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THE “TEACH THE CONTROVERSY” CONTROVERSY

DAVID K. DEWOLF*

INTRODUCTION

In 2000, my coauthors and I published an article proposing that public schools would violate no constitutional prohibition (and would improve science education) by permitting biology teachers to “teach the controversy” concerning biological evolution.¹ This proposal generated substantial academic commentary.² As this article details, members of the United States Congress and education officials in a few states have expressed some support for the idea. However, most academic commentators have accused the authors of substituting a renamed but substantially equivalent form of “creationism” in an attempt to circumvent existing law. Others have accused the proponents of hijacking perfectly respectable concepts—like academic freedom or viewpoint neutrality—for disreputable purposes, such as advancing religion.³ This article will recount the reaction to the proposal to “teach the controversy” and will respond to the primary arguments raised against it.

I. A BRIEF SUMMARY OF THE “TEACH THE CONTROVERSY” PROPOSAL

A. THERE IS CONTROVERSY OVER THE DARWINIAN THEORY OF EVOLUTION

While it is routinely asserted that the theory of evolution is no more controversial than the theory of gravity,⁴ this is mere bluster. The central

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1. David K. DeWolf, Stephen C. Meyer and Mark E. DeForrest, *Teaching the Origins Controversy: Science, Religion, or Speech?*, 2000 UTAH LAW REVIEW 37 (2000).

2. See Appendix A.

3. Ravitch, *supra* note 2, at 844–45.

4. Owen D. Jones, *Evolutionary Analysis in Law: Some Objections Considered*, 67 BROOK. L. REV. 207, 217 (2001) (“While there are still debates about details of evolution on the margin

claims of Darwinian evolution—that random mutation and natural selection (or some similarly unguided process)⁵ are sufficient to produce increasingly complex life forms—cannot be confirmed through experimentation in the way that the theory of gravity can be confirmed.⁶ Even if it were shown through experimentation that a Darwinian mechanism could produce a more complex life form from a simpler ancestor, it does not prove that this mechanism did *in fact* produce such an effect in the past. Explanations on the origins of complex life forms through Darwinian mechanisms will never approach the degree of certainty that one can have in other scientific concepts such as gravity, the heliocentric arrangement of the solar system, or Boyle's Law.⁷

To assert that there is controversy over Darwinism is simply to state the obvious. Darwin's theory is controverted scientifically, and because of its implications, it remains controversial for purposes of public education. One rarely sees a headline reaffirming the heliocentric arrangement of the solar system or the theory of gravity. However, one regularly sees headlines announcing that new transitional fossils have been found.⁸ In fact, it was duly noted by a defender of Darwinian orthodoxy that such headlines actually cast doubt on the "proven" status of Darwinian Theory.⁹ If Darwinian evolution were a settled scientific issue, such discoveries would

(just as there continue to be debates among those studying gravity), the theory of evolution by natural selection is no less robust than the theory of gravitational attraction of mass to mass."); Ravitch, *supra* note 2, at 860 ("To say that evolution is just a theory makes as much sense as saying it is just a theory that the Milky Way galaxy is part of a cluster of galaxies.").

5. Darwin's theory of random mutation and natural selection continues to be the primary explanation for the evolutionary succession of complex life forms from simpler ancestors. Some evolutionary theorists have suggested that other mechanisms, exemplified by such phenomena as "punctuated equilibrium," may supplement the process of random mutation and natural selection to generate large-scale changes, such as the appearance of new body plans. However, virtually every textbook presentation of evolution credits Darwin with the discovery of a mechanism that was adequate to explain how complex life forms could descend from simpler ancestors.

6. According to one classic definition of science, theories are never confirmed—they are only retained so long as they survive falsification. Thus, rather than being confirmed, a scientific theory makes predictions, which (if the predictions turn out to be accurate) will lead scientists to continue to make use of the theory until a different explanation does a better job of explaining the same phenomena while surviving efforts to falsify it.

7. MICHAEL S. MATTA, ET AL., CHEMISTRY 226 (Addison-Wesley ed., 1993); Bradford William Short, *The Healing Philosopher: John Locke's Medical Ethics*, 20 ISSUES L. & MED. 103, note 20.

8. Casey Luskin, *The Big Ida: The Rise & Fall of Another Missing Link & Other Media Hype*, SALVO MAGAZINE, Autumn 2009.

9. When a dinosaur fossil (nicknamed "Ida") was discovered that appeared to exhibit transitional features, Google (temporarily) changed its logo, causing one commentator to complain, "She's beautiful and interesting and important, but I do have to take exception to the surprisingly frantic news coverage I'm seeing." Eric Ethridge, *Let's Not Go Ape Over Ida*, The New York Times, May 20, 2009, <http://opinionator.blogs.nytimes.com/2009/05/20/lets-not-go-ape-over-ida/>. (Quoting P.Z. Myers).

be no more newsworthy than an experiment confirming Boyle's Law.

1. Darwin's Theory is Controverted Scientifically

In the 2000 article we created a fictional high school teacher, John Spokes, who was fascinated by the scientific literature expressing skepticism concerning Darwin's theory. Since that time there are even more reasons for a "John Spokes" to wade into the scientific debate. Scores of peer-reviewed articles and books have been published questioning Darwinian Theory or advancing the theory of Intelligent Design.¹⁰ Over 700 scientists signed a statement declaring that they are "skeptical of claims for the ability of random mutation and natural selection to account for the complexity of life. Careful examination of the evidence for Darwinian theory should be encouraged."¹¹

It is frequently claimed, "[Intelligent Design's] negative attacks on evolution have been refuted by the scientific community."¹² Attempts to rebut the claims made by Intelligent Design ("ID") theorists do not establish that there is no longer a controversy any more than the resounding conclusion of the respondent's argument to an appellate court shows that the appellant's argument has been refuted. We permit the appellant to rebut because we do not assume that the respondent's claims have necessarily refuted the appellant's argument. Such is the case with the claims that ID arguments have been refuted.¹³ Frequent attempts to refute Intelligent Design concepts such as irreducible complexity, represent a concession by defenders of Darwinian theory that there is genuine controversy.

2. Darwinism is Controversial

During one of the Republican primary debates in the 2008 Presidential election, the candidates were asked the following question: "Do you believe in evolution?"¹⁴ Seven of the ten candidates raised their hands, while three did not.¹⁵ The fact that the question was asked, and that the vote was seven to three, illustrates that the reliability of Darwinian Theory is even more

10. Discovery.org, PEER-REVIEWED & PEER-EDITED SCIENTIFIC PUBLICATIONS SUPPORTING THE THEORY OF INTELLIGENT DESIGN (ANNOTATED), <http://www.discovery.org/a/2640> (last visited Nov. 30, 2009).

11. A Scientific Dissent From Darwinism, <http://www.dissentfromdarwin.org/> (last visited Nov. 30, 2009) (To sign the statement, one must hold either a Ph.D. in one of the natural sciences (biology, chemistry, etc.) or an M.D. and serve as a professor of medicine.).

12. Kitzmiller, 400 F. Supp. 2d at 735.

13. See DeWolf (Montana), *supra* note 2, at 32–36.

14. The New York Times, The Republicans' First Presidential Candidates Debate, <http://www.nytimes.com/2007/05/03/us/politics/04transcript.html?pagewanted=print> (last visited Nov. 30, 2009).

15. *Id.*

widely questioned within political circles than within the scientific community. Opinion surveys show that only a third of Americans agree that, "[t]he development of life came about through an unguided process of random mutations and natural selection."¹⁶

Although some might argue that Darwinian theory is only controversial for people whose religious beliefs are challenged by Darwinism, the relationship between the scientific question ("What is the best explanation for the origin of complex life forms?") and the religious question ("Is there a God?") is more complex. Some find religious belief perfectly compatible with Darwinian theory; for example, biologist Kenneth Miller, an expert in the *Kitzmiller* case, has stated, "I am an orthodox Catholic and I'm an orthodox Darwinist."¹⁷ By contrast, some find an irreconcilable conflict between Darwinian claims and their religious beliefs.¹⁸ There is a similar phenomenon among those without religious beliefs. Some claim that Darwinian theory has nothing to do with religion, and that they have rejected religion for reasons having nothing to do with Darwinian theory,¹⁹ while some vocal advocates of atheism assert that acceptance of Darwinian theory requires a rejection of religion, and they criticize those who attempt to reconcile Darwinian theory with religious belief.²⁰ Darwinian theory is scientifically controverted and culturally controversial; attempts to deny the existence of a controversy are unpersuasive.

B. TEACHERS SHOULD BE ENCOURAGED TO ACKNOWLEDGE THE CONTROVERSY AND INVITE THEIR STUDENTS TO LEARN MORE ABOUT IT.

A second claim of the "teach the controversy" proposal was that school administrators should encourage, rather than discourage, teachers whose impulse was to recognize and explore the controversy. In situations where teachers have attempted to teach the controversy, the typical reaction by school authorities has been negative.²¹ This is in part because of the fear of

16. Discovery Institute, *Report on 2009 Zogby Poll about Evolution and Academic Freedom* (2009), <http://www.evolutionnews.org/2009%20Zogby%20Poll%20Findings%20Report%20Final.pdf> (last visited Nov. 30, 2009).

