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INTELLIGENT DESIGN AND THE CONSTITUTION: THE TRUTH WILL SET US FREE

(REFLECTIONS ON *KITZMILLER V. DOVER AREA SCHOOL DISTRICT*)

PATRICK T. GILLEN*

I was delighted when I saw the advertisement for this symposium and was immediately interested in it. Let me tell you why: as fate would have it, it fell to me to serve as litigation counsel for the Defendants in *Kitzmiller v. Dover Area School District*,¹ the much ballyhooed case arising from the Dover School Board's decision to incorporate what board members believed to be a legitimate scientific theory, Intelligent Design Theory (IDT), into the high school biology curriculum.² As a lawyer who spent the better part of a year of his life working on the case, I was disappointed with Judge Jones's opinion.³ For this reason, I have always thought that it would be a tragedy if that opinion were allowed to have the effect that Judge Jones intended it to have, that is, to foreclose once and for all any effort to address the intriguing issues presented by the controversy surrounding IDT in connection with the science education of students in the public schools. My overarching goals today are to provide some additional insight into the case itself in order to mitigate the possibility that discussion of this topic will be set aside because of Judge Jones's opinion, and suggest a strategy to address the problem in science education that came to my attention as a

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1. *Kitzmiller v. Dover Area School District*, 388 F.Supp.2d 484 (2005).

2. I ended up at the center of the pretrial and trial process by reason of relative case-load in the office at the time the case was filed. Richard Thompson is Chief Counsel of the Thomas More Law Center and the scope of the litigation was such that a number of attorneys were drawn into the trial and made essential contributions. I do not wish to exaggerate my role or minimize theirs. And I certainly do not speak for them; the views expressed herein are my own.

3. While I disagree with Judge Jones's opinion, I do want to say that on a personal level he was a fine man to appear before. He was good to me when a serious family concern required relief from the pretrial order and I believe he was considerate of the needs the lawyers encountered as they labored to represent their clients. So while I disagree with the ultimate result such disagreement is not intended as a wholesale condemnation of the man.

result of my participation in the litigation.

In service of those two goals, I have three fairly modest objectives for my contribution to this colloquium. First, in the interest of candor, I want to briefly describe my background and initial thoughts on the matter as I entered the litigation. Second, I want to bring to light some of the evidence that was presented to Judge Jones on behalf of the Defendants, evidence which tends to show that the case itself, and the issue concerning the distinction between religion and science at the heart of the case, were much more complicated than Judge Jones's opinion makes out. Third, I want to suggest a strategy to address the problem relating to science education that came to my attention as a result of my participation in this litigation, i.e., the resistance to science education that many students bring to the classroom because they believe there is a conflict between their deeply held religious convictions and the claims that they have been led to believe that science makes for the Theory of Evolution (ET). With respect to this last point, I am confident that all people of goodwill can agree that such a problem (which undoubtedly exists), is not desirable, particularly given the tremendous contribution that both religion and science have made to our society. Accordingly, I suggest a course of action that is well calculated to address this stumbling block to science education, fully consistent with the law, and serves the common good.

At the beginning, let me note that I fully understand that the discussion which follows prescind from some very fascinating questions. As I worked on the case, I realized that it implicated a wide range of questions about religion, philosophy, and science, as well as the interrelationship between them. I understand that behind the surface discourse of evolutionary theory and intelligent design theory (e.g., the use the term "random" in ET or the claim for "design" in nature, whether "real" or "apparent", in IDT), there are far-flung and profound questions that are metaphysical in nature. I see that claims made for so-called "methodological" naturalism as the foundation of the scientific method can—and often do—entail an implicit claim for philosophical naturalism. I see that some claims dressed up as scientific reduce to ones that are more accurately characterized as religious. I realize that once one engages in a discussion in this area we can hardly avoid bracketing critical terms like "religion" and "science" because philosophers and historians of science cannot even agree among themselves. In short, I fully realize that this topic is very interesting and very complex.

But this higher level of discourse has generated books that fill library shelves in several areas today—with more to come no doubt. I have no intention of addressing those questions because I do not believe that they need to be addressed in terms of the governing law or in order for us to constructively address the vexing problem for science education I noted

earlier, and explain further later on. Also, I lack the background needed to make a genuine contribution to this “thicker” discussion of the topic. At the same time, I do wish to address the decision given my particular involvement with the case and the unfortunate results that Judge Jones’s opinion might have for science education.

BACKGROUND

One of the topics frequently raised by commentators during the trial itself related to the religious conviction of the lawyers involved. I suppose that these questions were designed to reveal bias or motive on the part of the lawyers responsible for the presentation of the case. Whatever the reason, the question was omnipresent. Likewise, various participants in the larger debate have disclosed their background beliefs in a genuine effort to address concerns about bias up front. So in the interest of fostering a candid discussion I will share my background and initial thoughts about the case with you.

I am an orthodox Roman Catholic who recites the Nicene Creed every Sunday, publicly confirming, among the community of my church, my ongoing faith that God is the “maker of heaven and earth.” At the same time, my religious tradition has a particular way of understanding revelation in Scripture, which does not entail a literal interpretation of the Bible, including the Book of Genesis. As a result, I see no necessary conflict between Scripture and claims made for ET, at least when claims made for ET are properly confined to scientific claims. So working on the case posed no religious conflict for me. At the same time, my religion did not lead me to embrace IDT either.

As a lawyer committed to protection of religious liberty guaranteed by the First Amendment, I agree with the Supreme Court’s holdings in *Epperson*⁴ and *Edwards*.⁵ I understand *Epperson* to stand for the proposition that the religious beliefs of public officials or their constituents should not limit the science education made available in public schools because measures designed to tailor science education to religious doctrine do not further a legitimate objective of civil law.⁶ I understand *Edwards* to stand for the related proposition that when the state operates a system of public education, it can neither suppress the teaching of a legitimate scientific theory because it is inconsistent with religious beliefs, nor require the teaching of a religious assertion as a condition of, and counterweight to, the teaching of a legitimate scientific theory because that does not further a

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

5. *Edwards v. Aguillard*, 482 U.S. 578 (1987).

6. *Epperson v. Arkansas*, 393 U.S. 97, 107–14 (1968).

legitimate objective of civil law.⁷

I am also a student of history who was struck from the outset by the fact that the *Dover* case was immediately discussed in terms of the *Scopes* “Monkey Trial”⁸ and *Inherit the Wind*.⁹ I was aware that the *Scopes* “Monkey Trial” was often made to stand for the conflict between evolutionary theory and a strain of Protestant religious conviction often labeled “fundamentalist,” and further, that the dominant historical narrative depicts the incident as one where science prevailed at the expense of religious prejudice, thereby contributing to the diminished influence of religion in American culture towards the end of the nineteenth century.

The historical context in which the case was seen raised a number of interesting questions for me. For one thing, the public polling that took place during the trial and afterward revealed that belief in creation, including a literal understanding of the Book of Genesis, remains alive and well in America.¹⁰ This in turn made me realize that, to the extent the conflict between religion and science (represented by ET) persisted, it is by no means certain that this strain of scientific research will continue to command public support. Of course, the opposite is true as well: if the religious opposition to science (including ET) fails, the invited conflict between legitimate scientific claims and religion undermines the legitimate force of religious conviction in our civil life. As someone who appreciates the positive contributions that religion has made to our civil life throughout our nation’s history, and respects the legitimate claims of science for its autonomy as a discipline, I could not help but approach the dispute with concern, especially once I became aware of the bombast that seemed to dominate public discussion of the case. It seemed to me that the case might never be viewed on its own merits but always in terms of caricatures and stereotypes.

My reservations were heightened by my personal skepticism about IDT and whether it qualified as a bona fide “scientific” theory. As a result of my personal reading, principally in the journal *First Things*, I came to the case with the tentative sense that IDT was not properly characterized as science but rather as a philosophical or religious assertion.¹¹ At the same time, I had

7. *Edwards v. Aguillard*, 482 U.S. 578, 593–97 (1987). I realize that some may argue about whether these are the actual holdings of either case (because the court mischaracterized either facts or law), but the opinions are justified on these grounds by the courts, and as so understood I find them unobjectionable.

8. *Scopes v. State*, 278 S.W. 57 (Tenn. 1925).

9. *INHERIT THE WIND* (MGM Pictures 1960).

10. According to a Pew Research Center poll of Americans in 2005, forty-two percent of participants held creationist views that “living things have existed in their present form since the beginning of time.” Laurie Goodstein, *Creationism strongly backed in U.S.*, N.Y. TIMES, Sept. 1, 2005, available at <http://www.nytimes.com/2005/08/31/news/31iht-religion.html>.

11. See, e.g., Stephen M. Barr, *The Design of Evolution*, FIRST THINGS, Oct. 2005, available

some acquaintance with the philosophy and history of science *via* Thomas S. Kuhn's masterpiece, *The Structure of Scientific Revolutions*, and was aware of the possibility that IDT might encounter resistance based on non-scientific considerations.¹² This risk seemed exacerbated by the historical context in which the public discussion of IDT was situated from the outset. As skeptical as I was about the claims made for IDT as science, I recognized the possibility that extra-scientific considerations might actually impede the advance of a legitimate scientific insight given IDT's criticism of claims made for ET, which I took to be the dominant paradigm in biology.

