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One Nation, Under . . . The Watchmaker?: Intelligent Design and the Establishment Clause

*Nicholas A. Schuneman**

I. INTRODUCTION

For nearly eighty years, American courts have mediated the debate between creationists and evolutionists. As one scholar has shown, American creationists' legislative campaign against the Theory of Evolution can be broken down into three eras: (1) the era of anti-evolution legislation, (2) the era of balanced treatment statutes, and (3) the era of minimization.¹ The first era, characterized by outright bans of evolutionary theory in public school curricula, reached its climax in the famous "Scopes Monkey Trial"² and ended with the Supreme Court's declaration in *Epperson v. Arkansas* that anti-evolution statutes violate the Establishment Clause of the First Amendment.³ After *Epperson* halted creationist attempts to exclude the Theory of Evolution from public school curricula, creationists adopted a new strategy, supporting legislation that requires "equal treatment" for evolution and creationism in science courses. This tactic was quashed by the Supreme Court in *Edwards v. Aguillard* on the rationale that such legislation served no secular purpose; thus ended the era of balanced-treatment statutes.⁴ The third era, which continues to the current day, involves primarily subtle attacks designed to minimize the role of the Theory of Evolution in public education as well as to diminish its credibility in the eyes of students. These attacks have taken the form of attempts to eliminate evolutionary theory from state standardized tests, the use of disclaimers which marginalize the Theory of Evolution and suggest creationism as a viable alternative, and the presentation of scientific and philosophical "evidence" against evolution to either imply or directly support the

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1. Lisa D. Kirkpatrick, Note, *Forgetting the Lessons of History: The Evolution of Creationism and Current Trends to Restrict the Teaching of Evolution in Public Schools*, 49 *DRAKE L. REV.* 125, 130–40 (2000).

2. *Scopes v. State*, 289 S.W. 363 (Tenn. 1927).

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

4. Kirkpatrick, *supra* note 1, at 135; *see also* *Edwards v. Aguillard*, 482 U.S. 578 (1987).

hypothesis of creation by a supernatural agent.⁵

Without a doubt, the most intriguing and controversial weapon in the creationist's third-era arsenal is the Intelligent Design hypothesis. A subtle variant of its philosophical predecessor, so-called "creation science," the Intelligent Design hypothesis has captured the imagination of Christian fundamentalists and inspired anger and angst among Darwinian loyalists. In contrast to its precursors, however, the Intelligent Design hypothesis has been championed by highly-qualified academics that support the hypothesis with sophisticated arguments. Many of the hypothesis' proponents have participated in public debates with evolutionists, and major universities have sponsored scholarly symposia on the topic of Intelligent Design. Several public school boards, backed by faith-based think tanks, have considered including the Intelligent Design hypothesis within their science curricula,⁶ and legal scholars have published defenses of the Intelligent Design hypothesis against claims that such curricula would violate the Establishment Clause.⁷ Prominent national politicians, such as President George W. Bush and Senator Bill Frist, have chimed in on the topic, proclaiming their support for Intelligent Design in public schools.⁸

Following the trail first blazed by its metaphysical precursors, Creationism and Creation Science, Intelligent Design soon found its way into a federal courthouse. In the case of *Kitzmiller v. Dover Area School District*,⁹ the United States District Court for the Middle District of Pennsylvania became the first federal court to address the constitutionality of public school instruction on the Intelligent Design hypothesis. The court, in an exceptionally meticulous opinion by Judge John E. Jones, applied both the endorsement and *Lemon* tests in reaching

5. Kirkpatrick, *supra* note 1, at 135.

6. The Kansas State Board of Education heard testimony from several Intelligent Design advocates in the procedures leading up to its revised 2005 science standards. While the Board did not incorporate the Intelligent Design hypothesis into the required curriculum, it was careful to note that the Science Education Standards "neither mandate nor prohibit teaching" the hypothesis. See Kansas Science Education Standards, Draft 2(d). The Dover, Pennsylvania school board went so far as to adopt a resolution requiring that students "be made aware of gaps/problems in Darwin's theory and of other theories of evolution including, but not limited to, intelligent design." The resolution and its application were recently held to violate the Establishment Clause. *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707, 708 (M.D. Pa. 2005).

7. See, e.g., Francis Beckwith, *Science and Religion Twenty Years After McLean v. Arkansas: Evolution, Public Education, and the New Challenge of Intelligent Design*, 26 HARV. J.L. & PUB. POL'Y 455 (2003); see also Stephen L. Marshall, Note, *When May a State Require Teaching Alternatives to the Theory of Evolution? Intelligent Design as a Test Case*, 90 KY. L.J. 743 (2002).

8. See Daniel C. Dennett, Op-Ed., *Show Me the Science*, N.Y. TIMES, Aug. 28, 2005, § 4, at 11.

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

its decision.¹⁰ The court held that the Dover Area School District's policy requiring instructors to introduce students to the Intelligent Design hypothesis would be perceived as state endorsement of religion, that the policy was motivated by a religious purpose, and that the policy had as its only effect the advancement of religion.¹¹ The holding rested on three independent observations about the Intelligent Design hypothesis: (1) its intellectual roots in the creationist movement and its almost exclusive support by fundamentalist Christians, (2) its fundamentally religious nature¹² and (3) its failure to satisfy the generally-accepted requirements of a scientific theory.¹³ Judge Jones' reliance on multiple independent grounds leaves no legal or logical room in which Intelligent Design advocates might maneuver. However, the *Kitzmiller* opinion's robustness serves to obscure the issue of what kinds of ideas may be taught in public schools. Although the *Kitzmiller* court was willing to find Intelligent Design—with its open and obvious ties to identifiable and unarguably religious organizations—unconstitutional, it is not entirely obvious that a court would be so quick to identify ideas similar to the Intelligent Design hypothesis, but lacking its ties to recognizable religious groups, as religious notions. As long as judges can point to sectarian advocates for ideas that dwell in the murky margins between religion and science, they need not take a bold stand on the nature of ideas themselves. It is simply not that controversial to categorize a claim as religious if its proponents are culled exclusively from religious advocacy groups. But what becomes of similar metaphysical claims without ties to recognizable, traditional faiths?

This paper examines the constitutionality of teaching the Intelligent Design hypothesis in public schools, but with a more directed focus than Judge Jones' opinion in *Kitzmiller*. Instead of dwelling on the religious pedigree of the Intelligent Design hypothesis, as have other analyses of the issue,¹⁴ the paper focuses on the constitutional consequences of the hypothesis' *substantive* claims. In other words, the intent is to evaluate the constitutionality of Intelligent Design on the basis of the claims it makes, and not on the motivations of those who make them. It is hoped

10. *Id.* at 712.

11. *Id.* at 765–66. The particular policy at issue mandated that teachers read ninth-grade biology students a statement that challenged the validity of the Theory of Evolution and introduced and encouraged students to explore the concept of Intelligent Design. In addition, the policy required that the book *Of Pandas and People* be made available for students' reference. *See id.* at 708–09.

12. *Id.* at 716–23.

13. *Id.* at 716–23, 735–46.

14. *See, e.g.,* Jay Wexler, Note, *Of Pandas, People, and the First Amendment: The Constitutionality of Teaching Intelligent Design in the Public Schools*, 49 STAN. L. REV. 439, 463–66 (1997).

that, in doing so, we might clarify the boundary separating those ideas that may be taught in public schools without offending the Establishment clause from those that may not and reduce the courts' reliance on tracing an idea's intellectual pedigree to determine its constitutional status. In this sense, the Intelligent Design hypothesis serves as an example of a broad class of marginally religious notions that may find their way into public school curricula, and the analysis herein serves as a template for evaluating the Establishment Clause consequences of presenting these ideas to schoolchildren. Section II presents a primer on the Intelligent Design hypothesis, exploring the contours of the hypothesis by comparison to its metaphysical rival, the Theory of Evolution. Section III provides an overview of the Establishment Clause framework within which the constitutionality of the Intelligent Design hypothesis will be evaluated. In Section IV, public school instruction on the Intelligent Design hypothesis is explored under this framework. It is shown that while religious notions such as the Intelligent Design hypothesis may not be presented in the context of science courses without offending the First Amendment, there may be room for such ideas in other educational contexts. Section V addresses the complementary notion that instruction on the Theory of Evolution violates the Establishment Clause, and Section VI provides concluding remarks and observations.

Before moving on, it is important to note three key limitations of the analysis presented in this paper. First, the analysis that follows is limited to public elementary and secondary schools. Second, claims made about the nature of the Intelligent Design hypothesis extend only to the hypothesis itself, and not necessarily to the evidence or arguments offered in support of the hypothesis. Finally, the following analysis proceeds without regard for the intellectual pedigree of the Intelligent Design hypothesis or the religious affiliations of its proponents. This final limitation allows us to focus on the constitutional consequences of the hypothesis' substantive claims and, therefore, to generate a dialogue applicable to a wider range of potential ideas. With these caveats in mind, the constitutionality of public school instruction on the Intelligent Design hypothesis is discussed below.

II. PRIMER ON INTELLIGENT DESIGN

The Intelligent Design hypothesis is primarily a response to and critique of the theory of evolution by natural selection (hereinafter, "the Theory of Evolution"), which was first elaborated by Charles Darwin in

his classic work, *The Origin of Species*.¹⁵ Thus, to understand the Intelligent Design hypothesis, one must first comprehend the basic structure of its analytical foil: the Theory of Evolution.

A. *The Theory of Evolution*

The Theory of Evolution is a generic term for the scientific notion that modern earthly species emerged as the result of a long, slow process of gradual variation from an ancient common ancestor.¹⁶ According to the modern Theory of Evolution, commonly known as “neo-Darwinism,” the variation of species’ *phenotypes* (i.e., physical form) reflects a variation in their *genotypes* (i.e., the genetic code constituting a “blueprint” for a given phenotype).¹⁷ Such variation in the genotype can occur because of randomly occurring *mutations* between generations or the blending of genetic material in the process of *sexual reproduction*. Variations that result in a subsequent benefit to the new generation are sustained and propagated in a process known as *natural selection*. Over long periods of time, minor variations accumulate and result in significant alterations. Thus, the modern Theory of Evolution is fundamentally an accounting for the variety of species by a historical process of intergenerational variation, driven by genetic modification and natural selection, from a common ancestor.¹⁸

Charles Darwin is typically credited with introducing the concept of evolution by natural selection.¹⁹ Although his ideas have proven exceptionally powerful as an organizational and explanatory theory for biology, Darwin was not the first naturalist to propose the concept of evolution. Other theorists, such as Jean Baptiste Lamarck, suggested that variation among modern species was likely due to a process of gradual evolution from simple species to more complex ones.²⁰ However, Darwin was the first to propose that the evolution of species was due to the relative advantage conveyed to certain phenotypic variations within a species—those better suited to survival and reproduction will reproduce more often, according to Darwin, thus leading to a predominance of the

15. R. J. BERRY, NEO-DARWINISM 2 (1982).

16. *Id.* at 5.

17. *See generally id.*

18. *Id.* at 16–26.

19. *See* NEIL A. CAMPBELL, BIOLOGY 420 (3d ed. 1993).