17. *Darwin's Dangerous Idea* (PBS Television Broadcast September 24, 2001), available online at http://www.pbs.org/wgbh/evolution/about/overview_series.html.

18. Jonathan Wells, *Darwinism and the Argument to Design*, DIALOGUE & ALLIANCE 4, no. 4, Jan. 1, 1991, <http://www.discovery.org/a/102>. (last visited Nov. 30, 2009).

19. Eugenie C. Scott, *Dealing with Antievolutionism*, <http://www.ucmp.berkeley.edu/fosrec/Scott2.html>. (last visited Nov. 30, 2009).

20. RICHARD DAWKINS, *THE GOD DELUSION* (2006); Jerry Coyne, *Truckling to the Faithful: A Spoonful of Jesus Helps Darwin Go Down*, Apr. 22, 2009, <http://whyevolutionistrue.wordpress.com/2009/04/22/truckling-to-the-faithful-a-spoonful-of-jesus-helps-darwin-go-down/>. (last visited Nov. 30, 2009).

21. John Gibeaut, *Evolution of a Controversy*, 85 Nov ABAJ 50A.B.A.J., Nov. 1999, at 50; Beckwith (Levake), *supra* note 2 (discussing the case of Rodney Levake).

adverse legal consequences, exemplified by *Kitzmiller v. Dover Area School District*.²² Nonetheless, since the time of the original article a constructive approach to the issue has become more necessary. In a survey of high school biology teachers, 26% reported spending at least an hour on “creationism or Intelligent Design.”²³ Of that 26%, approximately half agreed with the statement, “I emphasize that many reputable scientists view these as valid alternatives to Darwinian theory.”²⁴ Thus, a significant number of biology teachers already devote class time to the controversy over Darwinian Theory. A smaller but still significant number of biology teachers believe that it is helpful to their students to introduce them to the competing theories regarding the origin of biological complexity.²⁵

The “teach the controversy” approach defends the decision to permit an acknowledgement of the controversy rather than to suggest that the only constitutional approach to this phenomenon is to suppress it. While the constitutional issues will be more fully addressed below, it deserves emphasis that the focus of the original “teach the controversy” article was to support the academic freedom of teachers who believe it is good science education to acknowledge the controversy and help students think critically about the topic. Occasionally, the claim is made, particularly in the context of discussing *Kitzmiller*,²⁶ that the original proposal to “teach the controversy” would require teachers to present Intelligent Design as an alternative to Darwinian evolution.²⁷ This is clearly wrong. The original proposal drew much of its logic from the experience of the hypothetical biology teacher John Spokes who wanted to teach the controversy. In fact, the language in *Edwards v. Aguillard* provides strong support for “teaching

22. 400 F.Supp. 2d. 707 (M.D. Pa.. 2005). The author (along with Casey Luskin and John G. West) critically analyze the *Kitzmiller* case in DeWolf (Montana), *supra* note 2.

23. Michael B. Berkman, Julianna Sandell Pacheco, and Eric Plutzer, *Evolution and Creationism in America's Classrooms: A National Portrait*. PLoS Biol 6(5): e124. doi:10.1371/journal.pbio.0060124, <http://www.plosbiology.org/article/info%3Adoi%2F10.1371%2Fjournal.pbio.0060124>. (last visited Nov. 30, 2009).

24. PLoS Biology, *Teacher Orientations to Discussing Creationism or Intelligent Design in High School Biology Classes*, <http://www.plosbiology.org/article/SingleRepresentation.action?uri=info:doi/10.1371/journal.pbio.0060124.st003>. (last visited Nov. 30, 2009).

25. A similar result was obtained in a survey of college students regarding their education in biology. See Kristi L. Bowman, *An Empirical Study Of Evolution, Creationism, And Intelligent Design Instruction In Public Schools*, 36 J.L. & EDUC. 301 (2007) (30% reported that the issue of Intelligent Design was addressed, although, for the most part briefly; by her calculation 7% present.).

26. *Kitzmiller*, 400 F. Supp. 2d 707.

27. As Barry Lynn of Americans United for Church and State put it, “Discovery Institute invented this snake oil called Intelligent Design, and now they’ve found that Dover is really a bad salesman.” Quoted in Paul Nussbaum, “Fearing a Loss by the School Board Could Hurt Their Cause, the Movement’s Key Backers Ask Judge for a Narrow Ruling,” PHILADELPHIA INQUIRER, October 20, 2005.

the controversy.”²⁸ What a school board should, and constitutionally may, require teachers to present regarding biological origins is another question that my colleague Casey Luskin addresses in a companion article.²⁹

C. EMBRACING RATHER THAN SUPPRESSING THE CONTROVERSY RESULTS IN BETTER SCIENCE EDUCATION

A third aspect of the original proposal is that “teaching the controversy” is not only legally permissible, but that it also does a better job of achieving the goals of science education. There is a legitimate question as to whether the anticipated benefits from “teaching the controversy” would outweigh the potential detriments. There are a variety of policy arguments in favor of “teaching the controversy,” many of which were cited in the Congressional debate over the so-called “Santorum amendment.”³⁰ One primary argument that has recently become more urgent is the emphasis on critical thinking within science education.³¹ The companion article authored by Casey Luskin explores this issue in detail.³²

II. THE “SANTORUM AMENDMENT” AND OTHER RESPONSES TO THE PROPOSAL

A. THE BACKGROUND OF THE AMENDMENT

Long before Rick Santorum was elected as a United States Senator from Pennsylvania, efforts were underway to break a perceived monopoly in the presentation of the origins controversy. Phillip Johnson, a law professor at University of California at Berkeley, had picked up the flag of dissent after it suffered what many thought was a virtual knockout blow at the end of the 1980s. Johnson began publishing a series of books,

28. While recent cases have cast doubt on the proposition that public school teachers enjoy academic freedom, it must be remembered that a central holding of *Edwards v. Aguillard*, 482 U.S. 578 (1987), was that the purported purpose of the Louisiana statute—to enhance the academic freedom of science teachers—was a sham because nothing in the statute could grant teachers “a flexibility that they did not already possess to supplant the present science curriculum with the presentation of theories, besides evolution, about the origin of life.” *Id.* at 587. The astonishing breadth of the right identified by the court may be doubted in light of such cases as *Garcetti v. Ceballos*, 547 U.S. 410 (2006), which identified the right of government officials to control the speech that is made in their name. Nonetheless, without the assumption that a public school teacher has some “flexibility” in the presentation of the material that is assigned to be taught, the decision in *Edwards* would be effectively overruled.

29. Casey Luskin, *The Constitutionality and Pedagogical Benefits of Teaching Evolution Scientifically*, 4 UST. J. L. & PUB. POL’Y 206 (2009).

30. See text accompanying notes 54 to 59, *infra*.

31. Luskin, *supra* note 29.

32. *Id.*

including *Darwin on Trial*,³³ *Reason in the Balance*,³⁴ and *Defeating Darwinism by Opening Minds*,³⁵ which began convincing people that the modern version of Darwinism, neo-Darwinism, was not the proven theory that its supporters claimed it to be. Johnson abandoned a reliance on the Bible in favor of a skeptical, lawyer's view of the evidence for neo-Darwinism, and a recognition of the philosophical assumptions that often made certain kinds of evidence inadmissible in the debate over origins.

At the same time, books and articles by scientists had begun casting doubt on the notion that one could be opposed to the argument for neo-Darwinism only by ignoring (or lacking the capacity to understand) the scientific basis for neo-Darwinism. Michael Denton's book, *Evolution: A Theory in Crisis*, was published in 1986, the same year that the United States Supreme Court decided *Edwards*,³⁶ which held unconstitutional a legislative attempt to give "equal time" in the classroom to scientific creationism and evolution. Denton acknowledged the problems with neo-Darwinism, but was not yet ready to suggest any alternative. In 1996, biochemist Michael Behe published *Darwin's Black Box*, which not only detailed the skepticism of a well-credentialed biochemist pursuing his field in a respectable public university, but also proposed that the evidence of engineering in the cell could be the basis for a theory of Intelligent Design.

In 2000, the year of Bush's election as President, Jonathan Wells, a biologist with a Ph.D. in embryology from UC Berkeley, published *Icons of Evolution*,³⁷ a careful review of the most widely used illustrations or "icons" of evolution contained in typical high school biology textbooks. From peppered moths to Haeckel's embryos to "life in a test-tube," the American high school student was apt to get an introduction to the issue that was downright misleading. Instead of simply making dissent from neo-Darwinism intellectually respectable, Wells was accusing most secondary science education of failing to observe basic principles of scientific integrity.

Meanwhile, a relatively new think tank in Seattle, the Discovery Institute, had begun assembling a group of scientists, public policy experts, philosophers and theologians who had in common a sympathy with Phillip Johnson's thesis, presented in *Reason in the Balance*, that philosophical materialism had been allowed to displace reason as the starting point for the

33. PHILLIP JOHNSON, *DARWIN ON TRIAL* (1991).

34. PHILLIP JOHNSON, *REASON IN THE BALANCE: THE CASE AGAINST NATURALISM IN SCIENCE, LAW & EDUCATION* (1995).

35. PHILLIP JOHNSON *DEFEATING DARWINISM BY OPENING MINDS* (1997).

36. 482 U.S. 578 (1986).