So where did this all net out for me? I was uncommitted, quite honestly, on the issue of whether IDT was properly categorized as a scientific, philosophical, or religious proposition. So I was completely free to operate as a lawyer tasked with representing a client. I remain uncommitted on whether IDT as presently formulated qualifies as science but I have a much greater appreciation for the complexity of the issue. My purpose here is simply to share my mindset as I found myself drawn into a case billed as historical and share reflections about the larger legal and educational issues raised by the case with the hope of fostering meaningful discussion of the issue.

THE KITZMILLER LITIGATION AND OPINION

Read at face value, Judge Jones's opinion in *Kitzmiller* makes it seem as if no sensible person could entertain the notion that IDT might be included in the public school science curriculum consistent with the constitution. So why bother discussing the matter?

Well, paper never refused ink (as the saying goes). There is good reason to believe that Judge Jones's opinion is more a caricature of the case than a serious consideration of the important issues involved, chiefly the important question at the heart of the dispute.¹³ I have noted with some satisfaction

at <http://www.firstthings.com/article/2007/01/the-design-of-evolution-22>; Stephen M. Barr, *The Miracle of Evolution*, FIRST THINGS, Feb. 2006, available at <http://www.firstthings.com/article/2007/01/the-miracle-of-evolution---4>; Stephen M. Barr, *The Form of Speaking*, FIRST THINGS, Dec. 2006, available at <http://www.firstthings.com/article/2007/03/the-form-of-speaking-46> (reviewing FRANCIS S. COLLINS, *THE LANGUAGE OF GOD* (2006)).

12. See THOMAS S. KUHN, *THE STRUCTURE OF SCIENTIFIC REVOLUTIONS* (1962).

13. There is a related question of how we judge when a discussion of religion or religious ideas has the primary effect of advancing religion in an illicit way understood as one not furthering a legitimate civil objective, in this case an educational objective. The Supreme Court recognized in *Epperson* and *Edwards*, that the discussion of religion in public schools is not forbidden—indeed we could not teach well about our nation's history or society without mentioning the role of religion. I deal with this question briefly below. For an illuminating discussion of this issue, see Jared Haynie, *Breaking Evolution's Monopoly on Origins: Self-*

that scholars from a variety of perspectives, including some authors in this same journal issue, do not accept Judge Jones's ruling.¹⁴ Before I give you a few examples I will briefly consider the law governing these perspectives.

Countless courts and commentators have remarked on the lack of clarity that plagues current "establishment clause" jurisprudence.¹⁵ Despite the muddle, it seems that the so-called *Lemon* test, derived from the Supreme Court's decision in *Lemon v. Kurtzman*, remains the overarching key to the Court's interpretation of the "no law respecting an establishment" provision of the First Amendment.¹⁶ Somewhere along the way, Justice O'Connor's concurring opinions engendered an "endorsement" inquiry that has been tacked on to the *Lemon* test or, as in the opinion rendered in the *Kitzmiller* litigation, employed in the alternative.¹⁷ Behind these general principles are the Supreme Court's specific precedents applying the Establishment Clause to cases similar to *Kitzmiller*, i.e., *Epperson*, and then *Edwards*, as well as a few lower court opinions that have some bearing on whether the inclusion of a given concept in the curriculum of a public school violates the prohibition on laws respecting an establishment of religion contained in the First Amendment.

Applying this body of law that sitting justices of the Supreme Court have characterized as in "hopeless disarray" or producing results that can

Governance, Parental Rights, and Religious Viewpoints in the Public Square—A Response to Kevin Trowel's Divided By Design, 7 AVE MARIA L. REV. 239, 250-51 (2008) (discussing Justice Jackson's views on the matter).

14. See, e.g., Jay D. Wexler, *Kitzmiller and the "Is it Science?" Question*, 5 FIRST AMEND. L. REV. 90 (2006); David K. DeWolf, *Intelligent Design Will Survive Kitzmiller v. Dover*, 68 MONT L. REV. 7 (2007).

15. Justice Clarence Thomas has said Establishment Clause jurisprudence is in "hopeless disarray" and that jurisprudential confusion has led to results that can only be described as silly. *Rosenberger v. Rector and Visitors of University of Virginia*, 515 U.S. 819, 861 (1995) (Thomas, J., concurring). Justice Antonin Scalia has called Establishment Clause jurisprudence involving holiday displays an "embarrassment." *Lee v. Weisman*, 505 U.S. 577, 636 (1992) (Scalia, J., dissenting). Scalia has gone so far as to compare the *Lemon* test to a ghoulish character of horror movies that keeps popping up "after being repeatedly killed and buried." *Lamb's Chapel v. Center Moriches Union Free Sch. Dist.*, 508 U.S. 384, 398 (1993). Justice Anthony Kennedy has written that Establishment Clause doctrine may need "substantial revision." *County of Allegheny v. ACLU Great. Pittsburgh Chapter et al.*, 492 U.S. 573, 656 (1989) (Kennedy, J., concurring in part and dissenting in part). See also Jay A. Sekulow & Francis J. Manion, *The Supreme Court and the Ten Commandments: Compounding the Establishment Clause Confusion*, 14 WM. & MARY BILL RTS. J. 33 (2005); Kristin M. Engstrom, *Establishment Clause Jurisprudence: The Sourcing of Lemon and the Search for a New Test*, 27 PAC. L.J. 121 (1995); Adam M. Conrad, Note, *Hanging the Ten Commandments on the Wall Separating Church and State: Toward a New Establishment Clause Jurisprudence*, 38 GA. L. REV. 1329 (2004); Frank J. Ducoat, Note, *Inconsistent Guideposts: Van Orden, McCreary County, and the Continuing Need for a Single and Predictable Establishment Clause Test*, 8 RUTGERS J.L. & RELIGION 14 (2007).

16. *Lemon v. Kurtzman*, 403 U.S. 602 (1971).

17. See, *Kitzmiller*, 400 F.Supp. 2d at 712-15; for Justice O'Connor's concurrence see *Lynch v. Donnelly*, 465 U.S. 668, 688 (1984).

only be described as silly,¹⁸ Judge Jones found that the Dover Area School Board violated the Establishment Clause because the changes to the biology curriculum were enacted primarily for a religious purpose, had the primary effect of advancing religion and, as if that were not enough, constituted an unconstitutional endorsement of religion by the Dover Area School District. For the purpose of our discussion here, I will briefly treat the purpose and effects findings of Judge Jones's opinion.¹⁹ I will not spend time on his endorsement test finding because I believe the endorsement test is insupportable as a principle of law.²⁰

PURPOSE PRONG FINDING

Judge Jones found that the Dover Area School Board violated the Establishment Clause because the changes to the biology curriculum were enacted primarily for a religious purpose.²¹ Now at the outset let me acknowledge that this finding is the most case-specific and least important for the larger discussion about what the Constitution might have to say about discussing or teaching IDT in public schools. But I do want to provide some additional information suggesting that Judge Jones's "purpose" finding is open to fair questioning.

For that limited purpose I want to focus on a few features of the case that Judge Jones either made much of, or neglected, so that his opinion can be evaluated more objectively. In this regard I will focus as an initial matter on the change to the curriculum that the board actually adopted. That change entailed providing students with a four-paragraph statement that provided:

The Pennsylvania Academic Standards require students to learn about Darwin's Theory of Evolution and eventually to take a

18. Justice Clarence Thomas used "hopeless disarray" to describe jurisprudential confusion resulting from the *Lemon* test. *Rosenberger v. Rector and Visitors of Univ. of Virginia*, 515 U.S. 819, 861 (1995) (Thomas, J., concurring). In 1982, Justice William Rehnquist described a *Lemon* test outcome as how "silly cases-also make bad law." *Larkin v. Grendel's Den, Inc.*, 459 U.S. 116, 128 (1982) (Rehnquist, J., dissenting).

19. *Kitzmiller*, 400 F.Supp. 2d at 714-16.

20. I say this because I believe any test that turns on whether a hypothetical reasonable observer would see a given governmental policy as "endorsing" religion in some undefined and utterly subjective way deemed alienating to this hypothetical reasonable observer—who is a member of a political community thoroughly permeated by religious influences since its founding—is a truly (and tragically) laughable test when considered in light of the very real injustices that engendered the religious liberty provisions.

21. *Kitzmiller*, 400 F.Supp. 2d at 762-63. I realize that there is good reason to take the position that there is no "Establishment Clause" as such but rather one "religion clause." Nonetheless, the terms are a useful short-hand reference to the jurisprudence developed around the prohibition of "laws respecting an establishment of religion." I use the term for that purpose herein.