20. *Id.* at 424. Lamarck is famous for his notions of “use and disuse”—whereby characteristics of an organism adapt, during its lifetime, to fill the organism’s survival needs—and “inheritance”—whereby the adaptations are passed hereditarily to the adapted organism’s descendants. *Id.*

advantageous phenotypic variation in subsequent generations.²¹ In other words, optimal phenotypes emerged and gained dominance through a process of unguided survival of the fittest, otherwise known as “natural selection.” Darwin’s notion of evolution by natural selection was eventually merged with Mendelian genetics, which offered an underlying explanation for the phenotypic variation within species that fueled Darwinian evolution.²² Together, the systematic study of genetics and the process of natural selection have yielded a powerful analytical system, known as neo-Darwinism, capable of accounting for the wide variety and complexity of earthly species.²³

Since its introduction by Darwin, the Theory of Evolution has been modified and adjusted to better account for empirical data. While Darwin’s basic framework of evolution by natural selection still forms the core of evolutionary theory, some aspects of the current theory appear to contradict Darwin’s ideas. One particularly salient example is the notion of “punctuated equilibrium,” which was formulated to explain the relatively rapid appearance of new species in the evolutionary timeline.²⁴ Darwin believed that natural selection leads to gradual, smooth evolution of species in the direction of ever-increasing complexity and optimum over time.²⁵ This model fails to account for anomalous periods of rapid diversification of species revealed by the fossil record.²⁶ Modern theorists, such as Niles Eldredge and Stephen Gould, have proposed mechanisms to account for these short periods of rapid variation that occur between longer periods of relative evolutionary stasis.²⁷ While punctuated equilibrium, as this modern theory is called,²⁸ may seem to contradict evolutionary theory, it is best read as the type of minor adjustment all scientific theories undergo as the available data sample grows. In fact, at least one scientist has argued that Eldredge and Gould’s hypothesis is “something that *followed* from long-accepted conventional Darwinism, properly understood.”²⁹ Another classic example of an accepted alteration to Darwin’s original theory is the incorporation of Mendelian genetics, now a fundamental component of

21. *Id.* at 427–28.

22. *Id.* at 439; *see also* BERRY, *supra* note 15.

23. Neo-Darwinism is so potent and useful as a description of the evolution of species on Earth that “[t]he scientific consensus around evolution is overwhelming.” STEERING COMM. ON SCI. AND CREATIONISM & NAT’L ACAD. OF SCIENCES, SCIENCE AND CREATIONISM: A VIEW FROM THE NATIONAL ACADEMY OF SCIENCES 28 (2d. ed. 1999) [hereinafter STEERING COMM.].

24. *See* CAMPBELL, *supra* note 19, at 469.

25. *Id.*

26. *Id.*

27. *Id.*

28. *Id.*

29. RICHARD DAWKINS, THE BLIND WATCHMAKER 236 (1996).

the modern understanding of evolution.³⁰

The details of the Theory of Evolution are likely to continue evolving as scientists adapt the theory's structure to account for newly discovered data. However, one key feature of the theory is certain to remain constant: no matter how many adjustments are made, the Theory of Evolution will always be a *naturalistic* model.³¹ In other words, the Theory of Evolution will always be one that explains the emergence of species exclusively in terms of observable, natural phenomena. This quality is crucial in differentiating the theory from many of its competitors, including the Intelligent Design hypothesis.

B. *Intelligent Design*

Although this paper focuses on the metaphysical claims of Intelligent Design—and argues that these claims alone are likely sufficient to render the inclusion of the Intelligent Design hypothesis in public school science curricula unconstitutional—it is useful to at least briefly explore the history of the hypothesis's intellectual development.³² The modern Intelligent Design hypothesis has its roots in the work of eighteenth-century theologian William Paley, who famously argued that design could be inferred from complexity, precision, and purpose.³³ In his treatise, *Natural Theology—or Evidences of the Existence and Attributes of the Deity Collected from the Appearances of Nature*, Paley employed the example of a mechanical watch found in a field.³⁴ Faced with such a stunning specimen of complex, precise, and purposeful machinery, the watch's finder would be compelled to presume that the watch was created by a “maker . . . who comprehended its construction, and

30. Although unaware of Mendel's work, Darwin had realized the need for some mechanism, which he deemed “chance,” to explain the appearance and transmission of variations between generations. Darwin's “chance” was eventually supplanted by Mendelian genetics. WALTER J. WILKINS, *SCIENCE AND RELIGIOUS THOUGHT* 20–21 (1987).

31. By many accounts, Darwin's main goal was to remove the supernatural from biology and replace it with a natural mechanism. *See id.* at 18. Darwin's theory thus represented a form of methodological revolution in the study of biology. *Id.* at 27.

32. Some scholars and courts—including Judge Jones in the recent *Kitzmiller* case—have focused on Intelligent Design's intellectual pedigree, arguing that the hypothesis' fundamentalist Christian roots reveal a surreptitious religious motive on the part of its advocates. While this argument is powerful, this paper argues that the religious motivations of those who developed Intelligent Design are not the sole reason that its inclusion in public school curricula is constitutionally problematic. Rather, this paper demonstrates that the *inherently religious nature* of the Intelligent Design hypothesis—irrespective of the affiliation of its proponents—leads to potential conflict with the Establishment Clause.

33. *See* DAWKINS, *supra* note 29, at 4.

34. *See generally* WILLIAM PALEY, *NATURAL THEOLOGY* (2d ed. 1828).

designed its use.”³⁵ Paley’s general argument resurfaced in the 1989 supplemental biology textbook *Of Pandas and People*.³⁶ In 1991, law professor Phillip Johnson published *Darwin on Trial*, which outlined an attack on the methodological naturalism that underlies the Theory of Evolution.³⁷ The Intelligent Design movement gained steam in 1996 with the publication of Lehigh University biochemist Michael Behe’s critique of Darwinism, *Darwin’s Black Box*.³⁸ Soon after Behe’s work was published, mathematician and philosopher William Dembski added to the growing Intelligent Design literature with a series of publications including *The Design Inference* (1998), *Mere Creation* (1998), and *Intelligent Design* (1999). In 1999, Johnson and other fellows of the Discovery Institute’s Center for Renewal of Science and Culture prepared the now-infamous “Wedge Document,” which outlined a plan to “replace [a materialist view of science] with a science consonant with Christian and theistic convictions.”³⁹

The rise of the Intelligent Design hypothesis in recent years has been attributed to the creationists’ defeats in court, such as those in *Epperson*⁴⁰ and *Edwards*,⁴¹ coupled with their persistent desire to incorporate theistic notions into the public school science curriculum.⁴² The Intelligent Design hypothesis is merely the most recent incarnation of the basic creationist analytical system.⁴³ It is also the subtlest incarnation to date: while the creationist systems of earlier eras were characterized by complex, detailed, and dogmatic explanatory theories of the origins of life as well as outright identifications of a responsible deity, the Intelligent Design hypothesis proposes merely that empirical data supports the inference of a vaguely-defined intelligence responsible for the emergence of species.⁴⁴ In this sense, Intelligent Design avoids two common pitfalls of the earlier creationist systems: (1) it does not propose a complex set of falsifiable historical claims about the origins of life that

35. *Id.* at 5–6. The title of this paper is a clumsy play on Paley’s famous metaphor.

36. Eugenie C. Scott, *Antievolutionism and Creationism in the United States*, 26 ANN. REV. OF ANTHROPOLOGY 263, 279 (1997). *Pandas* was published shortly after the decision in *Edwards v. Aguillard* (discussed *infra*). For an interesting analysis of the differences between the pre and post-*Edwards* draft of *Pandas* and the implication that the authors substituted Intelligent Design-related terminology for more obvious creationist arguments to conform with *Edwards*, see *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707, 708 (M.D. Pa. 2005).

37. See Scott, *supra* note 36, at 281.

38. *Id.* at 282.

39. Discovery Institute Center for Renewal of Science and Culture, *The Wedge* 4.

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

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

42. See Bob Holmes & James Randerson, *A Skeptic’s Guide to Intelligent Design*, NEW SCIENTIST, July 9, 2005, at 12.

43. *Id.* at 10.

44. *Id.*

contradict geological and paleontological evidence, and (2) it does not identify, with specificity, the proposed designer of life.⁴⁵ The first quality of Intelligent Design is important mainly from the standpoint of public opinion: that Intelligent Design advocates avoid contradicting well-settled science⁴⁶ lends a degree of legitimacy to the movement. Because it does not squabble with the most concrete and cherished simulacra of the Theory of Evolution, Intelligent Design appears to the layman more like a competing scientific theory than religious dogma. Also, because the Intelligent Design hypothesis lacks an accompanying historical narrative, its relation to any specific theological tradition is obscured. That Intelligent Design is a religious hypothesis subject to the strictures of the First Amendment is thus not immediately apparent. The second quality provides the Intelligent Design advocates with additional room for constitutional maneuvering: because no deity is identified by name, the religious nature of Intelligent Design is less clear than that of earlier creationist systems.

A handful of variations of the Intelligent Design hypothesis exist, but they all share a common structure: each represents a critique of the naturalist Theory of Evolution on scientific grounds that culminates in the conclusion that the diversity of earthly species could only have emerged as a result of the purposeful actions of an intelligent agent. As used by Intelligent Design proponents, the term “intelligence” implies several qualities, including: (1) the ability to plan, (2) at least rudimentary knowledge and competency in chemistry and biology, and (3) purpose.⁴⁷ Taken together, the intelligent designer differs from the unguided natural processes that underlie the Theory of Evolution in the sense that the designer can construct molecules (or organisms) in a systematic, directed manner for an intended purpose.⁴⁸ The logical structure of the arguments offered in support of the Intelligent Design hypothesis can be understood by focusing on a syllogism underlying the

45. *Id.* at 11.

46. For instance, many Intelligent Design proponents are often careful to acknowledge the truth of “microevolution,” a term used to describe the variation within a species from one generation to the next. *See id.* at 10. This is prudent because microevolution is readily observed in laboratory experiments and fieldwork (one significant example of real-world microevolution is the gradual acquisition of drug-immunity in pathogens). Also, Intelligent Design advocates do not overtly contradict the general historical timeline typically associated with the Theory of Evolution or the notion of a common ancestor. *See id.*

47. Intelligent Design theorist William Dembski defines intelligence as the ability of the designer to choose. *See* William Dembski, *Intelligent Design as a Theory of Information*, 49 *PERSP. ON SCI. AND CHRISTIAN FAITH* 180, 186–88 (1997).

48. The Intelligent Design hypothesis is, in this sense, a *teleological* model of the origin of species, explaining the emergence of complexity in terms of purposeful action. The modern Theory of Evolution, with its basis in undirected natural selection, eschews teleological explanation.

naturalist Theory of Evolution. The validity of the Theory of Evolution depends on the truth of the proposition that the current species on Earth may be traced back through a lineage of natural processes. This proposition must apply in a discrete form at every step in the evolutionary timeline and at every location in the evolutionary tree, so that each variation may be understood as the effect of a natural cause; if, at some point in evolutionary history, the naturalist proposition fails, then the naturalistic Theory of Evolution cannot provide a comprehensive accounting of the origin of species. Those who advocate Intelligent Design exploit this fact, claiming that “gaps” exist in the naturalist causal chain.⁴⁹ According to Intelligent Design theorists, these supposed gaps in the Theory of Evolution evince design, which one researcher defines as “the purposeful arrangement of parts.”⁵⁰

The various versions of the Intelligent Design hypothesis therefore do not differ in logical structure; rather, the distinction appears in the support—in the form of the specific “gap” claimed to exist in the naturalist theory or the type of argument employed to demonstrate that a gap in fact exists—provided for the hypothesis that life’s complexity is due to purposeful design by an intelligent agent. William Dembski takes a probabilistic approach, arguing that the complexity and specificity of life renders its emergence simply too improbable without the direction of an intelligent, purposeful designer.⁵¹ Along this vein, Dembski defines an “explanatory filter” which allows one to identify the cause—from three possible options: regularity, chance, and design—of an observed event.⁵² Dembski claims that evolution by natural selection, which focuses on regularity and chance, is insufficient to account for the emergence of the “complex, specified information” that comprises organic life.⁵³ Thus, the source of such information—and, by implication, life—must be an intelligent designer.⁵⁴ Biochemist Michael Behe takes this argument one step further, asserting that while gradual evolution from simpler organic systems to more complex ones is possible (and, in fact, happens), such a process is insufficient to comprehensively account for the origins of life.⁵⁵ Behe starts by noting that life is composed of component parts—cells, organs, and systems—that, according to the Theory of Evolution, arose in their current form through gradual variation from more primitive

49. MICHAEL BEHE, *DARWIN’S BLACK BOX* 187 (1996).

50. *Id.* at 193.