37. JONATHAN WELLS, *ICONS OF EVOLUTION: SCIENCE OR MYTH? WHY MUCH OF WHAT WE TEACH ABOUT EVOLUTION IS WRONG* (2000).

analysis of scientific and cultural controversies. Discovery Institute Fellows published a booklet, *Teaching the Controversy: Darwinism, Design and the Public School Science Curriculum*, through the Foundation for Thought and Ethics,³⁸ which they distributed over the Internet, at conferences addressing the issue, and in follow-up to inquiries from school boards and teachers who were frustrated with the Darwin-only approach found in textbooks and standard curricula. The same authors rewrote the material in the booklet and published it in the *Utah Law Review* under the title, *Teaching the Origins Controversy: Science, or Religion, or Speech?*³⁹ Cases were already beginning to arise of teachers who wanted to "teach the controversy" but were being told by school administrators that any departure from the neo-Darwinian orthodoxy presented in their textbooks would pose legal peril for the school district.⁴⁰ Consequently, the demand was increasing for a public policy effort to protect the right of teachers to teach the controversy and the right of students to discuss it.

In 2000, as the November Presidential and Congressional elections loomed, the pace increased. In addition to a steady stream of inquiries to the Discovery Institute from school board members, parents, and teachers, the Discovery Institute attempted to influence public debate through briefings to lawmakers. In the spring of 2000, Phillip Johnson made a presentation to sympathetic members of Congress. In May, 2000, a public briefing discussing the case both for the science of design as well as for the public policy supporting a "teach the controversy" approach was held for a number of Members of Congress.⁴¹ After the November elections left Republicans in control of both the House of Representatives and the White House, proposals were made to include some version of "teach the controversy" in the federal legislation that would help to fund American public school education. In proverbial "back of the napkin" fashion, Phillip Johnson drafted a few sentences for Senator Rick Santorum to propose as an amendment.⁴²

B. THE ORIGIN OF THE AMENDMENT

On June 13, 2001, Senator Rick Santorum introduced an amendment to

38. David K. DeWolf, Stephen C. Meyer, & Mark E. DeForrest, *Teaching the Controversy: Darwinism, Design and the Public School Science Curriculum* (1999), <http://guweb2.gonzaga.edu/~dewolf/fte2.htm>. (last visited Nov. 30, 2009).

39. See note 1, *supra*.

40. See John Gibeaut, *Evolution of a Controversy*, A.B.A. J., Nov. 1999, at 50–55.

41. Rep. Roscoe Bartlett (R-MD), Rep. Charles Canady (R-FL), Rep. Sheila Jackson-Lee (D-TX), Rep. Thomas Petri (R-WI), Rep. Joseph Pitts (R-PA), Rep. Mark Souder (R-IN), and Rep. Charles Stenholm (D.on TX), Sen. Sam Brownback (R-KS).

42. Larry Witham, *Senate Bill Tackles Evolution Debate; Advises States to Allow Academic Openness on Concept*, WASHINGTON TIMES, June 18, 2001, at A4.

what would later be called the No Child Left Behind Act, asking for a “sense of the Senate” that federal law should encourage the an approach to scientific controversies that would eventually be known by the shorthand “teach the controversy.” Although the amendment was written in broad language, it included as an example of scientific controversy the topic of biological evolution. The resolution advocated that:

- (1) good science education should prepare students to distinguish the data or testable theories of science from philosophical or religious claims that are made in the name of science; and (2) where biological evolution is taught, the curriculum should help students to understand why this subject generates so much continuing controversy, and should prepare the students to be informed participants in public discussions regarding the subject.⁴³

After some discussion, the amendment passed by a vote of 91-8.⁴⁴ Later, through a process which itself has become controversial,⁴⁵ this language was transferred to the Conference Report.

The Santorum language was a response to a wider movement to “teach the controversy” about biological origins. In 2002, the Ohio State Board of Education held widely publicized hearings as part of its revision of state science standards. After lengthy discussion and negotiation, the Board unanimously adopted a policy calling for students to learn “how scientists continue to investigate and critically analyze aspects of evolutionary theory.”⁴⁶ In 2005, the Kansas State Board of Education called for hearings on a dispute between the majority and minority on its science standards writing committee.⁴⁷ The majority report called for a definition of science as “the human activity of seeking natural explanations for what we observe in the world around us.”⁴⁸ The minority report called for a definition of science as “a systematic method of continuing investigation . . . to lead to more adequate explanations of natural phenomena.” The school board ultimately decided to adopt the minority report.⁴⁹

43. Congressional Record, June 13, 2001.

44. No one spoke against the amendment; the only negative votes apparently came from conservative Senators who were not opposed to the principle of the Santorum language but were generally opposed to the federalization of education policy.

45. See text accompanying notes 54 to 59, *infra*.

46. Stephanie Simon, *Ohio Drops Demand That Evolution Be Challenged*, LOS ANGELES TIMES, Feb. 15, 2006, 2006 WLNR 6964481. (The Board later voted to rescind the policy).

47. Anthony Kirwin, Student Author, *Toto, I've a Feeling We're ... Still in Kansas? The Constitutionality of Intelligent Design and the 2005 Kansas Science Education Standards*, 7 MINN. J. L. SCI. & TECH. 657, 689 (2006).

48. Linda A. Malone, *What Do Showmobiles, Mercury Emissions, Greenhouse Gases and Runoff Have in Common? The Controversy Over "Junk Science"* 9 CHAP. L. REV. 365 (2006), at 383.

49. *Id.* at 691.

Meanwhile, in Cobb County, Georgia, a federal district judge held that it was unconstitutional for the school board's requirement that a three-sentence disclaimer be inserted in biology textbooks.⁵⁰ And in Dover, Pennsylvania, a school board mandated that, alongside the textbook treatment of evolution, teachers would read a statement of policy that mentioned Intelligent Design.⁵¹ Opinion pieces and editorials alternatively praised and condemned the effort to "teach the controversy."⁵² Legal scholars and commentators joined in the fray, publishing law review articles and books either supporting or opposing the proposal to "teach the controversy."⁵³

In part, the controversy is a legal one: pitting claims of unconstitutional establishment of religion against claims that suppressing alternative perspectives on the origins controversy constitutes viewpoint discrimination. In addition, there is disagreement over the desirability of addressing the controversy as a way of enhancing the quality of science instruction. Adding to the controversy and confusion is the lack of consensus as to the appropriate division of labor between the public, Congress, state boards of education, local school boards, science department curriculum committees, and the professional judgment of individual science teachers. This confusion was generating discord rather than harmony. Into this moving current stepped Senator Rick Santorum.

C. THE ADOPTION OF THE SANTORUM AMENDMENT

The text of the Santorum Amendment was very brief; two sentences, in fact.⁵⁴ After reading the proposed text of the amendment, Santorum made a brief statement in support of the language.⁵⁵ When he finished, the

50. *Selman v. Cobb County Sch. Dist.*, 390 F. Supp. 2d 1286 (2005). The finding of the trial judge was later vacated and remanded on appeal, in a decision that identified a list of 18 questions (which were "only suggestive . . . not exclusive") that the trial judge would need to answer in making findings regarding the constitutionality of the disclaimer. *Selman v. Cobb County School Dist.*, 449 F. 3d 1320, 1338 (2006).

51. *Teaching of 'Intelligent Design' Delayed*, PITTSBURGH POST-GAZETTE, December 23, 2004 Page A-12.

52. See, e.g., E.J. Dionne, Op-Ed., *Liberty vs. Liberty: When Religious Values Collide with the Principles of Secular Government, Both Sides Must Give*, Pittsburgh Post-Gazette, March 19, 2002, at A11 (2002 WLNR 4227173) ("Nor can Intelligent Design be taught as scientifically equal to evolution, since most scientists reject it"); Editorial Board, *The Evolution of Textbooks: Students Shouldn't be Protected From Dissent*, Dallas Morning News, November 5, 2003, available at <http://www.discovery.org/a/1629>. ("When dissenting scientists produce reliable data challenging prevailing orthodoxy on scientific terms, then respectful attention should be paid, no matter whom it pleases or discomfits").

53. See *supra* note 2.

54. 147 Cong. Rec. S6147, S6147-S6148 (daily ed. June 13, 2001) (statement of Sen. Santorum).

55. *Id.*

amendment was supported by Senators Kennedy,⁵⁶ Byrd,⁵⁷ and Brownback.⁵⁸ No Senator spoke in opposition to the amendment, and it ultimately passed by a vote of 91-8.⁵⁹ The only Senators who voted against the amendment were Republicans who were generally opposed to federal control over public education.⁶⁰

In short, there was much support, and virtually no substantive opposition, to the goals of the Santorum Amendment on the day it was introduced and passed. However, outside the Senate chamber, alarm bells were sounding. In August 2001, 96 organizations representing the science education establishment sent a letter to the chairs of the House and Senate education committees asking for the language in the Santorum Amendment to be struck from the final bill.⁶¹ Eugenie Scott, director of the National Center for Science Education, said that the amendment “will encourage the teaching of creationism. If a teacher is looking for a loophole or justification to bring non-scientific views into the curriculum, this amendment can be interpreted that way.”⁶² Some Senators who initially expressed support for the amendment were being taken to the woodshed by the science establishment and warned that what sounded evenhanded was in fact a form of stealth creationism.⁶³ And the fact that the Santorum Amendment did not have a corresponding provision in the education bill that passed the House created an opportunity to reconsider its merits when the Conference Committee took up the task of reconciling the two bills.

