounds like one of the lies that journalists tell, but it is really an understatement of the facts. Even a Methodist, by Rhea County standards, is one a bit debauched by pride of intellect. It is the four Methodists on the jury who are expected to hold out for giving Scopes Christian burial after he is hanged.³⁷⁶

Although Bryan led the charge against intellectual elitism in general, he was particularly vitriolic toward scientists, of whom he had said, "A scientific soviet is attempting to dictate what shall be taught in our schools. . . . It is the smallest, the most impudent, and the most tyrannical oligarchy that ever attempted to exercise arbitrary power."³⁷⁷ In his proposed speech in *Scopes*, he claimed that more than half of scientists were atheists or agnostics³⁷⁸ and then asked how the people of Tennessee could "protect society, and even the church, from the deadening influence of agnosticism and atheism if they permit the teachers employed by taxation to poison the minds of the youth with this destructive doctrine?"³⁷⁹ The speech concluded with a ringing assertion of what Bryan saw as the conflict between evolution and religion: "The case," he wrote, "has assumed the proportions of a battle-royal between unbelief that attempts to speak through so-called science and the defenders of the Christian faith, speaking through the legislators of Tennessee."³⁸⁰

To no one's surprise, the jury found Scopes guilty³⁸¹ after deliberating for only nine minutes.³⁸² The court thereupon fined him \$100,³⁸³ leading to a reversal by the Supreme Court of Tennessee on the ground that the judge rather than the jury had determined the fine.³⁸⁴ Although the First Amendment did not yet apply to the states, the Tennessee Supreme Court also addressed the question of religion because the defense had appealed on the basis of a religion

376. H.L. MENCKEN, *Yearning Mountaineers' Souls Need Reconversion Nightly*, *Mencken Finds*, BALTIMORE EVENING SUN, July 13, 1925, available at <http://www.positiveatheism.org/hist/menck02.htm#SCOPES5> (last visited Oct. 4, 2007).

377. WEBB, *supra* note 217, at 69.

378. THE TENNESSEE EVOLUTION CASE, *supra* note 321, at 329.

379. *Id.* at 330.

380. *Id.* at 338.

381. *Id.* at 313.

382. THE TENNESSEE EVOLUTION CASE, *supra* note 321, at 312.

383. *Id.* at 313.

384. *Scopes*, 154 Tenn. at 120-21.

clause in the state constitution.³⁸⁵ "We are not able to see," the court wrote, "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."³⁸⁶ Of greater interest was a concurrence by Judge Chambliss, who stated that if he believed that the statute banned the teaching of any theory of evolution that differs from a literal meaning of Genesis, he would vote to strike it down.³⁸⁷ In distinguishing between atheistic and theistic evolution, Judge Chambliss asserted that as long as the door is left open to the possibility that God was the ultimate source of creation, the teaching of evolution should be legal.³⁸⁸

IV. AFTER INCORPORATION: REFINING THE DESIGN

Between *Scopes* and the next challenge to an antievolution statute, the legal landscape changed dramatically as a result of the U.S. Supreme Court's declaration in *Cantwell v. Connecticut*:

The fundamental concept of liberty embodied in [the Fourteenth] Amendment embraces the liberties guaranteed by the First Amendment. The First Amendment declares that Congress shall make no law respecting an establishment of religion or prohibiting the free exercise thereof. The Fourteenth Amendment has rendered the legislatures of the states as incompetent as Congress to enact such laws.³⁸⁹

This Section deals with four evolution cases that took place after *Cantwell: Epperson v. Arkansas*,³⁹⁰ which struck down a ban on the teaching of evolution; *Daniel v. Waters*,³⁹¹ which declared that teaching biblical creationism in public-school science classes was unconstitutional; and *McLean v. Arkansas*³⁹² and *Edwards v. Aguillard*,³⁹³ which forbade the teaching of the scientific proofs of creationism. Since Judge Jones made extensive use of these precedents in

385. DELFATTORE, FOURTH R, *supra* note 333, at 63-64.

386. *Scopes*, 154 Tenn. at 118.

387. *Id.* at 128-29.

388. *Id.* at 121-29.

389. *Cantwell v. Connecticut*, 310 U.S. 296 (1940).

390. *Epperson v. Arkansas*, 393 U.S. 97 (1968).

391. *Daniel v. Waters*, 515 F. 2d 485 (6th Cir. 1975).

392. *McLean v. Arkansas*, 529 F. Supp. 1255, 1260 (1982).

393. *Edwards v. Aguillard*, 482 U.S. 578; 107 S.Ct. 2573 (1986).

Kitzmiller,³⁹⁴ this section may serve to flesh out the nature of the cases on which he relied. More significantly, the facts and decisions in these cases shed light on the logic and purpose of the ID movement as represented by the actions of the Dover board.

It can be inferred from the foregoing brief descriptions of the four cases that the attempts of antievolutionists to influence public-school science instruction has followed a clear trajectory. The starting point was an attempt to uphold, in a post-*Cantwell* constitutional environment, a pre-*Cantwell* statute that forbade the teaching of evolution.³⁹⁵ When that statute was struck down because of a failure to show any credible secular reason for excluding evolution,³⁹⁶ antievolutionists initiated efforts to dilute the theory of evolution with instruction that was more consistent with their own views. The longstanding perception that Darwinism was "a mere guess"³⁹⁷ was put into law in the form of a disclaimer,³⁹⁸ a technique with which antievolutionists are still experimenting.³⁹⁹ The first attempt at a disclaimer failed, in part because the underlying statute explicitly mentioned Genesis.⁴⁰⁰ Antievolutionists then formulated a version of their beliefs, called creation-science, which did not mention the Bible but, instead, focused on selected scientific data that could be interpreted—or misinterpreted—to support creationism.

It was at this point that an approach known as "balanced treatment" came into play in an effort to require instruction in both creation-science and evolution if either were taught. The first attempt to enforce a state statute requiring balanced treatment was unsuccessful.⁴⁰¹ Some of the blame was placed on the statute's description of creation-science, which did not explicitly mention the Bible but did include such examples as a great flood.⁴⁰² When a revised version that omitted such examples was nonetheless struck down by the U.S. Supreme Court,⁴⁰³

394. See *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707 (M.D. Pa. 2005).

395. *Epperson*, 393 U.S. at 97.

396. *Id.*

397. *WEBB*, *supra* note 217, at 11.

398. *Daniel*, 515 F. 2d at 487.

399. See *infra* Section IV.

400. *Daniel*, 515 F. 2d at 487-89.

401. *McLean*, 529 F. Supp. at 1255.

402. General Acts, 73rd General Assembly, State of Arkansas, Act 590 of 1981. See MARCEL C. LA FOLLETTE, ed., CREATIONISM, SCIENCE, AND THE LAW: THE ARKANSAS CASE 16 (1983).

403. *Edwards v. Aguillard*, 482 U.S. 578; 107 S.Ct. 2573 (1986).

antievolutionists transitioned from creation-science to intelligent design as it appeared in *Kitzmiller*⁴⁰⁴ and in the disputes discussed in Section IV, below.

A. *Epperson v. Arkansas*

Although the first of the post-*Cantwell* evolution cases was not decided until 1968, the events leading up to it began shortly after *Scopes*, when an antievolution law was adopted by popular initiative in Arkansas.⁴⁰⁵ Declaring that "Doctrine of ascent or descent of man from lower order of animals [is] prohibited,"⁴⁰⁶ it threatened teachers in all state-supported schools and universities with a \$500 fine and loss of their positions for teaching evolution or using any textbook that did so.⁴⁰⁷ The lobbying campaign in favor of this legislation was led by the American Anti-Evolution Association, which

was open to everyone except 'Negros [sic], and persons of African decent [sic], Atheists, Infidels, Agnostics, such persons as hold to the theory of Evolution, habitual drunkards, gamblers, profane swearers, despoilers of the domestic life of others, desecrators of the Lord's Day, and those who would depreciate feminine virtue by vulgarly discussing relationships.'⁴⁰⁸

Arkansas Governor Orval Faubus, who was famous for having attempted to use the National Guard to prevent the desegregation of Central High School in Little Rock, "supported the antievolution law 'as a safeguard to keep way-out teachers in line.'"⁴⁰⁹

In 1965, the Arkansas Education Association looked for a teacher willing to act as a test case,⁴¹⁰ as the ACLU had done in *Scopes*. Susan Epperson,⁴¹¹ a second-year biology teacher at Central High School, volunteered. The new biology textbooks purchased by the school in 1965 included a reference to the possibility of common ancestry between humans and apes,⁴¹² and

404. *See infra*, Section I.

405. *Epperson*, 393 U.S. at 109 n.17.

406. *Id.* at 99 n.3.

407. *Id.*

408. MOORE, EVOLUTION, *supra* note 216, at 44.

409. *Id.* at 47.

410. *Id.*

411. *See* PETER IRONS, THE COURAGE OF THEIR CONVICTIONS: SIXTEEN AMERICANS WHO FOUGHT THEIR WAY TO THE SUPREME COURT 205-30 (1990).

412. *Epperson*, 393 U.S. at 99.

Epperson, who had been instructed to use this textbook, could technically have been fired for doing so.⁴¹³

Like the judge in *Scopes*, the trial court in *Epperson* refused to allow testimony about the scientific validity of either evolution or creationism.⁴¹⁴ Instead, the prosecutor in *Epperson* asserted that evolution is atheistic and materialistic and that teaching it would damage spiritual, moral, and patriotic values.⁴¹⁵ Following a trial that lasted for only two hours, the court found the law unconstitutional on the grounds that it was vague and arbitrary and did not demonstrate sufficient cause to override constitutional liberties.⁴¹⁶ The Arkansas Supreme Court issued a two-sentence opinion reversing the decision and upholding the law as a reasonable exercise of the state's authority over the public-school curriculum.⁴¹⁷ Nevertheless, the decision provided some support to the vagueness argument by questioning whether the law prohibited any explanation of evolution theory, or merely the assertion that it was true.⁴¹⁸

In his 2006 book, *How Free Can Religion Be?*, Randall Bezanson⁴¹⁹ analyzes the Supreme Court oral argument in *Epperson*.⁴²⁰ He notes that Don Langston, the Arkansas Attorney General, was clearly reluctant to defend the statute⁴²¹ and interpreted it in the way that was least likely to be upheld.⁴²² In response to the state supreme court's uncertainty about whether the law forbade all teaching of evolution or only the promotion of it, Langston stated that teachers would be subject to penalty if they even made their students aware of it.⁴²³ In Bezanson's words, "Langston, in effect, has handed [opposing counsel] the case on a silver platter."⁴²⁴ The Supreme Court subsequently struck down the Arkansas law on the ground that it

413. *Id.* at 100.

