

Feature Article: DI410

## INTELLIGENT DESIGN IN THE SCHOOLS: IS IT CONSTITUTIONAL?

by Francis J. Beckwith

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### SYNOPSIS

Intelligent design (ID) theory — which seeks to explain the cause of the specified complexity in the universe — is a new factor in the debate over origins. The U.S. Supreme Court has specifically dealt with state laws concerning creation and evolution in public school science curricula, but it has never addressed ID. If the Supreme Court were to assess a law permitting or requiring the teaching of ID in public schools it would likely employ the standard set down in its most famous creation/evolution case, *Edwards v. Aguillard*. It is possible, however, to construct a statute that would pass constitutional muster: First, ID has no historical connection to the creation/ evolution debate in the *Scopes* trial; therefore, it should not suffer from guilt by association. Second, ID literature and curricula are not transparently derived from the book of Genesis, as is creationist literature. The arguments for ID are not grounded in any particular religion's interpretation of its special revelation. They are, rather, the result of empirical facts, well-grounded conceptual notions, and critical reflection. The conclusions of ID are consistent with creationism, it is true, but ID is essentially different. Finally, an ID statute could be justified using two secular lines of reasoning: by challenging the state endorsement and biased promotion of evolution, and by arguing that an ID statute would promote students' exposure to important scholarship and protect the academic freedom of ID adherents.

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What if a government body required or permitted its public schools to include criticisms of evolution and presentations of intelligent design (ID) theory in their science curricula? The U.S. Supreme Court has specifically dealt with state laws that either forbade evolution (*Epperson v. Arkansas*)<sup>1</sup> or required balanced treatment between evolution and creation (*Edwards v. Aguillard*),<sup>2</sup> but it has never addressed this particular question. To require or permit the teaching of ID in public schools, nevertheless, is constitutional. To make this case, we must first define *creation*, *evolution*, and *intelligent design*.

### DEFINING CREATION, EVOLUTION, AND INTELLIGENT DESIGN

**Creation.** *Creation*, as understood by the courts, is synonymous with *young-earth creationism*. This view, according to Phillip E. Johnson, U.C. Berkeley law professor, is associated with the "term 'creation-science,' as used in the Louisiana law [in the *Edwards* case], [and] is commonly understood to refer to a movement of Christian fundamentalists." "Creation-scientists," continues Johnson, "do not merely insist that life was *created*; they insist that the job was completed in six days no more than ten thousand years ago....[Young-earth creationism] attributes the existence of fossils to Noah's flood" (emphasis in

original).<sup>3</sup> The statutes struck down as unconstitutional by the Supreme Court in *Epperson and Edwards*, and by a federal district court in *McLean v. Arkansas*,<sup>4</sup> had this type of creationism in mind.

**Evolution.** *Evolution* can mean different things. Sometimes it is a synonym for “Darwinism,” the theory defended by Charles Darwin (1809–1882) in *The Origin of Species*, as well as subsequent refinements of Darwin’s theory. Arguing from what he observed when domestic breeders engaged in selection, Darwin offered *natural selection* as the engine by which living organisms adapt, survive, acquire new characteristics, and pass them on to their offspring:

Owing to this struggle, variations, however slight and from whatever cause proceeding, if they be in any degree profitable to an individual of any species, in its infinitely complex relations to other organic beings and to external nature, will tend to the preservation of that individual, and will generally be inherited by the offspring....Natural Selection, as we shall hereafter see, is a power incessantly ready for action, and is as immeasurably superior to man’s feeble efforts, as the works of Nature are to those of Art.<sup>5</sup>

Not even hard-line creationists deny that biological species adapt to changing environments over time and genetically pass those adaptations to their offspring. This is *microevolution*, which is distinguished from *macroevolution* — the view that through small, incremental, and beneficial mutations over eons of time, all living things in our world originated from one bacterial cell.