51. See generally WILLIAM DEMBSKI, *THE DESIGN INFERENCE: ELIMINATING CHANCE THROUGH SMALL PROBABILITIES* (1998).

52. *Id.* at 37.

53. Dembski, *supra* note 47, at 181–86.

54. *Id.* at 186–88.

55. BEHE, *supra* note 49, at 23–25.

precursors.⁵⁶ He then asserts that we can infer *design* of a component part that is both (1) too complexly organized to have arisen spontaneously and (2) too streamlined and/or interconnected to function in a simpler form; component parts that satisfy these two criteria are said to be “irreducibly complex.”⁵⁷ The logic of Behe’s argument is simple: if gradual variation (a hallmark of evolution by natural selection) cannot account for the origins of irreducibly complex parts, then those parts must have appeared suddenly. Since the spontaneous organization of molecules into a complicated organic system is exceedingly unlikely, it is more reasonable to infer that these parts were designed. Behe cites several examples of supposed irreducibly complex systems from the realm of biology—including bacterial cilia and flagella,⁵⁸ the blood coagulation cascade,⁵⁹ antibodies,⁶⁰ and AMP biosynthesis⁶¹—that, in his view, evince design.⁶²

Despite the different approaches taken by various Intelligent Design theorists to support their critique of the Theory of Evolution, each culminates in a common inference: namely, the necessity of a designer. In other words, in contrast to the Theory of Evolution, the Intelligent Design hypothesis claims that the complexity underlying life on Earth could not have arisen without the interference of a purposeful and capable designer at some point in our planet’s history. It is this proposed designer that is the key difference between the Intelligent Design hypothesis and the Theory of Evolution and, as will be shown below, it is a concept that is fundamentally religious.

56. *Id.* at 3–23.

57. *Id.* at 194–96. The most famous example of an irreducibly complex system is the household mousetrap, which consists of a board, a spring, a lever arm and a latch. If the mousetrap is asserted to have evolved in a manner analogous to naturalistic evolution, it must have arisen from very simple, initially unconnected component parts (maybe a board, an unbent wire, etc.) to the more complex form. Behe asserts that this is unlikely to have happened, because the components by themselves are useless for trapping mice; only a complete mousetrap, constructed of the components arranged in a very specific manner, is useful for the intended purpose. The mousetrap—a relatively simple device—is, according to Behe, therefore irreducibly complex. *Id.* Numerous naturalists have attacked the power and relevance of this analogy. See, e.g., Keith Robison, *Irreducible Complexity or Irreproducible Irreducibility?* (1996–97), <http://www.talkorigins.org/faqs/behe/review.html>.

58. BEHE, *supra* note 49, at 51–73.

59. *Id.* at 74–97.

60. *Id.* at 117–39.

61. *Id.* at 140–61.

62. *Id.* at 187–208.

III. ESTABLISHMENT CLAUSE FRAMEWORK

The proper relationship between religion and the state is defined by the First Amendment to the United States Constitution, which states in pertinent part, “Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof.”⁶³ Read literally, the First Amendment Religion Clauses apply only to acts of the United States Congress. However, the clauses have, over time, come to stand for the prohibition of state action—whether legislative or executive, federal, or state-level—that either affects an establishment of religion or burdens the free exercise of religious beliefs.⁶⁴ The inclusion of the Intelligent Design hypothesis in public school curricula raises issues that primarily involve religious establishment.⁶⁵ To gain an understanding of whether the Intelligent Design hypothesis runs afoul of the Establishment Clause, one must determine whether the Intelligent Design hypothesis implicates “religion” and whether its inclusion in the public schools qualifies as a “law respecting an establishment of religion.”

A. Definition of “Religion”

The Religion Clauses of the First Amendment only purport to regulate “religion;”⁶⁶ their application is limited by the text of the Amendment to those teachings, beliefs, and groups that legitimately qualify as religion. Thus, before we evaluate the Intelligent Design hypothesis under the lens of the Establishment Clause, we must first determine whether the hypothesis involves religion. Unfortunately, no explicit definition of the term “religion” may be found in the text of the Constitution. However, several extra-constitutional sources help to construct a useful and somewhat rigorous definition of “religion” as it is applied in the First Amendment. First, the words of influential Framers of the Constitution provide some clues to the original intent of the Religion Clauses. Second, there is a small amount of relevant federal case law that addresses the issue. Finally, some core characteristics of religion may be extracted from the work of anthropologists who have

63. U.S. CONST. amend. I.

64. *See, e.g.,* Abington Sch. Dist. v. Schempp, 374 U.S. 203, 253–58 (1963).

65. It has been suggested that the general curricular conflict between the Theory of Evolution and the Intelligent Design hypothesis raises a complementary issue involving the Free Exercise Clause—namely, whether teaching a scientific theory that, by implication, contradicts certain closely-held religious convictions is a violation of the Free Exercise Clause. *See* McLean v. Ark. Bd. of Educ., 529 F. Supp. 1255, 1273–74 (E.D. Ark. 1982). The validity of such a claim is beyond the scope of this paper.

66. *See* U.S. CONST. amend. I.

studied religion. These sources, and a proposed test for religiosity of an analytical system such as the Intelligent Design hypothesis or the Theory of Evolution, are described below.

1. *Views of the framers*

The expressed views of the Framers can often illuminate the intended meaning of ambiguous terms that appear in the Constitution. In the case of the Religion Clauses, the writings of two influential framers—James Madison and Thomas Jefferson—provide insight into the originally-intended definition of the term “religion.” In his *Memorial and Remonstrance*, Madison referred to religion as “the duty which we owe to our Creator, and the manner of discharging it.”⁶⁷ This definition includes three distinct components: (1) the notion of a creator, (2) a duty owed to the creator, and (3) guidelines for fulfilling this duty. Jefferson, in his Act for Establishing Religious Freedom, implicitly defined “religion” through a non-exhaustive list of extant religions.⁶⁸ The list included only faiths demonstrating sophisticated theologies and ritual practices and centered on belief in a supernatural entity, but Jefferson noted that his Act was intended to be “universal” and to apply to “infidel[s] of every denomination.”⁶⁹ It is notable that each of the faiths listed by Jefferson would qualify as a religion under Madison’s creation-centric definition.

2. *Relevant jurisprudence*

The Supreme Court has remained largely silent on the issue of the definition of religion. However, a few opinions have flirted with the definitional question. Writing for the Court in *Davis v. Beason*, Justice Field largely echoed the words of Madison, defining religion as “one’s view of his relations to his Creator, and to the obligations they impose of reverence for his being and character, and of obedience to his will.”⁷⁰ Justice Brennan, in *Edwards v. Aguillard*, described the belief “that a supernatural being created humankind” as a “religious viewpoint.”⁷¹ Taken together, these two opinions clearly identify the belief in a

67. JAMES MADISON, MEMORIAL AND REMONSTRANCE AGAINST RELIGIOUS ASSESSMENTS (1785) (quoting VIRGINIA DECLARATION OF RIGHTS § 16 (1776)).

68. AMERICAN STATE PAPERS BEARING ON SUNDAY LEGISLATION 133 n.1 (William Addison Blakely ed., rev. enl. ed. 1911). The religions listed by Jefferson included Judaism, Christianity, Islam and Hinduism.

69. *Id.*

70. *Davis v. Beason*, 133 U.S. 333, 342 (1890).

71. *Edwards v. Aguillard*, 482 U.S. 578, 591 (1986).

supernatural creator as a religious notion.

Two other notable Supreme Court opinions have implied an expanded definition of religion, albeit in the context of the Free Exercise Clause. In *Torcaso v. Watkins*, Justice Black implied the possibility of non-theistic religion, insisting that the state may not “aid those religions based on a belief in the existence of God as against those religions founded on different beliefs.”⁷² Unfortunately, Justice Black’s opinion did not elaborate on the particular qualities of these non-theistic belief systems that would qualify them as religions. In *United States v. Seeger*, the Court interpreted the definition of the term “religion” as applied in Section 6(j) of the Universal Military Training and Services Act.⁷³ Despite the fact that the statute employed a definition of religion that was explicitly theistic, the Court read the Act’s definition to subsume non-theistic belief systems that “occup[y] a place in the life of [their] possessor[s] parallel to that filled by the orthodox belief in God.”⁷⁴ However, the Court stopped short of labeling any and all belief systems “religious,” noting that the statute could exclude “essentially political, sociological, or philosophical views” from protection.⁷⁵ *Seeger* thus implies that, in addition to theistic belief systems, some, but not all, non-theistic belief systems may qualify as religion.

At least one federal circuit court has attempted to clarify the fuzzy boundary between religion and non-religion. Judge Adams of the Third Circuit formulated an initial definition of religion in *Malnak v. Yogi*⁷⁶ and later refined the definition in *Africa v. Pennsylvania*.⁷⁷ Known as the “Adams Test,” the definition notes three indicia of religious belief systems: religious systems (1) “address[] fundamental and ultimate questions having to do with deep and imponderable matters,” (2) are “comprehensive in nature” and (3) often involve “formal and external signs” such as organized rituals, recognized experts, and official texts.⁷⁸ One salient feature of this test is that it includes no explicit requirement of belief in the supernatural or a creator. However, while the supernatural creator concept is not a necessary condition under the Adams Test, it is surely a sufficient condition. After all, it is difficult to imagine a clearer attempt to “address fundamental and ultimate questions” than the proposal that a supernatural being created the universe.

72. *Torcaso v. Watkins*, 367 U.S. 488, 495 (1961).

73. *United States v. Seeger*, 380 U.S. 163 (1965).

74. *Id.* at 165–66.

75. *Id.* at 165.

76. *Malnak v. Yogi*, 592 F.2d 197 (3d Cir. 1979).

77. *Africa v. Pennsylvania*, 662 F.2d 1025 (3d Cir. 1981).

78. *Id.* at 1032.

3. *Anthropological understanding*

The legal sources, especially the relevant Supreme Court precedent, leave us with a rather ill-defined understanding of exactly what belief systems qualify as religions worthy of First Amendment scrutiny. While it is clear that the major theological faiths, their “equivalents,” and even some non-theistic systems qualify as religion, there is no underlying unity that ties these views together. One source that might shed some light on the definitional question is the work of anthropologists of religion. As one legal scholar has argued, “‘Religion’ in the First Amendment [m]eans [r]eligion.”⁷⁹ If this was the intent of the Framers, then there is no better source for a definition of religion than the work of those who catalogue and categorize human religious practices. After all, religion is fundamentally a term to describe specific collections of beliefs and practices of human beings. It is therefore appropriate to study these behaviors in an effort to define the term that purports to classify them.

According to James Donovan, the various anthropological definitions of religion fall into four distinct categories based on the particular criterion—content, behavior, mental effect, or function—applied to sort religion from non-religion.⁸⁰ Because the Religion Clauses are most powerful as applied to either protect or prohibit certain *beliefs*, *expressions*, and *behaviors*, the most useful definition for the purposes of constructing a legal definition of religion is likely to be of either the content-based or behavioral variety. For the limited purpose of this paper, which evaluates the constitutionality of teaching the *idea* of Intelligent Design, it is sufficient to focus our attention on the construction of a content-based definition.