414. MOORE, EVOLUTION, *supra* note 216, at 52.

415. *Id.* at 53.

416. *Epperson*, 393 U.S. at 101.

417. MOORE, EVOLUTION, *supra* note 216, at 55.

418. *Epperson*, 393 U.S. at 99, n.7.

419. Bezanson is the David H. Vernon Professor of Law at the University of Iowa College of Law. University of Iowa Faculty, <http://www.law.uiowa.edu/faculty/randy-bezanson.php> (last visited Oct. 4, 2007).

420. RANDALL P. BEZANSON, HOW FREE CAN RELIGION BE? 84-93 (2006).

421. *Epperson*, 393 U.S. at 89.

422. *Id.* at 91.

423. *Id.* at 90.

424. *Id.* at 91.

"selects from the body of knowledge a particular segment which it proscribes for the sole reason that it is deemed to conflict with a particular religious doctrine; that is with a particular interpretation of the Book of Genesis by a particular religious group."⁴²⁵ While noting that unlike the Tennessee statute on which it was based, the Arkansas law did not explicitly mention Genesis,⁴²⁶ the Court found that "[T]here is no doubt that the motivation for the law was the same: to suppress the teaching of a theory which, it was thought, 'denied' the divine creation of man."⁴²⁷ This sentence was particularly relevant to *Kitzmiller* because it supports a finding that an antievolution policy may be found unconstitutional even in the absence of explicit references to religion.⁴²⁸

B. *Daniel v. Waters; McLean v. Arkansas*

Following *Epperson*, a new antievolution approach manifested itself in a Tennessee law that did not forbid the teaching of evolution, but did provide that any textbook dealing with "the origins or creation of man and his world"⁴²⁹ must state "that it is a theory . . . and is not to be represented to be scientific fact."⁴³⁰ The textbook must also give equal time and emphasis to the origins of man as "recorded in other theories, including, but not limited to, the Genesis account in the Bible."⁴³¹ Excluded from the Act was "The teaching of all occult or satanical beliefs of human origin."⁴³² The disclaimer about being a theory and not a fact, which applied to all secular explanations of origins, was not to be attached to the Bible.⁴³³

Like the *Kitzmiller* disclaimer, which described evolution as a flawed theory but expressed no reservations about ID,⁴³⁴ the Tennessee statute was found to undercut secular explanations while implying the inerrancy of the creationist alternative.⁴³⁵ Accordingly, the

425. *Id.* at 103.

426. *Epperson*, 393 U.S. at 108.

427. *Id.* at 109.

428. *Kitzmiller*, 400 F. Supp. 2d at 716.

429. *Daniel*, 515 F. 2d at 487.

430. *Id.*

431. *Id.*

432. *Id.*

433. *Id.*

434. *See supra* note 56 and accompanying text.

435. *Daniel*, 515 F. 2d at 489.

decision in *Daniel v. Waters* stated that "The result of this legislation is a clearly defined preferential position for the Biblical version of creation as opposed to any account of the development of man based on scientific research and reasoning."⁴³⁶ The decision also pointed out that the exclusion of occult or satanic views would entangle the state in religious controversies because members of various religions frequently accused adherents of other religions of being under the sway of the devil.⁴³⁷

Having failed either to exclude evolution from public-school science instruction or to include creationism in it, antievolutionists tried yet another new approach: the claim that scientific evidence supporting creationism, known as creation-science, should be given balanced treatment with evolution.⁴³⁸ The architect of this approach was Wendell Bird, who devised it while a law student at Yale.⁴³⁹ It was based on the premise that evolution is as religious as creationism because it promotes humanism and other liberal religious views, so that teaching evolution without creation-science prefers one religious view over the other.⁴⁴⁰ By contrast, teaching only the scientific evidence for both theories qualifies as science.⁴⁴¹

Bird's formulation was adopted by the Institute for Creation Research (ICR), which, according to its website, "equips believers with evidences of the Bible's accuracy and authority through scientific research, educational programs, and media presentations, all conducted within a thoroughly biblical framework."⁴⁴² Creationist Paul Ellwanger, founder of Citizens for Fairness in Education,⁴⁴³ produced a model "Balanced Treatment for Creation-Science and Evolution-Science Act" based on Bird's work. His organization led the lobbying effort, depicting the Act as a vindication of academic freedom over indoctrination.⁴⁴⁴ The cause was taken up by Reverend W.A. Blount in Little Rock, and a state senator who was a member of his congregation agreed to sponsor it.⁴⁴⁵ Like the Dover school board in *Kitzmiller*, advocates of the Balanced Treatment Act made no attempt to consult scientists, science educators, or higher state

436. *Id.* at 489.

437. *Id.* at 491.

438. SMOUT, *supra* note 224, at 111. *See* WEBB, *supra* note 217, at 155-58.

439. MOORE, EVOLUTION, *supra* note 216, at 73.

440. *Id.*

441. *Id.* at 74-75.

442. Institute for Creation Research, <http://www.icr.org/> (last visited Oct. 4, 2007).

443. *See* LA FOLLETTE, *supra* note 402, at 1.

444. MOORE, EVOLUTION, *supra* note 216, at 80.

445. *Id.* at 81.

authorities.⁴⁴⁶ And, like the Dover board, they promoted their proposal as an aid to academic freedom while also asserting that they did not understand exactly what creation-science means.⁴⁴⁷ The Act passed the Arkansas State Senate after fifteen minutes of debate, and it passed the House with no discussion.⁴⁴⁸ After signing the bill into law, the governor said, "This is a terrible bill, but it's worded so cleverly that none of us can vote against it if we want to come back here."⁴⁴⁹ From start to finish, the process of passing the bill took less than a week.⁴⁵⁰

Not surprisingly, the Little Rock chapter of the ACLU sued on behalf of religious leaders, parents, and teachers.⁴⁵¹ The lead plaintiff, Reverend Bill McLean, was the principal officer of the Presbyterian Church in Arkansas.⁴⁵² Organizations such as the Arkansas Education Association, the National Association of Biology Teachers, and the American Jewish Congress were also among the plaintiffs.⁴⁵³ The complaint argued that because the existence of a creator is neither provable nor disprovable by natural means, it does not fall within the realm of science.⁴⁵⁴ Like the critics of the Dover school board, the *McLean* plaintiffs protested that the bill had been rushed through without discussion of its scientific or educational merit.⁴⁵⁵ The Arkansas Attorney General, while admitting to some "personal qualms"⁴⁵⁶ about the Balanced Treatment Act, defended it on the grounds of fairness and academic freedom.⁴⁵⁷ He also rejected Bird's offer to participate in the case, and the judge later denied Bird's request to intervene on behalf of creation-scientists.⁴⁵⁸

446. *Id.*

447. *Id.*

448. *Id.* at 82.

449. MOORE, EVOLUTION, *supra* note 216, at 82.

450. *Id.*

451. For copies of documents in *McLean v. Arkansas*, together with articles on this case and related topics, see LA FOLLETTE, *supra* note 402.

452. Complaint at 1, *McLean v. Arkansas*, 529 F. Supp. 1255, 1260 (1982) (No. LR C 81 322).

453. *Id.* at 1-10.

454. *Id.* at 13.

455. *Id.* at 11.

456. MOORE, EVOLUTION, *supra* note 216, at 83.

457. *Id.*

458. *Id.* at 84-85.

The *McLean* trial was different from its predecessors and similar to *Kitzmiller* in that both sides presented expert witnesses in the areas of science, religion, and education.⁴⁵⁹ Like the ID witnesses in *Kitzmiller*, the creation-science advocates who testified in *McLean* conceded that their ideas would not fall within the mainstream understanding of science because, among other things, they were not testable or falsifiable.⁴⁶⁰ As the director of ICR had observed earlier, "'The Creator does not create at the whim of a scientist."⁴⁶¹ The plaintiffs' arguments also anticipated those of their *Kitzmiller* counterparts, including the assertion that

'[C]reation-science' does not follow the scientific method, and the 'scientific evidences' on which 'creation-science' relies are not scientific at all. Among other things, 'creation-science' ignores, distorts, and fails to take account of relevant data; it relies upon out-of-date and thoroughly discredited data and authorities; and it ignores, distorts and rewrites scientific principles, solely to give the appearance of support for pre-determined conclusions.⁴⁶²

In his decision, Judge William R. Overton challenged the either-or approach⁴⁶³ that later disturbed Judge Jones in *Kitzmiller*.⁴⁶⁴ "[T]he two-model approach of the creationists is simply a contrived dualism which has no scientific factual basis or legitimate educational purpose,"⁴⁶⁵ the decision states. According to this approach, "all scientific evidence which fails to support the theory of evolution is necessarily scientific evidence in support of creationism and is, therefore, creation science 'evidence' in support of [the Balanced Treatment Act]."⁴⁶⁶ Moreover, the court

459. LA FOLLETTE, *supra* note 402, at 7.

460. Roger Lewin, *Where Is the Science in Creation Science?*, 215 SCIENCE 142 (1982).

461. *Id.*

462. Plaintiffs' Preliminary Outline and Pre-Trial Brief in *McLean v. Arkansas*, in LA FOLLETTE, *supra* note 402, at 20-32 (excerpts). See GARY E. CRAWFORD, *Science as an Apologetic Tool for Biblical Literalists*, in LA FOLLETTE, *supra* note 402, at 105 (arguing that even if creation-science had some scientific validity, teaching it in public schools would nonetheless be unconstitutional because "The determinative question is not into which philosophical classification creation-science fits but whether the function (i.e., the purpose and effect) . . . is to promote belief in sectarian doctrine . . ."). See also JOHNSON, DARWIN, *supra* note 83, at 111 (stating that "The Arkansas statute was the work of unsophisticated activists who had no idea how to attract support from outside their own narrowly fundamentalist camp.").

463. *McLean*, 529 F. Supp., at 1260.

464. See *supra* note 211 and accompanying text.

465. *McLean*, 529 F. Supp., at 1266.

466. *Id.*

found, the quality of this alleged scientific evidence was by no means high. In the court's view, "The proof in support of creation science consisted entirely of efforts to discredit the theory of evolution through a rehash of data and theories which have been before the scientific community for decades,"⁴⁶⁷ and creation-science materials "simply omit Biblical references but the content and message remain the same."⁴⁶⁸

With respect to the long-running debate about whether religion and evolution necessarily conflict, Judge Overton wrote, "The theory of evolution assumes the existence of life and is directed to an explanation of how life evolved. Evolution does not presuppose the absence of a creator or God and the plain inference conveyed by [the statute] is erroneous."⁴⁶⁹ The court also expressed exasperation with Ellwanger, as Judge Jones later did with two of the Dover board members.⁴⁷⁰ In *McLean*, the behavior at issue was correspondence in which Ellwanger had admitted that creation-science is not science but opined that neither is evolution. In the court's view, this correspondence "shows an awareness that [the statute] is a religious crusade, coupled with a desire to conceal this fact."⁴⁷¹

C. *Edwards v. Aguillard*

After the Arkansas Balanced Treatment Act had been struck down in *McLean*,⁴⁷² creation-science advocates turned their attention to a revised version of the Act that had recently been signed into law in Louisiana.⁴⁷³ Unlike the Arkansas statute, the Louisiana legislation contained no religious references and defined creation-science only as "scientific evidences for creation and inferences from those scientific evidences,"⁴⁷⁴ without defining either creation or evolution. The law provided that if either creation-science or evolution-science were taught,

467. *Id.* at 1270.