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.²²

In addition, a notation was made to the biology curriculum that enshrined the existing practice of teachers, which was not to discuss origins of the species when teaching evolutionary theory.²³ Finally, as a result of the change in the curriculum, a number of books addressing ET and IDT were accepted and placed in the high school library.²⁴ At the outset, one has to ask whether such a minor change to the biology curriculum really comports with Judge Jones's portrait of a school board bent on teaching religion in the classroom.²⁵

In support of his conclusion, Judge Jones made much of the fact that some of the board members were Creationists who believed in a literal interpretation of the Book of Genesis, and that some of them had expressed an interest in whether Creationism could be taught in the public schools.²⁶ Judge Jones used this fact to support his finding that the board acted with a religious purpose.²⁷

Setting aside the fact that most of the board members were not Creationist and that absolutely no action was taken to include Creationism in Dover area schools, there is another striking fact that Judge Jones

22. *Id.* at 708–09. Note that after additional books on the subject were donated to the library, the statement was changed in June, 2005, to include the following revised sentence, “The reference book, *Of Pandas and People*, is available in the library along with other resources for students who might be interested in gaining an understanding of what Intelligent Design actually involves.” Transcript of Proceeding of Bench Trial Afternoon Session on Nov. 2, 2005 at 18–32, 39–40, *Kitzmiller*, 400 F.Supp. 2d at 707.

23. Defendants' Proposed Findings of Fact and Conclusions of Law at 141, *Kitzmiller*, 400 F.Supp. 2d at 707.

24. *Id.* at 101–02, 141.

25. *Kitzmiller*, 400 F. Supp. 2d at 731–32, 750–52.

26. *Id.* at 750–52.

27. *Id.* at 762–63.

rejected.²⁸ None of the Creationists who voted for the curriculum change agreed with IDT or understood it to be Creationism.²⁹ In fact, IDT was inconsistent with their personal religious beliefs, which include a literal understanding of the Book of Genesis.³⁰ At the same time, they did think IDT was a legitimate scientific theory that made sense—more sense than the claims made for ET.³¹ Let me suggest that they can be forgiven for thinking IDT was a legitimate scientific theory if only because at the time of the trial there were three PhDs who shared their opinion.³²

Judge Jones seemed to think that the board members could only have a religious motive for their actions.³³ But the record does not compel that conclusion.³⁴ Consider Alan Bonsell. He had a very real interest in ET, at least in part because of his religious conviction.³⁵ But does that disqualify his views altogether? During the trial, I asked him to explain why the statement he drafted included references to “gaps” and “problems” in ET. Here is the way he explained it:

Well, the way I look at it, gaps and problems are sort of two different things. Gaps could be okay, we have evidence for A and we have evidence for C, but we’re missing B to connect the two together. So there are the gaps. A problem I would consider what I think I talked about earlier, a problem for say evolutionary theory is that it’s statistically impossible for it to happen. That’s a problem. That’s not a gap.³⁶

As someone whose acquaintance with evolutionary theory ended after a tenth grade biology course organized around *Biology* by Miller and Levine, I was startled that a small businessman in Dover, Pennsylvania, had actually given this sort of distinction some careful thought. But do not take his word for the fact that there are gaps and problems in ET. The 2004 edition of *Biology* by Miller and Levine, the one purchased by the board and used in the classroom, was actually edited to include reference to gaps and problems in evolutionary theory while the Dover School Board was selecting that text and drafting the curriculum change.³⁷

28. Defendants’ Proposed Findings of Fact and Conclusions of Law, *supra* note 23, at 202–06.

29. *Id.* at 10, 39, 44–6, 51, 127, 202–06.

30. *Id.*

31. *Id.* at 125–33.

32. *Id.* at 39, 46, 49–50, 93, 145–46, 153; Defendant’s Proposed Rebuttal Findings of Fact and Conclusions of Law at 2–3, *Kitzmiller*, 400 F.Supp. 2d at 707.

33. *Kitzmiller*, 400 F. Supp. 2d at 762–63.

34. Defendants’ Proposed Findings of Fact and Conclusions of Law, *supra* note 23, at 134.

35. *Id.* at 127–28.

36. Transcript of Civil Bench Trial Proceedings Morning Session on Oct. 31, 2005, at 130, *Kitzmiller v. Dover Area Sch. Dist.* 400 F. Supp. 2d 707 (M.D. Pa. 2005) (No. 04-CV-2688).

37. Defendants’ Proposed Findings of Fact and Conclusions of Law, *supra* note 23, at 38, 41, 58, 187–88.

Similarly, Judge Jones made much of the fact that Bill Buckingham ventured the thought that the separation of church and state was not in the Constitution and made some other statements with religious themes during board meetings, some of which discussed the controversy over the “one nation, under God,” language of the Pledge of Allegiance that was struck down by the Ninth Circuit during this period.³⁸ He also emphasized that Alan Bonsell had suggested that the Assistant Superintendent of the Dover School District consider a book by David Barton entitled *Myth of Separation*.³⁹

Setting aside the fact that nothing was ever done to include the Barton book in the social studies curriculum, let me suggest again that these board members can be forgiven for taking this position. I say this for two reasons. The first reason is that the phrase “separation of church and state” does not in fact appear in the Constitution, and while it is undoubtedly true that the provisions require some separation of church and state, it is equally certain that some of the decisions premised on a broad understanding of “separation” remain highly controversial.⁴⁰ The second reason they can be forgiven is related, i.e., a sitting Chief Justice of the United States Supreme Court has made the same assertion, relying on a monograph by a historian from Northwestern University.⁴¹ Again, does this assertion really support a finding that the statement above had the primary purpose of advancing religion?

Let me highlight a few more facts of record. As the school board’s discussion of the biology text and biology curriculum heated up, Richard Nilsen, the Superintendent, received a bulletin advertising a panel discussion, sponsored by the Pennsylvania School Board Association, addressing “Creationism and the Law” at a local college.⁴² Nilsen asked Mike Baksa, the Assistant Superintendent, to attend the discussion and learn anything that might bear on the biology curriculum.⁴³

Baksa did attend the panel discussion, which was conducted by two presenters, one of whom, Baksa noted, had a law degree from Harvard and

38. *Kitzmiller*, 400 F. Supp. 2d at 751–52.

39. *Id.* at 749.

40. See *Wallace v. Jaffree*, 472 U.S. 38, 92 (1985) (Rehnquist, J., dissenting) (citing 8 WRITINGS OF THOMAS JEFFERSON 113 (H. Washington ed. 1861); see also *ACLU of Kentucky v. Mercer County, Kentucky*, 432 F.3d 624, 638 (6th Cir. 2005) (referring to notion of separation of church and state as an “extra-constitutional concept” and noting the controversial nature of arguments advanced under that rubric).

41. *Wallace*, 472 U.S. at 103–04 (Rehnquist, J., dissenting) (citing ROBERT L. CORD, SEPARATION OF CHURCH AND STATE: HISTORICAL FACT AND CURRENT FICTION, 61–82 (1982)).

42. Defendants’ Proposed Findings of Fact and Conclusions of Law, *supra* note 23, at 13–14.

43. *Id.*

the other of whom had a Ph.D. in the history of science.⁴⁴ The general thrust of the presentation was that incorporating some mention of Creationism into the biology curriculum might actually prompt a useful discussion that could be used to place religion and ET in context so as to further science education.⁴⁵ This led Baksa to conclude, quite understandably, that if Creationism could be mentioned in a manner consistent with the law, then surely the board could include some mention of IDT, which Baksa did not see as Creationism.⁴⁶ Again, is this practical judgment borne of reliance on a presentation sponsored by the Pennsylvania School Boards Association evidence of a Fundamentalist plot to advance religion in the classroom? Or could it be evidence that the relationship between evolutionary theory and certain religious beliefs is part of our cultural context such that educational professionals look for appropriate ways to address it in connection with science education?

Judge Jones also made much of the fact that Buckingham was highly critical of the version of the text *Biology* by Miller and Levine that was being used in the classroom.⁴⁷ Indeed, the record shows that Buckingham did research on the web and presented Baksa with a list of objections to the presentation of evolutionary theory.⁴⁸ While the board worked through the process of selecting a text and the curriculum change dispute was pending, a new edition of *Biology* was placed in circulation and the biology teachers requested the newest version for the classroom.⁴⁹ Concerned that the new text might draw objections from Buckingham, Baksa sat down with Buckingham's list of objections to compare the two texts and vet the new edition against Buckingham's list.⁵⁰ Baksa found that many of the changes made in the newest edition addressed points on Buckingham's list of objections.⁵¹

Finally, I think anyone interested in scrutinizing the opinion should compare the goals that board members started with and the policy the board ended up enacting. At the outset, Alan Bonsell and Bill Buckingham were convinced that there were serious gaps and problems in ET and that students should be made aware of those because ET was being presented as a fact when it was simply a scientific theory.⁵² They regarded IDT as a

44. *Id.*

45. *Id.*

46. *Id.* at 103–04.

47. *Kitzmiller*, 400 F. Supp. 2d at 751.

48. *Id.* at 749–50.

49. Defendants' Proposed Findings of Fact and Conclusions of Law, *supra* note 23, at 50, 53, 55–59.

50. *Id.* at 57–59.

51. *Id.*; Transcript of Proceedings of Bench Trial Morning Session on Nov. 3, 2005 at 43, *Kitzmiller*, 400 F. Supp. 2d at 707.