Several anthropologists have proposed content-based definitions of religion. Anthropologist Edward Tylor asserts that the “minimum definition of religion” is a belief in the supernatural.⁸¹ Similar views have been expressed by Anthony Wallace and Raymond Firth.⁸² Emile Durkheim proposes a definition of religious belief based on the distinction between the “sacred” and the “profane.”⁸³ The supernatural deity so common to religion is merely a special—albeit the most common—example of a “sacred being.” Interestingly, Durkheim

79. Eduardo Peñalver, Note, *The Concept of Religion*, 107 YALE L.J. 791, 802 (1997).

80. James M. Donovan, *Defining Religion*, in SELECTED READINGS IN THE ANTHROPOLOGY OF RELIGION 61, 72 (Stephen D. Glazier & Charles A. Flowerday eds., 2003).

81. Paul Bloom, *Is God an Accident?*, THE ATLANTIC MONTHLY, Dec. 2005, at 105.

82. See Donovan, *supra* note 80, at 72.

83. “The division of the world into two domains, one containing all that is sacred and the other all that is profane—such is the distinctive trait of religious thought.” EMILE DURKHEIM, THE ELEMENTARY FORMS OF RELIGIOUS LIFE 34 (1995).

explicitly notes that “the fundamental task of sacred beings has been to maintain the normal course of life by positive action.”⁸⁴ Pascal Boyer, in his book *Religion Explained: the Evolutionary Origins of Religious Thought*, constructs a multi-faceted definition of religion.⁸⁵ Among the components of religion listed by Boyer is belief in supernatural agents capable of exercising practical control over the events of the natural world.⁸⁶ According to Boyer, religions range from simple forms—in which adherents believe in supernatural agents that affect their lives, practice rituals to appease these agents, share their beliefs with an identifiable group, and recognize spiritual experts in their community—to highly sophisticated theological systems that provide throngs of adherents with uniform, official doctrine concerning the role of supreme deities in matters of universal import.⁸⁷

In summary, the content-based definitions proposed by anthropologists typically center on belief in the supernatural. But, how useful is this definition? Donovan asserts that “[a] content definition highlighting supernaturalisms would be the best kind of definition *if* it collocated phenomena as we demand,” but notes that such definitions are both under- and over-inclusive.⁸⁸ Supernatural content-based definitions are under-inclusive because they fail to identify as “religious” systems—such as Buddhism—that, despite their lack of supernatural concepts, are almost unanimously considered religious. Such definitions are over-inclusive because they count as “religious” items—such as superstitions and folktales—that are generally not considered religious.⁸⁹ Thus, a simple dichotomy of the religious from the non-religious based on the inclusion of supernatural concepts maps only roughly our intuitive notions about what qualifies as religion. However, while the three

84. *Id.* at 26. Durkheim further notes that religious deities are most often used to account “for the normal march of the universe, the movement of the stars, the annual growth of vegetation, the perpetuation of species, and so forth.” *Id.*

85. *See generally* PASCAL BOYER, *RELIGION EXPLAINED: THE EVOLUTIONARY ORIGINS OF RELIGIOUS THOUGHT* (2001).

86. *Id.* at 136–47. The other components Boyer lists are group identity, ritual practices, integration of a moral system, the existence of recognized specialists, special beliefs about death and (in some cases) the existence of a standardized theology. Unlike belief in supernatural agents, however, none of these components is unique to religion. *Id.*

87. *Id.* at 265–96. According to Boyer, the practical, self-centered, often theoretically incoherent or incomplete beliefs in supernatural agents are more typical of religious beliefs than are the theoretical, universal, coherent and complete systems that typify the established, theological faiths. The latter version has incorporated certain qualities necessary to facilitate the incorporation of multiple peoples into a unified religious constituency. *See generally id.*

88. Donovan, *supra* note 80, at 76–77.

89. *See id.* Durkheim also decries the over-inclusiveness of a content-based definition based on the inclusion of supernatural concepts, noting that such a definition would label as religious those systems rightly deemed “magical.”

content-based definitions of religion introduced above differ significantly in their details and sophistication, a careful comparison of the three reveals a more precise commonality than mere inclusion of supernatural ideas: all three definitions subsume within their bounds belief systems that propose causation by one or more supernatural *agents*, where agency is defined roughly as “the abstract quality that is present in animals, persons, and anything that appears to move of its own accord, in pursuance of its own goals.”⁹⁰ This common theme provides a foundation for a test applicable to the constitutional issues surrounding Intelligent Design.

4. A proposed test

Constructing a rigorous and comprehensive definition of religion is an exceedingly difficult task; even expert religious anthropologists cannot agree on a common definition. Jurists seeking a test that neatly divides religion from non-religion are searching in vain. The traditional legal sources discussed above fail to provide a definition of religion that is simultaneously rigorous and exhaustive. The term is not clearly defined in the text of the Constitution, and the Supreme Court’s treatment of the definitional question has been somewhat evasive. While the Court has clearly stated that religion includes theological faiths based on belief in a supernatural creator and some other non-theistic faiths,⁹¹ it has failed to articulate a clear boundary between the realms of the religious and non-religious. The Third Circuit has elaborated an apparently rigorous method to identify religious systems,⁹² but the test was designed primarily for Free Exercise claims and its application has therefore been plagued by overzealous rigor.⁹³ Fortunately, a rigorous

90. BOYER, *supra* note 85, at 144.

91. See discussion *supra* Part III.A.2; cases cited *supra* notes 70–78.

92. *Africa v. Pennsylvania*, 662 F.2d 1025 (3d Cir. 1981); *Malnak v. Yogi*, 592 F.2d 197 (3d Cir. 1979). These cases set forth the Adams Test. See discussion *supra* Part III.A.2.

93. *E.g.*, *Jacques v. Hilton*, 569 F. Supp. 730, 734 (D.N.J. 1983). In *Jacques*, the District Court for New Jersey applied an especially strict reading of the Adams Test, holding that a prison-based “church” was not a religion within the meaning of the First Amendment. The court based its ruling largely on the observation that the church’s doctrines were somewhat vague and did not follow necessarily from the nature of the church’s deity. Opinions such as *Jacques* can likely be explained by the policy issues unique to Free Exercise claims applied to supposedly religious *practices* (as opposed to religious *beliefs*). Religions are relatively easy to found; no special training or certification is necessary to start one’s own faith. This fact could be exploited by disingenuous practitioners who seek, by fashioning a customized religious doctrine, to shield otherwise illegal or unethical behaviors from legal proscription. Courts, faced with the prospect of accommodating idiosyncratic belief systems at the expense of public policy, might simply choose to avoid the issue by interpreting the definition of “religion” so narrowly as to exclude the controversial system at issue from protection.

and comprehensive definition of religion is not necessary for analysis under the Establishment Clause. In order to prove a violation of the Establishment Clause, a plaintiff need not demonstrate that a *complete religion* has been installed; rather, under the Supreme Court's current Establishment Clause jurisprudence, the plaintiff need only demonstrate that the state conduct at issue improperly involves (i.e., respects an establishment of) a *religious belief or practice*.⁹⁴ Thus, what is required is a means to distinguish between those beliefs and practices that are religious and those that are not.

A synthesis of the relevant legal and anthropological efforts to define religion reveals at least one element—namely, the attribution of causation for natural phenomenon to the work of a supernatural agent intervening within the natural order⁹⁵—that distinguishes religious and non-religious belief. Many anthropologists suggest that such notions are essential to religious thought.⁹⁶ While some legal commentators have argued that religion may include more than just belief systems that involve supernatural agency, almost all recognize such belief systems as the baseline for comparison.⁹⁷ In fact, much of the theoretical work regarding the definition of religion—both in jurisprudence and anthropology—has focused on what systems *besides those that involve belief in supernatural agency* qualify as religion.⁹⁸

We can therefore propose a non-exhaustive test that identifies an idea as religious if it invokes supernatural agency as the cause of observed, natural phenomena. Such a non-exhaustive test, based on the notion of supernatural agency, largely avoids the definitional pitfalls identified by Donovan. Because it requires supernatural agency and application to real-world phenomena, the test minimizes over-inclusiveness: superstition and magic involve supernatural causation, but almost never invoke supernatural *agency*; folktales are works of fiction that do not purport to explain actual, observed phenomena (i.e., they do not make historical causal claims). The supernatural agency definition does not eliminate the under-inclusiveness problem, but the definition is nonetheless quite useful as a legal standard. While the supernatural

94. See, e.g., *Lee v. Weisman*, 505 U.S. 577 (1992).

95. A special case of the intervening supernatural agent, the idea of a supernatural creator, has been especially associated with religion by our nation's most influential legal scholars. From James Madison to Justice Field in *Davis v. Beason*, 133 U.S. 333 (1890), to Justice Brennan in *Edwards v. Aguillard*, 482 U.S. 578 (1987), belief in a supernatural creator has consistently been considered undeniably religious. See generally *supra* Parts III.A.1–3 for discussion of the definition of religion.

96. See *supra* Part III.A.3, with examples including Tylor, Wallace, Firth, and Boyer.

97. See *supra* Parts III.A.1 and III.A.2.

98. See *supra* Part III.A.2 for discussion of religious definition jurisprudence and *supra* Part III.A.3 for discussion of anthropological definitions of religion.

agency definition may prove under-inclusive in the sense that it fails to identify systems that, despite their lack of supernatural agency, should legitimately be deemed “religious,” we can be confident that any system that includes such notions is, indeed, religious.⁹⁹ A definition based on notions of supernatural agency may therefore apply as a first-cut test, identifying ideas that are unambiguously religious and leaving open the possibility that a system which fails to meet its criteria may, nevertheless, be legitimately religious.

It is not sufficient, however, to note merely that the proposed legal test of religiosity satisfies the concerns of anthropologists; a legal definition must also conform to the relevant jurisprudence. The supernatural agency test satisfies the latter criteria as well. In fact, in the Religion Clause jurisprudence, systems that invoke supernatural agency to explain natural phenomena serve as the exemplar against which all other systems’ religiosity is judged. The Madisonian view of religion, based as it is on belief in a Creator deity,¹⁰⁰ is merely a special case of belief systems that invoke supernatural agency to explain natural phenomena. Jefferson operated under a definition of religion that incorporated a general class of theistic beliefs, but every example of faith cited by Jefferson in his Act for Establishing Religious Freedom includes notions of supernatural agency. The Supreme Court has often applied the Madisonian definition of religion.¹⁰¹ On the rare occasions that the Court has diverged from Madison’s view, it has moved towards a more inclusive definition of religion, by expanding religion to include certain non-theistic systems.¹⁰² While the Court has found that some systems that lack belief in supernatural agency qualify as religion,¹⁰³ it has never held that the notion of supernatural agency fails to qualify as a religious belief. Even the Adams Test confirms this view, as it is essentially an expansion of the definition of religion outward from a core definition based on belief in supernatural agents.¹⁰⁴ Defining religious beliefs as those that involve supernatural agents generally—as opposed to the narrower subclass of theologically sophisticated deities—is consistent with the courts’ tendency to apply constitutional protection to a wide

99. This is not to say that such systems are *religions*. As noted earlier, what constitutes a complete religion is unclear; it must therefore suffice to identify beliefs and practices that are of a religious character.

100. MADISON, *supra* note 67.

101. See discussion *supra* Part III.A.2; cases cited *supra* notes 70–71.

102. See discussion *supra* Part III.A.2; cases cited *supra* notes 72–73.

103. *Id.*

104. “[T]he important question . . . is how far the constitutional definition of religion extends beyond the Theistic formulation; that it comprehends all Theistic faiths has, to my knowledge, not been questioned.” *Malnak v. Yogi*, 592 F.2d 197, 203 (3d Cir. 1979).

range of legitimately religious beliefs beyond those of the major world faiths as well as the universality of Jefferson's understanding of religion.