468. *Id.* at 1271.

469. *Id.*

470. *See supra* note 215 and accompanying text.

471. *McLean*, 529 F. Supp., at 1261.

472. *McLean v. Arkansas*, 663 F.2d 47 (8th Cir. 1981). (*McLean* upheld the district court's denial of a motion to intervene by Arkansas Citizens for Balanced Education in Origins, represented by Bird. The motion to intervene questioned whether the attorney general would adequately defend the statute.) *See also* DELFATTORE, JOHNNY, *supra* note 373, at 94-95.

473. DELFATTORE, JOHNNY, *supra* note 373, at 94-95.

474. *Aguillard v. Treen*, 634 F. Supp. 426, 429 (1985). The case was later renamed *Aguillard v. Edwards*, because Edwin Edwards had succeeded David Treen as governor.

then the other had to be taught as well.⁴⁷⁵ In addition, a panel made up exclusively of creationists was to be formed to develop research services and teaching guides for creation-science. School boards were forbidden to discriminate against creationist teachers, but no mention was made of evolutionists.⁴⁷⁶ The stated purpose of the legislation was to "assure academic freedom by requiring the teaching of the theory of creation ex nihilo in all public schools where the theory of evolution is taught."⁴⁷⁷

Citizens for Fairness in Education, the advocacy group founded by Paul Ellwanger, persuaded State Senator Bill Keith to sponsor the Balanced Treatment Act.⁴⁷⁸ According to news accounts, Senator Keith was interested in the legislation because "his son's science teacher dismissed as unsatisfactory the boy's recitation that 'God created the world and God created Man.'"⁴⁷⁹ Unlike the Arkansas bill, which passed with almost no discussion, the Louisiana Balanced Treatment Act was debated at no fewer than seven legislative hearings.⁴⁸⁰ Although creation-science was not defined in the bill, the testimony included repeated assertions that it affirmed the act of a creator in bringing about all that exists.⁴⁸¹ Senator Keith also expressed the dualistic view that is characteristic of creationists: "One concept is that a creator however you define a creator was responsible for everything that is in this world. The other concept is that it just evolved."⁴⁸² He later stated, "There are two religions in this world and secular humanism is one of them. . . . [A]nd I would only remind you gentlemen that evolution is the cornerstone of that religion."⁴⁸³ In general, supporters of the bill expressed the opinion that:

There are two and only two scientific explanations for the beginning of life -- evolution and creation science. Both are bona fide 'sciences.' Both posit a theory of the origin of life and subject that theory to empirical testing. . . . Since there are only two possible explanations of the origin of life, any evidence that tends to disprove the theory of evolution necessarily tends to prove the theory of creation science, and vice versa.⁴⁸⁴

475. *Id.* at 430.

476. *Id.*

477. *Id.*

478. DELFATTORE, JOHNNY, *supra* note 373, at 95.

479. Paul Reidinger, *Creationism in the Classroom*, 72 A.B.A.J. 66 (1986).

480. *Edwards*, 482 U.S. at 610 (Scalia, J., dissenting)

481. *Id.* at 592 n.13.

482. *Id.* at 582 n.13.

483. Brief of Appellees at 18, *Edwards v. Aguillard*, 482 U.S. 578 (1987) (No. 85-1513).

484. *Edwards*, 482 U.S. at 622 (Scalia, J., dissenting).

Despite the assertion that creation-science and evolution-science represent the two possible explanations of human origins, some creationist witnesses appeared to doubt whether evolution deserved to be considered science. The chief expert witness, Dr. Edward Boudreaux,⁴⁸⁵ testified that:

The problem was that all these people [Darwin's associates] were professed atheists whose views of life were governed by social humanism. Hence, Darwin's purpose was not at all one of objective science, but rather to initiate a doctrine that appealed to the human intellect; to man's egotistical egocentricity and contrary to biblical teaching. . . . The whole issue ultimately escalated to the point that a large majority of scientists were 'brainwashed' into accepting evolution as a proven theory with overwhelming data in support of it.⁴⁸⁶

His prepared statement explicitly stated that "[E]volution can in no way be accepted as authentic science."⁴⁸⁷

The testimony also covered other major themes that later arose in *Kitzmiller*, such as the allegation that evolution is anti-God;⁴⁸⁸ the assumption that because Genesis is inerrant, it follows that true science must bear it out;⁴⁸⁹ and the argument that parents have a right to pass on their beliefs about the origin of species to their children.⁴⁹⁰ Even the obligatory monkey joke made its appearance: "It is almost obvious that you make monkeys out of men, but you can't make men out of monkeys."⁴⁹¹

The Balanced Treatment Act was not, of course, unopposed. The future lead plaintiff, Don Aguillard, worried that biology teachers would stop discussing evolution in order to avoid having to present creationism.⁴⁹² Senator Keith appeared to validate that concern when he stated,

485. Boudreaux is Professor Emeritus of Chemistry and Chemical Physics at the University of New Orleans. http://www.youngearth.org/Past_Meetings/2005_11_E_Boudreaux.htm (last visited Oct. 28, 2007).

486. Brief for Appellees at 9, *Edwards v. Aguillard* 482 U.S. 578 (1987) (No. 85-1513).

487. Brief for People for the American Way et al., as Amicus Curiae at 20, *Edwards v. Aguillard*, 482 U.S. 578 (1987) (No. 85-1513).

488. Brief for Appellees at 11, *Edwards v. Aguillard*, 482 U.S. 578 (1987) (No. 85-1513).

489. *Id.* at 17.

490. *Id.* at 13.

491. *Id.* at 18.

492. MOORE, *EVOLUTION*, *supra* note 216, at 99.

"My preference would be that neither [creationism nor evolution] be taught."⁴⁹³ Reverend James Stovall, a United Methodist minister and director of the Louisiana Inter-Church Conference, protested that "There is no scientific creationism There's no body of scientific data to support it. It's pure humbug. Propaganda."⁴⁹⁴ State Senator Sidney Nelson spoke of the pressure brought to bear on legislators by fundamentalists, and he accused Keith of seeking "to have something taught by force of law that can't win on its own merits."⁴⁹⁵ The bill was also opposed by education groups, including the Louisiana Science Teachers Association.⁴⁹⁶ Nevertheless, it passed with large majorities in both Houses of the Louisiana state legislature, and Governor Donald C. Treen signed it into law.⁴⁹⁷

ACLU attorneys promptly filed suit on behalf of parents, teachers, and religious and educational leaders.⁴⁹⁸ The state board of education and the Orleans Parish school board were originally defendants, but they later joined the plaintiffs.⁴⁹⁹ The case, *Aguillard v. Treen*, was renamed *Aguillard v. Edwards* after Edwin Edwards succeeded Treen as governor in 1984. Unlike the Arkansas attorney general, the attorney general of Louisiana was happy to designate Wendell Bird a special assistant attorney general to assist with the case,⁵⁰⁰ but Bird achieved no better results than had the Arkansas attorney general whom he so bitterly criticized. The district court held that the Balanced Treatment Act was unconstitutional,⁵⁰¹ and the Fifth Circuit affirmed.⁵⁰²

The Appellants' Jurisdictional Statement to the Supreme Court included several of the elements that had by now become characteristic of the antievolution movement. First, it fell back on badly outdated scientific sources, such as the work of Louis Agassiz, to demonstrate the

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

494. REIDINGER, *supra* note 479.

495. Al Kamen, *Creationism Case Raises Issues of Faith, "Freedom,"* WASHINGTON POST, Dec. 10, 1986, at A1.

496. Brief of People for the American Way et al., as Amicus Curiae at 23, *Edwards v. Aguillard*, 482 U.S. 578 (1987) (No. 85-1513).

497. DELFATTORE, JOHNNY, *supra* note 373, at 95.

498. MOORE, EVOLUTION, *supra* note 216, at 99.

499. *Edwards*, 482 U.S. at 580.

500. DELFATTORE, FOURTH R, *supra* note 333, at 95. See MOORE, EVOLUTION, *supra* note 216, at 99.

501. *Aguillard v. Treen*, 634 F. Supp. 426 (E.D. La. 1985).

502. *Aguillard v. Edwards*, 765 F.2d 1251 (5th Cir. 1985).

acceptability of creationism as science.⁵⁰³ Second, it denied that creation-science necessarily entails a creator,⁵⁰⁴ despite the testimony to the contrary presented in the legislative hearings. Third, it misrepresented the work of evolutionists as support for creation-science. For instance, paleontologist Stephen Jay Gould⁵⁰⁵ was cited as confirming "systematic gaps" in the fossil record and "abrupt appearance of fossil categories."⁵⁰⁶ Gould protested that when paleontologists speak of "abrupt" appearance, they mean centuries or millennia, not moments, as implied by the creationist model.⁵⁰⁷ As is also characteristic of the antievolution movement, Gould's clarification was ignored. Twenty years later, expert witness Kevin Padian had to rebut a similar misinterpretation of Gould's work by the ID proponents in *Kitzmiller*.⁵⁰⁸

In their Motion to Affirm, the Appellees countered that "No profession of secular purpose, no incantation of the word 'science,' can make the religious content of the Creationism Act disappear."⁵⁰⁹ Like the *Kitzmiller* plaintiffs, the Appellees in *Edwards* protested that creationists demanded a ridiculous standard of proof from evolutionists⁵¹⁰ while offering none themselves.⁵¹¹ Among the many amici curiae briefs filed on behalf of the appellees, the most relevant to this Article is that of the National Academy of Sciences, which opened with this salvo: "Creation-science is not science. It cannot meet any of the criteria of science. Indeed, it fails to display the most basic characteristic of science: reliance upon naturalistic explanations."⁵¹²

The Supreme Court agreed. In its view, the stated secular purpose of the Balanced Treatment Act—the furtherance of academic freedom—did not stand up to examination.⁵¹³

503. Jurisdictional Statement at 7, *Edwards v. Aguillard*, 482 U.S. 578 (1987) (No. 85-1513).

504. *Id.* at 8.