D. THE CONFERENCE REPORT

There were many issues to be resolved by the Conference Committee, but among the most contentious issues was (and is) the extent to which the federal government should be holding states accountable for academic performance. In a now familiar reversal of conservative and liberal

56. *Id.* at S6150 (statement of Sen. Kennedy).

57. *Id.* at S6152 (statement of Sen. Byrd).

58. *Id.* at S6152 (statement of Sen. Brownback).

59. *Id.* at S6153.

60. Tamara Henry, *Teachers: What in creation?*, USA Today, July 25, 2001, at 01D.

61. “Issues in Science and Technology,” published by the American Association for the Advancement of Science, Spring 2002, available at <http://bob.nap.edu/issues/18.3/hill.html>.

62. Henry, *Teachers: What in creation?*

63. *Id.* (In fact, Sen. Kennedy felt it necessary to retract his earlier support of the amendment. In a letter to the *Washington Times*, responding to an earlier column by Sen. Santorum, Kennedy wrote, “My colleague Sen. Rick Santorum, Pennsylvania Republican, erroneously suggested that I support the teaching of ‘Intelligent Design’ as an alternative to biological evolution. That simply is not true. [¶] Rather, I believe that public school science classes should focus on teaching students how to understand and critically analyze genuine scientific theories. Unlike biological evolution, ‘Intelligent Design’ is not a genuine scientific theory and, therefore, has no place in the curriculum of our nation’s public school science classes.” *Washington Times*, March 21, 2002, at A18 (2002 WLNR 384482)).

positions, the Bush Administration argued for federal accountability, while liberals argued for states' rights. The Santorum language was actually part of this larger struggle. For many conservatives, the acceptance of increased federal control was contingent upon a variety of protections against federally mandated orthodoxy. Protection for diversity of opinion with respect to such issues as biological evolution was a key limitation on what otherwise might be characterized as a major surrender of local autonomy.

Assuming some form of the Santorum amendment was desirable for the Senate conferees, it was unclear as to the form the language should take in the final version of the bill. The Santorum amendment was passed as a "sense of the Senate." If it was to become the "sense of the Congress," it could have just as easily been included in the Conference Report, which explains the way in which the conflicts between the House and Senate bills have been reconciled. While some conferees wanted to scuttle the language altogether, and others wanted to add the language to the bill itself; inclusion of the Santorum language in the Conference Report seemed like a reasonable compromise. Thus, the final language read as follows:

The conferees recognize that a quality science education should prepare students to distinguish the data and testable theories of science from religious or philosophical claims that are made in the name of science. Where topics are taught that may generate controversy, such as biological evolution, the curriculum should help students understand the full range of scientific views that exist, why such topics may generate controversy, and how scientific controversies can profoundly affect society.⁶⁴

E. SPINNING THE LANGUAGE

The ink was barely dry on the President's signature when the respective spin operations began. Ken Miller claimed that it had been "struck from the bill."⁶⁵ Eugenie Scott was relieved that "the conference committee largely heeded the call of the officers of the scientific societies."⁶⁶ Dennis Hirsch, a law professor, claimed that even the language in the Conference Report "did not receive the endorsement of Congress as a whole."⁶⁷ By contrast, proponents of the "teach the controversy" principle, including Senator

64. H.R. Rep. No. 107-334, at 703 (2001).

65. Kenneth Miller, *The Truth About the "Santorum Amendment" Language on Evolution*, <http://www.millerandlevine.com/km/evol/santorum.html> (last visited Nov. 30, 2009).

66. National Center for Science Education, "Santorum Amendment Stripped from Education Bill," <http://ncse.com/news/2001/12/santorum-amendment-stripped-from-education-bill-00249> (last visited Nov. 30, 2009).

67. Dennis Hirsch, *Science vs. Intelligent Design: The Law*, <http://ncse.com/taking-action/science-vs-intelligent-design-law> (last visited Nov. 30, 2009).

Santorum, greeted the Report language as a major victory.⁶⁸ Who has the better of the argument?

Much depends upon what one perceives the original Santorum language as claiming. Kenneth Miller creates the impression that advocates of the Santorum language wanted it to mandate the teaching of alternatives to Darwinism, and by removing the language from the bill itself and placing it in the Conference Report, that disaster had been averted. By contrast, proponents of the Santorum language—at least Sen. Santorum himself, the Discovery Institute, and Phillip Johnson—never claimed that the Santorum language *required* a “teach the controversy” approach. Rather, the primary objective was to affirm the value of academic freedom and to remove the impression—assiduously cultivated by defenders of Darwinian orthodoxy—that any departure from Darwinian evolution was subject to grave constitutional infirmity. The continuing debate over the constitutionality of “teaching the controversy” is the very reason that the United States Senate initially adopted the Santorum language, and its significance—as an affirmation of Congressional policy—remains. By recognizing that there was a need for academic freedom in this area, the United States Congress would make it more difficult to say that this was simply a throwback to the Scopes trial of the 1920s.

In evaluating what happened to the language from the time it was approved by the Senate 918, and its appearance in the Conference Report,⁶⁹ there are slight modifications of the language, but there is no question that the language in the Conference Report constitutes an endorsement. While the Report language is merely a recommendation, without mandating or forbidding any practice, the same is true of the original Santorum amendment.

It is also misleading to suggest that Conference Committee language is

68. 147 Cong. Rec. S13365, S13422 (daily ed. Dec. 18, 2001) (statement by Sen. Santorum).

69. One vocal critic of the Santorum language claimed that the Discovery Institute was wrong in claiming “the amendment is not in the conference report, but in the joint explanatory statement.” The Santorum language had found its way into the conference report, “for claiming that the Santorum language found its way into the conference committee report, claiming that it was only part of the “joint explanatory statement. [Discovery Institute President Bruce] Chapman erred in locating the amendment in the conference committee report; the joint explanatory statement is separate from the report.” Barbara Forrest and Paul R. Gross, *Creationism's Trojan Horse: The Wedge of Intelligent Design* (2004) at 243. This claim is repeated: “the amendment is not in the conference report, but in the joint explanatory statement,” *Id.* at 246. Forrest and Gross simply fail to understand that the statement is part of the conference report: “A conference committee produces a report in two parts: bill language, typically a compromise between the bill language passed by the House and that passed by the Senate, submitted to the House and Senate for final passage; and a ‘joint explanatory statement of the managers’ that explains what the conference committee did.” Charles Tiefer, *The Reconceptualization of Legislative History in the Supreme Court*, 2000 Wis. L. Rev. 205, 233 (2000).

simply "an expression of a few members of the House and Senate about the law,"⁷⁰ or that the Conference Committee Report "does not itself constitute a source of law."⁷¹ Courts routinely treat Conference Committee Reports as authoritative statements of what legislation means. Report language, while not part of a statute in a technical sense, is typically regarded by Congress as on par with the authority of statutory language. Congress regularly provides substantive policy guidance to federal agencies through report language, including detailed instructions on how the money allocated in an appropriation bill should be spent. In fact, most earmarks for specific projects to be funded by Congressional appropriations bills are provided through report language rather than statutory language.⁷² Report language also typically provides authoritative guidance on how statutory language should be interpreted and applied. For example, report language elsewhere in the No Child Left Behind Act supplies detailed instructions for how the graduation rate statistics required by the Act should be calculated.⁷³ Report language is considered so important that the President may choose to veto or approve bills based on their report language. In 1995, for example, President Clinton vetoed a bill dealing with securities litigation primarily because he objected to the bill's report language.⁷⁴ In 1996, President Clinton notified Congress of his intention to veto another bill in part because of its report language.⁷⁵ And in 1998, President Clinton signed a bill after noting that his approval hinged on a statement inserted in the bill's

70. Dennis D. Hirsch, *Science vs. Intelligent Design: The Law*, Ohio Citizens for Science, <http://ecology.cwru.edu/ohioscience/santorum.asp>.

71. Jay D. Wexler, *Darwin, Design, and Disestablishment: Teaching the Evolution Controversy in Public Schools*, 56 *Vand. L. Rev.* 751, 766 (2003).

72. Sandy Streeter, *Earmarks and Limitations in Appropriations Bills*, Congressional Research Service Report to Congress, Jan. 11, 1999.

73. H.R. Rep. No. 107-334, No Child Left Behind Act Conference Report (2001). [The Conferees intend that reporting of graduation rates described in clause \(vi\) shall be determined by reporting the percentage of students who graduate from high school with a regular diploma \(not an alternative degree that may not be fully aligned with State academic standards, such as a certificate or GED\), on time \(within four years of starting the ninth grade for high schools that begin with the ninth grade or within the standard number of years for high schools that begin with another grade\). The approach used to calculate graduation rates must also avoid counting dropouts as transfers. States that have or could have a more accurate longitudinal system that follows individual student progress through high school may use that system if approved by the Secretary as part of the State's Title I plan.](http://thomas.loc.gov/cgi-bin/cpquery/1?cp107:/temp/~cp1071fhk:e2268628:&&sid=khf101pcmocibttatneilc10&&report=hr334.107&&sel=TOC_2268627&&previous_query=&&xform_type=1000&&hold_doc_count=1&&level=3&&variant=no&&item_number=1&&bool=n& . Scroll down to #137.</p>
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74. *Message to the House of Representatives Returning Without Approval the Private Securities Litigation Reform Act of 1995*, Dec. 19, 1995, *Public Papers of the Presidents (1995)*, vol. 2, pp. 1912–13.