The supernatural agency test therefore provides a paradigm that, at least in part, harmonizes the relevant Religion Clause jurisprudence with the anthropological understanding of religious belief. Although it is under-inclusive in that it does not identify non-theistic views as religious, the supernatural agency test serves as a good "first cut" at determining a belief system's religiosity. As it turns out, the supernatural agency test is all that is needed to determine whether the Intelligent Design hypothesis is a religious notion.

B. Establishment Clause Tests

The Supreme Court has, over the past several decades, established at least three tests for evaluating whether a government action complies with the Establishment Clause. These three tests are introduced below.

1. The Lemon test

The first test applied by the Supreme Court to evaluate Establishment Clause claims was formulated in *Lemon v. Kurtzman*.¹⁰⁵ The *Lemon* test specifies three requirements of government conduct; if the conduct fails on any one of the three, it violates the Establishment Clause. "[T]he government conduct in question (1) must have a secular purpose, (2) must have a principal or primary effect that neither advances nor inhibits religion, and (3) must not foster an excessive government entanglement with religion."¹⁰⁶ The secular purpose prong of the *Lemon* test "aims at preventing [government] from abandoning neutrality and acting with the intent of promoting a particular point of view in religious matters."¹⁰⁷ The second prong dictates that the state "may not place its prestige, coercive authority, or resources behind a single religious faith or behind religious belief in general."¹⁰⁸ And, the third prong aims to maintain administrative separation between the government and religious organizations. The *Lemon* test served as the Supreme Court's exclusive Establishment Clause test in the period between 1971 and 1984,¹⁰⁹ but

105. *Lemon v. Kurtzman*, 403 U.S. 602 (1971), *aff'd* 411 U.S. 192 (1973).

106. *Newdow v. U.S. Cong.*, 328 F.3d 466, 485 (9th Cir. 2002) (citing *Lemon*, 430 U.S. at 612–13), *rev'd sub nom.* *Elk Grove Unified Sch. Dist. v. Newdow*, 542 U.S. 1 (2004).

107. *Corp. of the Presiding Bishop of the Church of Jesus Christ of Latter-day Saints v. Amos*, 483 U.S. 327, 335 (1987).

108. *Tex. Monthly, Inc. v. Bullock*, 489 U.S. 1, 9 (1989).

109. *See id.* The lone exception was *Marsh v. Chambers*, in which the Supreme Court upheld the Nebraska legislature's practice of opening daily sessions with a prayer. 463 U.S. 783 (1983). The

has since been supplemented with at least two other tests.

2. *Endorsement*

The Supreme Court began to retreat from the formal, three-pronged structure of the *Lemon* test in *Lynch v. Donnelly*.¹¹⁰ In a concurring opinion in *Lynch*, Justice O'Connor proposed an alternative test that would find a violation of the Establishment Clause when the government conduct either (1) fostered "excessive entanglement with religious institutions" or (2) affected an "endorsement or disapproval of religion."¹¹¹ Although Justice O'Connor's test has not supplanted the *Lemon* test as the governing standard in Establishment Clause jurisprudence,¹¹² a plurality of the Court adopted Justice O'Connor's test in *County of Allegheny v. ACLU* and the Court has since applied it to numerous Establishment Clause cases.¹¹³

Whether a state action affects an endorsement of religion depends on the message the action conveys to a reasonable, objective observer.¹¹⁴ The Supreme Court defined the role of an objective observer in *Santa Fe Independent School District v. Doe*, noting that "[i]n cases involving state participation in a religious activity, one of the relevant questions is 'whether an objective observer, acquainted with the text, legislative history, and implementation of the statute, would perceive it as a state endorsement of [the religious activity at issue].'"¹¹⁵ In determining the perception of an objective observer, the court must consider the context of the religious activity¹¹⁶ with the understanding that the reasonable,

decision in *Marsh* was grounded in the unique history of legislative prayer. *See id.*

110. *Lynch v. Donnelly*, 465 U.S. 668 (1984).

111. *Id.* at 687–88 (O'Connor, J., concurring).

112. In fact, at least one circuit court has read the endorsement test as a mere restatement of the *Lemon* test. "Justice O'Connor's 'endorsement' test effectively collapsed the first two prongs of the *Lemon* test." *Newdow v. U.S. Cong.*, 328 F.3d 466, 486 (9th Cir. 2002).

113. *See County of Allegheny v. ACLU*, 492 U.S. 573 (1989).

114. *McCreary County v. ACLU*, 545 U.S. 844, 869 (2005).

115. *Santa Fe Indep. Sch. Dist. v. Doe*, 530 U.S. 290, 307 (2000) (O'Connor, J., concurring) (quoting *Wallace v. Jaffree*, 472 U.S. 38, 73, 76 (1985)).

116. *See County of Allegheny*, 492 U.S. at 597 (stating that "the effect of the government's use of religious symbolism depends upon its context"). One interesting ambiguity in the endorsement test is whether the objective observer must recognize the religious nature of a state policy. Although the relevant case law is unclear on this issue, there is good reason to believe that the reasonable, objective observer's detection of a policy's religiosity is a prerequisite to a finding of unconstitutional endorsement. For example, the analysis in *Lynch v. Donnelly* focused on whether the policy "sends a message to nonadherents that they are outsiders." 465 U.S. 668, 688 (1984). This message is communicated only if the nonadherents to a religion detect that the message is religious in nature. Similarly, Laurence Tribe has noted that "[w]hether a given practice constitutes a forbidden establishment may ultimately depend on whether most people would view it as religiously significant." LAURENCE TRIBE, *AMERICAN CONSTITUTIONAL LAW* 1187 (2d ed. 1987).

objective observer is “presumed to be familiar with the history of the government’s actions and competent to learn what history has to show.”¹¹⁷

3. *Coercion*

The third Establishment Clause test applied by the Supreme Court was introduced in *Lee v. Weisman*, in which the Court implied that some state policies so clearly violate the Establishment Clause that it is unnecessary to evaluate their merits under the *Lemon* test.¹¹⁸ Writing for the Court in *Lee*, Justice Kennedy enunciated the principle that “at a minimum, the Constitution guarantees that government may not coerce anyone to support or participate in religion or its exercise, or otherwise to act in a way which ‘establishes a [state] religion or religious faith, or tends to do so.’”¹¹⁹ According to the majority in *Lee*, a junior high school violated the Establishment Clause’s prohibition of religious coercion when it invited a clergyman to recite “nonsectarian” opening and closing prayers at a school graduation ceremony.¹²⁰ The majority found the prayer coercive, despite the fact that both attendance at the graduation ceremony as well as participation in the prayer were voluntary.¹²¹ The Court held that the public and peer pressure on students to “maintain respectful silence” during the prayer was coercive.¹²² This seems to imply that the Establishment Clause not only prohibits the state from coercing religious exercise, but also forbids any state policy that would expose a captive audience—even if attendance is formally voluntary—to religious practice. *Lee* thus clarifies the baseline anti-coercion guarantee of the Establishment Clause and sets a rather low bar for what qualifies as “coercion.”

117. *McCreary County*, 545 U.S. at 869.

118. *Lee v. Weisman*, 505 U.S. 577 (1992).

119. *Id.* at 587. (quoting *Lynch v. Donnelly*, 465 U.S. 668, 678 (1984)). The Ninth Circuit has apparently taken Justice Kennedy’s characterization of the minimum requirements of the Establishment Clause at face value, asserting that where the coercion test is violated by state conduct, there is no need to evaluate the conduct under either the *Lemon* or endorsement tests. *See Newdow v. U.S. Cong.*, 328 F.3d 466, 487 (9th Cir. 2002).

120. *See Lee*, 505 U.S. 577.

121. *Id.* at 593. The Court noted that, while attendance was technically voluntary, the graduation was such a significant event that it would be improper for the state to “exact religious conformity from a student as the price of attending [it].” *Id.* at 596.

122. *Id.* at 593.

IV. DOES TEACHING INTELLIGENT DESIGN VIOLATE THE ESTABLISHMENT CLAUSE?

Given the recent publicity surrounding the Intelligent Design hypothesis, and especially the drive to include material about the hypothesis in public school science curricula, it is important to determine whether such an inclusion would pass muster under the Establishment Clause. The analysis that follows tackles this issue in two parts. First, it is established that, despite the sophisticated, scientific quality of the support for the Intelligent Design hypothesis, the hypothesis is fundamentally a religious notion. Next, the constitutionality of teaching religious ideas in public schools is evaluated for three distinct academic domains: the hard sciences, the social sciences, and the humanities. While the Establishment Clause likely prohibits instruction on religious ideas—specifically, the Intelligent Design hypothesis—in the context of the hard sciences, it is argued that such instruction may be constitutionally permissible within the context of the social sciences and humanities.

A. *The Intelligent Design Hypothesis Is a Religious Notion*

Observers who are exposed to the Intelligent Design hypothesis for the first time will likely be struck by its technical and philosophical sophistication as well as the vagueness surrounding the identity of the hypothesized designer. These qualities do not arise by accident. The creationist movement has gradually moved towards ever-more-subtle analytical systems consistent with their core belief in a supernatural creator. Following on the heels of the Court's rejection of "balanced treatment" statutes, which mandated that the standard Genesis account be taught alongside evolution in public schools, the "creation science" movement argued for Biblical creation using scientific-sounding arguments.¹²³ The courts rejected creation science as an attempt to circumvent the Establishment Clause by shrouding religious dogma in a cloak of scientific terminology.¹²⁴ Opponents of the theory of evolution then pinned their hopes to the subtler and more abstract Intelligent Design hypothesis.¹²⁵ However, despite its abstraction and the technical

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

124. *See Edwards v. Aguillard*, 482 U.S. 578 (1987). "The legislative history therefore reveals that the term 'creation science,' as contemplated by the legislature that adopted this Act, embodies the religious belief that a supernatural creator was responsible for the creation of humankind." *Id.* at 591–92.

125. *Kitzmiller*, 400 F.Supp.2d 707. *See also* Holmes & Randerson, *supra* note 42.

sophistication of its supporting arguments, the Intelligent Design hypothesis is no less a religious notion than are Biblical Creation and Creation Science. As will be shown below, the Intelligent Design hypothesis argues for the conclusion that a supernatural agent has exerted control over the natural universe and is, therefore, a religious hypothesis. The notion that the Intelligent Design hypothesis is science, and thus not religion, is addressed in the subsection that follows.

1. The intelligent design hypothesis explains natural phenomena by positing interference by a supernatural agent.

In its prior incarnations, the creationist analytical system differed from the Theory of Evolution in many significant respects. Earlier versions of creationism proposed specific narrative accounts of the creation of life on Earth—accounts that clearly conflicted with the fossil record and genetic research.¹²⁶ However, the Intelligent Design hypothesis takes a much subtler approach. Instead of confronting the mountains of scientific data supporting the Theory of Evolution head-on, the Intelligent Design theorists apply scientific and mathematical rationales to support their hypothesis.¹²⁷ Prominent Intelligent Design advocates even acknowledge the existence of evolutionary processes, most notably the process known as “microevolution.”¹²⁸ Intelligent Design therefore represents a shift of the metaphysical fault lines from the heart of biological dogma to the frontiers of research in the life sciences. Intelligent Design advocates do not contradict the work biologists have already completed and verified; rather, they propose that the fundamental naturalist framework of science cannot solve those biological puzzles that remain, as-of-yet, unsolved.¹²⁹ It is on this frontier that we discover the true distinction between the Theory of Evolution and the Intelligent Design hypothesis—namely, that the former searches for natural causes at every turn, while the latter allows for (and even relies upon) the intervention of supernatural agents in the natural universe.

126. See generally CAMPBELL, *supra* note 19.

127. WILLIAM DEMBSKI, INTELLIGENT DESIGN: THE BRIDGE BETWEEN SCIENCE AND THEOLOGY 106 (1999) (“What has emerged is a new program for scientific research known as *intelligent design*.”).