505. Ironically, or at least coincidentally, Gould, who was an outspoken atheistic evolutionist, held the Alexander Agassiz Professor of Zoology chair at Harvard, named for the son of Louis Agassiz. See <http://www.hno.harvard.edu/gazette/2002/05.16/99-gould.html> (last visited Oct. 28, 2007).

506. Jurisdictional Statement at 11, *Edwards v. Aguillard*, 482 U.S. 578 (1987) (No. 85-1513).

507. KAMEN, *supra* note 495, at A1.

508. PADIAN, *supra* note 73, at 13. See also MILLER, *supra* note 92, at 83-92.

509. Mot. to Affirm, at 7, *Edwards v. Aguillard*, 482 U.S. 578 (1987) (No. 85-1513).

510. Mot. to Affirm, at 8, *Edwards v. Aguillard*, 482 U.S. 578 (1987) (No. 85-1513).

511. *Id.* at 15-17.

512. Brief for the National Academy of Sciences, as Amicus Curiae at 4, *Edwards v. Aguillard*, 482 U.S. 578 (1987) (No. 85-1513).

513. *Edwards*, 482 U.S. at 586.

Teachers in Louisiana had already been free to teach all scientific evidence about origins,⁵¹⁴ and "The goal of providing a more comprehensive science curriculum is not furthered either by outlawing the teaching of evolution or by requiring the teaching of creation science."⁵¹⁵ In determining that the true purpose of the Act was "to change the science curriculum of public schools in order to provide persuasive advantage to a particular religious doctrine that rejects the factual basis of evolution in its entirety,"⁵¹⁶ the decision gave significant weight to the legislative history, particularly the statements of the Act's sponsor.⁵¹⁷ The Court also went beyond the language of the Act to seek information about the definitions and goals of creation-science as expressed by national advocacy groups.⁵¹⁸ As an example, the Court noted that ICR, with which several witnesses were affiliated,⁵¹⁹ stated as a goal the "revival of belief in special creation as the true explanation of the origin of the world"⁵²⁰ by means of the "development of new methods for teaching scientific creationism in public schools."⁵²¹ Not surprisingly, Judge Jones's use of this precedent in *Kitzmiller* dismayed the attorneys for the Dover school board, who had argued vehemently that the court should focus on the facial language of the disclaimer and the board's denial of knowledge about what ID means.

V. THE MORE THINGS CHANGE, THE MORE THEY STAY THE SAME

In the wake of *Edwards*, antievolutionists had to deal with the fact that the simple omission of religious terminology or biblical references was not sufficient to allow a statute to hold up in court.⁵²² What was needed was a formulation that would be sufficiently distant from religion to pass constitutional muster without abandoning the core values that the movement

514. *Id.* at 587.

515. *Id.* at 586.

516. *Id.* at 596.

517. *Id.* at 587, 590-93.

518. *Id.* at 602.

519. *Edwards*, 482 U.S. at 601.

520. *Id.* at 602.

521. *Id.*

522. *Id.* at 596.

sought to promote. As Eugenie C. Scott⁵²³ has pointed out,⁵²⁴ one passage of *Edwards* seems to suggest a possible strategy:

We do not imply that a legislature could never require that scientific critiques of prevailing scientific theories be taught In a similar way, teaching a variety of scientific theories about the origins of humankind to schoolchildren might be validly done with the clear secular intent of enhancing the effectiveness of science instruction.⁵²⁵

To meet these criteria, antievolutionists turned from creation-science to ID,⁵²⁶ which its opponents call "the new creationism."⁵²⁷ This approach focuses on attacking the scientific validity of evolution,⁵²⁸ asserting that it is erroneously presented as fact when it "is based not upon any incontrovertible empirical evidence, but upon a highly controversial philosophical presupposition."⁵²⁹ William A. Dembski, Research Professor in Philosophy at Southwestern Baptist Theological Seminary⁵³⁰ and a leading advocate of ID, offers this definition: "Intelligent design studies patterns in nature that are best explained as a result of intelligence. It identifies

523. Scott is a physical anthropologist who serves as Executive Director of the National Center for Science Education. See <http://www.natcensci.ed.org/ourstaff.asp> (last visited Oct. 28, 2007).

524. EUGENIE C. SCOTT, *EVOLUTION VS. CREATIONISM* 114 (2004).

525. *Edwards*, 482 U.S. at 593-94.

526. SCOTT, *supra* note 524, at 113-14. See *Kitzmiller*, 400 F. Supp. 2d at 721.

527. See SCOTT, *supra* note 524, at 113; MICHAEL RUSE, *THE EVOLUTION WARS: A GUIDE TO THE DEBATES* 267 (2000); Philip Kitcher, *Born-Again Creationism*, in *INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS: PHILISOPHICAL, THEOLOGICAL, AND SCIENTIFIC PERSPECTIVES* 281 (2000) (using the abbreviation "neo-creo"); MATTHEW J. BRAUER and DANIEL R. BRUMBAUGH, *Biology Remystified: The Scientific Claims of the New Creationism*, *INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS: PHILISOPHICAL, THEOLOGICAL, AND SCIENTIFIC PERSPECTIVES* 289 (2000).

528. See Phillip E. Johnson, *Evolution as Dogma: The Establishment of Naturalism*, in *INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS: PHILISOPHICAL, THEOLOGICAL, AND SCIENTIFIC PERSPECTIVES*, 59-76 (2000); JOHNSON, *DARWIN*, *supra* note 83; Dembski, ed., *Uncommon Dissent*, *supra* note 94.

529. Johnson, *DOGMA*, *supra* note 528, at 60.

530. See William A. Dembski, <http://www.designinference.com/biosketch.htm> (last visited Oct. 28, 2007).

those features of objects that reliably signal the action of an intelligent cause."⁵³¹ As evidenced in *Kitzmiller*, most of the specific evidence offered in support of ID consists of attacks on evolution, such as the irreducible complexity argument associated with Michael Behe⁵³² and allegations of gaps in the fossil record.⁵³³ Affirmative proofs of ID are relatively sparse, in part because ID affirms a principled reliance on induction and analogy rather than on replicable evidence. Among the affirmative proofs that have been offered is the specified complexity argument associated with Dembski, which states that the existence of mathematically significant sequences of related information is evidence of intelligence.⁵³⁴ Unlike creationism and creation-science, ID does not insist upon teaching that the Earth is only a few thousand years old,⁵³⁵ and it de-emphasizes arguments specifically associated with the Bible, such as a worldwide flood.⁵³⁶

In addition to reformulating their ideas in a way that speaks of science rather than of religion, antievolutionists now de-emphasize efforts to mandate instruction and focus instead on disclaimers similar to the one used in *Kitzmiller*. Such disclaimers, they assert, do not promote any ideas; indeed, they do not teach anything at all, but merely make students aware of certain facts. As an example, Superintendent Richard Nilsen testified in *Kitzmiller* that reading the disclaimer to the students would not constitute teaching⁵³⁷ because it does not involve objectives,

531. William A. Dembski, Expert Witness Report: The Scientific Status of Intelligent Design, (Mar. 29, 2005) (withdrawn before deposition), *available at* http://www.designinference.com/documents/2005.09.Expert_Report_Dembski.pdf (last visited Oct. 28, 27007).

532. See BEHE, *supra* note 88, in general.

533. DAVIS, PANDAS, *supra* note 26, at 91-114. See Cornelius G. Hunter, *Why Evolution Fails the Test of Science*, UNCOMMON DISSENT, *supra* note 94, 205-08; JOHNSON, DARWIN, *supra* note 83, at 45-62.

534. See Dembski, Expert Witness Report, *supra* note 531, at 3. See also WILLIAM A. DEMBSKI, THE DESIGN INFERENCE: ELIMINATING CHANCE THROUGH SMALL PROBABILITIES (1998); WILLIAM A. DEMBSKI, NO FREE LUNCH: WHY SPECIFIED COMPLEXITY CANNOT BE PURCHASED WITHOUT INTELLIGENCE (2002). For rebuttal of Dembski's ideas, see Jeffrey Shallit & Wesley Elsberry *Playing Games with Probability: Dembski's Complex Specified Information*, in WHY INTELLIGENT DESIGN FAILS: A SCIENTIFIC CRITIQUE OF THE NEW CREATIONISM 121-38 (2004); Mark Perahk, *There Is a Free Lunch After All: William Dembski's Wrong Answers to Irrelevant Questions*, in WHY INTELLIGENT DESIGN FAILS: A SCIENTIFIC CRITIQUE OF THE NEW CREATIONISM 153-71 (2004).

535. Davis writes that "The vast majority of the known animal phyla [over 95%] are either known or believed to have appeared within a geologically 'brief' period [estimates range from 10 to 40 million years]". DAVIS, PANDAS, *supra* note 26, at 92

536. DAVIS, PANDAS, *supra* note 26, generally.

537. Transcript, *supra* note 6, Day 14 PM.

outcomes, materials, and assessment.⁵³⁸ Asked whether he would consider it teaching to tell students that William the Conqueror invaded England in 1066, that Thomas Jefferson wrote the Declaration of Independence, or that John Wilkes Booth killed Lincoln, he replied in the negative.⁵³⁹

Although an attempt to use disclaimers in the 1970s had been unsuccessful, its failure in *Daniel v. Waters* was attributed to the underlying legislation's explicit mention of Genesis.⁵⁴⁰ Accordingly, post-*Edwards* antievolutionists adapted the disclaimer strategy to address a different content. This initiative is illustrated by two lawsuits: *Freiler v. Tangipahoa Parish Board of Education*,⁵⁴¹ which preceded *Kitzmiller*; and *Selman v. Cobb County*,⁵⁴² which was decided a few months after *Kitzmiller*.

A. *Freiler v. Tangipahoa Parish Board of Education*

The events leading up to *Freiler* were not entirely dissimilar to those in *Kitzmiller*. In December 1993, the policy committee of the Tangipahoa Parish School Board rejected a proposal to allow, among other things, the teaching of creation-science and the inclusion of prayer in graduation ceremonies.⁵⁴³ Nevertheless, the proposal was introduced at a full board meeting in March 1994, with the same result.⁵⁴⁴ The following month, board member E.F. (Jake) Bailey brought a proposal for an antievolution disclaimer before the board without following the usual practice of first going through the policy committee.⁵⁴⁵ The proposed disclaimer included an explicit reference to the biblical account of creation, and a board member suggested deleting it because there are many different religious accounts of the origins of life.⁵⁴⁶ Bailey replied that removing the mention of the Bible would have "'guttled the basic message of this document.'"⁵⁴⁷ He added,

538. *Id.*

539. *Id.*

540. *Daniel v. Waters*, 515 F.2d 485 (6th Cir. 1975).

541. *Freiler v. Tangipahoa Parish Bd. of Educ.*, 975 F. Supp. 819 (1997).

