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# **KITZMILLER AND THE “IS IT SCIENCE?” QUESTION**

**JAY D. WEXLER \***

## **INTRODUCTION**

When Judge John E. Jones, III, a United States District Court judge appointed by President George W. Bush, ruled that the Dover school board’s intelligent design (ID) policy<sup>1</sup> violated the Establishment

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\* Associate Professor, Boston University School of Law. The author would like to thank participants and attendees of the First Amendment Law Review's symposium of which this article was a part for very helpful questions and comments on the argument contained below. The piece also benefited from questions and comments received at the American Association for the Advancement of Science's 2006 Annual Meeting in St. Louis, as well as in connection with a presentation at the Boisi Center for Religion and American Public Life at Boston College. Finally, special thanks to Dan Blau, whose terrific suggestions and expert editing of the piece improved it enormously.

1. Dover’s policy had two relevant parts. First, the school board passed a resolution stating that: “Students will be made aware of gaps/problems in Darwin’s theory and of other theories of evolution including, but not limited to, intelligent design. Note: Origins of Life is not taught.” Second, the school district announced that students in ninth grade biology classes would be read the following statement:

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

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

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

Clause,<sup>2</sup> ID opponents were ecstatic.<sup>3</sup> They had good reason to be. The opinion was a comprehensive and complete victory for ID opponents. The decision held that the policy was an unconstitutional endorsement of religion when viewed both from a reasonable Dover student's perspective<sup>4</sup> as well as from the perspective of a reasonable adult in the Dover community.<sup>5</sup> It also held that the policy was adopted for a religious purpose,<sup>6</sup> therefore failing the Supreme Court's longstanding three-part *Lemon* test.<sup>7</sup> And if finding the policy unconstitutional for at least three independent reasons was not enough, the judge also concluded that ID was not science,<sup>8</sup> cast doubt on the school board's truthfulness and ethics at the trial,<sup>9</sup> and declared that the policy represented "breathtaking inanity."<sup>10</sup> In short, the decision was a slam dunk for ID opponents.

As someone who has been arguing for nearly a decade that teaching ID in the public schools would be constitutionally problematic,<sup>11</sup> I, too, was delighted by Judge Jones' opinion. The

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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.

*Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707, 708-09 (M.D. Pa. 2005).

2. *Id.* at 709.

3. See *infra* notes 24-25 and accompanying text.

4. *Kitzmiller*, 400 F. Supp. 2d at 724, 729.

5. *Id.* at 734.

6. *Id.* at 762-63.

7. *Id.* at 763-64. See *Lemon v. Kurtzman*, 403 U.S. 602, 612-13 (1971) (holding that in order for a statute to comply with the Establishment Clause, "[f]irst, the statute must have a secular legislative purpose; second, its principal or primary effect must be one that neither advances nor inhibits religion; finally, the statute must not foster 'an excessive government entanglement with religion.'" (citation omitted) (alteration added)).

8. See *Kitzmiller*, 400 F. Supp. 2d at 735-46.

9. See *id.* at 752, 756, 765.

10. *Id.* at 765 ("The breathtaking inanity of the Board's decision is evident when considered against the factual backdrop which has now been fully revealed through this trial.").

11. My first article on the subject appeared in 1997. See Jay D. Wexler, Note, *Of Pandas, People, and the First Amendment: The Constitutionality of Teaching Intelligent Design in the Public Schools*, 49 STAN. L. REV. 439 (1997).

opinion is clear, painstakingly documented, and, in my view, somewhere around 95% correct. Judge Jones' determination to employ the endorsement test, when the Supreme Court has not directly used that test in similar circumstances, was the right legal choice in a jurisprudential area of great ambiguity. His application of that test was extremely careful and persuasive.<sup>12</sup> Further, his decision to consider the *Lemon* test after he had already invalidated the policy on endorsement grounds was likewise shrewd and helped ensure that the decision would have withstood appellate review, had the school board chosen to take the case to the Third Circuit. The decision is also filled with insightful observations and details that indicate Judge Jones gave the issue an enormous amount of thought and consideration, and that he understood the issues presented by the case with sophistication and depth. My personal favorite on this score is the footnote in which Judge Jones makes fast work of the Board's argument that reading a brief disclaimer in the classroom is not in fact "teaching."<sup>13</sup> As Jones rightly points out, practically everything that happens in a school classroom can be understood as teaching in the relevant sense, and reading a short statement about evolution and its alternatives is no exception.<sup>14</sup>

Given the quality of the opinion, why do I believe that the decision was only somewhere around 95% correct? The opinion's main flaw lies in the conclusion with which most ID opponents were particularly pleased—namely, the judge's finding that ID is not science. I take this position, I hasten to add, not because I necessarily think that ID *is* science. As someone who is neither a scientist nor a philosopher of

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12. My own view, which I have repeatedly set out elsewhere, is that teaching ID in the public school classroom would, under most circumstances, result in an endorsement of religion. See, e.g., Jay D. Wexler, *Intelligent Design and the First Amendment: A Response*, 84 WASH. U. L. REV. 63 (2006); Jay D. Wexler, *Darwin, Design, and Disestablishment: Teaching the Evolution Controversy in Public Schools*, 56 VAND. L. REV. 751 (2003); Wexler, *Of Pandas, People, and the First Amendment*, *supra* note 11.