The notion of common descent is fundamental to evolution even if Darwinian and neo-Darwinian accounts of this descent are supplemented by another theory (e.g., punctuated equilibrium, recombination, the founder effect, genetic drift). This is why atheist philosopher Antony Flew points out that “it is wrong to identify either the Darwinism of *The Origin of Species* or Neo-Darwinism with biological evolution without prefix or suffix. That to which any account of the evolution of species is necessarily opposed is any doctrine of their immutability; combined, presumably, with the claim that they were...specially created by *ad hoc* supernatural agency.”<sup>6</sup>

Evolutionists assert that the bacterial cell from which all life arose sprung from inorganic matter. According to biologist Douglas J. Futuyama, “We will almost certainly never have direct fossil evidence that living molecular structures evolved from nonliving precursors. Such molecules surely could not have been preserved without degradation; [nevertheless] a combination of geochemical evidence and laboratory experiment shows that such evolution is not only plausible but almost undeniable” (emphasis added).<sup>7</sup>

Inorganic matter, moreover, is said to have resulted from an initial explosion called the big bang over 15 billion years ago that naturalists believe will one day be accounted for scientifically.<sup>8</sup> Evolution is thus a grand materialist explanation for the diversity and apparent design of entities that make up nature.<sup>9</sup> Paleontologist George Gaylord Simpson explains the “meaning of evolution”: “Although many details remain to be worked out, it is already evident that all the objective phenomena of the history of life can be explained in purely naturalistic or, in a proper sense of the sometimes abused word, materialistic factors....Man is the result of a purposeless and natural process that did not have him in mind.”<sup>10</sup>

*Naturalistic* evolution says the entire universe can be accounted for by strictly material processes without resorting to any designer, creator, or nonmaterial entity. To say such a view of evolution is true, therefore, is to say naturalism (or materialism) as a worldview is true, for such a strictly material and random version of evolution *necessarily entails* naturalism. This means a threat is posed to materialism when evolution is challenged, for naturalistic evolution seeks to answer the *very same* question as ID: What is the origin of the apparent design in biological organisms and/or the rest of the natural universe and/or the universe as a whole? Evolution answers this question by appealing to the forces of unguided matter (and/or energy) whereas ID appeals to an intelligent agency.

**Intelligent Design.** *Intelligent design* is a research program. A small, though growing, platoon of academics embraces this program and maintains that, rather than the blind forces of unguided matter, an intelligent agency better explains the specified, and sometimes irreducible, complexity of some physical systems. These systems include biological entities as well as the existence of the universe as a whole.

Two aspects of ID are relevant to the constitutionality of an ID statute: (1) the case against methodological naturalism, and (2) the case for intelligent design. The literature supporting ID is sophisticated, vast, and growing; therefore, the presentation of its case will be cursory.

## THE CASE AGAINST METHODOLOGICAL NATURALISM

ID proponents, such as mathematician William A. Dembski, maintain that most scholars who hold to evolutionary theory do so because of a prior commitment to *methodological naturalism* (MN), “the view that science must be restricted solely to undirected natural processes.”<sup>11</sup> According to Johnson, “a methodological naturalist defines science as the search for the best naturalistic theories. A theory would not be naturalistic if it left something out (such as the existence of genetic information or consciousness) to be explained by a supernatural cause.”<sup>12</sup> If one defines science as a discipline that allows only naturalistic explanations, and if one maintains that science is the only field that provides truth on the question of origins, then evolution (not necessarily Darwinism) *must be true* even if it leaves many unanswered questions. The real question, according to design theorists, is not whether ID conflicts with MN but whether their arguments for ID work. If ID arguments work, then MN is not a necessary precondition of natural science and cannot be employed to exclude positions contrary to it.

## THE CASE FOR INTELLIGENT DESIGN

**Detecting Specified Complexity.** At the core of the ID research program are criteria that proponents claim can be used to detect or falsify design. Dembski offers one such criterion. He posits an explanatory filter in order to detect *specified complexity* (SC), something we recognize as evidence of intelligent agency in many fields, such as “forensic science, intellectual property law, insurance claims investigation, cryptography, and random number generation.”<sup>13</sup> Dembski proposes that we extend these insights, which have proved fruitful in other fields, to the natural sciences.