542. *Selman v. Cobb*, 449 F.3d 1320 (11th Cir. 2006)

543. *Freiler*, 975 F. Supp. at 821-22.

544. *Id.* at 822.

545. *Id.*

546. *Id.*

547. *Id.* at 823.

We can talk about Hindu, we can talk about Mohammed, we can talk about all this other stuff, but there are two basic concepts out there Now, I happen to feel that a large, large percentage, perhaps 95 percent, fall into the category of believing in divine creation. But the whole point is that those [biblical creation and evolution] are the two main concepts⁵⁴⁸

At the board meeting, future lead plaintiff Herb Freiler accused Bailey of trying "to foist your own fundamentalist Christian viewpoint on the citizens of this parish at great embarrassment to many of us."⁵⁴⁹ Bailey responded that teaching evolution without mentioning creation was comparable to teaching about dictatorial forms of government without mentioning democracy.⁵⁵⁰ Most students were taught divine creation at home, and if told "that they are a mere accident . . . the kid is thinking and saying, 'Wait a minute. This doesn't coincide with what my parents taught me. This is not what I learned in Sunday school.'"⁵⁵¹ Bailey concluded that if students believed that life and matter had originated by accident, then "Human lives are not important, that means that this thing of abortion is— gives more validity to that [and the] crime rate is sweeping our nation, sweeping our state, you see, it gives credibility there because life is not important because we are just here by accident"⁵⁵²

By a vote of 5-4, the school board declared that immediately prior to any instruction in evolution, teachers were to read aloud the following disclaimer:

It is hereby recognized by the Tangipahoa Board of Education, that the lesson to be presented, regarding the origin of life and matter, is known as the Scientific Theory of Evolution and 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.

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 or 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.⁵⁵³

548. *Id.*

549. Thomas Vinciguerra, *Word for Word Religion in the Classroom; in Louisiana Parish, Dim Echoes of the "Monkey Trial,"* N.Y. TIMES, Jun. 25, 2000, § 4 at 7.

550. *Freiler*, 975 F. Supp., at 823.

551. *Id.*

552. *Id.* at 824.

553. *Id.* at 821.

The ACLU filed suit on behalf of Freiler and two other parents, who chose to remain anonymous.⁵⁵⁴ They prevailed in the district court, which observed that although board members testified that the purpose of the policy was to promote critical thinking and the examination of alternatives, those goals had not been mentioned during the board meetings. Rather, the board had focused on the concern "that schoolchildren should not be taught evolution as fact, that they would be confused by the teaching of evolution in public school because most of the children are taught the Biblical theory of creation or creation by a Higher Being in Sunday School."⁵⁵⁵ Moreover, the stated secular purposes of the policy appeared pointless because teachers and students already had the right to consider all scientific theories, and critical thinking was encouraged in all classes.⁵⁵⁶ Only with respect to evolution did the board "announce its intention *not to influence or dissuade* whatever opinion the student may already hold."⁵⁵⁷ Observing that "As hard as it tries to, this Court cannot glean any secular purpose to this disclaimer,"⁵⁵⁸ the court declared that the policy failed the purpose prong of the *Lemon* test.⁵⁵⁹

The Court of Appeals for the Fifth Circuit found that the policy did not advance the board's stated purpose of promoting critical thinking because it was aimed at ensuring that children continued to believe whatever they had been taught at home.⁵⁶⁰ It did, however, further two other stated secular purposes: to eschew orthodoxy of belief, and to avoid offending parents.⁵⁶¹ Noting that even one valid secular purpose would be sufficient,⁵⁶² the court found that the policy passed the purpose prong of *Lemon*.⁵⁶³ Nevertheless, the appeals court struck down the policy on the ground that although it had at least one secular purpose, its primary effect was "to protect and maintain a particular religious belief."⁵⁶⁴ The disclaimer, in the court's view,

554. See VINCIGUERRA, *supra* note 549, at §4 at 7. By coincidence, one plaintiff chose the pseudonym of John Jones, the name of the judge in *Kitzmiller*.

555. *Freiler*, 975 F. Supp. at 824.

556. *Id.* at 828.

557. *Id.* (emphasis is in the original).

558. *Id.* at 829.

559. *Lemon v. Kurtzman*, 403 U.S. 602, 612-13 (1971) (declaring that a government activity is unconstitutional if it lacks a secular purpose, has a primary effect that either advances or inhibits religion, or excessively entangles government with religion).

560. *Freiler v. Tangipahoa*, 185 F. 3d 337, 345 (5th Cir. 1999).

561. *Id.*

562. *Id.* at 344.

563. *Id.* at 345.

564. *Id.* at 346.

not only denied endorsement of evolution, but actively encouraged students to consider a religious alternative.⁵⁶⁵ The Supreme Court denied certiorari.⁵⁶⁶ A dissent written by Justice Antonin Scalia and joined by Chief Justice William Rehnquist and Justice Clarence Thomas argued that the reference to the Bible was merely an example and that the facial language of the disclaimer did not justify the conclusion that the effect was to advance religion.⁵⁶⁷ "We stand by in silence," the dissent protested, "while a deeply divided Fifth Circuit bars a school district from even suggesting to students that other theories besides evolution—including, but not limited to, the Biblical theory of creation -- are worthy of their consideration."⁵⁶⁸

In finding the Tangipahoa disclaimer unconstitutional, the Fifth Circuit panel declined to offer any opinion about disclaimers as such. "We limit our analysis to the precise language of the [Tangipahoa] disclaimer and the context in which it was adopted," the decision states. "We 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."⁵⁶⁹ Not surprisingly, antievolutionists continue to explore that strategy for introducing the concept of an intelligent creator into science instruction. *Kitzmiller* is one example, as is a somewhat similar case that arose in Georgia at about the same time.

B. *Selman v. Cobb County*

In 1995, the Cobb County school board enacted a policy regarding "the subject of the origin of human species";⁵⁷⁰ the word "evolution" was not mentioned. Beginning with the phrase "In respect for the family teachings of a significant number of Cobb County citizens,"⁵⁷¹ the policy provided that no student could be compelled to study the subject of origins; it could not be taught in elementary or middle schools; no course addressing it could be required for graduation; elective courses and library collections dealing with it "shall include, but not be limited to, the creation theory";⁵⁷² and any elective that addressed it had to be identified as such in all course selection materials.⁵⁷³ In practice, some science teachers avoided the topic altogether despite its

565. *Id.*

566. *Tangipahoa v. Freiler*, 530 U.S. 1251 (2000).

567. *Id.* at 1253-54.

568. *Id.* at 1255.

569. *Freiler*, 185 F.3d at 342.

570. *Id.*

571. *Selman v. Cobb County Bd. of Educ.*, 390 F. Supp. 2d 1286, 1290 (N.D. Ga. 2005).

572. *Id.*

573. *Id.*

presence in the state standards, and "it was common practice in some science classes for textbook pages containing material on evolution to be removed from the students' textbooks."⁵⁷⁴

Six years later, a textbook adoption committee recommended revising the district's policy in order to bring Cobb County into compliance with state standards for instruction in evolution. To this end, the committee recommended the same biology text that was at issue in *Kitzmiller: Biology*, by Kenneth Miller and Joseph Levine.⁵⁷⁵ School officials supported the recommended changes,⁵⁷⁶ but according to the district court, approximately 2300 residents signed a petition asking the school board to "ensure the presentation of all theories regarding the origin of life and place a statement prominently at the beginning of the text that warned students that the material on evolution was not factual but rather was a theory."⁵⁷⁷ The school board responded by composing a sticker to be attached to any biology book that mentions evolution: "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."⁵⁷⁸ The board then adopted the recommended textbooks on condition that the stickers be used.⁵⁷⁹ The school board minutes provide no account of this discussion, and the board enunciated no purpose at the time.⁵⁸⁰ Board members later denied that they had had a religious purpose or had intended to open the door to teaching creationism or ID.⁵⁸¹ The board also revised its policy on origins of life to say, among other things, that teachers should "respectfully focus discussion on scientific subject matter" and "distinguish between scientific and philosophical or religious issues. It may be appropriate to acknowledge that science itself has limits, and is not untended [sic] to explain everything, and that scientific theories of origin and religious belief are not necessarily mutually exclusive."⁵⁸² The policy also forbids teachers from coercing students into avowing or disavowing any religious beliefs.⁵⁸³

574. *Id.*

575. *Id.* at 1290-91.

576. *Id.* at 1291.

577. *Id.* at 1291-92. The appeals court later queried the district court's evidence for this statement; see below.

578. *Id.* at 1292.

579. *Id.*

580. *Id.*

581. *Id.* at 1292-93.

582. *Id.* at 1296.

583. *Id.*

Like the court in *Freiler*, the *Selman* court found no evidence of a religious purpose in the board's actions⁵⁸⁴ but struck down the policy on the ground that its primary effect was to advance religion.⁵⁸⁵ In the court's view, the long history of religious opposition to evolution justified the conclusion that the sticker supported religious opposition to that one particular scientific topic.⁵⁸⁶ More specifically, the court found, the statement that evolution is theory and not fact is misleading and aligns the school district with Christian fundamentalists.⁵⁸⁷ The court also declared that the policy violated the entanglement prong of *Lemon*⁵⁸⁸ because "The School Board has effectively improperly entangled itself with religion by appearing to take a position."⁵⁸⁹

In view of creationist allegations about the fossil record, it is hard to tell whether the U.S. Court of Appeals for the Eleventh Circuit had its tongue in its judicial cheek when it used the phrase "significant evidentiary gaps"⁵⁹⁰ to describe the record that went up on appeal. Be that as it may, the court observed that "Whether we should reverse or affirm the judgment depends on the evidence that was before the district court, and we cannot tell from the record what that evidence was."⁵⁹¹ The lawyers acknowledged that material had been omitted but could not say what it was, and "at least some key findings of the district court are not supported by the evidence that is contained in the record."⁵⁹² The district court had, for instance, mentioned a 2300-signature petition that appeared nowhere in the record; the only petition in evidence had been presented months later.⁵⁹³ The appeals court also questioned the district court's understanding of the *Lemon* test, noting that it "apparently believ[ed] that any action with a forbidden religious effect also constituted excessive entanglement."⁵⁹⁴ Accordingly, the appeals court vacated the decision and remanded the case to the district court "to conduct new evidentiary proceedings and to enter a new set of findings based on evidence in a record that we

584. *Id.* at 1300-05.

585. *Id.* at 1306, 1312.

586. *Id.* at 1306-07, 1309.

587. *Id.* at 1308.

588. *See supra* note 539.

589. *Selman*, 390 F. Supp. 2d at 1312.

590. *Selman v. Cobb County*, 449 F.3d 1320, 1322 (11th Cir. 2006).

591. *Id.* at 1322.

592. *Id.*

593. *Id.* at 1332-33.