13. *Kitzmiller*, 400 F. Supp. 2d at 727 n.7 ("Dr. Alters, the District's own science teachers, and Plaintiffs Christy Rehm and Steven Stough, who are themselves teachers, all made it abundantly clear by their testimony that an educator reading the disclaimer is engaged in teaching, even if it is colossally bad teaching. . . . The disclaimer is a 'mini-lecture' providing substantive misconceptions about the nature of science, evolution, and ID which 'facilitates learning.'" (citations omitted)).

14. *Id.*

science, I do not know if ID is science. But the important issue for evaluating the decision is not whether ID actually is science—a question that sounds in philosophy of science—but rather whether judges should be deciding in their written opinions that ID is or is not science as a matter of law. On this question, I think the answer is “no,” particularly when the overall question posed to a court is whether teaching ID endorses *religion*, not whether ID is or is not *science*.<sup>15</sup> The part of *Kitzmiller* that finds ID not to be science is unnecessary, unconvincing, not particularly suited to the judicial role, and even perhaps dangerous both to science and to freedom of religion.

Part I of this short Essay briefly reviews what the *Kitzmiller* opinion says about ID’s status as non-science. Part II argues that the opinion would have been better without this controversial finding.

### I. WHAT THE OPINION SAYS

Judge Jones devotes close to a fifth of his opinion to the question of whether ID constitutes science. Prior to embarking upon his discussion, the judge prefaces his analysis with this paragraph:

We have now found that both an objective student and an objective adult member of the Dover community would perceive Defendants’ conduct to be a strong endorsement of religion pursuant to the endorsement test. Having so concluded, we find it incumbent upon the Court to further address an additional issue raised by Plaintiffs, which is whether ID is science. To be sure, our answer to this question can likely be predicted based upon the foregoing analysis. While answering this question compels us to revisit evidence that is entirely complex, if not obtuse, after a six week trial that spanned twenty-one days and included countless hours of detailed expert witness presentations, the Court is confident that no other tribunal in the United States is in a better position than are we to traipse into this controversial area. Finally, we will

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15. I first made this point in 1997. See Wexler, *Of Pandas, People, and the First Amendment*, *supra* note 11, at 466-68.

offer our conclusion on whether ID is science not just because it is essential to our holding that an Establishment Clause violation has occurred in this case, but also in the hope that it may prevent the obvious waste of judicial and other resources which would be occasioned by a subsequent trial involving the precise question which is before us.<sup>16</sup>

Beginning his substantive discussion of why ID is not science, Judge Jones observes that there are at least three, perhaps four, independent reasons why he reaches his conclusion. Noting that “ID fails on three different levels, any one of which is sufficient to preclude a determination that ID is science,”<sup>17</sup> he lists the following rationales:

(1) ID violates the centuries-old ground rules of science by invoking and permitting supernatural causation; (2) the argument of irreducible complexity,<sup>18</sup> central to ID, employs the same flawed and illogical contrived dualism that doomed creation science in the 1980s; and (3) ID’s negative attacks on evolution have been refuted by the scientific community.<sup>19</sup>

The judge goes on to note that ID’s failure to gain any acceptance among scientists or to make any inroads into peer-reviewed

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16. *Kitzmiller*, 400 F. Supp. 2d at 734-35.

17. *Id.* at 735.

18. According to the opinion, Behe’s definition of “irreducible complexity” is as follows:

By irreducibly complex I mean a single system which is composed of several well-matched, interacting parts that contribute to the basic function, wherein the removal of any one of the parts causes the system to effectively cease functioning. An irreducibly complex system cannot be produced directly by slight, successive modifications of a precursor system, because any precursor to an irreducibly complex system that is missing a part is by definition nonfunctional . . . .

*Id.* at 739 (quoting and paraphrasing Michael Behe, *Reply to My Critics: A Response to Reviews of Darwin’s Black Box: The Biochemical Challenge to Evolution*, 16 *BIOLOGY AND PHILOSOPHY* 685, 694-95 (Nov. 2001)).

19. *Id.* at 735.

literature is “additionally important to note.”<sup>20</sup> It is unclear, however, whether these failures constitute a fourth independent reason (or reasons) for rejecting ID as science.

The discussion that follows this introductory paragraph proceeds roughly in the order of the three or four listed rationales, but it is somewhat jumbled and indeed offers more than just these three or four rationales for rejecting ID as science. For instance, in his discussion of the first rationale, Judge Jones analyzes ID’s failure to follow the traditional and conventional “ground rules” of science by relying on non-testable and non-natural explanations for observed data.<sup>21</sup> He also observes, however, that major scientific organizations, such as the National Academy of Science and the American Association for the Advancement of Science, have concluded that ID is not science because (among other things) it does not rely on natural explanations,<sup>22</sup> a point that seems somewhat different than the main one. The judge’s treatment of the second and third factors is similarly unclear.<sup>23</sup>

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20. *Id.*

21. *See id.* at 735-37.

22. *See id.* at 737-38.

23. In its treatment of the second point, the discussion veers somewhat chaotically. It starts by reiterating the false dichotomy point that discrediting evolution is not the same as proving ID. *See id.* at 738. But, it also critiques the merits of Michael Behe’s irreducible complexity theory at length, *id.* at 739-41, and then rejects, as resting on a flawed analogy of human design to supernatural design, ID’s “positive argument” that “[w]e infer design when we see parts that appear to be arranged for a purpose.” *Id.* at 741 (alteration added).