According to Dembski, “Whenever we infer design, we must establish three things — *contingency*, *complexity* and *specification*. Contingency, by which we mean that an event was one of several possibilities, ensures that the object is not the result of an automatic and hence unintelligent process.”<sup>14</sup> In other words, an event that is not contingent is one that can be completely accounted for by natural law (or an algorithm). For instance, a salt crystal “results from forces of chemical necessity that can be described by the laws of chemistry. A setting of silverware does not.”<sup>15</sup>

“Complexity,” writes Dembski, “ensures that the object in question is not so simple that it can readily be explained by chance.”<sup>16</sup> For Dembski, “complexity...is a form of probability.”<sup>17</sup> For example, because the improbability of opening a combination lock by chance depends on the complexity of the mechanism, “the greater the complexity, the smaller the probability. Thus to determine whether something is sufficiently complex to warrant a design inference is to determine whether it has sufficiently small probability.”<sup>18</sup> Complexity alone, however, does not necessarily indicate design. The result of 1,000 coin flips is complex but can be explained by randomness. This is why specification is also essential.

“Specification ensures that this object exhibits the type of pattern that is the trademark of intelligence.”<sup>19</sup> Specificity alone does not necessarily indicate design. For example, redundant order, such as the earth’s orbiting the sun every 365 days, can be explained by law and necessity. If specification is combined with complexity, however, a design inference may be warranted. Dembski often cites an example from one area of science, the Search for Extra-Terrestrial Intelligence (SETI). In attempting to detect intelligence outside earth, SETI researchers have developed a filter with preset patterns so that it may discard radio waves that do not exhibit specified complexity. In Carl Sagan’s novel and film, *Contact*, SETI researchers detect extraterrestrial intelligence when they discover a sequence of beats and pauses that correspond to the prime numbers from 2 to 101.<sup>20</sup>

Dembski distinguishes between *specification* and *fabrication*. The latter occurs when one infers a pattern ad hoc (that fits only one instance) after the fact. For example, suppose a hurricane moved through my

neighborhood, destroying four out of the seven homes on my street, and the three homes not destroyed are owned by my two brothers and me.<sup>21</sup> We own the second, fourth, and sixth homes on the block, which means that the hurricane destroyed only the odd-numbered homes. Suppose I were to infer from this pattern either that the hurricane intentionally spared the homes of the Beckwith brothers and/or that the hurricane did not like odd-numbered homes on my block. This design inference would not be warranted since the “pattern” may be adequately accounted for by chance and necessity and thus is ad hoc. The pattern detected by the SETI researchers in *Contact*, however, is not a fabrication. It is an instance of SC because it is not only highly complex and improbable, but it also has specification, a pattern that is *independent* of, or *detachable* from, the event it explains. In other words, the pattern is not derived exclusively from the event, but one we could construct even if we did not know which one of the possible events would occur.

On the one hand, the pattern of eight randomly selected numbers in a lottery is not detachable, for it cannot be a specified pattern apart from the event. On the other hand, the pattern of the message from space in *Contact* is detachable, for our background knowledge (or side information, as Dembski calls it<sup>22</sup>) about binary arithmetic provides the resources by which we can construct this pattern independent of the message itself. As a researcher in the film *Contact* exclaimed, “This isn’t noise, this has structure.”<sup>23</sup> The message is not merely complex but has “structure,” a pattern that one could have constructed independent of the message itself. According to Dembski, “this distinction between specifications and fabrications can be made with full statistical rigor.”<sup>24</sup>

There are several ways in which design theorists employ Dembski’s filter in order to detect design in nature. We will look at two.

**Irreducible Complexity of Certain Biological Systems.** Biochemist Michael Behe takes seriously Darwin’s claim that “if it could be demonstrated that any complex organ existed which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down.”<sup>25</sup> A system that is *irreducibly complex* (IC) is thus a serious challenge to the explanatory power of Darwin’s theory. Behe defines an IC system as “a single system 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.”<sup>26</sup>

A mechanical mousetrap is an example of such a system.<sup>27</sup> Behe notes that a mousetrap consists of a number of parts, and it will not function if any one of its parts is removed. An IC system has no function until all its parts are in place, and therefore it cannot be accounted for by gradual changes over time, but according to natural selection a biological entity must have some function so that it may exist, change, and pass that change on to its progeny. With IC systems, however, there can be no functioning intermediate forms that have yet to acquire the necessary parts. Behe concludes, “If there is no function, selection has nothing to work on, and Darwinian evolution is thwarted.”<sup>28</sup>