594. *Id.* at 1328.

will be able to review."⁵⁹⁵ In December 2006, the case was settled out of court when Cobb County officials dropped their attempts to insert evolution-related disclaimers into textbooks.⁵⁹⁶

C. Insert Your Favorite Toto Joke

The final dispute to be considered in this Article differs from the others in that it is not a lawsuit and involves neither a state statute nor a local school district policy. Rather, it focuses on the development of the state standards that drive local instruction. In *Kitzmiller* and *Selman*, a persuasive argument for teaching evolution in local high schools was that the state standards mandated it. But suppose they did not?

The dispute over evolution in the Kansas state standards began, as *Selman* did, with an attempt to strengthen the teaching of evolution. In 1997, the Kansas State Board of Education appointed a committee of twenty-seven scientists, science educators, and parents to develop new state standards in science. Basing its work on the National Science Education Standards put out by NAS,⁵⁹⁷ the Science Education Standards Writing Committee developed standards that treated evolution as an organizational principle of science and emphasized it accordingly.⁵⁹⁸ The committee developed several draft proposals and took them to public hearings throughout the state before presenting them to the board.⁵⁹⁹ When it did so, the board chairwoman was dismayed. "I don't think we expected creationism to be in there," she said, "but there was just page after page of evolution."⁶⁰⁰ Another board member, Steve Abrams, denied that the evidence supporting evolution theory justified such prominent treatment.⁶⁰¹ After contacting the Creation Science Association for Mid-America,⁶⁰² he suggested reducing the coverage of evolution and adding creation-science, with both evolution and creation-science to appear on the

595. *Id.* at 1322.

596. <http://www.au.org/site/News2?abbr=pr&page=NewsArticle&id=8797> (last visited Jan. 14, 2008).

597. See National Academies Press, <http://www.nap.edu/readingroom/books/nses/> (last visited Oct. 28, 2007).

598. Brad Williamson, *I Teach, Therefore I Worry, in Kansas*, WASHINGTON POST, Aug. 29, 1999, at B1.

599. *Id.* See Colleen M. McGrath, *Redefining Science to Accommodate Religious Beliefs: The Constitutionality of the 1999 Kansas Science Education Standards*, 45 N.Y.L. SCH. L. REV. 297, 310-11.

600. Scott Canon, *Kansas Board Split on Whether Creationism Belongs in Schools*, BOSTON GLOBE, June 13, 1999 at A3.

601. *Id.*

602. Creation Science Association, <http://www.csama.org/> (last visited Oct. 28, 2007).

state tests.⁶⁰³ Among other things, he objected that no explanation of the origins of life can be considered scientific because no such theory can be replicated and observed.⁶⁰⁴

The board considered Abrams' proposal in June 1999 and split 5-5.⁶⁰⁵ Abrams then withdrew his draft⁶⁰⁶ and convened an ad hoc subcommittee of three board members to revise the proposal of the science committee, which refused to do so itself.⁶⁰⁷ According to a science committee member, "[Abrams'] document greatly reduced and misrepresented the concept of evolution and related science topics. It omitted all mention of geologic time, for example, and radically structured cosmology."⁶⁰⁸ Nevertheless, in August 1999, the board voted 6-4 "to embrace new standards for science curricula that eliminate evolution as an underlying principle of biology and other sciences."⁶⁰⁹ More broadly, the revised standards changed the NAS definition of a scientific theory as "a well-substantiated explanation of some aspect of the natural world that can incorporate facts, laws, inferences and tested hypotheses (e.g., atomic theory, evolutionary theory)"⁶¹⁰ to omit "well-substantiated."⁶¹¹ A creationist activist hailed the decision because "You can't go into the laboratory or the field and make the first fish. When you tell students that science has determined [evolution to be true], you're deceiving them."⁶¹² On the other side of the debate, the ACLU of Kansas and Western Missouri threatened a lawsuit if religious views of origins were taught.⁶¹³

Unlike some states, Kansas does not explicitly require school districts to teach in accord with the state standards, although it does hold them responsible for their students' performance

603. Canon, *supra* note 600, at A3.

604. McGrath, *supra* note 599, at 312.

605. Canon, *supra* note 600, at A3.

606. McGrath, *supra* note 599, at 312.

607. Williamson, *supra* note 598, at B1; McGrath, *supra* note 599, at 314.

608. McGrath, *supra* note 599, at 314.

609. Carey Gilliam, *Kansas Eliminates Evolution from Public School Curricula*, WASHINGTON POST, Aug. 12, 1999, at A13.

610. McGrath, *supra* note 599, at 318.

611. *Id.*

612. *Id.*

613. Press Release, ACLU of Kansas and Western Missouri, ACLU Urges Kansas Public Schools to Reject Religion-Based Evolution Teachings in Science Classes (Aug. 13, 1999).

on tests based on those standards.⁶¹⁴ Some local school officials and teachers therefore asserted that they would not change the way evolution was taught in their districts and classrooms, and the state education commissioner said that the inclusion of evolution in science textbooks would ensure its continued presence in the curriculum.⁶¹⁵ Opponents rejoined that if the board did not think that its standards have an impact, it was difficult to see the point of developing them.⁶¹⁶ Republican Governor Bill Graves opposed the changes, protesting that after twenty-seven scientists and science educators had spent two years developing new standards, six members of the board had cut out pages of their work in just a few hours. In his view, they "did so to make a rhetorical splash at the behest of the conservative wing of the state Republican Party."⁶¹⁷

Apparently acting on the principle that there is no situation that cannot be made worse by a political campaign, the presidential candidates who were gearing up for the 2000 election jumped in. Then-Governor George W. Bush "favored exposing children to different theories of how life began,"⁶¹⁸ and his spokeswoman added that he believed that both evolution and creationism should be taught, although the final decision was up to state and local authorities.⁶¹⁹ Then-Vice President Al Gore said that although he preferred evolution, he thought that schools should be able to teach creationism as well. Following an outburst from the scientific community,⁶²⁰ a spokesman later clarified that Gore had been talking about teaching creationism as religion, not as science.⁶²¹ A columnist later quipped, "On the second day, the media created a new campaign issue—evolution vs. creationism. And the presidential candidates said, 'This is not good.'"⁶²²

Less amused were the national science organizations whose materials had been used in the Kansas science standards. Since the board's revision affected little other than evolution,

614. Jacques Steinberg, *Evolution Struggle Shifts to Kansas School Districts*, N.Y. TIMES, Aug. 25, 1999, at A1.

615. *New Standards Won't Keep Evolution Out of Kansas Schools*, ST. LOUIS POST DISPATCH, Aug. 13, 1999, at A7.

616. Kate Beem, *Kansas Sees Fallout from Evolution Decision*, KANSAS CITY STAR, Aug. 27, 1999.

617. *New Standards*, *supra* note 615, at A7.

618. *Opinions of Candidates on Teaching Creationism Alarm Some Scientists*, ST. LOUIS POST DISPATCH, Aug. 27, 1999, at A6.

619. *Id.*

620. *Id.* Eugenie Scott, Executive Director of NCSE, said, "'My God, that's appalling!'" *Id.*

621. *Id.*

622. Steve Kraske, *Creationism Evolves into Campaign Topic*, KANSAS CITY STAR, Sept. 2, 1999.

excerpts from the national groups' work were still there. The National Science Teachers Association, the American Association for the Advancement of Science, and the National Research Council pointedly denied permission for the use of their materials in the revised Kansas standards.⁶²³

Only months after the dispute began, it came to an end with the Republican primaries, in which enough antievolution board incumbents lost to proevolution challengers to guarantee that the revised science standards would not survive long enough to take effect.⁶²⁴ As predicted, the newly elected board lost no time in voting 7-3 to approve the science standards that had been developed by the science committee.⁶²⁵ The proevolution majority held through the election of 2002, but following the 2004 campaign, the board once again had a 6-4 antievolution majority.⁶²⁶ The board held three days of hearings, which evolution supporters boycotted⁶²⁷ on the grounds that the board was already committed to its plan and that scientists did not want to lend credibility to the assertion that there is a serious scientific debate about the adequacy of evolution as a core concept in biology. As Scott expressed it, "[T]his was not a scientific exchange, it was a political show trial."⁶²⁸ The chief subjects of discussion were methodological naturalism, irreducible complexity, common descent, and the wedge strategy.⁶²⁹

To no one's surprise, the new board proposed yet another revision, this one to include a change in the definition of science. The science committee had followed NAS in defining it as "seeking natural explanations for what we observe around us,"⁶³⁰ but the new proposal called it

623. Press Release, National Science Teachers Association, National Science Teachers Association Issues Joint Statement with National Research Council and American Association for the Advancement of Science to Deny Kansas State Board of Education Copyright Permission, (Sept. 23, 1999); Press Release, National Research Council, "Joint Statement from the National Research Council, American Association for the Advancement of Science, and the National Science Teachers Association Regarding the *Kansas Science Education Standards*, (Sept. 23, 1999).

624. Julie Blair, *Kansas Primary Seen as Signaling Shift in Evolution Stance*, EDUCATION WEEK, Sept. 6, 2000, at 6.

625. John Milburn, *Kansas Restores Evolution to Schools*, WILLMINGTON NEWS JOURNAL, Feb. 21, 2001, at A5.

626. Jodi Wilgoren, *In Kansas, Darwinism Goes on Trial Once More*, N.Y. TIMES, May 6, 2005, at A18.

627. *Id.*

628. Cornelia Dean, *Opting Out in the Debate on Evolution*, N.Y. TIMES, June 21, 2005, at D1.

629. Jodi Wilgoren, *The Terms of Debate in Kansas*, N.Y. TIMES, May 15, 2005, at 16.

630. Wilgoren, *In Kansas*, *supra* note 626, at A18.

"continuing investigation that uses observation, hypothesis testing, measurement, experimentation, logical argument and theory building to lead to more adequate explanations of natural phenomena."⁶³¹ Defenders of eliminating "natural explanations" from the definition of science argued that it is hubristic to claim that there are natural explanations for everything. Opponents protested that science made no attempt to answer all questions, but only those within the province of nature.⁶³² Opening science to supernatural explanations was, they argued, a huge step backward.⁶³³ Once again, the issue was resolved at the polls. The majority of six antievolutionists lost two of its seats in the August 2006 Republican primaries,⁶³⁴ thus guaranteeing that the November election would result in yet another proevolution majority.⁶³⁵

As noted earlier, the ongoing Kansas controversy serves to round out the discussion of decision-making by elected boards with respect to creationism/ID and evolution. Like *Kitzmiller* and other cases discussed in this Article, it involves attempts by an elected board lacking scientific credentials to redefine science in accord with religious beliefs that are perceived by their adherents as scientifically valid.⁶³⁶ Moreover, the antievolution revisions of the Kansas science standards arose from the same goals as the disclaimer policies mentioned above: to cast doubt on the validity of evolution as a scientific theory; to redefine science to include explanations deemed to be logical but conceded to be supernatural; to foster "critical thinking," defined as skepticism of evolution in favor of creationism/ID; and to avoid challenging what children are taught in the homes of biblical literalists. Similarly, despite the fact that the Kansas dispute deals with state standards and not with local curriculum, some elements of the procedure were the same: for instance, failing to consult scientific organizations or national science experts, ignoring the recommendations of local science professionals, and developing policy based on the results of the most recent election.