75. "Letter to Congressional Leaders on Product Liability Legislation," March 16, 1996, *Public Papers of the Presidents (1996)*, vol. 1, pp. 464–65.

report language.⁷⁶

Of course, the legal *effect* may depend upon where the language is located. If the language in the statute itself appears to require X, but language in a conference report expresses an intent not to require X, then the status of Congress' intent as "mere legislative history" is obviously significant. For example, in *City of Chicago v. Environmental Defense Fund*,⁷⁷ the Supreme Court held that language in the Resource Conservation and Recovery Act clearly authorized regulation of a municipal solid waste incinerator, despite language in the Committee Reports suggesting that Congress intended otherwise.⁷⁸ By contrast, the examples cited previously demonstrate that Conference Report language is often used by courts as a supplement to statutory language itself and, so long as there is no conflict with the statutory language, is treated as part of the statute itself.

Applying these principles to the Santorum language, one cannot plausibly argue that moving the Santorum language from the bill itself to the Conference Report resulted in a substantial change in its legal effect. It would be one thing if the original Santorum language *required* recipients of federal funds to "teach the controversy" as a condition of receiving such funds. Then the "demotion" of the language to "mere Conference Report language" would have been significant. But the Santorum language was always an expression of Congressional intent—an endorsement of the educational value of a "teach the controversy" approach, not an effort to impose it by law.

Opponents of the "teach the controversy" approach went to great lengths to mischaracterize what Congress did. One of the first opportunities to debate the significance of the Santorum language was at a public hearing held by the Ohio State Board of Education in early 2002. After the Board received competing recommendations for new science standards, it voted to hold a public hearing, inviting advocates of the "teach the controversy" strategy to debate opponents of this approach. Representing the proponents' view were Stephen C. Meyer, director of the Discovery Institute's Center for Science and Culture and co-author of the language that was cited by

76. "Statement on Signing the Securities Litigation Uniform Standards Act of 1998," Nov. 3, 1998, Public Papers of the Presidents (1998), vol. 2, pp. 1974–76.

77. *Chicago v. Envtl. Def. Fund*, 511 U.S. 328 (1994).

78. The dissent complained: "The purpose of a committee report is to provide the Members of Congress who have not taken part in the committee's deliberations with a summary of the provisions of the bill and the reasons for the committee's recommendation that the bill should become law. The report obviously does not have the force of law. Yet when the text of a bill is not changed after it leaves the committee, the Members are entitled to assume that the report fairly summarizes the proposed legislation. What makes this Report significant is not the single word 'generation,' but the unmistakable intent to maintain an existing rule of law." 511 U.S. at 345 n. 7 (Stevens, J., dissenting).

Senator Santorum in introducing his amendment, and Dr. Jonathan Wells, an embryologist, author of *Icons of Evolution*.⁷⁹

Meyer proposed that Ohio should adopt the "teach the controversy" principle in part because "federal educational policy calls for precisely this kind of approach."⁸⁰ Kenneth Miller, a biologist at Brown University and author of a widely used high school biology textbook, was a representative of those who opposed "teaching the controversy," and spent part of his time in the hearing demonstrating that the Santorum language had been "struck from the bill" and was not part of the No Child Left Behind Act.⁸¹ He claimed:

During the March 11, 2002 panel discussion on evolution in front of the Ohio Board of Education, the Discovery Institute's Stephen Meyer claimed that two purportedly anti-evolution sentences known as the "Santorum Amendment" were part of the recently-signed Education Bill, and therefore that the State of Ohio was obligated to teach alternative theories to evolution as part of its biology curriculum. I answered Meyer's contention by showing, using my own computer, that the Santorum language was not in the Bill, a copy of which I had downloaded from the Congressional web site. The effect on the crowd in attendance was devastating. A proponent of "Intelligent Design" had been caught misleading the Board as to the content of the law.⁸²

Similar claims were made by other Santorum opponents. In a law review article Professor Jay Wexler addressed both the "teach the controversy" concept in general, as well as the Santorum amendment and its developments in Ohio. He reported that, following the vote in the Senate, evolution supporters wrote to the Chairmen of the House and Senate Education Committees asking for deletion of the Santorum language from the bill.⁸³ After describing the justifications contained in the letter, Wexler reports:

The evolutionists got their wish. When the Joint House and Senate Conference Committee conferred in December, 2001 to create a final version of the education bill to present to the President. . .it deleted the controversial amendment from the text of the legislation. Instead, an altered version of the amendment was

79. See note 36, *supra*.

80. Stephen C. Meyer, *Teach the Controversy*, Cincinnati Enquirer, March 20, 2002, <http://www.discovery.org/scripts/viewDB/index.php?command=view&id=1134>.

81. Kenneth Miller, *A Law by Any Other Name?*, <http://www.millerandlevine.com/km/evol/santorum.html>.

82. *Id.*

83. Wexler, at 766.

inserted into the explanatory committee report, which does not itself constitute a source of law. . . Thus, although it flirted with the idea for a while, for the time being at least, the U.S. Congress as a whole has made no official pronouncement on the question of how public schools ought to teach their students about the origins of life and the universe.⁸⁴

In a book-length attack on the Intelligent Design movement, Barbara Forrest and Paul R. Gross claim:

Despite the shaky (or even nonexistent) legal status of the Santorum amendment, the Wedge accomplished what they initially set out to do: they managed to influence the legislative process regarding legislation of signal importance to science education, getting the initial sense of the Senate passed with an overwhelmingly supportive vote (91–8) before it was removed by the conference committee.⁸⁵

Forrest and Gross recognize that the language in the joint explanatory statement “left intact” the language from the Santorum amendment, but they rely on the erroneous claim of Professor Hirsch that conference report language is insignificant.⁸⁶

Opponents of the Santorum language would also argue that even if the Santorum language did have some faint legal effect, it would still fail to offer support for advocates of alternative theories such as Intelligent Design, because the Conference Report language only encouraged the presentation of “the full range of scientific views.” Furthermore, they assert that Intelligent Design falls outside of “anything that could be properly included among the “full range of scientific views,” Santorum offers no support for altering science education.⁸⁷

These valiant efforts to spin the Santorum language do not change a few basic facts: first, the Santorum language was initially enthusiastically endorsed by the United States Senate, and then endorsed in a slightly modified form by the entire United States Congress. The significance of this fact should be seen in light of the usual association of “evolution opponents” with small rural school boards with sincere but non-professional members. Because the Santorum language was never intended to *require*

84. Wexler, at 766–67 (footnotes omitted).

85. BARBARA FORREST & PAUL A. GROSS, *CREATIONISM’S TROJAN HORSE* 244–45 (2004).

86. “[T]he watered down version that appeared in the explanatory statement was added at the behest of a special interest group and did not receive the endorsement of Congress as a whole. In such situations, courts give legislative history little weight even as an interpretive tool. They in no way treat it as the considered ‘federal law’ on the subject.” FORREST & GROSS, *supra* note 84 at 244.

87. FORREST & GROSS, *supra* note 84 at 244.

that schools teach the controversy, but only convey Congressional *endorsement* of that approach, it does not resolve the question of whether such an approach would be constitutional, or even if it were, whether it constitutes good educational policy. Critics of the "teach the controversy" approach continue to deny both propositions.

III. THE CONTINUING CONSTITUTIONAL OBJECTIONS TO A "TEACH THE CONTROVERSY" APPROACH, WITH REBUTTAL

A. THE DEMARCATION ARGUMENT(S)

The most common starting point for attacks on the "teach the controversy" proposal has been the assertion that, while Darwinian Theory is based in science, the theory of Intelligent Design is inherently unscientific, and therefore has no place in the science classroom.⁸⁸ This claim has multiple prongs.

1. "Science Can Only Consider Material Causes"

One justification for refusing to consider Intelligent Design to be science is the claim that science is limited to the study of material causes.⁸⁹ To the extent that a theory proposes an explanation for living things that involves intelligent agency, rather than natural causes, some would argue that the theory lies outside of science insofar as science only deals with natural explanations for natural phenomena.⁹⁰ This is clearly

88. See, e.g., Katskee, *supra* note 2.

89. One common mistake made by those who claim that ID is not science is to pose the alternative as natural (or material) explanations vs. *supernatural* ones. While ID theory does not *exclude* supernatural causes (because science is limited in its ability to distinguish natural from supernatural causes), it does not *posit* them as the alternative to a natural (or material) cause. Instead, it identifies features of phenomena that are characteristic of the acts of intelligent agency.

90. Theresa Wilson, *Evolution, Creation, and Naturally Selecting Intelligent Design out of the Public Schools*, 34 U. TOL. L. REV. 203 (2003) (citing John Moore).

The sciences make a sharp distinction between what is "natural" and what is "supernatural." The first refers to the objects and processes that obey the impersonal laws of nature. These laws involve constant relationships between causes and effects. They are invariant-given the same circumstances and conditions, a specific cause will be followed always by a specific effect. Neither human desires nor forces outside of nature can affect the outcome. We contrast this scientific with explanations that involve supernatural forces that may be capricious and so do not obey invariant rules. These can never be studied by the basic approaches of science, which are observation and experiment. We are here in the realm of belief, not rational science. Belief is a pattern of thought that has characterized the human mind over all of its history, for it is comforting for many to accept that there are forces far more powerful than those available to human beings-forces that control the destinies of individuals and nations. This is a mind-set, however, that has been singularly unsuccessful in furthering an understanding of natural phenomena-the task of science.