Behe cites a number of examples of irreducibly complex biological systems, including those contained within the cell. One of the cell’s molecular machines is the cilium.<sup>29</sup> Behe explains the necessity of its parts:

Ciliary motion certainly requires microtubules; otherwise, there would be no strands to slide. Additionally, it requires a motor, or else microtubules of the cilium would lie stiff and motionless. Furthermore, it requires linkers to tug on neighboring strands, converting the sliding motion into a bending motion, and preventing the structure from falling apart. All of these parts are required to perform one function: ciliary motion. Just as the mousetrap does not work unless all of its constituent parts are present, ciliary motion simply does not exist in the absence of microtubules, connectors, and motors. Therefore we can conclude that the cilium is irreducibly complex — an enormous monkey wrench thrown into its presumed gradual, Darwinian evolution.<sup>30</sup>

Reviewers of Behe’s *Darwin’s Black Box* “admit[ted] the current lack of Darwinian explanations,” even though most “expressed confidence that in the future such explanations will be found.”<sup>31</sup> Behe does not share this optimism. He rather argues that the data are more consistent with an ID explanation. He

maintains that we do have legitimate criteria by which to detect design (e.g., SC) and that an IC system exhibits the characteristics these criteria are meant to detect: it is contingent, complex, and specified.

**The Fine-Tuning of the Universe for the Existence of Human Life.** In the 1960s, some physicists observed that our universe appears to have been fine-tuned for the existence of human life.<sup>32</sup> During the 1980s and 1990s, a number of works have assessed this “anthropic coincidence” in differing ways.<sup>33</sup> According to science philosopher Stephen C. Meyer, these scientists “discovered that the existence of life in the universe depends upon a highly improbable but precise balance of physical factors. The constants of physics, the initial conditions of the universe, and many other of its features appear delicately balanced to allow for the possibility of life.”<sup>34</sup> Any slight alteration in these constants would have made human life impossible. In 1998, astrophysicist and design advocate, Hugh Ross, estimated that there are “twenty-nine characteristics of the universe that must be fine-tuned for any kind of physical life to be possible” and that our solar system has 45 characteristics necessary for human life.<sup>35</sup>

Given the individual and collective probabilities for these characteristics all to arise by chance with precisely the correct values to make human life possible, Ross estimated that there is “much less than 1 chance in one hundred billion trillion trillion trillion [that there] exists...even one” planet on which life “would occur anywhere in the universe.”<sup>36</sup> This is why Nobel laureate in physics, Arno Penzias, writes that “astronomy leads us to a unique event, a universe which was created out of nothing, and delicately balanced to provide exactly the conditions required to support life. In the absence of an absurdly-improbable accident, the observations of modern science seem to suggest an underlying, one might say, supernatural plan.”<sup>37</sup>

ID advocates have applied Dembski’s explanatory filter to this phenomenon.<sup>38</sup> According to some design theorists, the fine-tuning of the universe for the possibility of human life exhibits the characteristics of specified complexity; and thus, it can be attributed to an intelligent agent, for it is contingent (i.e., it is one of many possibilities), complex (i.e., it is a highly improbable arrangement of independent variables), and specified (i.e., it is a cosmological pattern a capable intelligence could have constructed if it intended to make the universe conducive to human life).

## ID AND THE EDWARDS STANDARD

Having defined creation, evolution, and intelligent design, we now turn to the possibility of constructing a constitutional ID statute. If the Supreme Court were to assess a law (statute) that permitted or required the teaching of ID, it would likely employ the test it set down in *Edwards*, the case that set the standard by which public school curricula on origins should be evaluated.

The Louisiana statute assessed in *Edwards* was struck down for four reasons: (1) its historical continuity with the *Scopes* trial and the creation/evolution debate, (2) its textual connection to the Genesis-inspired statutes struck down in *Epperson* and *McLean*, (3) the religious motivation of its supporters, and (4) its illegitimate means (i.e., advancing religion, limiting what teachers may teach) to achieve appropriate state ends — that is, academic freedom — though the Court concluded that the statute’s purported purpose (or end) was “a sham,”<sup>39</sup> and thus the statute had no real secular purpose.