128. See BEHE, *supra* note 49, at 22 (“This is not to say that . . . Darwinism fails to explain anything (it explains microevolution very nicely) . . .”).

129. DEMBSKI *supra* note 127, at 112–13. This characteristic of the Intelligent Design hypothesis has earned it the unflattering nickname “God in the Gaps Theory” among its detractors—the idea being that Intelligent Design proponents find room for their theistic beliefs in the gaps of scientific understanding (gaps that, over time, inevitably shrink or close).

Those who support instruction on the Intelligent Design hypothesis often emphasize that the hypothesis never identifies the designer as any particular deity, or even as a deity at all.¹³⁰ However, this purposeful ambiguity surrounding the identity of the designer is superficial. The fact remains that the designer in the Intelligent Design hypothesis is one that acts outside the bounds of the laws of nature; in other words, the designer is a supernatural agent. This fact is evident from the admissions of Intelligent Design theorists. According to William Dembski, “[i]ntelligent design is three things: a scientific research program that investigates the effects of intelligent causes; an intellectual movement that challenges Darwinism and its naturalistic legacy; and *a way of understanding divine action*. Intelligent design therefore intersects science and theology.”¹³¹ Other Intelligent Design advocates—including Michael Behe, Scott Minnich, and Steven William Fuller—have indicated that the Intelligent Design hypothesis necessarily implies the intervention of a *supernatural* agent.¹³²

But the supernatural nature of the intelligent designer is not merely a subjective choice of Intelligent Design theorists. Rather, the supernatural character of the designer is necessary if, as its advocates assert, Intelligent Design is to provide a distinct alternative to the Theory of Evolution. As Richard Dawkins has pointed out, “[i]f we want to postulate a deity capable of engineering all the organized complexity in the world, either instantaneously or by guiding evolution, that deity must have been vastly complex in the first place. The creationist . . . simply *postulates* an already existing being of prodigious intelligence and complexity.”¹³³ In other words, any designer capable of creating the complex, specified information comprising life from scratch must itself possess sufficient complexity to carry out the creation. Because the Intelligent Design hypothesis proposes the designer as an *alternative* to the emergence of complexity from natural processes, the designer’s complexity must have arisen from processes that lie outside the bounds of the natural; otherwise, the Intelligent Design hypothesis would be forced to rely on *naturalistic* processes to explain the emergence of the necessarily-complex designer from an initial state of simplicity. In other words, the Intelligent Design hypothesis without a supernatural creator is an Intelligent Design hypothesis that acknowledges Darwinism as the explanation for the emergence of the intelligent designer. This watered-down version of the Intelligent Design hypothesis would not amount to a

130. See, e.g., BEHE, *supra* note 49, at 250–51.

131. *Id.* at 13 (emphasis added).

132. See *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707, 720 (M.D. Pa. 2005).

133. DAWKINS, *supra* note 29, at 316.

refutation of the Theory of Evolution, but rather would constitute an historical theory that inserts an intelligent, but naturally created, designer into the timeline of evolution.¹³⁴ This is not what the Intelligent Design hypothesis proposes; rather, Intelligent Design theorists propose a designer that is, by logical necessity, a supernatural agent.

We can thus determine, based on the admissions of Intelligent Design theorists and an argument from logical necessity, that the Intelligent Design hypothesis proposes the interference of a supernatural agent in the natural world as an explanation for observed phenomena. As was shown in Section III.A, attributing causality for natural phenomena to a supernatural agent is a fundamentally religious concept. That this supernatural agent is not identified by name or attributed anthropomorphic qualities is irrelevant.¹³⁵ Thus, the core proposition of the Intelligent Design hypothesis—the key distinction between it and its metaphysical competitor, the Theory of Evolution—is a religious notion.

2. *The notion that intelligent design is “science” is irrelevant.*

Intelligent Design advocates have argued that the technical sophistication of the hypothesis qualifies it as “science,” and, thus renders the hypothesis immune from the strictures of the Establishment Clause.¹³⁶ Even assuming the specious first premise of this syllogism to be correct, the argument is invalid. The Constitution does not dictate that science be taught in public schools. Rather, the Establishment Clause prohibits the teaching of *religion* in public schools.¹³⁷ So, whether the Intelligent Design hypothesis is science or not is irrelevant if it is determined that the hypothesis is a religious notion.¹³⁸ To understand

134. The logical possibility that such a designer could affect the evolution of species is not controversial. Human beings currently fill this role when they apply selective breeding or sophisticated gene-modification techniques to purposefully adjust the course of evolution.

135. Pascal Boyer emphasizes the abstraction of the “spirits” the belief in whom forms the core of many simplistic religious systems. See BOYER, *supra* note 85, at 139–40 (noting that the Kwaio people of the Solomon Islands are “remarkably vague as concerns the exact nature of the *adalo* [the supernatural agents around which Kwaio religious life revolves].”).

136. See *Kitzmiller*, 400 F. Supp. 2d at 736 (noting that defense expert Michael Behe “admitted that his broadened definition of science, which encompasses ID, would also embrace astrology.”); see also Beckwith, *supra* note 7, at 470 (characterizing Intelligent Design advocates as “a small, though growing, platoon of academics who maintain that intelligent agency, as an aspect of scientific theory-making, has more explanatory power . . . than the blind forces of unguided matter.”). Beckwith goes on to argue that methodological naturalism may be discarded as a precondition of natural science, opening the door to an expanded definition of science that would subsume the Intelligent Design hypothesis. See *id.*

137. See Wexler, *supra* note 14, at 466.

138. The *Kitzmiller* holding was based in large part upon the notion that the Intelligent Design hypothesis does not qualify as science. Although the court’s resolution of this question is certainly reasonable, given the predominant philosophical understanding of science, the court operated under

why, we must explore the relationship between the realms of scientific and religious inquiry, as these realms are typically defined, and then examine how the Intelligent Design hypothesis' location within these realms changes—if at all—with the implementation of an expanded definition of “science.”¹³⁹

Science and religion, as we have defined the two, actually fulfill quite similar functions. According to our limited test for religiosity, any hypothesis that assigns causation for natural phenomena to a supernatural agent is a religious idea. Science, at its most fundamental level, also seeks to determine the causes of natural phenomena.¹⁴⁰ In contrast to religion, however, science is limited to the realm of natural causes.¹⁴¹ According to Harvard evolutionary biologist Ernst Mayr, “scientists do not invoke the supernatural to explain how the natural world works.”¹⁴² Scientists, in other words, proceed under the limitations of methodological naturalism, “the belief that science should explain phenomena only in terms of entities and properties that fall within the category of the natural, such as by natural laws acting either through known causes or by chance”¹⁴³

a false presumption that its “conclusion on whether [the Intelligent Design hypothesis] is science . . . is essential to [the court’s] holding that an Establishment Clause violation has occurred” *Kitzmiller*, 400 F. Supp. 2d at 735. Once the court had determined that the hypothesis was a religious idea, determining whether or not it simultaneously qualified as science is irrelevant from a First Amendment standpoint.

139. It is critical here to note the distinction between the Intelligent Design hypothesis and the arguments offered in support of it. While the support for the Intelligent Design hypothesis may arise through the scientific processes of observing phenomena and collecting and processing data, the hypothesis itself represents a religious notion.

140. See ARTHUR PAP, AN INTRODUCTION TO THE PHILOSOPHY OF SCIENCE 251 (1962) (stating that “it is indeed true and truistic to say that science, or at least the sciences dealing with change (as distinct from purely classificatory sciences), aim at the discovery of causal connections.”); see also SAMIR OKASHA, PHILOSOPHY OF SCIENCE 49 (2002) (arguing that many philosophers favor a general theory of scientific explanation centered on the concept of causality).

141. See STEERING COMM., *supra* note 23, at 25 (“Scientific investigators seek to understand natural phenomena by observation and experimentation. Scientific interpretations of facts and the explanations that account for them therefore must be testable by observation and experimentation. Creationism, intelligent design, and other claims of supernatural intervention in the origin of life or of species are not science because they are not testable by the methods of science.”).

142. ERNST MAYR, THIS IS BIOLOGY: THE SCIENCE OF THE LIVING WORLD (1997), reprinted in NATIONAL ACADEMY OF SCIENCES, TEACHING ABOUT EVOLUTION AND THE NATURE OF SCIENCE 43 (1998).

143. Edward B. Davis & Robin Collins, *Scientific Naturalism*, in SCIENCE AND RELIGION 322 (Gary B. Ferngren ed., 2002). Methodological naturalism is to be contrasted with another related principle, ontological naturalism, which implies that “nature is all there is.” *Id.* According to Davis and Collins, “in every discipline today, except in some schools of theology, a strict methodological naturalism is observed, and typically an ontological naturalism is presupposed by most of the practitioners of these disciplines.” *Id.* at 327. The latter claim amounts only to an observation about the personal epistemologies of many scientists, and does not reflect an overarching principle of scientific thought, just as the fact that “many scientists are deeply religious” does not redefine the boundaries of science and theology as disciplines. STEERING COMM., *supra* note 23, at ix.

Science and religion, as defined herein, may thus be viewed as two different types of what might be called “causal-analytic systems”—i.e., systems that seek to identify the causes for observed natural phenomena. While causal-analytic systems are often metaphysical systems—systems that “attempt to say what reality is”¹⁴⁴—they need not be: one may set limits on the type of causes that are consistent with the principles of a given causal-analytical system without claiming that such limits are coincident with the bounds of reality. The key distinction between religious and scientific causal-analytic systems is that while the former attribute causation to supernatural agents, the latter is limited to the realm of natural—that is, observable, testable, repeatable—causes. Thus, scientific and religious thought, as we have defined the two, “occupy two separate realms” within the same general class of causal-analytic systems.¹⁴⁵ While both religious systems and sciences are classes of causal-analytical systems generally (which also includes causal-analytical systems, such as superstitions, that are neither religious nor scientific), no system is both “religious” and “scientific” according to our definitions. The two categories are mutually exclusive.

What Intelligent Design advocates such as Michael Behe and Francis Beckwith argue is that if the definition of science can be expanded beyond its classically-defined bounds to accommodate supernatural agency, then Intelligent Design would qualify as “science.”¹⁴⁶ This may certainly be true. However, it is beside the point. Such an expansion of the bounds of science would simply reclassify religious systems as a subset of scientific systems. It is within this subset that the Intelligent Design hypothesis would dwell. Intelligent Design would not, by virtue of its inclusion in the broadened definition of science, cease to qualify as a religious system; it would simply qualify as *both* a scientific and a religious system.

Because adjusting the definition of science does not divest the Intelligent Design hypothesis of its religious nature, arguments that rely on Intelligent Design’s science-like philosophical and technical sophistication or the argument that a requirement of methodological naturalism is philosophically arbitrary are constitutionally irrelevant. Whether the Intelligent Design hypothesis is nominally science or supported by scientific arguments, the hypothesis is unequivocally religious. Therefore, inclusion of the Intelligent Design hypothesis in public school curricula is subject to the strictures of the Establishment Clause.

144. ROBERT C. SOLOMON, *THE BIG QUESTIONS* 88 (1982).

145. *STEERING COMM.*, *supra* note 23, at ix.

146. *See supra* note 136.

B. Intelligent Design and the Establishment Clause Tests

Given that the Intelligent Design hypothesis is a religious notion, we must determine whether the Establishment Clause prohibits its inclusion in the public school curriculum. The presentation of religious ideas is not off-limits to the state in all circumstances. The Supreme Court has allowed state association with religious ideas in several non-educational contexts, including daily prayers at a state legislature¹⁴⁷ and the display of religious symbols on municipal property.¹⁴⁸ Additionally, the Court has hinted at contextual distinctions that would allow the presentation of religious concepts in public school.¹⁴⁹ A rationale for these distinctions is explored below, followed by a constitutional analysis of religious instruction in the three main academic domains: the hard sciences, the social sciences, and the humanities.