52. Defendants' Proposed Findings of Fact and Conclusions of Law, *supra* note 23, at 11–12,

scientific theory and thought ET and IDT should be taught side-by-side in the classroom using a compare and contrast method.⁵³ Likewise, they thought the text *Of Pandas and People*, the only text they could find addressing IDT, should be a classroom text on par with *Biology* by Miller and Levine, the basal text used at the time.⁵⁴

Here is what the board actually approved. Teachers were expected to “make students aware of” IDT, and when they objected that they were not familiar with the subject the board drafted the statement above to serve that purpose.⁵⁵ That statement referenced gaps in ET, much like the 2004 edition of *Biology* by Miller and Levine had been edited to note gaps and problems.⁵⁶ *Of Pandas and People* was available in the school library (not the classroom) along with three other texts critical of ET.⁵⁷ And if a student went to the computer terminal in the library to call up a book on IDT, the only book that would come up on the screen was one critical of IDT, and edited by one of the Plaintiff’s experts, Robert Pennock, entitled *Intelligent Design and its Critics*.⁵⁸

If we believe that actions speak louder than words, then what does this substantial divergence between initial goals and the final result suggest? Does it suggest a board that pursued a goal with a primarily religious motive? Or does it suggest a board that believed it was pursuing a legitimate educational goal but took the views of its critics into account? Like all trials, that final decision turns on countless smaller decisions about facts and credibility that we cannot revisit here. Nevertheless, I think this small portion of “the other side of the story” that I have highlighted to provide context for Judge Jones’s decision because of the way it has been used in connection with discussion of how IDT might be incorporated into the curriculum of public schools, suggests that the case is more complicated than Judge Jones’s opinion makes out.

EFFECTS PRONG

Judge Jones’s treatment of the central and fascinating issue in the case—how we distinguish between religious and scientific assertions—is the most disappointing portion of the opinion. It fails to take into account fundamental principles from the philosophy of science. It demonstrates no

18–19.

53. *See id.* at 39–51.

54. *Id.* at 61.

55. *Id.* at 138–45.

56. Defendants’ Proposed Findings of Fact and Conclusions of Law, *supra* note 23, at 142–45.

57. *Id.* at 121–22, 142–44.

58. *Id.* at 144.

meaningful appreciation for the history of science whatsoever. It employs a logic that, if applied consistently, would disqualify ET as a scientific assertion, simply because some of its public proponents have made the ridiculously unscientific claims that ET proves there is no God.

Once I began to get a sense for the issues presented in the case, it became apparent to me that the decision might turn on whether IDT was classified as a religious or scientific assertion. I say “might” because Judge Jones could have rested his decision simply on finding a religious purpose, as the Supreme Court had done in *Edwards*.⁵⁹ I realized that in order to address this question, I would need an expert from the academic discipline that referees disputes of this nature, one credentialed in the philosophy and history of science. So like any lawyer trying to serve a client, I searched for an expert who might be willing to support the board’s view that IDT was science.

My search for an expert in the philosophy and history of science began and ended with Steve William Fuller. His full curriculum vitae and expert report spans pages but let me sketch his credentials and accomplishments so that you can appreciate the trial testimony that I outline below.⁶⁰ After receiving his undergraduate degree from Columbia, Fuller was awarded the Kellet Fellowship to fund his study at Cambridge University, where he earned a masters degree in philosophy.⁶¹ He then entered the Ph.D. program in the philosophy and history of science at the University of Pittsburgh, a premier program in the United States and the world.⁶² He was the first post-doctorate fellow for the National Science Foundation here in the United States and the first research fellow in the public understanding of science at the Economic and Social Research Council in the United Kingdom.⁶³ At the time of the trial he had nine books published and two in printing.⁶⁴ He is the author of over two hundred published articles or book chapters and had been translated into fifteen languages—by this time I am sure he has further contributed to his field.⁶⁵ His work is known throughout the world.⁶⁶

At the trial, Fuller gave his expert opinion that IDT was science.⁶⁷ This may seem startling given Judge Jones’s opinion, which treats IDT as Creationism and uses this finding to support the ultimate finding that

59. *Edwards*, 482 U.S. at 585.

60. Transcript of Proceedings Bench Trial Morning Session on Oct. 24, 2005, *supra* note 51 at 3–5.

61. *Id.*

62. *Id.* at 5.

63. *Id.* at 6–8.

64. *Id.* at 6.

65. *Id.*

66. Transcript of Proceedings Bench Trial Morning Session on Oct. 24, 2005, *supra* note 51 at 6.

67. *Id.* at 34.

reading the four paragraph statement set forth above has the primary effect of advancing religion.⁶⁸ But truth be told, the divergence of opinion speaks volumes about the defects in Judge Jones's finding.

Fuller opined that IDT as currently advanced by its principal proponents, William Dembski and Michael Behe, was not inherently religious and did qualify as science.⁶⁹ He offered this opinion while fully acknowledging the evident connection between what might be called a "creationist mindset" and IDT on the part of at least some proponents of IDT.⁷⁰

Here he explained that when the philosophy of science seeks to distinguish between scientific and non-scientific assertions it employs a distinction between the "context of discovery" and the "context of justification."⁷¹ The "context of discovery" is understood as the mindset of the scientist who engages in inquiry.⁷² As Fuller explained at trial and I sketch below, it turns out that the history of science is filled with any number of individuals who proceeded from a "creationist" context of discovery, and many believe it is the creationist mindset engendered by Western Civilization that explains the genesis of modern science.⁷³

The "context of justification" serves to disentangle an assertion from its metaphysical context of discovery and determine if it is "scientific" in the sense we use the term.⁷⁴ The test turns on whether someone who does not share the scientist's particular metaphysical or religious commitments (i.e., the "context of discovery") nonetheless can understand the theory and test it by means of non-religious proofs.⁷⁵ For example, gravity became a recognized phenomenon quite apart from Newton's religious convictions and his belief that he needed to understand the mind of God in order to understand the movement of things, because he could specify gravitational force mathematically and his assertion could be tested in a manner sufficient to regard it as accurate.⁷⁶ In contrast, Johannes Kepler's explanation for planetary movement would not have made the leap from his religious "content of discovery" to a non-religious "context of justification," despite the firm grasp Kepler had on the elliptical orbits of

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

69. Transcript of Proceedings Bench Trial Morning Session on Oct. 24, 2005, *supra* note 51, at 35-39.

70. *Id.* at 81-82, 99-103, 114-15.

71. *Id.* at 81-82.

72. *Id.*

73. See, e.g., *id.* at 44-45, 77-78, 117-19.

74. *Id.* at 81-82.

75. Transcript of Proceedings Bench Trial Morning Session on Oct. 24, 2005, *supra* note 51, at 82.

76. See *id.* at 76-77; Transcript of Proceedings of Bench Trial Afternoon Session on Oct. 24, 2005 at 27-28, *Kitzmiller*, 400 F. Supp. 2d at 707.

the planets, because he sought to explain planetary movement in those orbits with reference to a spiritual mover, i.e., “anima motrix.”⁷⁷

Fuller gave examples of scientists proceeding from a creationist mindset and making major scientific discoveries during the trial to illustrate the distinction.⁷⁸ For example, Isaac Newton’s papers reveal that as he sought to explicate the natural phenomena we call gravity, he saw his task as getting into the mind of God so as to grasp how God might have built into nature the law of gravity.⁷⁹ Fuller shared other examples with me that I omitted from his trial testimony due to the limits of time but will mention briefly here for the purpose of illustrating this point.

For example, James Maxwell, who likewise saw himself as exploring laws of nature created by God, made numerous scientific discoveries of the first rank, including his unification of electricity and magnetism (hence our term electromagnetism), and ultimately light, something that prompted Einstein to describe Maxwell’s contribution to physics as the most significant since Newton.⁸⁰ Likewise, George Lemaitre, a Catholic priest, posited the reigning scientific theory for the origins of the universe, which he described in explicitly creationist terms and which was derisively called the “Big Bang theory,” a pejorative label that stuck even after the theory gained widespread acceptance in the scientific community.⁸¹

But the example that I enjoyed the most and want to share with you because the story is rich in irony concerns Gregor Mendel’s discovery of genetics.⁸² I will relate more of Fuller’s testimony about Mendel later, but suffice it to say that Mendel, an Augustinian monk, was also a “creationist.”⁸³ Yet the genetic theory he discovered turns out to be an essential ingredient of the current neo-Darwinian thesis at the center of modern ET.⁸⁴

The point here is that one fundamental flaw of Judge Jones’s opinion is his assertion that IDT is not science because it has some connection with a

77. Dedre Gentner et al., *Analogical Reasoning and Conceptual Change: A Case Study of Johannes Kepler*, 6 J. LEARNING SCIENCE 3, 11-18, 21-25 (1997). Kepler determined the solution to his calculations by “analogizing,” a common practice among alchemists at the time to compare subjects of study with ones more understood, and found the critical shape of the orbit with little understanding beyond his empirical data. *Id.*

78. Transcript of Proceedings of Bench Trial Morning Session on Oct. 24, 2005, *supra* note 51, at 137.

79. *Id.* at 77.

80. IVAN TOLSTOY, JAMES CLERK MAXWELL 1-7, 29-30, 58-62, 90 (Univ. of Chicago Press 1982).

81. JOHN FARRELL, THE DAY WITHOUT YESTERDAY: LEMAITRE, EINSTEIN, AND THE BIRTH OF MODERN COSMOLOGY 86-92 (2005).

82. Transcript of Proceedings of Bench Trial Morning Session on Oct. 24, 2005, *supra* note 51, at 45-47.

83. *Id.* at 45.