**ID’s Historical Connection to the Creation/Evolution Debate.** ID has no historical connection to the creation/evolution debate in the *Scopes* trial. Boston University law professor Jay Wexler, however, argues that because ID has *some* historical connection to the creation/evolution controversy, it would not pass the *Edwards* standard,<sup>40</sup> but that would make the genetic fallacy a principle of constitutional jurisprudence.<sup>41</sup> After all, if historical connection of any sort, no matter how distant or loose, is sufficient to prohibit the teaching of a subject, then astronomy and chemistry ought to be prohibited since they have their origin in the religiously oriented practices of astrology and alchemy.

**ID’s Connection to the Genesis Account.** The Court’s problem with the creationism curriculum required in the *Edwards* statute was its transparent connection to the book of Genesis and the contents of previously repudiated statutes in *Epperson* and *McLean*. The courts in these cases asked, How closely does

the curricular content required by the statute parallel the creation story in Genesis? If there are no essential differences between ID and creationism, then the teaching of ID in public schools would not pass constitutional muster. The essentials of ID are:

1. If an apparently designed entity exhibits specified complexity (SC), the inference is warranted that the entity is the result of an intelligent agent.
2. SC can be reliably detected by an explanatory filter.
3. The irreducible complexity of some biological systems, and the fine-tuning of the universe for the existence of life, are instances of specified complexity.
4. Presupposing methodological naturalism (MN) and relying exclusively on its resources (i.e., chance and necessity) cannot account for SC in the instances listed in (3).
5. ID cannot be excluded from serious consideration simply because it is inconsistent with an a priori commitment to MN.
6. Given points one through five, ID best accounts for the irreducible complexity of some biological systems and the fine-tuning of the universe for life.

No doubt ID has implications for the veracity of evolution: If its arguments are sound, then ID defeats evolution. ID's premises and propositions, unlike the ones from creationism, are neither derived from, nor grounded in, any particular religion's interpretation of its special revelation. They are, rather, the result of empirical facts (e.g., the structure of the cell), well-grounded conceptual notions (e.g., SC, IC), and critical reflection. These subsequently serve as the basis from which one may infer that an intelligent agent is likely responsible for the existence of certain apparently natural phenomena. Granted, the conclusions inferred by these premises may be consistent with, and lend support to, one or more tenets of creationism, but that fact alone does not make ID creationism or even constitutionally suspect. Even though the big bang theory, the most widely accepted theory of the universe's origin, is consistent with theism, it is not the same as theism;<sup>42</sup> neither is ID the same as creationism.

**ID's Motivation and Purpose.** In order to address the concerns of reasons (3) and (4) of the *Edwards* standard, any government body requiring or permitting ID to be taught in its public schools would have to justify it by appealing to secular reasons. The following four secular reasons can be employed.

*The Endorsement Test.* In *Lynch v. Donnelly*, Justice O'Connor proposed an "endorsement test" by which the Court may assess alleged transgressions of the Establishment Clause. No government action is to create a *perception* that it is either endorsing or disfavoring a religion. The concern of this test is whether the disputed activity suggests "a message to nonadherents that they are outsiders, not full members of the political community, and an accompanying message to adherents that they are insiders, favored members of the political community."<sup>43</sup> If a particular curriculum gives the impression that a certain disputed, irreligious point of view is favored, a state could argue that in order to erase that perception, a statute requiring or permitting the teaching of ID is necessary.