1. Constitutional analysis depends on the academic domain

While the Establishment Clause generally stands for the proposition that all religions and non-religions are equal under the law, not all courses of study are equal under the Establishment Clause. Justice Fortas, in a 1968 opinion that nullified (on Establishment Clause grounds) a state law prohibiting the teaching of Darwinian theory in public schools, noted that “study of religions and of the Bible from a literary and historic viewpoint, presented objectively as part of a secular program of education, need not collide with the First Amendment’s prohibition.”¹⁵⁰ Justice Fortas’ view represents an intuition that the constitutionality of public school instruction on religious principles depends on the *academic domain* in which the principles are presented. This intuition has been echoed by legal scholars such as Kent Greenawalt and Jay Wexler, who argue for a greater infusion of religion in public school humanities and social science courses.¹⁵¹

What lies behind these intuitive notions of a constitutionally meaningful distinction between religious concepts as taught in the various academic domains? Research by educational theorists examining the phenomenon of “domain differences” in education—the notion that

147. See *Marsh v. Chambers*, 463 U.S. 783 (1983).

148. See *Lynch v. Donnelly*, 465 U.S. 668 (1984).

149. See, e.g., *Epperson v. Arkansas*, 393 U.S. 97, 106 (1968); *Abington Sch. Dist. v. Schempp*, 374 U.S. 203, 225 (1963).

150. *Epperson*, 393 U.S. at 106.

151. See Kent Greenawalt, *Teaching About Religion in the Public Schools*, 18 J.L. & POL. 329 (2002); see also Jay Wexler, *Preparing for the Clothed Public Square: Teaching About Religion, Civic Education and the Constitution*, 43 WM. & MARY L. REV. 1159 (2002).

students and instructors make epistemological distinctions between knowledge obtained in different academic domains—may provide one explanation for the instinctive desire of legal scholars to differentiate between the Establishment Clause consequences of religion as taught in various contexts. Educational psychologists have documented differences in students' and teachers' perception of the epistemological quality of knowledge associated with the various fields of academic study. For example, empirical studies demonstrate that students tend to associate mathematics with certainty and uniqueness of knowledge and to view mathematics instructors as authoritative sources of knowledge in the subject.¹⁵² One study illuminated distinct attitudes on the part of fifth-grade students towards mathematics and social studies: while the substance of mathematics courses was viewed as "fixed and immutable," knowledge in social studies courses was seen as "less sharply defined."¹⁵³ The same study also indicated that, while students are confident in their ability to learn social studies through independent study, they were more likely to believe mathematics knowledge can only be obtained with the aid of a teacher.¹⁵⁴ Other researchers investigating middle school and high school students' epistemological attitudes towards the sciences have suggested that, similar to mathematics, students view the sciences as conveying knowledge that is factual, certain, independent of context, and dependent on authority for justification.¹⁵⁵ Another study indicates that first-year college students' epistemological perceptions of science and psychology differ

152. See Magdalene Lampert, *When the Problem Is Not the Question and the Solution Is Not the Answer. Mathematical Knowing and Teaching*, 27 AM. EDUC. RES. J. 29 (1990); see also A. Schoenfeld, *Learning to Think Mathematically: Problem Solving, Metacognition and Sense Making in Mathematics*, in HANDBOOK OF RESEARCH ON MATHEMATICS TEACHING AND LEARNING 334 (Douglas A. Grouws ed., 1992).

153. Susan S. Stodolsky, et al., *Student Views About Learning Math and Social Studies*, 28 AM. EDUC. RES. J. 89, 110 (1991). The authors suggest that this difference may be due to the divergent manners in which the two subjects are taught. While mathematics courses at the elementary level rarely involve "[a]pplication, experimentation, discovery or inquiry," courses in social studies offer "more avenues of access to learning." *Id.* at 112.

154. *Id.* at 105. This is an important distinction for our purposes, as other research demonstrates a similarity between the role of instructor-as-authority in the sciences and religion. This topic is discussed further in the subsequent subsections.

155. See Barbara K. Hofer & Paul R. Pintrich, *The Development of Epistemological Theories: Beliefs About Knowledge and Knowing and Their Relation to Learning*, 67 REV. OF EDUC. RES. 88, 126 (1997) (citing W. M. Roth & A. Roychoudhury, *Physics Students' Epistemologies and Views About Knowing and Learning*, 31 J. OF RES. IN SCI. TEACHING 5 (1994), and S. Carey & C. Smith, *On Understanding the Nature of Scientific Knowledge*, 28 EDUC. PSYCHOLOGIST 235 (1993)).

markedly.¹⁵⁶ These students

saw knowledge in science as more certain and unchanging than in psychology; were more likely to regard personal knowledge and firsthand experience as a basis for justification of knowing in psychology than in science; viewed authority and expertise as the source of knowledge more in science than in psychology; and perceived that in science, more than in psychology, truth is attainable by experts.¹⁵⁷

Although many questions about differences in epistemological perception across academic domains remain unanswered, the current research indicates that students, from at least the fifth grade through their college years, perceive mathematical and scientific knowledge as more authoritative and factual than knowledge learned in the social sciences and humanities.¹⁵⁸

Another possible explanation for making a constitutionally-relevant distinction between academic domains is the observation that course labels often act as a proxy for significant differences in the way causal-analytic systems are treated in various academic contexts. Courses in mathematics and the so-called “hard sciences”—physics, chemistry, and biology—generally provide students with instruction in the underlying theory and application of a specific causal-analytic system.¹⁵⁹ Students

156. See Barbara Hofer, *Dimensionality and Disciplinary Differences in Personal Epistemology*, 25 CONTEMP. EDUC. PSYCHOL. 378 (2000).

157. *Id.* at 394.

158. Although the results are somewhat preliminary, research indicates that the degree to which students' epistemological perception differs between the various academic domains varies as a function of age. See Hofer & Pintrich, *supra* note 155, at 120–23. At an early age, students perceive knowledge received in all of the disciplines as factual, determinable and certain; younger students are more likely to view teachers as authority figures than are older students. The older a student becomes, the more likely she is to perceive differences in the nature of knowledge learned in the various fields, and the less likely she is to attribute authority to teachers in the humanities and social sciences. See *id.* at 121 (noting that there is general agreement that, as children move towards adulthood, “the view of knowledge is transformed from one in which knowledge is right or wrong to a position of relativism and then to a position in which individuals are active constructors of meaning, able to make judgments and commitments in a relativistic context.”). Thus, the rationale for inclusion of religious material in the social sciences and humanities is most applicable to older students who exhibit a tendency to differentiate between the epistemological qualities of knowledge gained in the two domains.

159. See Richard A. Duschl & Richard J. Hamilton, *Introduction: Viewing the Domain of Science Education*, in PHILOSOPHY OF SCIENCE, COGNITIVE PSYCHOLOGY AND EDUCATIONAL THEORY AND PRACTICE 1, 5 (Richard A. Duschl & Richard J. Hamilton eds., 1992) (“The process of science is one of developing and testing theories to explain phenomena. . . . Science curricula need to be built around the development, testing, and restructuring of scientific theories if students are to ‘do science,’ and not simply learn ‘about science.’”); see also JANET DONALD, *LEARNING TO THINK: DISCIPLINARY PERSPECTIVES* 41 (2002).

are generally expected to apply this system to a set of problems on homework sets and examinations to generate the “correct” answer (i.e., the answer that is consistent with the causal-analytical system’s axioms). The correct answer is typically an effect which, according to the causal-analytical system, results from specific causes in a particular manner.¹⁶⁰ For example, students enrolled in an introductory course in physics will be instructed on the fundamentals of Newtonian mechanics and will be expected to apply this system of cause-and-effect to analyze hypothetical problems that represent real-world phenomena. As presented in the hard sciences, a causal-analytic system is to be taken as a relatively accurate model of the universe’s functional machinery.

Although courses in the social sciences—history, psychology, sociology, and economics—may include material on specific causal-analytic belief systems (e.g., religious beliefs, scientific theories, political philosophies, etc.), these systems often serve merely as an impetus driving the true focus of a humanities course: human behavior.¹⁶¹ The social sciences typically deal with at least two tiers of causal-analytic systems. On the upper tier is the overarching causal-analytic system that details the effect of human behavior on observed phenomena. A typical upper tier claim is “an upward shift in the demand curve without an accompanying shift in the supply curve results in a price increase;” here, the demand curve shift is a cause that brings about the effect of rising prices. On the lower level is a causal-analytic system that describes how various parameters affect human behavior. The effect in the lower tier causal-analytic system thus becomes the cause in the upper tier system. Continuing our example, we may wish to know *why* consumers in a market are more interested in a given product such that the demand curve will shift. The causes for such increased demand can be sociological (in the case of a new fashion trend), scientific (as when a previously useless material is discovered to have technical advantages over its molecular competitors) or even religious (for example, where the demand for Bibles increases due to an influx of new converts). On the lower tier, the personal beliefs of human beings often serve as critical causal factors affecting behavior. A comprehensive social science course should therefore discuss the effects of particular beliefs on the actions of the subjects of study.¹⁶² However, because the important inquiry in the social

160. Or, in the alternative, the answer might take the form of a particular cause that is necessary (or sufficient) to explain the described effect.

161. See ARTHUR A. HYDE & MARILYN BIZAR, THINKING IN CONTEXT 166–67 (1989) (providing a list of “general orientations” of the social studies and their “key concepts,” each of which involves a specific behavior of human beings); see also DONALD, *supra* note 159, at 134.

162. See Donald H. Bragaw & H. Michael Hartoonian, *Social Studies: The Study of People in Society*, in CONTENT OF THE CURRICULUM 226 (Allan A. Glatthorn ed., 2d ed. 1995) (advocating

sciences is not whether a particular belief is right or wrong but, rather, how it can be expected to affect the believer's actions, an evaluation of personal causal-analytic systems can be accomplished without presuming the system's "truth." For example, students of modern American history might study the religious beliefs of the "Heaven's Gate" cult in order to understand how their eschatology led to a mass suicide. These students, however, need not be asked to take a position on whether the predictions of the group's leaders—namely, that the members' suicide would enable them to board a comet-trailing spaceship—came to pass.

The difference, then, between the physical and social sciences' treatment of causal-analytic systems is this: the hard sciences apply causal-analytic systems as a presumably accurate model of observable events, while the social sciences allow for a treatment of causal-analytic belief systems in such a way that they are valuable not as an accurate model of observable events but as a means to predict what *the human subject of study* believes is an accurate model of observable events.¹⁶³

The constitutional relevance of the distinctions between the hard sciences, social sciences, and humanities is discussed in the sections that follow. However, before we proceed to this analysis, a word of warning is in order. Distinctions based on the treatment of causal-analytic systems are likely untenable at the level of course designation; rather, such distinctions must be made at the level of particular lessons. It is quite possible that a nominal science course could be taught more like a history course, in which the evolution of scientific thought from the Greek natural philosophers to the modern scientific academia is presented. In such a course, the introduction of religious ideas as an impetus for a given school of scientific thought might be constitutionally proper. On the other hand, it is possible to conceive of history lessons taught in a way that violates the Establishment Clause. While it may be appropriate to mention Catholicism as a motivation of the Spanish conquistadors, for example, a history lesson which characterized the Spanish conquest of native populations as the inevitable result of God's Holy Will would certainly run afoul of the First Amendment. The relevant difference is that the former theory proposes the historical

policy studies curricula that "create frames of deliberation in which students' personal values can be juxtaposed with the values and beliefs of others and the larger societies of which they are members").