VI. CONCLUSION: THE PROBLEM OF FIVE

The introduction to this Article defined its focus in terms of three questions:

631. *Id.*

632. Dennis Overbye, *Philosophers Notwithstanding, Kansas School Board Redefines Science*, N.Y. TIMES, Nov. 15, 2005, at F3.

633. *Id.*

634. MSNBC, *Evolution's Foes Lose Ground in Kansas*, Aug. 2, 2006, <http://www.msnbc.msn.com/id/14137751/> (last visited Oct. 28, 2007).

635. *What's Right with Kansas*, N.Y. TIMES, Nov. 15, 2006, <http://www.nytimes.com/2006/11/15/opinion/15wed4.html?em&ex=1163826000&en=862836cc48a8b525&ei=5087> (last visited Oct. 28, 2007).

636. See Marjorie George, *And Then God Created Kansas*, 149 U. PA. L. REV. 843, at 867-71 (2001) George argues that the revision of the Kansas standards is unconstitutional because it has no credible purpose other than to endorse a religious view. *Id.*

- To what extent are ID proponents justified in claiming that it is science?
- To what extent are ID proponents justified in claiming that it is not religion?
- Do religion and Darwinism necessarily conflict?

A. Is ID Science?

The *Kitzmiller* defense witnesses were entirely correct in associating Darwinism with a change in scientific methodology that represents a major obstacle to the acceptance of ID as science. Among other things, the empirical approach has made science such a specialized discipline that non-experts can no longer philosophize about it credibly.⁶³⁷ The reluctance of ID advocates to accept this model is not surprising, as it dooms any attempt at a populist, common-sense approach to science.⁶³⁸ Instead, science has become the province of specialists who, even if they believe in God (as many do not), nonetheless refuse to expand the discipline to encompass what ID advocates see as the logical inference that there must have been a designer. As ID supporters themselves concede, the current definition of science would have to be significantly altered in order to encompass that concept; under the current definition, the claim of ID to be considered science fails for reasons that have already been discussed at length in this Article. These include a lack of testability, the absence of valid affirmative evidence, contrived dualism, and the failure to make good the claim that evolution is invalid.⁶³⁹

B. Is ID Religion?

Although ID is not science, that alone is not enough to prove that it is religion. It does not explicitly mention the Bible or creation, nor does it identify the designer as God; possible alternatives include a time-traveling scientist or a space alien.⁶⁴⁰ Nevertheless, the defense witnesses in *Kitzmiller* acknowledged that the designer would have to possess supernatural powers⁶⁴¹ and that ID proponents consist exclusively of believers in God.⁶⁴² These and similar

637. McRoberts and Sandefur, *supra* note 157, at 39.

638. Jeffrey R. Addicott, *Storm Clouds on the Horizon of Darwinism: Teaching the Anthropic Principle and Intelligent Design in the Public Schools*, 63 OHIO ST. L.J. 1507, 1508 (2002). Addicott suggests that scientists are the real majoritarians because nothing can be accepted as science unless the majority of them approve it. *Id.*

639. MILLER, GOD, *supra* note 106, at 165. "In the real world of science, in the hard-bitten realities of lab bench and field station, the intellectual triumph of Darwin's great idea is total." *Id.*

640. *Kitzmiller*, 400 F. Supp. 2d. at 718.

641. Transcript, *supra* note 6, Day 11 PM, at 97, 100 (test. of Michael Behe).

642. *Id.* at 103-04.

issues, such as the history of the movement from creationism to creation-science and thence to ID, have already been addressed in this Article and will not be repeated here. One issue that does bear further exploration, however, is the ID contention that evolution is the equivalent of a religious view.⁶⁴³

According to Jeffrey R. Addicott, evolution assumes that "the rational mind must automatically conclude that life and all things that make up the entire universe happened by accident, and nothing anywhere has any intrinsic meaning whatsoever" ⁶⁴⁴ If that is not a promotion of a view about religion, he asserts, then neither is ID. Accordingly, he maintains that evolution should be taught "as a working scientific concept and not as the central linchpin to a metaphysical philosophy antagonistic to God,"⁶⁴⁵ with ID similarly presented "as a working scientific concept and not as an a priori belief designed to promote belief in any specific concept of God(s)."⁶⁴⁶ A similar argument is made by Francis Beckwith, in whose view

[N]aturalistic evolution provides an answer to the *very same* question ID provides an answer: What is the origin of apparent design in biological organisms and/or other aspects of the natural universe and/or the universe as a whole? Evolution answers the question by appealing to the forces of unguided matter (and/or energy), the latter to intelligent agency. But if this is the case, then the legal grounds for teaching ID in public schools . . . are strengthened⁶⁴⁷

This dualism between naturalism/materialism and belief in God recalls more extensive conflicts over public-school instruction, including but not limited to the topic of evolution, in which fundamentalist Christianity and secular humanism were alleged to be competing belief systems.⁶⁴⁸ As an example, the plaintiffs in *Mozert v. Hawkins County Board of Education* objected to the Holt, Rinehart, and Winston Basic Reading Series on the ground that it promoted anti-Christian concepts, such as evolution, vegetarianism, feminism, and pacifism.⁶⁴⁹ They

643. JOHNSON, DARWIN, *supra* note 83, at 122 (arguing that in order to maintain its "dominant cultural position . . . evolution must become a religion" and has in fact done so).

644. Addicott, *supra* note 638, at 1508.

645. *Id.*

646. *Id.*

647. Beckwith, *supra* note 120, at 6.

648. DELFATTORE, JOHNNY, *supra* note 373, at 15 (National Association of Christian Educators' assertion that only two world views exist: Christianity and everything else). The claim by plaintiffs in *Mozert v. Hawkins County Public Schools* was that the only two world views are fundamentalist Christianity and secular humanism. *Id.* at 59-60. Similar arguments were made in *Smith v. Bd. of School Commissioners of Mobile County. Id.* at 78.

649. *Id.* at 36-60.

identified these ideas as tenets of secular humanism, an omnibus designation for any beliefs, attitudes, skills, or information that conflicted with biblical literalism.⁶⁵⁰ In essence, they denied the possibility of neutrality by defining everything, including the secular, as either coinciding with their religion or promoting a competing view about religion.⁶⁵¹ As a result, they asserted that it was impossible to teach anything without promoting one religion or the other, and the only hope of balance would be to teach both, at least to the extent of providing Christian-friendly alternate instruction for their children.⁶⁵² The U.S. Court of Appeals for the Sixth Circuit rejected this assertion. As Chief Judge Pierce Lively observed, “[T]he plaintiffs view every human situation and decision, whether related to personal belief and conduct or to public policy and programs, from a theological and religious perspective. . . . However, the Supreme Court has clearly held that it violates the Establishment Clause to tailor a public school’s curriculum to satisfy the principles or prohibitions of any religion.”⁶⁵³

Colin McRoberts and Timothy Sandefur make a similar argument in response to the ID supporters’ denial of secular neutrality in discussions of human origins. In particular, they address the assertion that if evolution is taught, then ID must also be presented, in order to avoid favoring one world view over the other. “[I]f a commitment to non-supernatural thinking constitutes a religious establishment,” they wrote, “the alternative would seem to be a complete reversal of Establishment Clause logic.”⁶⁵⁴ Among other things, the *Lemon* test would become meaningless because its purpose prong would be violated by *any* purpose, whether secular or religious.⁶⁵⁵ In their view, the purpose of the Establishment Clause is “to restrain government to secular duties,”⁶⁵⁶ including teaching evolution, not ID.

It should be added that any argument for balanced treatment between evolution and ID on the ground of viewpoint discrimination must be based on the assumption that evolution does in fact advance a world view. As the preceding sections have demonstrated, scientists from Asa Gray and Thomas Huxley to Kevin Padian and Kenneth Miller have repeatedly asserted that evolution neither promotes nor undercuts any philosophical or religious conclusion, including materialism. As Joseph Le Conte observed in 1888, “Evolution is one thing and materialism

650. *Id.*

651. *Id.* at 71.

652. *Id.* at 36-38, 59.

653. *Mozert v. Hawkins County Bd. of Educ.*, 827 F.2d 1058, 1064 (6th Cir. 1987).

654. McRoberts and Sandefur, *supra* note 157, at 43.

655. *Id.* at 44.

656. *Id.* See Todd R. Olin, *Fruit of the Poison Tree: A First Amendment Analysis of the History and Character of Intelligent Design Education*, 90 MINN. L. REV. 1107 (April 2006). (arguing that teaching ID violates the Establishment Clause).

quite another. The one is an established law of Nature, the other an unwarranted and hasty inference from that law."⁶⁵⁷

Despite the claims of ID advocates who view the contradiction of their religious beliefs as the equivalent of religion, as did the plaintiffs in *Mozert* and similar cases,⁶⁵⁸ the data themselves are ideologically neutral. Such “isms” as materialism, atheism, creationism, and theism may offer interpretations of the data provided by evolution theory, but acceptance of such interpretations is a matter of personal belief, not science.

C. All This and Heaven Too: Theistic Evolution

In view of this intense debate over the alleged conflict between religion and the values attributed to evolution theory, it seems appropriate to explore the issue of theistic evolution in more detail than has been done in the earlier sections of this Article. The assertion that belief in God as creator does not and cannot conflict with anything science may discover seems to be so appealing that opposition to it may be difficult to understand. Accordingly, this section will present examples of scientific and religious support for theistic evolution, together with the issues that make it controversial.

As early as 1859, the year *On the Origin of Species* was published, supporters of Darwin were already asserting that his theories did not preclude belief in a divine creator because religious faith defines the ultimate cause of life, which is ground upon which science does not presume to tread.⁶⁵⁹ Evolutionists thus conceded the creationists' point that science cannot provide answers to certain questions, but in their view, the very fact that science is not trying to do so constituted evidence that the two approaches occupy separate spheres and thus need not conflict.