*The Neutrality Test.* The Supreme Court in *Epperson* wrote that the "government...must be neutral in matters of religious theory, doctrine, and practice. It may not be hostile to any religion or nonreligion; and it may not aid, foster, or promote one religion or religious theory against another or even against the militant opposite. The First Amendment mandates governmental neutrality between religion and religion, and between religion and nonreligion."<sup>44</sup> An ID statute, therefore, could be justified on the basis of neutrality by arguing that to teach only one theory of origins (evolution), the state is in fact advocating, aiding, fostering, and promoting irreligion, which it is constitutionally forbidden from doing. The state is not merely teaching what some religious people find antagonistic or offensive to their faith, which would not be unconstitutional. It is, rather, promoting a philosophical point of view "that occupies in the life of its possessor a place parallel to that filled by" traditional belief in God.<sup>45</sup>

Perhaps this is why Justice Black asked, "If the theory [of evolution] is considered anti-religious, as the Court indicates, how can the State be bound by the Federal Constitution to permit its teachers to advocate

such an ‘anti-religious’ doctrine to schoolchildren?” According to Justice Black, “this issue presents problems under the Establishment Clause....The very cases cited by the Court as supporting its conclusion that the State must be neutral” assert that the State should not favor “one religious or anti-religious view over another.”<sup>46</sup>

When government schools, whose attendance is generally compulsory, delve into matters that touch on the ultimate nature of things and imply or affirm an “orthodox” position on such matters, they violate what the Court maintains is a fundamental liberty.<sup>47</sup>

*Exposing Students to New and Important Scholarship.* A state could appeal to the importance of exposing students to reputable scholarship that critiques evolution. The *Edwards* ruling clarifies that it does “not imply that the legislature could never require that scientific critiques of prevailing scientific theories be taught....Teaching a variety of scientific theories about the origins of humankind to schoolchildren might be validly done with the clear secular intent of enhancing the effectiveness of science instruction.”<sup>48</sup> The Court also pointed out that the Balanced-Treatment Act it struck down in *Edwards* was unnecessary because Louisiana already permitted teachers to introduce alternative points of view.<sup>49</sup>

ID proponents have had their works published by prestigious presses and in academic journals,<sup>50</sup> have aired their views in major universities and other institutions,<sup>51</sup> and have been recognized by leading periodicals.<sup>52</sup> Students, therefore, should be exposed to these works.

*Furthering and Protecting Academic Freedom.* A state could make the argument that an ID statute protects the academic freedom of teachers and students. They may suffer marginalization, hostility, and public ridicule because of their support of ID and doubts about the veracity of the evolutionary paradigm.

Consider the following example. In 1999, a Burlington, Washington, high school biology teacher, Roger DeHart, was instructed by his superiors, following a student complaint filed by the American Civil Liberties Union (ACLU), to “drop references to design and stick to the textbook.”<sup>53</sup> In 2001, “DeHart was told he could not even introduce materials questioning Darwin’s theories,” something he had been doing for more than nine years until the 1999 incident.<sup>54</sup> No one disputes that he correctly taught the required curriculum, and although he never mentioned God, he nevertheless was accused of encouraging pupils to think deeply about the philosophical implications that flow from Darwinism. According to the *Los Angeles Times*, DeHart “dissected such scientific topics as bacterial flagella, fossil records and embryonic development. Examine the evidence, he told the students, and ponder the Big Question: Is life the result of random, meaningless events? Or was it designed by an intelligent force?”<sup>55</sup>

The Supreme Court has affirmed that teachers engage in protected speech under the rubric of academic freedom (and the First Amendment) when they bring into the classroom relevant material that is supplementary to the curriculum (and not a violation of any other legal duties) and they have adequately fulfilled all of their curricular obligations.<sup>56</sup> It follows, then, that any legislation passed to protect the academic freedom of teachers and students to discuss scientific alternatives to evolution would simply be affirming what is already a fixed point in constitutional law.

## THE CHANGING LANDSCAPE

In a society of contradictory religious and philosophical points of view, the law must address how public schools ought to deal with the question of origins with fairness while violating neither the presentations of science nor the rights of the nation’s citizens.

The infusion of intelligent design into this debate has changed the legal landscape. Unlike the creationism repudiated by the Supreme Court in *Epperson* and *Edwards*, ID cannot be dismissed as an attempt on the part of religious people to introduce their views into the public schools.

## NOTES

1. *Epperson v. Arkansas*, 393 U.S. 97 (1968).
2. *Edwards v. Aguillard*, 482 U.S. 578 (1987).