JOHN A. MOORE, SCIENCE AS A WAY OF KNOWING: THE FOUNDATION OF MODERN BIOLOGY 22

erroneous. Scientists routinely investigate phenomena with the purpose of identifying whether a phenomenon is likely caused by intelligent agency. For example, fraud and arson investigation, forensic medicine,⁹¹ and the Search for Extra-Terrestrial Intelligence (SETI)⁹² employ comparative techniques to distinguish events likely to have been caused by an intelligent agent from those that can be produced through natural forces. Moreover, many forms of science such as anthropology, sociology and psychology involve the application of scientific methods to study the actions of intelligent agents. Thus, it is not Intelligent Design advocates who are attempting to “redefine science,” but rather the defenders of Darwinian orthodoxy who arbitrarily truncate science in order to exclude aspects of scientific investigation that are otherwise recognized as appropriate uses of the scientific method.⁹³

Moreover, one of the aspects of science that has always motivated individuals to pursue scientific questions is the perception that science may tell us something about larger metaphysical questions. Scientists continually debate whether or not the mind is something more than simply the sum total of the mechanical systems, such as the brain and associated neurological organs, through which the mind operates.⁹⁴ Whether there is something other than a material universe is a question that scientific investigation inevitably illuminates through its discovery of evidence that points either toward or away from a world other than the material.⁹⁵

(1993); *See also* NATIONAL ASSOCIATION OF BIOLOGY TEACHERS, STATEMENT ON TEACHING EVOLUTION, available at http://www.nabt.org/sub/position_statements/evolution.asp (“Explanations employing nonnaturalistic or supernatural events, whether or not explicit reference is made to a supernatural being, are outside the realm of science and not part of a valid science curriculum. Evolutionary theory, indeed all of science, is necessarily silent on religion and neither refutes nor supports the existence of a deity or deities”).

91. *See generally*, DeWolf, *supra* note 1, at 59.

92. William A. Dembski, *Reinstating Design Within Science*, 1 RHETORIC & PUB. AFF. 506 (1998).

93. Robin Feldman, *Historic Perspectives on Law & Science*, 2009 STAN. TECH. L. REV. 1, 53 (2009) (stating that “[i]f science is about what we perceive and what we can verify, the [Karl Popper] definition seems to leave out a lot of how science has actually operated and what scientists do.”).

94. MARIO BEAUREGARD AND DENYSE O’LEARY, *THE SPIRITUAL BRAIN: A NEUROSCIENTIST’S CASE FOR THE EXISTENCE OF THE SOUL* (2008).

95. An example of the relationship between science and larger metaphysical questions is the “The Mystery of Chaco Canyon,” a film that describes how archaeologists and astronomers worked together to propose a new theory as to why the buildings in the Chaco Canyon were built, and the manner in which they were built – proposing that they were part astronomy and part religious worship. The film is found at <http://www.solsticeproject.org/films.html> and is offered for use by grades 5–12, as well as college students. The study guide that accompanies the film discusses how it might be used in a math, science, geology, archaeology, or architecture class. The scientific measurements are used to determine the likelihood that the intelligent agents who constructed the building did so in order to conform the buildings to certain astronomical phenomena, such as lunar and solar cycles. *Id.*

2. “Intelligent Design is not Falsifiable”

A second objection to the treatment of Intelligent Design as a scientific theory is the claim that it is not falsifiable.⁹⁶ These claims overstate the value of falsifiability as a test of modern science: “Falsification sounds like a good bedrock principle for a science, but it was a failure.”⁹⁷ Moreover, Intelligent Design theory is no more or less subject to falsification than Darwinian theory. Each theory posits an explanation for past events, and must be evaluated based upon which offers a better explanation of the data.⁹⁸

3. “Intelligent Design is Only a Negative Argument”

An additional objection to Intelligent Design as a viable scientific theory is the claim that it offers nothing by way of a positive theory, but simply poses an artificial dichotomy between the Darwinian explanation and Intelligent Design as though the failure of Darwinian explanations automatically meant that design could be inferred.⁹⁹ However, Intelligent Design appeals to the same form of reasoning that Darwin borrowed from the geologist Charles Lyell,¹⁰⁰ who gave his book *Principles of Geology* the following subtitle: “Being an Attempt to Explain the Former Changes of the Earth’s Surface, by Reference to Causes Now in Operation.”¹⁰¹ As we are now able to observe the actions of intelligent agents, we can evaluate the plausibility of a hypothesis proposing an explanation of a past event by the actions of an intelligent agent.¹⁰²

B. EVEN IF IT IS “SCIENCE,” IT IS STILL RELIGION

1. The *Ad Hominem* Argument

A significant strategy in the opposition to teaching the controversy is a

96. See, e.g., Lofaso, *supra* note 2, at 266.

97. Feldman, *supra* note 92, at 53.

98. For a general discussion of “inference to the best explanation,” see STEPHEN C. MEYER, *SIGNATURE IN THE CELL* (2009).

99. Eric Shih, *supra* note 2, at 552 (“Design theorists operate under a similar binary system, where ‘negative’ arguments against evolution are taken as ‘positive’ arguments for design”); Matthew J. Brauer, Barbara Forrest & Steven G. Gey, *supra* note 2, at 85–86 (“The only method that ID advocates have devised for identifying these objects is in the form of a negative argument by elimination. That is, they rely on the false assertion that either some current naturalistic model for the origin of an object is correct, or that their ‘Intelligent Design’ inference is”).

100. STEPHEN C. MEYER, *supra* note 97, at 160 (“Darwin thought that when explaining past events, scientists should seek to identify established causes—causes known to produce the effect in question. Darwin appealed to this principle to argue that presently observed microevolutionary processes of change could be used to explain the origin of new forms of life in the past”).

101. *Id.* at 160.

102. *Id.*

dramatic exposé of the “agenda” of those who have proposed it. For example, in their book attacking Intelligent Design, Forrest and Gross devote the first two chapters to a history of the “Wedge movement,” forming the basis of their thesis that the effort to introduce Intelligent Design as an alternative theory of origins is “Creationism’s Trojan horse.”¹⁰³ “[W]hat is needed now is documentation of the Wedge *itself*, from its own internal and public relations documents, so that the public may understand its purposes and the magnitude of its impact, current and projected. The issue is not Darwinism or science: the issue is the Wedge itself.”¹⁰⁴ In the early response to the effort to provide alternatives to Darwinism, the courts focused on the motivation of those who were seeking “balance” in the curriculum.

Edwards v. Aguillard,¹⁰⁵ which struck down as unconstitutional a statute requiring “equal time” for creation science whenever evolution science was taught, relied primarily on the religious motivation on the part of the legislators who adopted it.¹⁰⁶ In the first case striking down a disclaimer,¹⁰⁷ the trial court based its ruling on the motivation of the school board in adopting the disclaimer, finding that the purpose of the disclaimer was to protect the religious beliefs of the proponents.¹⁰⁸

In more recent cases the courts have moved away from an analysis of religious motivation (perhaps persuaded by Justice Scalia’s dissent in *Edwards*¹⁰⁹) and have relied upon the *effect* of efforts to avoid teaching

103. FORREST AND GROSS, *supra* note 84, at 14.

104. *Id.* at 14.

105. 482 U.S. 578 (1987).

106. *See generally*, David K. DeWolf, *Academic Freedom After Edwards*, 13 REGENT U. L. REV. 447, 460–67 (2001).

107. *Freiler v. Tangipahoa Parish Board of Education*, 975 F. Supp. 819 (E.D. La. 1997), *affirmed*, 185 F.3d 337, 341 (5th Cir. 1999), *reh’g denied en banc*, 201 F.3d 602 (5th Cir. 2000), cert. denied, 530 U.S. 1251 (2000).

108. “[I]t is patent that Bailey [the Board member who sponsored the resolution to adopt the disclaimer], and other School Board members, believed that teaching the theory of evolution is antithetical to the religious belief in the creation of life by a Divine Creator, that the proposal was introduced to satisfy similar religious concerns of majority of the constituency, and that if the proponents of Creation Science must accept the fact that it cannot be taught in the public schools, as it is taught in Sunday School, then the disclaimer is a ‘very reasonable compromise.’” *Freiler*, 975 F.Supp. at 829.