The leading exponent of theistic evolution in *Kitzmiller* was Kenneth Miller, whose testimony was particularly relevant because he is the co-author of the biology textbook at issue in that case (and in *Selman v. Cobb County*). As he sees it, the appearance of conflict arises out of religion's use of certain images—such as geocentrism or special creation—as the basis for religious values, such as human dignity. The invalidation of those images by scientific advances may appear to threaten the underlying religious truth, whereas all that has truly suffered is the metaphor.⁶⁶⁰

Miller is in distinguished company in both the scientific community and the world of religion. From the perspective of science, NAS has asserted that

657. Joseph Le Conte, *The Relation of Evolution to Materialism*, 33 THE POPULAR SCIENCE MONTHLY 79, at 80 (May 1888).

658. See DELFATTORE, JOHNNY, *supra* note 373, at 76-119 (discussing similar cases).

659. National Academy of Sciences, *Science and Darwinism: A View from the National Academy of Sciences*, 2nd ed. (1999), http://darwin.nap.edu/openbook.php?record_id=6024&page=1; GRAY, DARWINIANA, *supra* note 264, at 87-177, 252-65.

660. MILLER, GOD, *supra* note 106, at 55-56.

Many religious persons, including many scientists, hold that God created the universe and the various processes driving physical and biological evolution and that these processes then resulted in the creation of galaxies, our solar system, and life on Earth. This belief, which sometimes is termed 'theistic evolution,' is not in disagreement with the scientific explanations of evolution.⁶⁶¹

From the religious side, theistic evolution has been supported by such varied religious leaders as Bill McLean, principal officer of the Presbyterian Church in Arkansas and lead plaintiff in *McLean v. Arkansas*; and the American Jewish Congress, also a plaintiff in *McLean*.⁶⁶² Perhaps the clearest statements of theistic evolution in conjunction with the tenets of a particular religious denomination may be found in two official documents generated by the Vatican: *Humani Generis*, an encyclical issued in 1950 by Pope Pius XII,⁶⁶³ and a 1996 letter from Pope John Paul II to the Pontifical Academy of Sciences.⁶⁶⁴ The latter began with a reference to the former, asserting that *Humani Generis* had "affirmed that there is no conflict between evolution and the doctrine of the faith regarding man and his vocation, provided that we do not lose sight of certain fixed points."⁶⁶⁵ One of those fixed points was the special creation of the human soul,⁶⁶⁶ but as Pope John Paul II observed, the definition of "soul" is such that science would readily concede that issue to philosophy and religion.⁶⁶⁷

661. National Academy of Sciences, *supra* note 659. "Science is not the only way of acquiring knowledge about ourselves and the world around us. . . . Scientific knowledge may enrich aesthetic and moral perceptions, but these subjects extend beyond science's realm, which is to obtain a better understanding of the natural world." *Id.*

662. Complaint at 1, *McLean v. Ark. Bd. of Educ.*, 529 F. Supp. 1255 (E.D. Ark. 1982) (No. LR C 81 322).

663. *Humani Generis*, http://www.vatican.va/holy_father/pius_xii/encyclicals/documents/hf_p-xii_enc_12081950_humani-generis_en.html (last visited Oct. 29, 2007); See Stephen Jay Gould, *Nonoverlapping Magisteria*, in INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS: PHILOSOPHICAL, THEOLOGICAL, AND SCIENTIFIC PERSPECTIVES *supra* note 120, 737-49 (using *Humani Generis* as a springboard for a discussion of the respective realms of science and religion).

664. Pope John Paul II. Message to the Pontifical Academy of Sciences: On Evolution at <http://www.ewtn.com/library/PAPALDOC/JP961022.HTM> (last visited Oct. 29, 2007).

665. *Id.*

666. *Humani Generis*, *supra* note 663.

667. Pope John Paul II, *supra* note 664.

Whereas *Humani Generis* had been tentative about the validity of evolution in 1950, Pope John Paul's more recent letter stated, "Today, more than a half-century after the appearance of [*Humani Generis*], some new findings lead us toward the recognition of evolution as more than an hypothesis."⁶⁶⁸ The interdisciplinary body of work supporting evolution "constitutes in itself a significant argument in favor of the theory."⁶⁶⁹ Significantly, Pope John Paul II adopted the modern definition of a scientific theory as an explanation subject to verification, testing, and constant modification. He also asserted that the Bible is not meant to be taken literally, as the Church had done, to its embarrassment in the case of Galileo. "It is important," the letter states, "to set proper limits to the understanding of Scripture, excluding any unseasonable interpretations which would make it mean something which it was not intended to mean."⁶⁷⁰ The reference to Galileo in this context recalls a statement by a sixteenth-century churchman, Cardinal Cesare Baronius,⁶⁷¹ which was later quoted by Galileo: "The Bible was written to show us how to go to Heaven, not how the heavens go."⁶⁷²

Despite this impressive support for theistic evolution from both religious and scientific sources, creationist/ID opposition to it is intense but not unprecedented. It is not unusual, in debates about religion in public schools, for proponents of Christian-based measures to reserve their harshest criticism for co-believers who do not support such policies.⁶⁷³ Accordingly, there is nothing surprising in the fact that creationists respond to theistic evolution not as a reassurance but as a competitor.⁶⁷⁴ As Judge Jones observed in *Kitzmiller*, the argument that ID must be presented if evolution is taught rests on the claim of dualism. If competing viewpoints such as theistic evolution—or the creation accounts of other religions—are added to the mix, it becomes much more difficult to argue that there is an imbalance that needs to be corrected, and that could be corrected, solely by teaching or at least mentioning ID.⁶⁷⁵ More broadly, as a matter of simple

668. *Id.*

669. *Id.*

670. *Id.*

671. Later proclaimed "Venerable," the first step to canonization, by Pope Benedict XIV in 1745. See <http://www.newadvent.org/cathen/02304b.htm> (last visited Oct. 29, 2007).

672. <http://www.christiananswers.net/q-eden/galileo.html> (last visited Oct. 29, 2007).

673. See DELFATTORE, FOURTH R, *supra* note 333, at 122-26 (Advocates of a return to state-sponsored school prayer excoriated moderate and liberal Protestant groups for opposing those measures).

674. NORD, *supra* note 120, at 286-87.

675. DELFATTORE, FOURTH R, *supra* note 333, at 56-57. (Archbishop John Purcell of Cincinnati requested funding for Catholic schools as the alternative to the public schools, which promoted Protestantism. His cause was harmed by the support of other religious groups who also opposed the religious practices of the public schools but sought different remedies, thus

politics, the declaration that standing up for creationism means being on God's side is a powerful and easily conveyed rhetorical stance, and nothing damages it so severely as the assertion that religious believers are in fact divided in their views. A similar point might be made about the fact that theistic evolution is based on the premise that science says nothing about the ultimate cause of life and thus can neither confirm nor contradict any religious or philosophical explanation thereof.⁶⁷⁶ Accepting this characterization of evolution as ideologically neutral would doom any balanced-treatment argument in favor of teaching ID as science even though it deals with the ultimate cause of life and presents a supernatural explanation for human origins.

Most compellingly, theistic evolution does not go far enough to satisfy those who want science instruction to present the necessity, not merely the option, of believing in the direct and continuing action of a divine creator or intelligent designer.⁶⁷⁷ The wonder of creation has long been presented as a strong proof of God's existence, and the notion that the origin of species can be explained in a manner that merely permits but does not necessitate belief in God seems not only anemic but patronizing and harmful.⁶⁷⁸ ID advocates also question whether faith in God as creator is compatible with an explanation for the existence of the universe that does not require divine intervention. As Beckwith suggests, if theistic evolutionists believe that "the theoretical components, empirical predictions, and materialist presuppositions of evolution are adequate to account for the order and nature of things without either a Creator or other nonmaterial entities, then per Ockham's Razor, they are superfluous."⁶⁷⁹ At the very least, theistic evolution gives away the store, so to speak, by allowing a materialist world view to dominate science, thus reducing the importance of religion in the larger culture and threatening morality and spirituality.⁶⁸⁰ Indeed, ID supporters find it incredible that anyone who genuinely believes in God could fail to recognize that the random chance and brutality represented by evolution lie at the core of antireligious materialism and secularism in the modern world.⁶⁸¹

undercutting his duality-based contention that balance would be restored solely by funding Catholic schools.)

676. JOHNSON, DARWIN, *supra* note 83, at 123-32 (arguing that Darwinism equals atheism, and that the notion that religion and science do not conflict is true only if they are defined so broadly that they conflict with nothing).

677. NORD, *supra* note 120 at 287; JOHNSON, DOGMA, *supra* note 82, at 64.

678. *See also* MICHAEL RUSE, THE EVOLUTION CREATION STRUGGLE 282-83 (2005). Ruse, a supporter of evolution, contends that although some people may believe in both God and Darwin, religion and science can in fact conflict and are not necessarily separate. *Id.*

679. BECKWITH, *supra* note 120, at 3.

680. JOHNSON, DARWIN, *supra* note 83, at 124-26 (arguing that evolution leads to atheism and that scientists refuse to accept any moral teachings that do not rest on science, and none do).

681. *Id.* at 6.

D. The Rule of Four

This historical analysis of *Kitzmiller* bears out Judge Jones's finding that arguments in favor of presenting ID as science fail to overcome the substantial constitutional and academic problems they raise. The same is true of the doggedly repeated contention that evolution theory addresses the ultimate origins of life, whereas it neither confirms nor denies the intervention of a creator/intelligent designer. There is in fact no genuine issue of balance between creation/ID and evolution, although there might well be tension between creationism and theistic evolution on one side, and on the other the use of evolution theory to support nontheistic beliefs that fall as far outside the realm of science as creationism itself does.

As the cases discussed in this Article demonstrate, efforts to include creationism, creation-science, or ID in the science curriculum have practical and polemic implications. Students do not typically study philosophy or comparative religion, and even if they did, those disciplines are defined as matters of opinion rather than fact. Consequently, the most effective way to promote a religious interpretation of scientific data is in science class. The polemic element arises out of intense anger at scientific evidence that makes it possible to deny the age-old contention that the wonder of creation proves the existence of God. The history of the creationist/ID movement does not represent a century and a half of trying to find non-religious scientific explanations for such things as the immune system or the bacterial flagellum; it is clearly demonstrable that those elements appeared after, and because of, *Edwards*. Rather, the purpose and effect of this movement have been, and remain, the promotion of the belief that life originated with God. The careful omission of religious terminology and the lavish employment of scientific jargon are insufficient to render such an approach secular, and any formulation that satisfies its fundamental purpose must fail to pass constitutional muster. As Eugenie Scott observed with reference to the Kansas dispute,

I understand politicians like to compromise and that faced with one group who say two plus two equals four and another group that says two plus two equals six, will tend to arrive at a position that says two plus two equals five. Unfortunately, sometimes the answer has to be four, and this is one of those times.⁶⁸²

Indeed.

682. *Opinions of Candidates on Teaching Creationism Alarm Some Scientists*, ST. LOUIS POST DISPATCH, Aug. 27, 1999, at A6.