3. Phillip E. Johnson, *Darwin on Trial* (Chicago: Regnery/Gateway, 1991), 4.
4. *McLean v. Arkansas Board of Education*, 529 F. Supp. 1255 (1982).
5. Charles Darwin, *The Origin of Species*, A Facsimile of the 1st ed. (1859) (Cambridge: Harvard University Press, 1964), 61.
6. Antony Flew, *Darwinian Evolution*, 2d ed. (New Brunswick, NJ: Transaction, 1997), 42.
7. Douglas J. Futuyama, *Science on Trial: The Case for Evolution* (New York: Pantheon, 1983), 95.
8. See Monroe W. Strickberger, *Evolution*, 3d ed. (Sudbury, MA: Jones & Bartlett, 2000), 76.
9. See *ibid.*, chaps. 1–25.
10. George Gaylord Simpson, *The Meaning of Evolution: A Study of the History of Life and of Its Significance for Man*, rev. ed. (New Haven, CT: Yale University Press, 1967), 279.
11. William A. Dembski, *Intelligent Design: The Bridge between Science and Theology* (Downers Grove, IL: InterVarsity Press, 1999), 119.
12. Phillip E. Johnson, *Reason in the Balance: The Case against Naturalism in Science, Law, and Education* (Downers Grove, IL: InterVarsity Press, 1986), 208.
13. William A. Dembski, “Reinstating Design within Science,” *Rhetoric and Public Affairs* 1, 4 (1998): 506.
14. Michael J. Behe, William A. Dembski, and Stephen C. Meyer, *Science and Evidence for Design in the Universe*, The Proceedings of the Wethersfield Institute, vol. 9 (San Francisco: Ignatius Press, 2000), 25.
15. *Ibid.*, 26.
16. *Ibid.*, 25–26.
17. *Ibid.*, 27.
18. *Ibid.*
19. Dembski, “Reinstating Design,” 508.
20. *Ibid.*, 507–9.
21. This is my example, not Dembski’s.
22. See Dembski, *Science and Evidence for Design*, 47–51 n. 17.
23. Quoted in Dembski, “Reinstating Design,” 509.
24. Dembski, “Reinstating Design,” 510. Citing William A. Dembski, *The Design Inference: Eliminating Chance through Small Probabilities* (New York: Cambridge University Press, 1998), chap. 5.
25. Charles Darwin, *The Origin of Species*, 6th ed. (1872), 154, quoted in Michael Behe, “Intelligent Design as an Alternative Explanation for the Existence of Biomolecular Machines,” *Rhetoric and Public Affairs* 1, 4 (1998): 566.
26. Michael Behe, *Darwin’s Black Box: The Biochemical Challenge to Evolution* (New York: The Free Press, 1996), 39.
27. *Ibid.*, 42.
28. Behe, “Intelligent Design,” 567. Controversy surrounds Behe’s mousetrap example. For a response to criticisms, see William A. Dembski, *No Free Lunch: Why Specified Complexity Cannot Be Purchased without Intelligence* (Lanham, MD: Rowman and Littlefield, 2002), 256–67, 279–89.
29. Behe also includes the bacterial flagellum, blood clotting, vesicular transport, and immune systems as examples of irreducibly complex biological systems.
30. Behe, *Darwin’s Black Box*, 64–65.
31. Behe, “Intelligent Design,” 569.
32. K. Giberson, “The Anthropic Principle,” *Journal of Interdisciplinary Studies* 9 (1997).
33. See John Barrow and Frank Tipler, *The Anthropic Cosmological Principle* (Oxford: Clarendon Press, 1988); John Leslie, *Universes* (New York: Routledge, 1989); and Paul Davies, *The Accidental Universe* (Cambridge, UK: Cambridge University Press, 1982).
34. Meyer, *Science and Evidence for Design*, 56–57.
35. Hugh Ross, “Big Bang Refined by Fire,” *Mere Creation: Science, Faith and Intelligent Design*, ed. William A. Dembski (Downers Grove, IL: InterVarsity Press, 1998), 372.
36. *Ibid.*, 381.
37. Quoted in Walter L. Bradley, “Designed or Designoid,” in *Mere Creation*, 40, quoting from D. L. Brock, *Our Universe: Accident or Design?* (Wits, South Africa: Star Watch, 1992), n.p.
38. See Meyer, *Science and Evidence for Design*, 56–66.
39. *Edwards*, 482 U.S., 587.
40. Jay D. Wexler, “Of Pandas, People, and the First Amendment: The Constitutionality of Teaching Intelligent Design in the Public Schools,” *Stanford Law Review* (1997): 465.
41. The genetic fallacy occurs when the origin of a viewpoint or argument, rather than its merits, is used to dismiss the view.
42. See William Lane Craig and Quentin Smith, *Theism, Atheism, and Big Bang Cosmology* (New York: Oxford University Press, 1993).
43. *Lynch v. Donnelly*, 465 U.S. 668, 688 (1984) (O’Connor, J., concurring).
44. *Epperson*, 393 U.S., 103–4.
45. *United States v. Seeger*, 380 U.S. 163, 176 (1965).
46. *Epperson*, 393 U.S., 113 (Black, J., concurring).
47. The Court wrote in *Epperson* (93 U.S., 105): “This Court said in *Keyishian v. Board of Regents* [385 U.S. 589, 603 (1967)], the First Amendment ‘does not tolerate laws that cast a pall of orthodoxy over the classroom.’”
48. *Edwards*, 482 U.S., 593–94.
49. *Ibid.*, 587.
50. See Dembski, *The Design Inference*; Paul A. Nelson, *On Common Descent*, Evolutionary Monograph Series (Chicago: University of Chicago Press, forthcoming); Del Ratzsch, *Nature, Science, and Design: The Status of Design in Natural Science*, Philosophy and Biology Series (Albany, NY: State University of New York Press, 2001); Craig and Smith, *Theism, Atheism, and Big Bang*