109. “Our cases in no way imply that the Establishment Clause forbids legislators merely to act upon their religious convictions. We surely would not strike down a law providing money to feed the hungry or shelter the homeless if it could be demonstrated that, but for the religious beliefs of the legislators, the funds would not have been approved. Also, political activism by the religiously motivated is part of our heritage. Notwithstanding the majority’s implication to the contrary, we do not presume that the sole purpose of a law is to advance religion merely because it was supported strongly by organized religions or by adherents of particular faiths. To do so would deprive religious men and women of their right to participate in the political process. Today’s religious activism may give us the Balanced Treatment Act, but yesterday’s resulted in the abolition of slavery, and tomorrow’s may bring relief for famine victims.” *Edwards*, 482 U.S. 578

Darwinism, using Justice O’Connor’s endorsement test. For example, the Court of Appeals in *Freiler* rejected the trial judge’s finding of a “sham” secular purpose, but went on to affirm the finding that the effect of the disclaimer was to promote religion. Similarly, the trial judge in *Selman* did not find that the purpose prong in *Lemon* was violated. Instead, he held that:

[A]n informed, reasonable observer would interpret the Sticker to convey a message of endorsement of religion. That is, the Sticker sends a message to those who oppose evolution for religious reasons that they are favored members of the political community, while the Sticker sends a message to those who believe in evolution that they are political outsiders. This is particularly so in a case such as this one involving impressionable public school students who are likely to view the message on the Sticker as a union of church and state.¹¹⁰

The Court of Appeals remanded the case with a clear message that it found the trial court’s analysis unconvincing.¹¹¹

It stretches credulity to suggest that a policy of permitting students to hear about criticisms and alternatives to Darwinian Theory would have the effect of promoting religion, *because it was no longer imposing a one-sided view of the issue*. In a previous article I suggested that this argument is analogous to complaining that a school official was promoting Judaism if she responded to parental complaints about the parochial character of a “Christmas concert” by adding a Hanukkah carol.¹¹²

2. The Religious Implications Argument

An additional basis for attacking the constitutionality of the “teach the controversy” proposal is the argument that by allowing a teacher to acknowledge doubts about the adequacy of materialist explanation’s of the origin of complex life forms, a teacher would be promoting religion, because a strong candidate for an explanation other than material forces would be a supernatural agent.¹¹³ It is important to note that the theory of Intelligent Design is agnostic with respect to whether the agent responsible for the appearance of design is of natural or supernatural origin.¹¹⁴ Intelligent Design takes a strictly scientific approach, and thus

at 615 (Scalia, J., dissenting).

110. *Selman v. Cobb County Sch. Dist.*, 390 F.Supp.2d 1286, 1306 (2005).

111. *Supra* note 49.

112. DeWolf (Edwards), *supra* note 2, at 466–67.

113. As John Stewart wittily put it, the Intelligent Designer is either God, or someone with the same skill set. P.Z. Meyers, *Evolution Schmevolution 2*, Pharyngula Blog (Sept. 13, 2005) http://pharyngula.org/index/weblog/comments/daily_show_evolution_schmevolution_2/.

114. DeWolf (Montana), *supra* note 2, at 27. For example, Intelligent Design is compatible with explanations based upon an intelligent, but natural, designer such as panspermia, advanced

appeals only to causes with which we have observation-based experience—intelligent causes—and does not try to address religious questions about the identity of the designer. Nor does Intelligent Design theory try to address questions that are inaccessible via the scientific data, such as whether the designer is natural or supernatural. Nonetheless, it is certainly relevant to the Establishment Clause issue that many who have been persuaded that Intelligent Design is a better explanation for the origin of complex life forms wind up concluding that the best candidate for that agent is supernatural.¹¹⁵ The fact that a scientific theory might have religious implications is not unique to a theory of Intelligent Design applied to biology. It is well recognized that the so-called “anthropic principle”—identifying the features of the universe that logically point to the existence of a guiding supernatural intelligence—can only be escaped through exotic theories such as a “multiverse” theory of the origin of the universe.¹¹⁶ Even some who are skeptical of Intelligent Design as applied to biology believe that cosmology provides a strong argument for the existence of God.¹¹⁷ Thus, the fact that a theory has religious implications does not by

by Francis Crick and Leslie Orgel. F.H.C. Crick & L.E. Orgel, Directed Panspermia, 19 ICARUS 341 (1973) available at http://profiles.nlm.nih.gov/SC/B/C/C/P/_/scbccp.pdf). According to panspermia, the relatively sudden appearance of complex life forms on the earth makes a naturalistic origin of early life implausible; thus, the best explanation is that some intelligent being from elsewhere in the universe “seeded” earth with the necessary genetic materials to make the origin of life possible. While some have criticized this theory because it “only begs the question: What intelligent agent created the intelligent beings that spread intelligent life to Earth?” (Lofaso, *supra* note 2, at 269), if it turned out to be true that life on earth originated from an Intelligent Designer, albeit one whose origins begged further questions, that could have profound implications for our understanding of how terrestrial life functions. If, as defenders of Darwinian orthodoxy maintain, life could have originated (in fact, probably did originate) in more than one of those billions of planets scattered throughout the universe, wouldn’t it make a difference to our understanding of biology if it were discovered that life did indeed originate elsewhere, and it was seeded on earth by an intelligent agent? Would that discovery not change a good deal about the way that we understand biological organisms and the origin of humankind? The fact that we would still not know the answer to the origin of life from which our planet was seeded—would not change the profound significance of knowing that life on earth originated from an intelligent agent rather than from a blind process.

More to the point, if this question is conceded to be a legitimate scientific one, because it indeed has been advanced by one of the most distinguished scientists of our era, and because it could be empirically demonstrated, then the objection to Intelligent Design theory as lying outside of science virtually collapses. Thus, the dismissal of panspermia as merely “begging the question” about the origin of life is profoundly misguided.

115. For example, the well-known philosopher Anthony Flew became persuaded that the modern evidence for Intelligent Design changed his mind about the plausibility of atheism (“It now seems to me that the findings of more than fifty years of DNA research have provided materials for a new and enormously powerful argument to design.”) DeWolf (Montana), *supra* note 2, at 44, n. 205.

116. Ryan Spear, *What We Talk About When We Talk About God*, 1 HARV. L. & POL’Y REV. 495, 498 n. 22 (2007).

117. Stephen Barr, *The Miracle of Evolution*, FIRST THINGS (Feb. 2006).

itself render the theory unscientific, or result in an exclusion of such a theory from being taught in the public schools.¹¹⁸

Moreover, it is widely believed that Darwin's Theory has implications for religion in the opposite direction. Although some vigorously reject the notion that Darwinian Theory is in conflict with religious belief,¹¹⁹ other Darwinists claim that Darwinian Theory is the "universal acid" that makes traditional religious belief impossible.¹²⁰ In his popular biology textbook, Douglas Futuyma states, "[b]y coupling undirected, purposeless variation to the blind, uncaring process of natural selection, Darwin made theological or spiritual explanations of the life processes superfluous."¹²¹ The number of cases in which individuals point to their encounter with Darwinian theory as a turning point for them in abandoning traditional religious faith,¹²² roughly matches the number of individuals who point to the argument from design as a turning point in their decision to become a theist.¹²³

IV. THE POLICY OBJECTIONS TO TEACHING THE CONTROVERSY

A. IT IS A WASTE OF TIME

The first policy objection to teaching the controversy is that it squanders valuable time that students need to learn "real science." As I have previously noted, in order to make science "relevant" to students, mainstream textbooks include sidebars on political and social issues to which biology is relevant.¹²⁴ In light of the fact that the issue about biological origins is one that even presidential candidates must address, the claim that there is simply no time in the biology curriculum for this issue is hardly persuasive.

118. See also Addicott, *supra* note 2.

119. For example, Kenneth Miller's claim to be an orthodox Darwinist and an orthodox Catholic. See text accompanying note 17, *supra*.

120. DANIEL C. DENNETT, *DARWIN'S DANGEROUS IDEA* 63 (Touchstone ed. 1996) (1995); Michael Ruse, *On Behalf of the Fool*, in *Darwinism, Design, and Public Education* 475, 482-83 (John Angus Campbell & Stephen C. Meyer eds., 2003) ("Darwinism is a religion of a secular kind.")

121. DOUGLAS J. FUTUYMA, *EVOLUTIONARY BIOLOGY* 5 (3d ed. 1997).

122. Typified by Richard Dawkins' famous statement, "Darwin made it possible to be an intellectually fulfilled atheist." RICHARD DAWKINS, *THE BLIND WATCHMAKER: WHY THE EVIDENCE OF EVOLUTION REVEALS A UNIVERSE WITHOUT DESIGN* 6 (1996).

123. Illustrated by the case of Anthony Flew, *supra* note 114.

124. DeWolf, *Academic Freedom After Edwards*, 13 *REGENT U.L. REV.* 447, 481, n.193 (2000-2001).

B. THE RESTRICTION OF SCIENCE TO “MAINSTREAM”

A second objection is that science education should be confined to mainstream views, and that introducing students to a minority viewpoint only serves to dilute or diminish the knowledge that they should otherwise take away. The weakness in this argument is that, as noted earlier, a significant emphasis of modern science education is to teach “critical thinking.” Scientists do not merely accumulate more and more knowledge; they identify and correct mistakes in previous understanding of the phenomena they are studying. My colleague Casey Luskin has made this point effectively in a companion article in this issue.¹²⁵

C. BIOLOGY TEACHERS WILL REVOLT

As noted earlier, it is sometimes suggested that a “teach the controversy” approach will require biology teachers to violate their academic integrity in order to comply with an administrative requirement.¹²⁶ The scope of the teacher’s right to deviate from the curriculum prescribed by the school administration is still a matter of doubt. The extravagant claim made in *Edwards v. Aguillard* about the teacher’s academic freedom seems unlikely to survive closer scrutiny. However, the “teach the controversy” proposal never contemplated forcing biology teachers to do anything. It was proposed instead to provide encouragement and legal support to those teachers who, as a matter of their own academic integrity, want to present the origins controversy in a scientifically responsible way. Subject to whatever constraints are already in place to direct the way in which a biology class is taught, a “teach the controversy” policy offers teachers additional resources to stimulate interest in scientific questions and to model the way controversial issues can be respectfully discussed, appropriate to democratic pluralism.¹²⁷

D. THE DARWINISTS WILL TAKE REVENGE

The least persuasive policy reason for declining to adopt a “teach the controversy” approach is that it will invoke the wrath of those who defend Darwinian orthodoxy. After the *Dover* case, one of the attorneys noted that the decision “sends a message to other school districts contemplating

125. Luskin note 29 *supra*.

126. For example, the teachers in the *Kitzmiller* case refused to read the statement adopted by the School Board. *Kitzmiller*, at 761.