In its discussion of the third rationale—that ID’s attacks against evolution have been rejected by the scientific community—the opinion first claims that the consensus of scientists have rejected ID, *id.* at 743, and then it points out specific problems with the way that *Of Pandas and People*, the ID textbook at issue in the case, presents and critiques particular evolutionary claims involving the fossil record, homology, and the like. *Id.* at 743-44. Finally, citing testimony presented at trial, the opinion observes that “[a] final indicator of how ID has failed to demonstrate scientific warrant is the complete absence of peer-reviewed publications supporting the theory.” *Id.* at 744 (alteration added). In sum, the judge observes that “[a]fter this searching and careful review of ID as espoused by its proponents, as elaborated upon in submissions to the Court, and as scrutinized over a six week trial, we find that ID is not science and cannot be adjudged a valid, accepted scientific theory . . . .” *Id.* at 745 (alteration added).

## II. WHY ID OPPONENTS SHOULD THINK TWICE BEFORE APPLAUDING

As I observed previously, ID opponents were thrilled to read the section of the opinion concluding ID is not science. I think it is fair to say that these opponents were fairly confident that the challengers were going to win the suit, but they had no idea how broad the ruling was going to be or whether the opinion would cast doubt on ID's scientific validity. When the opinion was issued, evolutionists cheered its thoroughgoing critique of ID as science. For example, the National Science Teachers Association released a statement saying, "This is a great day for science education . . . Judge Jones's decision will echo far beyond Pennsylvania because . . . his comprehensive and detailed opinion . . . provides great clarity that ID is not science and has no place in science instruction."<sup>24</sup> Likewise, Anthony Romero, the Executive Director of the ACLU, praised the opinion's scientific conclusions as well as its legal conclusions when he stated, "We are extremely pleased that the court recognized that 'intelligent design' is not science and that it also is not constitutional."<sup>25</sup> These reactions were unsurprising, given that ID opponents have long argued that ID is not science. Hearing an objective and presumably conservative member of the legal establishment with real authority pronounce the same conclusion was surely music to the ears of many ID opponents.

It is difficult, at least on a visceral level, for an ID opponent such as myself to disagree with these sentiments. But I want to suggest here that ID opponents should not be overly hasty to praise Judge Jones' discussion of the "is it science?" question. Although nearly all of the particulars that the judge points to in his discussion (the lack of peer review, the scientific critiques of irreducible complexity, etc.) are

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24. Press Release, National Science Teachers Association, NSTA Hails Dover Court Decision Supporting Quality Science for Students of Dover, PA (Dec. 21, 2005), [http://www.nsta.org/pressroom&news\\_story\\_ID=51419](http://www.nsta.org/pressroom&news_story_ID=51419).

25. Press Release, American Civil Liberties Union, ACLU Applauds Decision in "Intelligent Design" Case, (Dec. 20, 2005), <http://www.aclu.org/religion/schools/23144prs20051220.html>. For a collection of statements issued in favor of the opinion, see *Praise for the Kitzmiller Verdict* (Dec. 22, 2005), [http://www.ncseweb.org/resources/news/2005/PA/316\\_praise\\_for\\_the\\_emkitzmilller\\_12\\_22\\_2005.asp](http://www.ncseweb.org/resources/news/2005/PA/316_praise_for_the_emkitzmilller_12_22_2005.asp).



relevant to a proper endorsement analysis,<sup>26</sup> it is far from clear that the judge should have engaged in the “is it science?” inquiry. As I will suggest in the following paragraphs, this section of the opinion in fact suffers from a number of flaws, including that it is irrelevant to the legal issue presented, unnecessary in any event, beyond the proper judicial role, unexplained, and perhaps even dangerous to both religion and science.

*A. The “Is it Science?” Issue is Irrelevant.*

First, and most importantly, the science versus non-science issue is simply not relevant to the ultimate question of ID’s constitutionality. The question posed by the Constitution, as interpreted by the Supreme Court, is only whether the policy endorses *religion*,<sup>27</sup> not whether the policy teaches, promotes, or endorses *science*. One might reply here that if some idea or theory is not science, then it must be religion, and thus answering the science question will also answer the religion question. This position, however, is flawed. For one thing, the idea or theory at issue (here, ID) could also be part of some third area of knowledge, such as philosophy or ideology. And even if the choice is really between religion and science, is it truly the case that if something is in some sense scientific then teaching it cannot constitute an endorsement of religion? Does the cloak of science automatically protect an idea from constitutional infirmity? If ID were science, in some nominal sense, would that mean that public schools necessarily could teach it, regardless of how strongly teaching it might send a religious message? The issue is not one that courts have addressed directly, but I think the best answer is that whether an idea qualifies as science should not be considered particularly relevant with respect to whether teaching the idea may also endorse religion.

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26. I point to similar factors in my own endorsement analysis. See Wexler, *Darwin, Design, and Disestablishment*, *supra* note 12, at 799-829.

27. To be clear, the Establishment Clause prohibits public schools from teaching any particular religious viewpoint as the truth; it does not prohibit schools from teaching *about* religion. Indeed, schools should teach far more about religion than they currently do. For an extended discussion of this point, see generally Jay D. Wexler, *Preparing for the Clothed Public Square: Teaching About Religion, Civic Education, and the Constitution*, 43 WM. & MARY L. REV. 1159 (2002).