84. *Id.* at 44.

creationist context of discovery.⁸⁵ On that theory, some of the greatest scientific discoveries in history, e.g., gravity, electromagnetism, and genetics, could be ruled out of science as “creationist.” For some reason, Judge Jones did not manage to grasp this simple truth of the history of science but proceeded to blithely disqualify IDT from science based largely on evidence that it has a connection with a creationist mindset.⁸⁶

Fuller also addressed a number of the other grounds said to disqualify IDT as a scientific assertion during trial.⁸⁷ Another pressing issue was whether IDT makes the sort of empirical claims that we think of as scientific, given that its task of testing for design seems to point to something beyond the reach of science, i.e., some source of design.⁸⁸ At the outset one should see that this sort of “bracketing,” that is, excluding certain questions from the scope of a ventured explanation, is a feature of many scientific theories, including ET.⁸⁹ Thus, for example, ET posits the origin of biological life based on a convergence of factors interacting with non-biological matter; but does not (as yet) posit a theory for the origin of the original matter from which biological life emerged; it takes that matter as a given and works forward from there.⁹⁰ Likewise the so-called “Big Bang theory” of the origins of the universe posits that the universe came into being as a result of an explosion of matter; but it does not (as yet) posit an explanation for the origin of that matter.⁹¹ So it cannot be the case that a theory is non-scientific because it brackets (does not seek to explain) every feature of the natural world but limits its focus to certain aspects that are deemed capable of explanation.⁹²

Fuller also rejected the claim that IDT is not science because it is not based on empirical observations of the natural world that are testable in any meaningful sense because IDT makes a claim for “real” as opposed to only “apparent” design in nature.⁹³ As he explained, proponents of IDT do advance empirical claims based on natural phenomena.⁹⁴ Dembski’s ongoing effort to specify design mathematically parallels other efforts to do so that are accepted by the scientific community, e.g., S.E.T.I.,⁹⁵ and represents a deductive approach to natural phenomena that is characteristic

85. *Kitzmiller*, 400 F. Supp. 2d at 718-23, 735-38, 765.

86. *Id.*

87. *Id.* at 46-47, 99-101.

88. *Id.* at 99-101.

89. *Id.* at 62-64.

90. *Id.*

91. See generally FARRELL, *supra* note 81.

92. Transcript of Proceedings of Bench Trial Morning Session on Oct. 24, 2005, *supra* note 51, at 62-64.

93. *Id.* at 100-01.

94. *Id.* at 37-39.

95. Search for Extra Terrestrial Intelligence.

of certain kind of scientific inquiry.⁹⁶ The work conducted by Behe and Minnich, working with the incredible complexity of biological life at the cellular and molecular level, represents the sort of inductive reasoning that represents another strain of scientific investigation.⁹⁷ One discipline that employs this approach is paleontology, a field that contributes to ET by examining a range of fossil remains and positing possible lines of descent based on morphological similarities.⁹⁸

Indeed, Fuller opined that when one surveys the scene of scientific inquiry, and the extent to which computer modeling is being used to test hypotheses about the natural world (including claims made for evolution), there is good reason to believe that IDT might manage to unite disparate scientific fields under a common approach. Here he noted this type of experimentation requires the “experimenting” scientist, working with a program that is designed to represent the natural phenomena, to “design” the program variables sought to be tested. Such experimental work parallels the same “creationist” mindset that many scientists, such as Newton, Maxwell, and Lemaitre, have brought to their work in the past.

Fuller opined that because this type of work seems to share roots with information theory, IDT might actually bring together a variety of lines of scientific inquiry under what might be called “design theory.”⁹⁹ And here it bears noting that this drive for overarching theory was a characteristic of Western science arising from the creationist’s mindset described earlier. In this regard, physics stands as the archetype of scientific theory precisely because it has managed to unite vast ranges of phenomena under a series of successively more comprehensive theoretical frameworks.¹⁰⁰ To learn such things is to make one wonder whether the claim for a “universe” (meaning one whole) might not be accounted for by some design.

Fuller also dealt with the claim that IDT is not science because it is not testable in the experimental sense we expect for scientific claims.¹⁰¹ First, he rejected the claim that IDT is not testable for the simple reason that Dembski and Behe have made assertions, which have been understood by other scientists—tested, critiqued, and rejected (at least so far).¹⁰² More

96. *Id.* at 38–39. S.E.T.I., or Searching for Extra-Terrestrial Intelligence, is a federally-funded program that uses detectors to search for electro-magnetic signals that would deductively point toward intelligent life in space. Transcript of Proceedings of Bench Trial Morning Session on Oct. 18, 2005 at 71–72, 104, *Kitzmilller*, 400 F. Supp. 2d at 707.

97. Transcript of Proceedings of Bench Trial Morning Session on Oct. 24, 2005, *supra* note 51, at 39.

98. *Id.* at 63, 68.

99. *Id.* at 79–82.

100. *Id.* at 117–19.

101. *Id.* at 100–01.

102. Transcript of Proceedings of Bench Trial Morning Session on Oct. 24, 2005, *supra* note 51, at 36.

importantly, the precise role of experimentation depends on the nature of the inquiry and the claims made.¹⁰³ Darwin himself did not conduct experiments when he posited the theory of evolution—he advanced his theory based on observed phenomena.¹⁰⁴ Similarly, the founder of modern chemistry, Lavoisier, did not conduct experiments.¹⁰⁵ Instead, he engaged in a systematic re-interpretation of existing data, thereby achieving the “chemical revolution,” he believed necessary to move the field forward.¹⁰⁶ And Einstein did not even come to his theory based on tests but rather, like Lavoisier, by reinterpreting existing data in a way that accounted for the mounting number of anomalies that had accumulated around Newtonian physics.¹⁰⁷

Fuller also addressed the claim that IDT was not science because it was inconsistent with methodological naturalism, the notion that modern science rules-out explanations of nature which are “supernatural.”¹⁰⁸ Here Fuller noted that Newton, just like Maxwell, Mendel, Lemaître, all believed their discoveries fully consistent with a final cause that was supernatural.¹⁰⁹ But plainly their beliefs did not render their theories nonscientific or religious.¹¹⁰ So a commitment to methodological naturalism, if it is understood as a decisive rejection of the possibility of supernatural causation at some level, is not a necessary feature of modern science.¹¹¹ Indeed, there are philosophers of science who believe that the commitment to methodological naturalism actually hampers scientific inquiry in critical areas, e.g., the ongoing effort to understand the human mind, a phenomenon that defies “natural” explanation as that term is currently understood.¹¹²

Moreover, the line between “natural” and “supernatural” is a moving one. Newton is a case in point.¹¹³ As Fuller explained, Newton’s discovery of gravity was remarkable in part because it specified an unseen causal mechanism, “action-at-a distance.”¹¹⁴ Up until that time natural causation was understood in a very physical and mechanical way, and things that could not be accounted for were deemed supernatural by default.¹¹⁵ When

103. *See id.* at 99–102.

104. *Id.* at 65–67.

105. *Id.* at 42–44.

106. *Id.*

107. *Id.* at 48–49.

108. Transcript of Proceedings of Bench Trial Morning Session on Oct. 24, 2005, *supra* note 51, at 35, 76, 98–99.

109. *Id.* at 44–45, 77.

110. *Id.* at 99.

111. *Id.* at 89–90.

112. *Id.* at 76–78.

113. *Id.* at 77.

114. Transcript of Proceedings of Bench Trial Afternoon Session on Oct. 24, 2005, *supra* note 76, at 27–28.

115. *Id.*

Newton began to float his ideas about gravity, the idea was thought of as occult.¹¹⁶ When Newton successfully specified gravity by means of a mathematical formula explaining observations, a range of phenomena once accounted for principally by supernatural explanations became susceptible of explanation in naturalistic terms we think of as typical of true science.¹¹⁷ Likewise, the “wave/particle” theory of light in quantum mechanics encountered resistance because it too was seen as inconsistent with the laws of nature.¹¹⁸

The final reason advanced to dismiss IDT from the field of science that Fuller addressed is the claim that IDT is not peer reviewed and well substantiated.¹¹⁹ At trial, Fuller testified that the role of peer review is much more complicated than it seems.¹²⁰ Here his testimony drew from the observations of Thomas S. Kuhn, who in his book, *The Structure of Scientific Revolutions*, demonstrated that there is a definite sociological dimension to scientific progress.¹²¹ Put simply, once a given scientific paradigm becomes generally accepted, the paradigm becomes entrenched because scientists become committed to the theory under which they have conducted their work and earned their status in their professional community.¹²² Such scientists and institutions often use their influence (in terms of peer review, grant awards, academic appointments, and tenure), to retard the progress of new theories that challenge the dominant paradigm.¹²³ In a similar way, scientific ideas can encounter resistance for non-scientific reasons, e.g., scientists balking at LeMaitre’s ideas because they seemed to smack of creation *ex nihilo*.¹²⁴

Here I will settle for one example that Fuller provided at trial, Gregor Mendel.¹²⁵ At the trial, Fuller explained that when Mendel first came up with his genetic theory based on the transmission of features in the peas he studied, he presented his findings to the editor of the leading botany journal in Germany at the time, with the hope of publishing his findings.¹²⁶ The editor was skeptical because he thought Mendel’s notions of phenotype and genotype were far-fetched and smacked of Creationism (remember Mendel

116. *Id.* at 27–28.