127. This perspective is most ably presented by John Angus Campbell . By teaching the controversy, he says, “we will be able to turn the heat of our longstanding cultural debate over evolution into needed educational light.” <http://www.discovery.org/scripts/viewDB/index.php?command=view&id=2519&program=CSC%20-%20Science%20and%20Education%20Policy%20-%20Federal%20Policy%20-%20MainPage&printerFriendly=true>.

Intelligent Design that the price tag can be truly substantial."¹²⁸ When the Kansas Board of Education passed science standards that made it easier to teach the controversy, *Science* published a letter proposing that universities refuse to accept credits from Kansas high school biology courses.¹²⁹ John Rennie, editor-in-chief of *Scientific American*, wrote an open letter that invited college admissions officials to "make it clear that the qualifications of any students applying from [Kansas] in the future will have to be considered very carefully."¹³⁰ Although risk-averse school boards are likely to take into account even a small chance of adverse consequences, there are good reasons for choosing the high road rather than the path of least resistance.

V. THE CONCLUSION

The "teach the controversy" proposal remains controversial. It offers a means by which science teachers can deal honestly with the questions that students are likely to raise as a result of reading the standard account of Darwinian orthodoxy in their textbook. Both because of an expanding range of scientific critiques of Darwinism, as well as a continuing cultural interest in the topic, the desire to incorporate such an approach into science education will generate continuing interest.

128. Amy Worden, *Dover District to Pay \$1 million in Legal Fees*, PHILADELPHIA INQUIRER Feb. 22, 2006, at B01 (quoting Richard Katskee, attorney for Americans United for Separation of Church and State).

129. Nancy Pearcey, *We're Not in Kansas Anymore: Why secular scientists and media can't admit that Darwinism might be wrong*, CHRISTIANITY TODAY, May 22, 2000 (<http://www.discovery.org/a/235>).

130. *Id.*

APPENDIX A

Casey Luskin, *Does Challenging Darwin Create Constitutional Jeopardy? A Comprehensive Survey of Case Law Regarding the Teaching of Biological Origins*, 32 *HAMLIN L. REV.* 1 (2009); Frank S. Ravitch, *Playing the Proof Game: Intelligent Design and the Law*, 113 *PENN ST. L. REV.* 841 (2009); Kelly S. Terry, *Shifting out of Neutral: Intelligent Design and the Road to Nonpreferentialism*, 18 *B.U. PUB. INT. L.J.* 67 (2008); Timothy Sandefur, *Reason and Common Ground: A Response to the Creationists' "Neutrality" Argument*, 11 *CHAP. L. REV.* 129 (2007); Eric Shih, *Teaching Against the Controversy: Intelligent Design, Evolution, and the Public School Solution to the Origins Debate*, 2007 *MICH. ST. L. REV.* 533 (2007); David K. DeWolf, John G. West, & Casey Luskin, *Intelligent Design Will Survive Kitzmiller v. Dover*, 68 *MONT. L. REV.* 7 (2007) [hereinafter DeWolf (Montana)]; Mary Katherine Hackney, *Is this Apple for Teacher an Apple from Eve? Reanalyzing the Intelligent Design Debate from a Curricular Perspective*, 85 *N.C. L. REV.* 349 (2006); David R. Bauer, *Resolving the Controversy over "Teaching the Controversy": The Constitutionality of Teaching Intelligent Design in Public Schools*, 75 *FORDHAM L. REV.* 1019 (2006); Richard B. Katskee, *Why It Mattered to Dover that Intelligent Design Isn't Science*, 5 *FIRST AMEND. L. REV.* 112 (2006); Johnny Rex Buckles, *The Constitutionality of the Monkey Wrench: Exploring the Case for Intelligent Design*, 59 *OKLA. L. REV.* 527 (2006); Philip A. Italiano, *Kitzmiller v. Dover Area School District: The First Judicial Test for Intelligent Design*, 8 *RUTGERS J. L. & RELIGION* 4 (2006); Martha M. McCarthy, *Instruction About the Origin of Humanity: Legal Controversies Evolve*, 203 *ED. LAW REP.* 453 (2006); Steven Goldberg, *Kennewick Man and the Meaning of Life*, 2006 *U. CHI. LEGAL F.* 275 (2006); Ralph D. Mawdsley, *Evolution and the Public School Curriculum: What Limitations on Teaching Evolution are Permissible and Acceptable?*, 203 *ED. LAW REP.* 9 (2005); Jay D. Wexler, *Review ("The Scopes Trope: Review of Where Darwin Meets the Bible: Creationists and Evolutionists in America, by Larry Witham")*, 93 *GEO. L.J.* 1693 (2005); Heather K. Gerken, *Dissenting by Deciding*, 57 *STAN. L. REV.* 1745 (2005); Stephanie L. Shemin, *The Potential Constitutionality of Intelligent Design?*, 13 *GEO. MASON L. REV.* 621 (2005); Matthew J. Brauer, Barbara Forrest, Steven G. Gey, *is it Science Yet?: Intelligent Design Creationism and the Constitution*, 83 *WASH. U. L.Q.* 1 (2005); Arianne Ellerbe, *We Didn't Start The Fire: The Origins Science Battle Rages On More Than 75 Years After Scopes*, 64 *LA. L. REV.* 589 (2004); Frank S. Ravitch, *A Funny Thing Happened On The Way To Neutrality: Broad Principles, Formalism, And The Establishment Clause*, 38 *GA. L. REV.* 489 (2004); Francis J.

Beckwith, *Not Your Daddy's Fundamentalism: Intelligent Design In The Classroom* 117 HARV. L. REV. 964 (2004); Chad Edgington, *Disclaiming Darwin Without Claiming Creation: The Constitutionality Of Textbook Disclaimers And Their Mutually Beneficial Effect On Both Sides Of The Origins Debate*, 35 TEX. TECH L. REV. 135 (2004); David J. Hacker *Warning! Evolution Lies Within: Preserving Academic Freedom In The Classroom With Secular Evolution Disclaimers*, 16 WASH. U. J.L. & POL'Y 333 (2004); Francis J. Beckwith, *Science And Religion Twenty Years After Mclean v. Arkansas: Evolution, Public Education, And The New Challenge Of Intelligent Design*, 26 HARV. J.L. & PUB. POL'Y 455 (2003); Jay D. Wexler, *Darwin, Design, And Disestablishment: Teaching The Evolution Controversy In Public Schools*, 56 VAND. L. REV. 751(2003); Kent Greenawalt, *Establishing Religious Ideas: Evolution, Creationism, And Intelligent Design*, 17 NOTRE DAME J.L. ETHICS & PUB. POL'Y (2003); Francis J. Beckwith, *Public Education, Religious Establishment, And The Challenge Of Intelligent Design* 17 NOTRE DAME J.L. ETHICS & PUB. POL'Y 461 (2003); T. Mark Moseley, *Intelligent Design: A Unique Perspective To The Origins Debate*, 15 REGENT U. L. REV. 327 (2002-2003); Daniel G. Gibbens, *Public School Education About Beginnings: Creationism, No! Truth About Science, Yes!* 55 OKLA. L. REV. 613 (2002); Francis J. Beckwith, *A Liberty Not Fully Evolved?: The Case Of Rodney Levake And The Right Of Public School Teachers To Criticize Darwinism*, 39 SAN DIEGO L. REV. 1311 (2002) [hereinafter Beckwith (Levake)]; Wendy F. Hanakahi, *Evolution-Creationism Debate: Evaluating The Constitutionality Of Teaching Intelligent Design In Public School Classrooms*, 25 U. HAW. L. REV. 9 (2002); Stephen L. Marshall, *When May A State Require Teaching Alternatives To The Theory Of Evolution? Intelligent Design As A Test Case*, 90 KY. L.J. 743 (2001-2002); Jeffrey F. 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 (2002); Deborah A. Reule, *The New Face Of Creationism: The Establishment Clause And The Latest Efforts To Suppress Evolution In Public Schools*, 54 VAND. L. REV. 2555 (2001); H. Wayne House, *Darwinism And The Law: Can Non-Naturalistic Scientific Theories Survive Constitutional Challenge?* 13 REGENT U. L. REV. 447 (2000-2001); David K. DeWolf, *Academic Freedom After Edwards*, 13 REGENT U. L. REV. 447 (2000-2001) [hereinafter DeWolf (Edwards)]; Theresa Wilson, *Evolution, Creation, and Naturally Selecting Intelligent Design out of the Public Schools*, 34 U. TOL. L. REV. 203 (2003).