This conclusion follows from the notion that endorsement is necessarily a fact-intensive inquiry that considers the entire circumstances surrounding a government action or policy.<sup>28</sup> At most, only one of those many circumstances will relate to whether the action involves science, and it is certainly possible that other considerations could combine to cause observers to perceive a religious message regardless of whether the content of the message is itself somehow scientific. What if, for example, a scientist performed a study indicating that there is at least some scientific support for the idea that people are reincarnated after death? Despite the study, many people would likely continue to believe that human beings are not reincarnated and that reincarnation is in fact a religious belief espoused by some religious traditions but not others. Would the existence of this one study allow schools to teach reincarnation as fact, even if most reasonable people still view the idea as religious? Does a certain belief cease being religious as soon as science steps into the picture, no matter how slightly? This hypothetical suggests the answer is “no.”<sup>29</sup>

But perhaps this example seems too far-fetched. Consider another, perhaps more likely, scenario. Some existing studies suggest that people who pray are healthier than people who do not pray, and that those who pray recover from illnesses more quickly than those who do not pray.<sup>30</sup> While there is evidence that these studies may be flawed,<sup>31</sup> it nonetheless seems clear that, by collecting and analyzing real-world data,

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28. See, e.g., *County of Allegheny v. ACLU*, 492 U.S. 573, 630 (1989) (O'Connor, J., concurring) (“[T]he ‘history and ubiquity’ of a practice is relevant because it provides part of the context in which a reasonable observer evaluates whether a challenged governmental practice conveys a message of endorsement of religion.” (alteration added)).

29. It might be the case that over time, if a concept that currently sounds in religion were to gain increasing, perhaps overwhelming, scientific support, it might at some point sound primarily in science rather than in religion. At that point, perhaps the concept could be taught in the public schools without violating the Establishment Clause.

30. See, e.g., Amy L. Ai, Ruth E. Dunkle, Christopher Peterson, & Steven F. Bolling, *The Role of Private Prayer in Psychological Recovery Among Mid-life and Aged Patients Following Cardiac Surgery*, 38 THE GERONTOLOGIST 591, 591-601 (1998). There have also been studies showing that people heal more quickly when others pray for them. See Rob Stein, *Researchers Look at Prayer and Healing; Conclusions and Premises Debated as Big Study's Release Nears*, WASH. POST, Mar. 24, 2006, at A1.

31. Stein, *supra* note 30, at A1 (pointing out critiques of prayer studies).

the studies can lay at least some claim to being scientific. Does the status of these studies as science mean that public schools can urge students to pray, as a way of improving their health and happiness, just as those schools currently urge their students to stop smoking or to eat their vegetables? Can those same public schools actually lead their students in prayer, just as they lead their students in exercise during gym class? I think the answer to these questions is self-evidently “no.”<sup>32</sup> The reason that schools cannot teach students to pray or lead them in prayer, despite studies showing the health benefits of prayer, however, is not because those studies are not in some sense science, but rather because teaching students to pray (or leading them in prayer) endorses and promotes religion.

The question for ID, as it is for prayer, should be whether a policy introducing ID into the classroom constitutes an endorsement of religion. As the judge correctly concluded in *Kitzmiller*, teaching ID does endorse religion. Certain factors relating to ID’s lack of success in the scientific community undeniably relate to that finding. For instance, the ID movement’s complete failure to make any headway into peer reviewed journals and the rejection of ID by the consensus of practicing scientists strongly demonstrates the implausibility of the claim that schools should teach ID to inform students of the serious scientific controversy over evolution. Judge Jones rightly emphasized these facts. But showing that ID is unsupported by the scientific community is not the same as saying that ID is not science. The latter claim is best left for philosophers of science to discuss in academic journals, not for inexperienced judges to conclude in legal opinions, no matter how excellent those opinions may otherwise be.

### *B. The “Is it Science?” Discussion was Unnecessary*

Second, the “is it science?” discussion is unnecessary given the logic of the *Kitzmiller* opinion. The judge first explained in great detail

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32. Granted, the analogy to teaching ID in schools as a possible alternative to evolution is not exact. Schools such as the ones in Dover were not seeking to urge their students to believe in ID in the same way that these hypothetical schools are leading their students in prayer. But the broader point remains that an idea, theory, or concept can endorse or promote religion even if it is in some sense scientific or finds support in science.

why the policy was unconstitutional for two separate reasons: because it would be viewed as an endorsement of religion by the students in the classroom<sup>33</sup> and because it would be similarly perceived by the parents in the community.<sup>34</sup> Later in the opinion, the judge held that the school board's purpose of promoting religion made the policy unconstitutional for yet a third independent reason.<sup>35</sup> In light of these findings, the further analysis of whether ID is or is not science simply was unnecessary. After all, the Constitution forbids promoting *religion*; it says nothing about teaching *science*. If the Constitution prohibited the government from excluding anything that constitutes science from the classroom, then of course the judge would have had to determine whether ID is science. But since the Constitution says nothing of the sort, the judge had no need to address the issue. This is not to say that judges should never address an issue that is strictly unnecessary to discuss; as I have already mentioned, the judge's decision to address the constitutionality of the ID policy under the *Lemon* test after he had already struck down the policy under the endorsement test was a shrewd one given the possibility of appeal.<sup>36</sup> But in this instance, given the controversial and difficult nature of ID, the judge would have been better off avoiding the matter.

### *C. By Defining Science, the Judge Acted Beyond the Judicial Role*

Third, Judge Jones acted beyond the typical judicial role by interpreting the non-legal term "science." Judges, of course, interpret words and phrases all the time. But this interpretation almost always (if not always) involves terms or phrases contained in concrete legal sources such as statutes, regulations, executive orders, or perhaps judicial opinions from higher courts. The source of the language will always be relevant to the method the court employs in interpreting it, and courts have developed myriad techniques and canons for figuring out how best to interpret the language used in these different sources. Whenever a court interprets a term or phrase from a legal text, it defines that term or

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33. *Kitzmiller*, 400 F. Supp. 2d at 723-29.