117. *Id.* at 74.

118. Transcript of Proceedings of Bench Trial Morning Session on Oct. 24, 2005, *supra* note 51, at 84–85. In this regard it should be noted that Fuller describes himself as a philosophical naturalist, who believes that in the end all phenomena will be explained “naturally.” *Id.* at 13–14.

119. *Id.* at 131–32.

120. *Id.* at 125–33.

121. *Id.* at 21–22.

122. *Id.* at 127–29.

123. *Id.* at 127–28.

124. Transcript of Proceedings of Bench Trial Morning Session on Oct. 24, 2005, *supra* note 51, at 132–33.

125. *Id.* at 44–45.

126. *Id.*

was a monk), so the editor refused to publish the paper.¹²⁷ As a result, Mendel's seminal work in genetics was lost to science for about forty years.¹²⁸

As I alluded to earlier, there is a great irony here because Mendel's work in genetics provides an essential ingredient of the so-called neo-Darwinian thesis.¹²⁹ Darwin's theory of evolution was losing appeal toward the end of the nineteenth century because it was not generating scientific progress.¹³⁰ Darwin's hypothesis that natural selection (a mechanism he posited by analogy from the artificial selection which he saw in livestock breeding, not experimentation), might lead to the survival of species with traits that conferred a survival advantage, seemed persuasive at a certain level.¹³¹ But the theory was at a dead end because no one could explain how traits that conferred a survival advantage were transmitted from one generation to the next.¹³² Genetics provided the explanation for the transmission of traits across generational lines and, when united with Darwin's theory of survival of the fittest via natural selection, provided the basis for the so-called neo-Darwinian synthesis still regnant today.¹³³ The irony is that Mendel's genetics—thwarted initially by peer review—allowed the resurrection of Darwin's theory of evolution.¹³⁴ But the fundamental point for our consideration is that valid scientific proposals can encounter resistance based on non-scientific considerations.

PROPOSAL

With this background in mind, I can lay out my concerns and a proposal relating to our topic. Various academics and commentators have offered a variety of programs designed (dare we say) to address the controversy surrounding ET and, more recently, IDT.¹³⁵ It is the relationship between

127. *Id.*

128. *Id.* at 47.

129. *Id.*

130. See Transcript of Proceedings of Bench Trial Morning Session on Oct. 24, 2005, *supra* note 51, at 46; Steve Fuller, *Intelligent Design Theory: A Site for Contemporary Sociology of Knowledge*, 31 CANADIAN J. SOCIOLOGY 277, 287 (2006).

131. See Transcript of Proceedings of Bench Trial Morning Session on Oct. 24, 2005, *supra* note 51, at 46; Fuller, *supra* note 131, at 287.

132. See *id.*

133. See Transcript of Proceedings of Bench Trial Morning Session on Oct. 24, 2005, *supra* note 51, at 46–47; Fuller, *supra* note 131, at 287.

134. See Transcript of Proceedings of Bench Trial Morning Session on Oct. 24, 2005, *supra* note 51, at 47; Fuller, *supra* note 131, at 287.

135. See, e.g., Casey Luskin, *Does Challenging Darwin Create Constitutional Jeopardy? A Comprehensive Survey of Case Law Regarding the Teaching of Biological Origins*, 32 HAMLINE L. REV. 1 (2009); Barry P. McDonald, *Getting Beyond Religion as Science: Unstifling Worldview Formation in American Public Education*, 66 WASH. & LEE L. REV. 587 (2009); Frank S.

IDT and the Constitution that brings us here. On that issue, opinions range from those who maintain that the continued suppression of any discussion of IDT in the science classroom is the only legitimate approach to the matter.¹³⁶ Others maintain that IDT can be included in the science curriculum or in the public school curriculum albeit outside science offerings.¹³⁷ I know that some of the authors in this journal advance the view that teaching students about the controversy between proponents of ET and IDT is good science education, and I cannot see how that would violate the Constitution.¹³⁸ After seeing Judge Jones's clumsy treatment of this complex issue, I have reservations about whether IDT will ever get the sort of robust discussion the controversy deserves.

We should not be surprised. The relationship between religion and science has produced controversy in the past, controversy that is itself often treated in a way that is grossly oversimplified and inaccurate.¹³⁹ In this regard, let us accept for the purpose of today's discussion a popular, if somewhat misleading, telling of historical conflict between religion and science that lays fault with the religiously minded, in the first instance, as per the popular treatments of the *Scopes* "Monkey Trial," or the long-standing telling of dispute surrounding Galileo's findings.¹⁴⁰ Accepting this oversimplification for the purpose of our discussion, let me suggest that there is good reason to believe that a great deal of responsibility for the current conflict lies with scientists who have made shamelessly non-

Ravitch, *Playing the Proof Game: Intelligent Design and the Law*, 113 PENN ST. L. REV. 841 (2009); Jared M. Haynie, *Breaking Evolution's Monopoly on Origins: Self-governance, Parental Rights, and Religious Viewpoints in the Public Square – A Response to Kevin Trowel's Divided by Design*, 7 AVE MARIA L. REV. 239 (2008); Amber N. Jeralds, *Removing the Taint: The Battle for Intelligent Design in the Classroom*, 32 S. ILL. U. L. J. 425 (2008); David R. Bauer, Note, *Resolving the Controversy Over "Teaching the Controversy": The Constitutionality of Teaching Intelligent Design in Public Schools*, 75 FORDHAM L. REV. 1019 (2006); Johnny Rex Buckles, *The Constitutionality of the Monkey Wrench: Exploring the Case for Intelligent Design*, 59 OKLA. L. REV. 527 (2006); Todd R. Olin, Note, *Fruit of the Poison Tree: A First Amendment Analysis of the History and Character of Intelligent Design Education*, 90 MINN. L. REV. 1107 (2006); Fuller, *supra* note 130; John Capps, *Naturalism, Pragmatism, and Design*, 14 J. OF SPECULATIVE PHIL. 161 (2000); Jay D. Wexler, Note, *Of Pandas, People, and the First Amendment: The Constitutionality of Teaching Intelligent Design in the Public Schools*, 49 STANF. L. REV. 439 (1997).

136. NOT IN OUR CLASSROOMS: WHY INTELLIGENT DESIGN IS WRONG FOR OUR SCHOOLS (Eugenie C. Scott & Glenn Branch eds., 2006).

137. Kent Greenawalt, *Teaching About Religion in Public Schools*, 18 J.L. & POL. 329, 344–46 (2003); McDonald, *supra* note 136, at 665–72.

138. See, e.g., DAVID DEWOLF ET AL., *TRAIPSING INTO EVOLUTION: INTELLIGENT DESIGN AND THE KITZMILLER VS. DOVER DECISION* (2006); David K. DeWolf et al., *supra* note 14; David K. DeWolf et al., *Teaching the Origins Controversy: Science, or Religion, or Speech?*, 2000 UTAH L. REV. 39.

139. See JOHN HEADLEY BROOKE, *SCIENCE AND RELIGION* 16–51, 321–47 (1991).

140. See *generally id.* at 321–47; MAURICE A. FINOCCHIARO, *RETRYING GALILEO* 1–6 (2005).

scientific claims for ET.

Let me give you a few examples that came to my attention while working on the *Kitzmiller* litigation. The late George Gaylord Simpson, an evolutionary biologist and paleontologist, has said that, “[m]an is the result of a purposeless and natural process that did not have him in mind. He was not planned.”¹⁴¹ Douglas Futuyama, another evolutionary theorist, has asserted that “[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.”¹⁴² Harvard paleontologist, Stephen Jay Gould, has claimed, “[b]efore Darwin we thought that a benevolent God had created [us],” and “[b]iology took away our status as paragons created in the image of God.”¹⁴³ Richard Dawkins has maintained that, “Darwin made it possible to be an intellectually fulfilled atheist.”¹⁴⁴ Here we have scientists making claims for what ET implies for religion.¹⁴⁵

I realize that this problem is unfortunate. Modern science defines itself narrowly by observing a self-imposed limitation to “methodological naturalism” that deliberately forswears metaphysical claims in order to foster scientific investigation.¹⁴⁶ Despite the plainly non-scientific assertions advanced by scientists as the necessary implications of ET, the scientific community makes no such claim.¹⁴⁷ Yet scientists engaged in this *metaphysical extrapolation* take no care to disclose that they are engaged in non-scientific speculation and thereby, it appears, create the impression that they are speaking as scientists.¹⁴⁸

This sort of metaphysical speculation about the implications scientific assertions might have for religious belief is not scientific, but it does shed

141. GEORGE GAYLORD SIMPSON, *THE MEANING OF EVOLUTION* 345 (Yale University 1967).

142. DOUGLAS FUTUYAMA, *EVOLUTIONARY BIOLOGY* 2 (2d ed. 1986).

143. STEPHEN JAY GOULD, *EVER SINCE DARWIN: REFLECTIONS IN NATURAL HISTORY* 147, 267 (W.W. Norton & Co. 1992) (1977).

144. RICHARD DAWKINS, *THE BLIND WATCHMAKER: WHY THE EVIDENCE OF EVOLUTION REVEALS A UNIVERSE WITHOUT DESIGN* 6 (W.W. Norton & Co. 1996) (1986).