*Cosmology*; John A. Campbell and Stephen C. Meyer, eds., *Darwinism, Design, and Public Education* (East Lansing, MI: Michigan State University Press, 2003); William A. Dembski and Michael Ruse, eds., *Debating Design: From Darwin to DNA* (New York: Cambridge University Press, forthcoming 2004); and William Lane Craig and J. P. Moreland, eds., *Naturalism: A Critical Analysis* (New York: Routledge, 2000).

51. In 2000, both Baylor University ("The Nature of Nature: An Interdisciplinary Conference on the Role of Naturalism in Science," Baylor University, 12–15 April 2000) and Yale University ("Science and Evidence for Design in the Universe," Yale University, 2–4 November 2000) hosted major conferences on ID science and the evidence for design in the universe. The American Museum of Natural History (New York City) presented a public discussion entitled, "Evolution or Intelligent Design? Examining the Intelligent Design Issue" in April 2002 ([http://www.amnh.org/programs/lectures/index.html?src=p\\_h#](http://www.amnh.org/programs/lectures/index.html?src=p_h#)).
52. See James Glanz, "Biologists Face a New Theory of Life's Origins," *New York Times*, 8 April 2001, sec. 1, 18; Teresa Watanabe, "Enlisting Science to Find the Fingerprints of a Creator," *Los Angeles Times*, 25 March 2001 ([http://www.arn.org/docs/news/fingerprints\\_032501.htm](http://www.arn.org/docs/news/fingerprints_032501.htm)); Beth McMurtrie, "Darwinism under Attack," *Chronicle of Higher Education*, 21 December 2001 (<http://chronicle.com/free/v48/i17/17a00801.htm>); Brian Fitelson, Christopher Stephens, and Elliot Sober, "How Not to Detect Design," *Philosophy of Science* 66, 3 (1999); Neil W. Blackstone, "Argumentum Ad Ignorantiam," *Quarterly Review of Biology* 72 (1997); J. A. Coyne, "God in the Details," *Nature* 383 (1996); and Robert Dorit, review of *Darwin's Black Box* by Michael Behe, *American Scientist* 85, 5 (1997) (<http://www.sigmaxi.org/amsci/bookshelf/leads97/dawin97%2D09.html>).
53. Watanabe.
54. Ibid.
55. Ibid.
56. See David K. DeWolf, "Academic Freedom after *Edwards*," *Regent University Law Review* 13, 2 (2000–2001): 480–81.