34. *Id.* at 729-35.

35. *Id.* at 746-63 (holding that the school board's ID policy failed the *Lemon* test).

36. *See supra* p. 91-92.

phrase in a very specific context—namely, as it exists in a particular text enacted or otherwise created by some other legal actor.

In other words, when a court defines or interprets a phrase in the Constitution—call the phrase “X”—the court is not saying that X means such and such in every context; it is simply saying that in this particular constitutional provision, in light of the Framers’ concerns (and other appropriate interpretive techniques), X means such and such. For example, if a court were to come up with a working definition of “religion” as it is used in the First Amendment,<sup>37</sup> the definition it developed would only be relevant and useful for understanding the meaning of the legal text. There is no reason to think that the definition of “religion” settled on by a court would bear much of a resemblance to other definitions of the term, whether those definitions be theological, anthropological, or otherwise.<sup>38</sup> And there is certainly no reason to think

37. See, e.g., *Africa v. Pennsylvania*, 662 F.2d 1025, 1032 (3d Cir. 1981):

First, a religion addresses fundamental and ultimate questions having to do with deep and imponderable matters. Second, a religion is comprehensive in nature; it consists of a belief-system as opposed to an isolated teaching. Third, a religion often can be recognized by the presence of certain formal and external signs.

38. For a theological definition of “religion,” see RUDOLF OTTO, *THE IDEA OF THE HOLY* 5-7, 10 (2d ed. 1950):

Holiness—‘the holy’—is a category of interpretation and valuation peculiar to the sphere of religion. It . . . remains inexpressible . . . in the sense that it completely eludes apprehension in terms of concepts. . . .

. . . [I]t will be useful, at least for the temporary purpose of the investigation, to invent a special term to stand for ‘the holy’ *minus* its moral factor or ‘moment,’ and, as we can now add, *minus* its ‘rational’ aspect altogether. . . .

. . . There is no religion in which it does not live as the real innermost core, and without it no religion would be worthy of the name.

. . . I adopt a word coined from the Latin *numen*. . . . I shall speak, then, of a unique ‘numinous’ category of value and of a definitely ‘numinous’ state of mind, which is . . . perfectly *sui generis* and irreducible to any other . . . .

that a theologian or anthropologist of religion would look to the court's definition to help her with her own understanding of the term. Legal interpretations are, to put it another way, interpretations of legal terms.

If Judge Jones had been interpreting the word "science" as that word appears in Article I, Section 8, Clause 8 of the Constitution, which gives Congress the power to promote the "Progress of Science" by granting patent rights, then he would have been acting well within his judicial role. But Judge Jones was not interpreting any legal text when he decided that ID is not "science." As the Constitution prohibits promoting religion but says nothing about teaching (or not teaching) science (or non-science), what exactly was the judge doing when he decided that ID is not "science"? It seems that he was coming up with criteria to define what science actually is, writ large, in the real world, outside the realm of legal text, as though he were a philosopher of science or, at the very least, some sort of dictionary editor. This is not a typical judicial undertaking. Indeed, unlike in the context of interpretation of legal texts, where techniques and canons have long existed to guide judges in the interpretive enterprise, it is not even clear how a judge should go about coming up with a definition of "science," as

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. . . [I]t is the emotion of a creature, submerged and overwhelmed by its own nothingness in contrast to that which is supreme above all creatures.

(alterations added). For an anthropological definition, see CLIFFORD GEERTZ, *THE INTERPRETATION OF CULTURES* 90 (1973):

[A]lthough it is notorious that definitions establish nothing, in themselves they do, if they are carefully enough constructed, provide a useful orientation, or reorientation, of thought, such that an extended unpacking of them can be an effective way of developing and controlling a novel line of inquiry. They have the useful virtue of explicitness: they commit themselves in a way discursive prose, which, in this field especially, is always liable to substitute rhetoric for argument, does not. Without further ado, then, a *religion* is:

*(1) a system of symbols which acts to (2) establish powerful, pervasive, and long-lasting moods and motivations in men by (3) formulating conceptions of a general order of existence and (4) clothing these conceptions with such an aura of factuality that (5) the moods and motivations seem uniquely realistic.*

(alterations added).

that term exists outside the world of legal texts. As such, the judge's foray into deciding whether ID constitutes science fell outside the typical work of the federal judge in our legal system.

#### *D. Judges are not Philosophers of Science*

Fourth, and relatedly, we should not expect judges to do a particularly good job when they attempt to define "science" as a philosopher of science might. Judges are experts in interpreting language contained in legal texts, but since they are neither scientists nor philosophers of science, it is hard to imagine that they would construct a successful definition of "science," if that term is unmoored to any sort of legal text. Unlike professional philosophers of science, judges are not trained in the discipline; are unschooled in the discipline's literature, history, and methods; and are unlikely to understand the full implications of their lay decisions.<sup>39</sup> Does the *Kitzmiller* opinion demonstrate otherwise? Did this judge correctly define "science"? Well, for one thing, it is not even clear what Judge Jones' definition of science actually

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39. Just as one example of what becoming a professional philosopher of science entails, consider this description of a philosophy of science Ph.D. program at University of Notre Dame:

Those who elect the philosophy track toward the Ph.D. in history and philosophy of science must satisfy the following course distribution requirements. In HPS, they will take a minimum of three courses in the general area of philosophy of science and four courses in history of science. In addition, students will satisfy a slightly modified form of the philosophy graduate program's requirements, namely, the philosophy proseminar and a minimum of one course in each of the following areas: logic, history of ancient philosophy, history of medieval philosophy or science, and history of modern philosophy, and in two of the following three areas: ethics, metaphysics, and epistemology. Students may also be advised to take some extra work in one of the sciences, if this seems necessary for the specialized research they are planning. The language requirement for Ph.D. candidates in the philosophy track is a reading knowledge of two foreign languages.