145. Transcript Of Proceedings Bench Trial Morning Session on Sept. 26, 2005 at 54–56, *Kitzmiller*, 400 F. Supp. 2d at 707; There are other scientists who believe ET is fully consistent with their religious faith, e.g. Ken Miller, who finds ET fully compatible with his Catholic faith. See KENNETH R. MILLER, *FINDING DARWIN’S GOD* 18–19, 217, 220–23, 260–61, 291–92 (1999). To Miller’s credit, he has repudiated earlier versions of his text, which seemed to offer philosophical claims based on ET and takes care to distinguish scientific claims from non-scientific speculation. Transcript Of Proceedings Bench Trial Morning Session on Sept. 27, 2005 at 5–7, 87–89, *Kitzmiller*, 400 F. Supp. 2d at 707.

146. Eugene C. Scott, *The Creation/Evolution Continuum*, Dec. 7, 2000, <http://ncse.com/creationism/general/creationevolution-continuum> (last visited Dec. 22, 2009); *Kitzmiller*, 400 F. Supp. 2d at 736.

147. See Transcript of Proceedings Bench Trial Afternoon Session on Oct. 12, 2005 at 52–58, *Kitzmiller*, 400 F. Supp. 2d at 707.

148. See *id.*

light on Judge Jones's opinion. In that opinion Judge Jones relied upon metaphysical extrapolation by proponents of IDT and its openness to the possibility of the "supernatural" as grounds for his decision that IDT is religion, not science.¹⁴⁹ But these examples of metaphysical extrapolation from ET show that if metaphysical extrapolation were good grounds to disqualify an idea from science, then ET could be excluded from science using Judge Jones's approach. I am not suggesting that would be sensible, but Judge Jones's refusal to accept IDT on its own terms—as attempting to detect evidence of "design" in the natural world (without positing a claim with respect to the source of design)—seems rooted in nothing greater than the sense that IDT points to the "supernatural." As noted earlier, if openness to the possibility of "supernatural" causation at some point were grounds to exclude an idea from science, then it seems that some of the greatest advances of modern science, e.g., gravity, electromagnetism, and genetics, could be excluded because these theories (as well as their proponents) likewise remain open to the possibility of supernatural causation at some point—they simply bracket the issue in order to avoid making non-scientific claims (much the way IDT purports to do).

I am here today because, as a result of my role in the *Kitzmiller* litigation, I learned that the larger cultural context sketched above has created a real problem for science education that I think must be addressed in order to serve the common good. The problem came to my attention as a result of testimony from one of the Plaintiff's experts, Brian Alters. At trial, Alters testified that the religious beliefs that students brought to the classroom were actually an impediment to science education, principally learning about ET, because students viewed ET as inconsistent with their religious beliefs.¹⁵⁰ Further confirming Alters' considerable body of work is research demonstrating that students discussing ET do so primarily in terms of the implications the theory has for metaphysical beliefs, principally religious ones, rather than discussing the ET in terms of its explanation of the natural world.¹⁵¹

Taken together, this work shows that many students come to the classroom with an aversion to science, including ET, because they believe it is inconsistent with their religious beliefs. And even when students discuss ET among themselves they do so principally in terms of non-scientific

149. *Kitzmiller*, 400 F. Supp. 2d at 735–38, 718–23.

150. Transcript of Proceedings of Bench Trial Morning Session on Oct. 12, 2005 at 81–90, *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707 (M.D. Pa. 2005) (No. 04–CV–2688); see also BRIAN J. ALTERS, *TEACHING BIOLOGICAL EVOLUTION IN HIGHER EDUCATION: METHODOLOGICAL, RELIGIOUS, AND NON-RELIGIOUS ISSUES* (2005).

151. See, e.g., Marjee U. Chmiel & Trevor J. Owens, *Online Anti-Evolution Forums: Analyzing a Source of Nature of Science Misconceptions*, EIGHTH INTERNATIONAL HISTORY, PHILOSOPHY, SOCIOLOGY & SCIENCE TEACHING CONFERENCE, http://www.ihpst2005.leeds.ac.uk/papers/Chmiel_Owens.pdf (last visited Dec. 22, 2009).

claims made for the theory, rather than the claims made for the theory as a scientific explanation for certain features of the natural world. The statements by scientists given above help explain this phenomenon.

If we agree that this stumbling block for science education should be addressed, then the question is how we might do so. My thoughts in this area explain the subtitle for my essay, *The Truth Will Set Us Free*. I believe the most effective way to address the impediment to science education described above is to educate students in the philosophy and history of science. Then students would be equipped to think about the relationship between science and the controversy surrounding IDT (as science) and ET (in terms of its implications for religious belief) for themselves. I think that if students were given a unit of this kind as they entered the high school science curriculum they would be equipped to think about the issues that produced the *Kitzmiller* litigation and that operate as a barrier to science education.

It seems to me that students beginning their science coursework should be given a sketch of philosophy and history of science along the lines of Fuller's testimony at the trial. Students should be introduced to the distinction between context of discovery and context of justification. They should be given examples of the way that the distinction operates as per my sketch of Fuller's trial testimony above. They should be given a sense for the historical and sociological dimension of scientific progress as treated by Kuhn.¹⁵² They should be given a sense for the saga of science, the way in which science has made remarkable progress by moving through a series of theoretical "paradigms," each of which was discarded in favor of another paradigm with more (at least apparent) explanatory force. They should see that new theories are born refuted (so to speak), sometimes encounter resistance based on non-scientific factors, and earn the allegiance of the scientific community over time based on demonstrated explanatory force.

Such a unit of instruction should help students understand the way modern science defines itself, i.e., a commitment to methodological naturalism—and the limits this implies for the type of truth-claim that can make any legitimate claim to be "science." Students should be given a sense for the tentative nature of scientific inquiry and the definition of hypothesis and theory. They should be helped to understand that science sees itself not so much as proving something positively true in a conclusive sense, but rather as demonstrating that a certain hypothesis appears to explain a given phenomena or demonstrate that a given explanation is false. They should be introduced to metaphysical extrapolation and why it is non-scientific.¹⁵³

152. See KUHN, *supra* note 12.

153. Transcript of Proceedings Bench Trial Afternoon Session on Oct. 12, 2005, *supra* note 148, at 81–90.

Here, it seems to me, they can be given no more appropriate example of metaphysical extrapolation than the metaphysical extrapolation based on ET of the kind I noted earlier.¹⁵⁴

Finally, I believe it would be desirable for the unit that deals broadly with the philosophy and history of science to include some discussion of the controversy surrounding IDT. The discussion should describe IDT as described by its proponents. It should describe the controversy surrounding whether IDT is properly classified as a scientific (as the scientific community defines itself) or metaphysical (non-scientific) claim. The discussion should forthrightly state that at present the scientific community, as represented by its most authoritative bodies, regards IDT as a non-scientific assertion.

This is not teaching the controversy so much as giving students a proper perspective on the controversy. In this way, students would acquire a better understanding of modern science, and a more sophisticated way of understanding the relationship between science and other ways of knowing (including religion). By educating students in this area public schools would address and hopefully obviate (or at least ameliorate) a significant impediment to science education. More fundamentally, the government, be it the public schools or federal judges, would not purport to dictate the resolution of this question, but rather, would simply equip students (and ultimately their families) with truthful and accurate information that would allow them to reach their own conclusions.

I am confident that a program crafted along these lines and implemented in a way that is designed to serve the legitimate pedagogical goal would pass constitutional muster. The sources cited above demonstrate that the perceived clash between science, particularly ET, and religious conviction is an impediment to science education, and there is no question that attempting to address that problem is a legitimate non-religious purpose. The truthful and accurate discussion of the way modern science defines itself will protect students from those scientists who disguise metaphysical speculation with the veneer of science.

The truthful and accurate discussion of IDT, including the fact that the

154. I realize that those who challenge measures designed to address this problem frequently rely upon a claim that ET was "singled out" for disfavored treatment to support a claim of an improper religious purpose. But there is no question that ET has become a poster-child for metaphysical extrapolation and I think there is no question that educators trying to address the problem identified by Dr. Alters could use ET as an example of the problem, making plain that ET is regarded as a scientific theory by the scientific community and differentiating the theory from metaphysical extrapolation. I see no reason why they could not do the same for IDT as well, making plain that IDT is not currently regarded by the scientific community as a scientific theory. After all, there is no reason why education must shrink from the actual complexity of the human situation, whether the issue be race, class, role of religion in history and society, or the relationship between science, religion, and philosophy.

scientific community does not accept the theory as science, avoids the claim that teaching IDT as “science” amounts to a “false-billing” that impermissibly advances religion in violation of the First Amendment’s prohibition of laws respecting an establishment of religion. In *Epperson*, *Edwards*, and elsewhere, the Court has acknowledged that education including explanation of religious ideas is fully consistent with the First Amendment. Therefore even if one accepts the claim that IDT is not science, then that still does not mean it is verboten in the public schools.¹⁵⁵

A program developed along these lines serves a legitimate educational purpose, and if implemented in a manner calculated to further that legitimate purpose, cannot be attacked on the grounds that its primary purpose is to advance religion in a way deemed inconsistent with the First Amendment. At the same time, the discussion allows students to see that the verdict of science is a tentative one by its very nature and that only time will tell whether IDT represents a genuinely scientific assertion.