Reilly Center for Science, Technology, and Values, HPS Graduate Program, [http://www.nd.edu/~hps/hps\\_doctoral.html](http://www.nd.edu/~hps/hps_doctoral.html) (last visited November 20, 2006).

is. Does he mean to say, for instance, that any theory which has not succeeded in the peer review literature is not science? Does he mean to say that any theory that has been compellingly critiqued, as he clearly believes Behe's theory of irreducible complexity has been, is likewise not science? It is not clear at all from his discussion of the issue. But more importantly, what about the substance of his definition? Is he pointing to the right criteria generally to determine what constitutes science? As for that question, I simply do not know. Like the judge, I am neither a scientist nor a philosopher of science, so I cannot reliably critique his criteria.

Moreover, I am given great pause from the philosophy of science that I have read, which suggests that at least some philosophers of science believe the whole "demarcation" approach—the approach that sets out criteria to distinguish science from non-science—is itself highly suspect.<sup>40</sup> Certainly the judge in *Kitzmiller* did not seek to justify his own decision to engage in a demarcation analysis in a way that would even acknowledge, much less satisfy, the anti-demarcation critique within the field. Also giving me pause is the very negative reaction from some philosophers of science which followed the only previous attempt by a court to set out criteria for demarcating science from non-science in a case involving evolution. After a district court judge tried defining science in *McLean v. Arkansas* in the mid-1980s,<sup>41</sup> defining science somewhat similarly to how Judge Jones seems to have defined it, one prominent philosopher of science critiqued the definitions as being "about as remote from well-founded opinion in the philosophy of science as Creationism is from respectable geology."<sup>42</sup> Of course, philosophy of science may have evolved since then, and I do not wish to make any firm substantive philosophical judgment here about the possibility of

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40. See, e.g., LARRY LAUDAN, *BEYOND POSITIVISM AND RELATIVISM: THEORY, METHOD, AND EVIDENCE* 211 (1996); PHILIP KITCHER, *ABUSING SCIENCE: THE CASE AGAINST CREATIONISM* 40-50 (1982). See also Wexler, *Darwin, Design, and Disestablishment*, *supra* note 12, at 784 n.148 (citing additional sources).

41. See *McClellan v. Arkansas Bd. of Educ.*, 529 F. Supp. 1255, 1272 (E.D. Ark. 1982) (holding unconstitutional an Arkansas statute forbidding the teaching of evolution in public elementary or secondary schools unless accompanied by instruction in the theory of "creation science").

42. Larry Laudan, *Commentary on Ruse: Science at the Bar—Causes for Concern*, in *CREATIONISM, SCIENCE, AND THE LAW: THE ARKANSAS CASE* 161, 166 (Marcel C. La Follette, ed., 1983).



demarcation or the particular criteria relied upon by Judge Jones. My point is simply that the demarcation enterprise seems to be fraught with peril and therefore best avoided, particularly when, as in this case, it was entirely unnecessary.

One counter-argument that could be raised at this point<sup>43</sup> is that judges often engage in this science vs. non-science demarcation because, under the Supreme Court's landmark decision in *Daubert v. Merrell Dow Pharm, Inc.*,<sup>44</sup> federal judges are required to determine whether proffered expert scientific testimony is scientifically valid before they allow it into evidence under Rule 702 of the Federal Rules of Evidence.<sup>45</sup> While this is true to some degree, there are several reasons why the analysis routinely engaged in by federal judges under Rule 702 is different from and does not justify the type of demarcation analysis that Judge Jones attempted in *Kitzmilller*.

First, federal judges *have to* engage in some sort of "is it science?" inquiry when considering expert testimony because Rule 702, which contains the word "scientific," was legislatively enacted and is thus binding on those judges. This was not true in the ID case, where no legislative or other text contained the word "science" or "scientific" or anything of the sort. Second, because the rule established by *Daubert* is based on the term "scientific" in Rule 702, the inquiry in which federal courts engage when they analyze proffered testimony is not whether some testimony is "scientific" in any philosophical, unmoored sense, but merely whether that testimony is "scientific" as that word was used by Congress in that particular rule. Thus, the *Daubert* inquiry is fundamentally different from the inquiry in which Judge Jones engaged. This leads to the third point, which is that because the *Daubert* test is

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43. Indeed, this counter-argument was raised by Professor Steve Gey from Florida State University when I presented the argument at the American Association for the Advancement of Science's annual meeting in St. Louis last February. I thank Professor Gey for his comments there.

44. 509 U.S. 579 (1993).

45. *Id.* at 589 ("[U]nder the [Federal Rules of Evidence] the trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable." (alterations added)). Rule 702 provides: "If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise." Fed. R. Evid. 702.

based on actual statutory language, if Congress believes that courts are making mistakes in how they understand what makes something “scientific,” it could always amend the rule either by changing the word or adding a more specific definition. There is no such check on judges in the ID context, since there, the judges are not interpreting statutory language.

Fourth, it is not at all clear that *Daubert* and Rule 702 actually require judges to distinguish “science” from “non-science,” or whether instead the inquiry under these sources of legal authority simply requires judges to determine whether something is good science as opposed to unsuccessful or bad science. If *Daubert* really requires the latter, then the inquiry in which federal judges engage would differ significantly from any *Kitzmiller*-like attempt to distinguish science from non-science. At some points in the *Kitzmiller* opinion the Court talks in terms of a theory’s “scientific validity” rather than whether it constitutes “science” in any philosophical sense, and certain of the Court’s criteria, such as error rates, peer review, publication, and general acceptance, also seem to sound in notions of good versus bad science rather than science versus non-science.

Finally, even if it were true that courts applying *Daubert* were performing a demarcation analysis, and thus the premise of the counter-argument were true (namely, that courts might as well engage in the science versus non-science inquiry when analyzing ID, because they do it all the time anyway), the counter-argument would still only prevail if it were clear that the *Daubert* demarcation criteria are sound and that judges engaging in this inquiry are doing a good job. It is not clear whether this is the case. Some commentary suggests that the *Daubert* criteria are unsound and that the entire practice of applying these criteria in the federal courts is deeply flawed.<sup>46</sup>

Given the above considerations, any judge who wants to engage in a demarcation inquiry should first explain why he or she is in fact competent to define science and to apply that definition. Certainly Judge Jones did not make this affirmative case before engaging in his own demarcation analysis.

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46. See, e.g., David Crump, *The Trouble with Daubert-Kumho: Reconsidering the Supreme Court’s Philosophy of Science*, 68 MO. L. REV. 1 (2003).

*E. The Judge's Discussion Opens the Door to Future Manipulation*

Although lawyers and judges may not be very good at philosophy of science, they are very good at making arguments and manipulating concepts and terms to suit their needs. As a result, Judge Jones' decision to set out criteria for distinguishing science from non-science could have unintended negative consequences for ID opponents. Once a judge declares that science means "X" and that it is essential to a finding of unconstitutionality that a purported teaching is not science (*i.e.*, not "X"), the judge has opened the door in the next case for better prepared lawyers to argue that in fact such a teaching is "X" and therefore must be allowed in the public schools.

For instance, could a school district now argue that it must be allowed to teach "flood geology"—the idea that the earth's geological characteristics are the result of a relatively recent world-wide flood? Under Judge Jones' criteria, the answer is not clear.<sup>47</sup> A flood is a natural, rather than a supernatural explanation, for observable data (criterion #1), and it is a positive explanation for those data, rather than simply a critique of evolution, thus perhaps steering clear of the second and third criteria. And while it is true that flood geology has not met with success in the scientific community, it is far from clear whether that is an independent criterion under Judge Jones' analysis (and one can certainly think of reasons why it should not be<sup>48</sup>). Moreover, if one judge can practice philosophy of science, what is to stop others from doing the same? Perhaps the next judge to hear an ID case will decide that science simply means "the process of searching for the best logical explanations for observed data." In that case, schools might be allowed to teach not only ID but also perhaps the whole kit and caboodle of

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47. Recall these criteria: "(1) ID violates the centuries-old ground rules of science by invoking and permitting supernatural causation; (2) the argument of irreducible complexity, central to ID, employs the same flawed and illogical contrived dualism that doomed creation science in the 1980's; and (3) ID's negative attacks on evolution have been refuted by the scientific community." *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707, 735 (M.D. Pa. 2005). *See supra* p. 94.

48. For example, if success in the scientific community was a prerequisite for something to be labeled "science," new ideas that are otherwise sound but that have not yet been accepted by the community would be denied scientific status. This could have the effect of unnecessarily stifling scientific progress.

young earth Creationism. Is this really a can of worms that ID opponents want to open?

*F. The Judge Did Not Explain Why He Addressed the “Is it Science?” Issue.*

Finally, given the many difficulties outlined above, one would have expected to see a clear, precise, and perhaps extended explanation of exactly why the judge thought it was necessary to take on the difficult and controversial question of “what is science?” The opinion in fact contains no such explanation. It merely states that resolving the question is “essential” to the court’s holding and that it is “incumbent upon the court” to decide the issue.<sup>49</sup> But the court never explains *why* it is incumbent on the court to decide the issue or *why* resolving the question is essential. The objection does not go simply to the opinion’s clarity, but also to its substance. If we do not know why it was necessary to ask whether ID is science, then we do not know what the implications are of the court’s finding that ID is not science.

The opinion’s lack of clarity on this score is particularly unfortunate because it is quite possible that the judge was not attempting to answer the “is it science?” question from a philosophy of science perspective. At certain points in the opinion, it appears that Judge Jones was simply asking whether ID is successful science, not whether it is or is not science. For example, when he concludes the relevant section of his analysis, he says not only that ID “is not science,” but also that it “cannot be adjudged a valid, accepted scientific theory,”<sup>50</sup> which leads to the possibility that the judge thought that ID may be science after all, although invalid and non-accepted science. Similarly, sometimes it seems that the judge might only be making the limited point that ID’s failure to achieve success in the scientific community contributes to the message of religious endorsement that the school sends by choosing to teach the theory, in part because no reasonable observer would see ID as scientific. The opinion states: “It is our view that a reasonable, objective observer would, after reviewing both the voluminous record in this case, and our narrative, reach the inescapable conclusion that ID is an

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49. *Kitzmilller*, 400 F. Supp. 2d at 716.