The forthright and accurate discussion of science that I have sketched above is fully consistent with the Supreme Court’s treatment of science, including peer review and general acceptance, as seen in *Daubert* and its progeny. In these decisions the Court has taken a realistic view of science and claims advanced under the banner of science, and it has demonstrated an appreciation for the limits of what Kuhn called “normal” science.¹⁵⁶ In particular, the Court has demonstrated an appropriate circumspection concerning the role that scientific consensus should play in determining whether a given theory or claim is properly regarded as “scientific” and it has refused to make the consensus of the scientific community dispositive for reasons that become plain in light of Fuller’s testimony.¹⁵⁷

Moreover, this strategy is consistent with the Court’s recognition that the mere overlap between religious and non-religious ideas is not problematic from an Establishment Clause standpoint. In a number of cases court has recognized that the mere overlap with religious beliefs does not disqualify a measure under the Establishment Clause.¹⁵⁸ To the extent that any discussion of IDT is seen as consistent with “creationist” religious beliefs, that overlap does not require the exclusion of IDT from the curriculum.

Finally, it is significant that the strategy I suggest above would be fully

155. Greenawalt, *supra* note 138 at 329, 344–46.

156. *Daubert v. Merrell Dow Pharms.*, 509 U.S. 579, 588–89, 593–94 (1993); *General Elec. Co. v. Joiner*, 522 U.S. 136, 151–55 (1997).

157. *Daubert*, 509 U.S. at 593–94; *Joiner*, 522 U.S. at 151–53.

158. See, e.g., *McGowan v. Maryland*, 366 U.S. 420, 81 S.Ct. 1101 (1961); *Walz v. Tax Comm’n of City of New York*, 397 U.S. 664, 90 S.Ct. 1409 (1970); *Mitchell v. Helms*, 530 U.S. 793 (2000); *Harris v. McRae*, 448 U.S. 297, 100 S.Ct. 2671 (1980); *Zelman v. Simmons-Harris*, 536 U.S. 639, 122 S.Ct. 2460 (2002).

justified quite apart from the particular problem that brings us here today. For one thing, I am certain that a unit along the lines I suggest would increase student interest in science. I found that my participation in the *Kitzmiller* litigation rekindled my interest in science, and as a result I began to monitor the science column of the *New York Times*. I was astounded by the way the trial had raised issues that were both current and timeless. Let me give you a few examples from the pages of *The New York Times*.

- One of the issues in the trial concerned DNA and whether its changes were really the result of random mutation or were directed in some sense, and therefore, reflected “design.”¹⁵⁹ In the aftermath of the trial, a science column appeared in the NYT drawing attention to the fact that scientists believed they had found a “code beyond genetics in DNA,” which governs the placement of nucleosomes (which protect and control access to DNA itself).¹⁶⁰ I found myself wondering: is there a “code behind the code,” and will there be a code behind that one as well? If so, would such coding of mutations thought to be random, point in the direction of design? If not, why not?
- The trial featured a great deal of evidence about ET, its status as the reigning paradigm in biology, and the extent to which ET actually did drive research in the lab.¹⁶¹ After the trial I came across a column “Darwin still Rules, but Some Biologists Dream of a Paradigm Shift.”¹⁶² Again, I found this fascinating and could not help but wonder what form a new paradigm might take. Can it really be the case that the neo-Darwinian synthesis is the final word on how biological life evolves or is there some other, better way, of understanding biological life that we have yet to strike upon?
- A great deal of time was spent at trial discussing whether “scientific” ideas could come out of activities we think of as “non-scientific” like alchemy or astrology.¹⁶³ After the trial I

159. Transcript Of Proceedings Bench Trial Morning Session on Oct. 17, 2005 at 39–42, *Kitzmiller*, 400 F. Supp. 2d at 707; Transcript Of Proceedings Bench Trial Morning Session on Nov. 4, 2005 at 88–91.

160. Nicholas Wade, *Scientists Say They've Found a Code Beyond Genetics in DNA*, N.Y. TIMES, July 25, 2006, available at <http://www.nytimes.com/2006/07/25/science/25dna.html>.

161. Transcript of Proceedings Bench Trial Morning Session on Oct. 24, 2005, *supra* note 51, at 11-15, 17, 22, 70; Transcript of Proceedings Bench Trial Afternoon Session on Oct. 24, 2005, *supra* note 76, at 31–32, 43–47

162. Douglas H. Erwin, *Darwin Still Rules, but Some Biologists Dream of a Paradigm Shift*, N.Y. TIMES, June 26, 2007, available at <http://www.nytimes.com/2007/06/26/science/26essay.html>.

163. Transcript of Proceedings of Bench Trial Morning Session on Oct. 24, 2005, *supra* note

came across a column “Transforming the Alchemists,” in which historians of science ventured the opinion that “alchemists contributed to the emergence of modern chemistry as a science,” based in part on the experimentalism that was a necessary part of the undertaking.¹⁶⁴ How interesting to see historians of science recognizing the contributions of alchemy to the field of chemistry, despite our recognition that many assertions made by alchemists were false—and proven so. How intriguing to consider whether IDT is a remnant of a creationist mindset that has produced science or the precursor of a new theory that might move science forward.

- A great deal of time was spent at the trial exploring the religious convictions of proponents of IDT, apparently on the theory that their religious beliefs might show that their commitment to IDT was non-scientific.¹⁶⁵ After the trial, I came across a piece about a paleontologist who was also a Young Earth Creationist who was allowed to pursue his Ph.D. at University of Rhode Island due to the truly liberal-minded faculty there who refused to disqualify him based on his religious beliefs so long as he abided by the reigning conventions of science.¹⁶⁶

I collected countless other pieces but mention these only to outline the basis for my conviction that giving students an appreciation for the history of science and the remarkable saga of scientific progress would increase their interest in the subject.

In addition, such a unit would also equip students for their role as future citizens required to critically evaluate claims advanced under the standard of science when forming positions on issues of public policy. The recent controversy about global warming is one example of how scientific claims lie at the heart of important public policy debates, and there are others.¹⁶⁷ By giving students a realistic sense for the nature of science and the very

51, 76–78.

164. John Noble Wilford, *Transforming the Alchemists*, N.Y. TIMES, Aug. 1, 2006, available at <http://www.nytimes.com/2006/08/01/science/01alch.html>.

165. *Kitzmiller*, 400 F. Supp. 2d at 730–46, 764.

166. Cornelia Dean, *Believing Scripture but Playing by Science’s Rules*, N.Y. TIMES, Feb. 12, 2007, available at <http://www.nytimes.com/2007/02/12/science/12geologist.html>.

167. See, e.g., AL GORE, *AN INCONVENIENT TRUTH* (Paramount 2006) (discussing the need for global policy initiatives to curb greenhouse gas emissions to stem global warming); DAVID KIRBY, *EVIDENCE OF HARM* (2006) (discussing the possible link of thimerisol in vaccines and increased incidence of autism in children); KEVIN A. MUHAMMAD, *AGAINST COMPULSORY VACCINATION* (2008) (discussing the dangers of injury from the HPV vaccine and the effects of the human papillomavirus disease itself).

human dimensions of scientific progress and scientific claims, students would be better prepared to critically evaluate claims advanced under the banner of science as they decided whether to support or oppose various public policy initiatives.

CONCLUSION

If the *Kitzmiller* litigation shows anything, it shows that the relationship between Intelligent Design and the Constitution is a complicated one. The relationship is complicated because the controversy surrounding IDT is situated in a much larger and centuries-long discussion about the relationship between science, religion, and philosophy. The relationship is further complicated because American history features a particular clash between ET and religious conviction that is part of our shared-consciousness as a nation, and at the very least, IDT appears to advance arguments that parallel non-scientific critiques of ET.

As a result of my role in the *Kitzmiller* litigation, I have come to see that this larger cultural context has created a stumbling block for students that should be addressed in the interests of science education. And I believe that in this area, as in so many others, the truth will set us free. By giving students an appreciation for the philosophy and history of science, we can give them the tools they need to assess the relationship between science and other ways of knowing. A truthful and accurate discussion about the nature of science, the relationship between science and other ways of knowing, and the controversy surrounding IDT will, if placed in the proper context, allow students to critically evaluate the controversy surrounding IDT and ET for themselves. Giving students a more sophisticated appreciation for science will also prepare them for their role as citizens called upon to critically appraise claims advanced as scientific when forming their opinions on important issues of public policy. I am delighted to have had this opportunity to share my thoughts on how we might address the relationship between IDT and the Constitution with the hope of serving the common good.