50. *Id.* at 745.

interesting theological argument, but that it is not science.”<sup>51</sup> Saying that the reasonable observer would understand ID as non-scientific is not the same as making a philosophy of science claim that ID is in fact not science.

If this were all that Judge Jones meant to express in the opinion, I would have no problem with his analysis. But although this might have been the judge’s intent, the language of the opinion quite strongly suggests he was instead making a conclusion, sounding in philosophy of science, that ID is in fact not science. He reiterates this “not science” language at least seven times.<sup>52</sup> Given that he says this over and over, there is little choice but to assume that the judge intended to make a larger, more philosophically-oriented claim beyond merely that ID is unsuccessful science or that its failure among the scientific community strengthens its religious endorsement message. Surely, lawyers or other judges trying to follow the opinion in the future would not be acting unreasonably in assuming that the “ID is not science” finding was “essential” to the opinion’s holding.<sup>53</sup>

The judge does offer one practical explanation for addressing the issue, namely that he presided over days and days of specific testimony on the issue and wanted to save other courts and judges the time and trouble of reconsidering the same evidence. “[W]e will offer our conclusion on whether ID is science,” the judge wrote, “in the hope that it may prevent the obvious waste of judicial . . . resources which would be occasioned by a subsequent trial involving [this] precise question.”<sup>54</sup> But this argument begs the question of why, as a legal matter, *anybody* would have to consider the evidence, at least as it relates to the question of “is ID science?” If there is no coherent answer, then Judge Jones’ explanation that consideration of the science issue will be useful to other courts likewise falters.

Of course, saying that the judge should not have resolved the issue is not the same thing as saying that the litigators should not have raised it. In their complaint, the plaintiffs argued that ID

is neither scientific nor a theory in the scientific sense; it is an inherently religious argument or

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51. *Id.* at 745-46.

52. *Id.* at 717, 735, 737, 738, 742, 745, and 764.

53. *See supra* text accompanying note 49.

54. *Kitzmiller*, 400 F. Supp. 2d at 735 (alterations added).

assertion that falls outside the realm of science . . . .  
The effect [of the policy] will be to compel public  
school science teachers to present to their students  
in biology class information that is inherently  
religious, not scientific, in nature.<sup>55</sup>

Although I disagree with the apparent assumption here—that something is either science or religion, and that the judge must decide which one includes ID—I certainly do not fault the plaintiffs for making this argument. At the very least, calling ID non-science certainly has a strong rhetorical appeal. Moreover, the plaintiffs had no idea how the judge would approach the case. As lawyers representing their clients, they were surely justified in making any reasonable argument that would further their case. As the judge’s decision proves, the plaintiffs made the right strategic choice—but litigating a case is not the same as deciding it.<sup>56</sup> The judge surely did not have to decide the issue simply because the plaintiffs asked him to do so. Unlike the litigants, the judge had the responsibility to consider whether making a science vs. non-science determination was necessary and advisable, given all the circumstances. For all the reasons outlined above, the judge should have declined the invitation to opine on the issue and should have decided the case on the grounds that the policy endorsed religion, pure and simple.

#### CONCLUSION

It is understandably easy to celebrate when a court reaches a decision that comports with one’s own view of a controversial issue. When I argue that ID opponents should be skeptical about Judge Jones’ decision that ID is not science, I do so with some hesitation. After all, the judge’s decision on this score will likely have the effect of

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55. Complaint, *Kitzmiller v. Dover Area Sch. Dist.*, 3-4, available at [http://www2.ncseweb.org/kvd/all\\_legal/2004-12-14\\_Kitzmiller\\_v\\_DASD\\_Complaint\\_readable.pdf](http://www2.ncseweb.org/kvd/all_legal/2004-12-14_Kitzmiller_v_DASD_Complaint_readable.pdf). The defendants, of course, argued the other way. See Answer, *Kitzmiller v. Dover Area Sch. Dist.* 5-6, available at [http://www2.ncseweb.org/kvd/all\\_legal/2005-01-03\\_Defense\\_Answer\\_to\\_Complaint.pdf](http://www2.ncseweb.org/kvd/all_legal/2005-01-03_Defense_Answer_to_Complaint.pdf) (“Intelligent Design is a scientific theory based on interpretation of scientific data by scientists; it is endorsed by a growing number of scientists who assert that intelligent causes are necessary to explain the complex, information-rich structures observed by biologists.”).

56. Or writing a law review article about it.

discouraging some (perhaps many) school districts from adopting ID policies in the future. As a policy matter, I think this is a good result. But judges are neither legislators nor school boards, and their opinions, to the extent they are precedential or persuasive to other courts, can carry unintended and unwanted consequences. My concern is that, by aggrandizing the power to define science, the judicial system could infringe on the scientific community's rightful authority over the boundary between science and non-science. By weakening the scientific community's authority in this way, the legal system not only undermines science, but also possibly threatens religious freedom as well. Consider the consequences if a future court, acting under the power established in *Kitzmiller*, were to define science so broadly that schools would be allowed to teach flood geology, creation science, or other theories that clearly endorse religion. Nonbelievers in those science classes would be forced to study and learn those concepts as truth, simply because a judge has declared them to be scientific. Today's victory can easily become tomorrow's defeat. ID opponents would be wise to downplay this controversial portion of the *Kitzmiller* decision and to protect vigilantly against its future abuse.