163. This differentiation is quite similar to Greenawalt's proposal that the truth-value assigned to ideas as proposed in various pedagogical contexts should prove constitutionally determinative. See Greenawalt, *supra* note 151, at 339 (stating that "[t]he obvious remedy for present neglect is for schools to say more about religion while withholding judgments about religious truth. . . . Much depends on particular complaints about particular subject matters, on the depth of treatment that is suggested for religion . . .").

actors' own religious beliefs merely as a motivation for their actions, while the latter describes historical events as the result of supernatural agency. Clearly then, the focus should remain on the particular treatment of causal-analytical systems—which, in general, differs between courses in the hard sciences, the social sciences, and the humanities—rather than the nominal label of a given course. For its purposes, this paper will define the social sciences as those disciplines that focus on human behaviors and that allow for the examination of causal-analytic beliefs as a means for understanding the behavior of those who possess those beliefs. The social sciences thus include disciplines such as economics, sociology, psychology, and history. The hard sciences are defined as those courses that apply a coherent causal-analytical system to predict, explain or model natural phenomena in a manner that is independent of human action. Examples of the hard sciences would be mathematics, the physical sciences, and the life sciences. The humanities functions as a catch-all group, subsuming fields such as literature, music, philosophy, and the arts; in each of these fields, the manner in which causal-analytic systems are treated is ambiguous. With these principles in mind, we proceed to evaluate the constitutionality of religious instruction in these three general domains of public school curricula.

2. Religion, as intelligent design, in the hard sciences

The relationship between religion and science is commonly conceived in one of two ways: (1) religion and science are entirely separate spheres of inquiry, applicable under different circumstances and (2) religion and science are at odds, competing to explain natural phenomena with entirely contradictory theories. Depending on one's view of the proper relations between naturalism and scientific reasoning, either one of these conceptions may be correct.¹⁶⁴ Regardless of the philosophical position one takes on the role of naturalism in science, however, there exist two critical similarities between the religious and scientific realms. First, religion and science both involve claims about processes of cause-and-effect in the natural universe. The main distinction between the two in this regard is the nature of the causal factors each invokes: while science is bound by the strictures of methodological naturalism, religion allows for, and almost always includes, the interference of one or more supernatural agents in the natural order. Second, people (especially children) learn about religious

164. Those who believe that science requires ontological naturalism will see religion as a direct metaphysical competitor, while those who limit scientific claims to the strictures of methodological naturalism will likely acknowledge that religious and scientific views may coexist.

and scientific entities, and judge their truth-value, in a very similar manner.¹⁶⁵ Because scientific and religious hypotheses are, in fact, highly related from a structural and pedagogical standpoint, a science course could easily be transformed into a vehicle for religious education by simply opening the door to supernatural agency.¹⁶⁶ In this sense, courses in science dwell in precarious constitutional territory: one seemingly minor curricular alteration could transform a standard biology or physics class into a constitutionally-prohibited program of religious indoctrination. For various reasons, the Establishment Clause tests recognize this danger and prohibit the inclusion of religious propositions in science courses. Each of these tests is applied below to a specific religious proposition, the Intelligent Design hypothesis.

We first consider the application of the *Lemon* test. As an initial matter, there is no reason to believe that instruction on the Intelligent Design hypothesis would necessarily foster entanglement with religious groups. Certainly, the *ideas* proposed by Intelligent Design theorists could be incorporated into standard biology textbooks without the need for significant administrative interaction with their religious sponsors. Thus, the entanglement prong of the *Lemon* test poses no barrier to religious instruction in public school science courses.

Intelligent Design advocates have argued that inclusion of the hypothesis in public school science curricula furthers the critical secular purpose of exposing students to potent criticism of standard scientific dogma, thus satisfying *Lemon's* second prong.¹⁶⁷ While it is true that exposure to the process of scientific peer review is a valid secular purpose of scientific education, it is also true that scientific critiques of Darwinian evolution can be presented without the religious trappings that accompany the Intelligent Design hypothesis. The supposed flaws of evolutionary theory are quite separate from a proposed supernatural resolution.¹⁶⁸ Thus, while the state may have a valid secular purpose in exposing students to the type of scientific criticism of Darwinist

165. See Paul L. Harris & Melissa A. Koenig, *Trust in Testimony: How Children Learn About Science and Religion*, 77 CHILD DEV. 505 (2006). See also Paul L. Harris, et al., *Germes and Angels: The Role of Testimony in Young Children's Ontology*, 9 DEVELOPMENTAL SCI. 76 (2006).

166. Obviously, "religion" often involves more than mere claims of supernatural intervention in the natural order. For one, religions often preach guidelines for action in the natural world in the form of moral rules. Thus, introducing students to the notion of supernatural agency is not tantamount to comprehensively teaching a given religion. However, supernatural agency is a uniquely religious concept and, therefore, to teach the interference of supernatural agents in the natural order is to teach a religious idea.

167. See, e.g., *Kitzmiller v. Dover Area Sch. Dist.*, 400 F. Supp. 2d 707, 762 (M.D. Pa. 2005).

168. In fact, much of the criticism leveled by Intelligent Design theorists has already been resolved by *naturalistic* modifications to the Theory of Evolution, rendering supernatural explanations unnecessary.

evolution that forms the basis of the Intelligent Design hypothesis, there is no secular justification for presenting the hypothesis' inference of supernatural agency. The Intelligent Design hypothesis thus fails the second prong of the *Lemon* test.

Additionally, the primary effect of teaching the Intelligent Design hypothesis in a public school science course is to advance religion. As mentioned above, the major difference between the Theory of Evolution and the Intelligent Design hypothesis is the latter's inference of supernatural agency, a religious notion. Because the Theory of Evolution is already taught in schools and because it is possible to present technical criticism of the Theory of Evolution without introducing an inference of supernatural agency, inclusion of the Intelligent Design hypothesis adds only one thing to the science curriculum: a religious belief. The Intelligent Design hypothesis therefore fails the primary effect prong of the *Lemon* test.

Under the endorsement test, the key inquiry is whether a reasonable, objective observer would interpret the inclusion of the Intelligent Design hypothesis in a public school science curriculum as a state endorsement of religion.¹⁶⁹ But what is the identity of the reasonable, objective observer of such a curricular maneuver? At the very least, students who are exposed to the Intelligent Design hypothesis as part of their coursework are direct observers of the school board's policy.¹⁷⁰ However, it may also be that members of the community at large are aware of the policy, and thus constitute part of the listening audience.¹⁷¹ If a reasonable, objective observer belonging to either group perceives government endorsement of a religious view, then the policy fails Justice O'Connor's test.

In evaluating whether a reasonable, objective student would infer state endorsement from a science curriculum that included the Intelligent Design hypothesis, the key is context. As was discussed in Section III.B.1, students tend to lend higher credence to information they are taught in hard science courses than they do in other courses. The material learned in the context of a science class is viewed as "factual" and "certain."¹⁷² Also, students tend to view their science teachers as authorities from whom this factual, certain information is to be

169. See *McCreary County v. ACLU*, 545 U.S. 844, 869 (2005).

170. In this sense, schoolchildren are analogous to "the members of the listening audience" mentioned in *Santa Fe Independent School District v. Doe*, 530 U.S. 290, 308 (2000).

171. In *Kitzmiller*, Judge Jones noted that the Dover School Board's distribution of a newsletter explaining their policy and public defense of their actions brought the community at large into the policy's audience. 400 F. Supp. 2d at 715-16.

172. Hofer & Pintrich, *supra* note 155, at 126.

learned.¹⁷³ A reasonable, objective student would, by virtue of these epistemological assumptions, presume that the state—in the form of the school district and the science instructors in its employ—endorses the accuracy of material included in the scientific curriculum. Thus, were a district to present the Intelligent Design hypothesis in science classes without a complementary presentation on the Theory of Evolution, a reasonable, objective student would almost certainly infer state endorsement of the hypothesis. However, because the Intelligent Design hypothesis is likely to be presented alongside its rival, the Theory of Evolution, it is less clear that the students would infer state endorsement of either causal-analytic system. The mere fact that competing theories are presented in tandem—implying that neither theory is incontrovertible¹⁷⁴—might counteract any message of endorsement inherent to the context of science.

Even if a reasonable, objective student would infer state endorsement of the Intelligent Design hypothesis by virtue of its inclusion in the science curriculum, it is questionable, for two reasons, whether such a student would view the Intelligent Design hypothesis as a religious notion. First, it is unclear whether the endorsement test is to be applied through the eyes of religious adherents or non-adherents.¹⁷⁵ This ambiguity could play an important role in applying the endorsement test to the Intelligent Design hypothesis. Religious students are far less likely to equate the Intelligent Design hypothesis, with all of its technical sophistication and abstract claims, with religious faith. To the faithful, Intelligent Design would seem a rather Spartan faith, lacking many features common to modern theologically-sophisticated religion (such as community, ritual, revelation, etc.). However, non-religious students—especially the atheists among them—are more likely to perceive the supernatural claims of the Intelligent Design hypothesis as religious in nature. Thus, whether the reasonable, objective observer infers state endorsement of the Intelligent Design hypothesis will likely depend on the religious persuasion of the observer. Second, it is questionable whether even the most reasonable and objective of elementary, middle,

173. *Id.*

174. From a scientific standpoint, this is certainly a fallacious message. However, the First Amendment does not necessarily require that schools accurately relay the scientific community's opinion to students.

175. Professor Tribe argues that, although Justice O'Connor implies, in *Lynch*, that the proper frame of reference is that of a non-adherent, her "analysis seemed to proceed from the perspective of an adherent." TRIBE, *supra* note 116, at 1292–93. Tribe further asserts that "in deciding whether a government practice would impermissibly convey a message of endorsement, one should adopt the perspective of a non-adherent; actions that reasonably offend non-adherents may seem so natural and proper to adherents as to blur into the background noise of society." *Id.*

or high school students is capable of appreciating the anthropological and legal rationale for defining religious beliefs as those founded on abstract notions of supernatural agency. In any case, if the reasonable, objective student is attributed this intellectual sophistication, then it is far less clear that such a student would naively infer state endorsement of an idea merely because it is presented within the context of a science class.

In sum, it is unclear whether a reasonable, objective student would infer state endorsement of the Intelligent Design hypothesis and simultaneously deem such a belief religious. Although students are highly likely to infer state endorsement of material presented in the context of a science course, it is possible that the hypothesis could be presented in such a way that minimizes or even eliminates entirely this message of endorsement. Also, it is questionable whether the student audience will detect a religious message in a presentation of the Intelligent Design hypothesis.¹⁷⁶ A similar analysis applies to reasonable, objective adult members of the community who, while more likely to perceive the Intelligent Design hypothesis as a religious notion, would be less likely to perceive state endorsement of the hypothesis.

Lastly, we consider the coercion test. As was discussed above, both religious and scientific systems seek to explain the causes of natural phenomena. It is fundamentally a scientific exercise to propose a causal process that conforms to the rigors of methodological naturalism. Similarly, it is fundamentally a religious exercise to attribute causation to a supernatural agent, especially in the context of creation. Instruction on the Intelligent Design hypothesis in a science course would result in obvious coercion if students are required to derive, apply, or argue for the hypothesis on their class work. This is especially true if grades are determined on the basis of whether students obtained the “correct” answer consistent with the Intelligent Design causal-analytic system, which would necessarily involve the attribution of causation to a supernatural agent. But, even if students are not required to apply the Intelligent Design hypothesis on written class work, any presentation of the hypothesis would require students to sit quietly while observing the teacher engage in the religious exercise of inferring a supernatural creator from evidence found in the natural universe. Such a scenario is equivalent to the plight of the graduating students in *Lee v. Weisman*,¹⁷⁷

176. This observation results from the limits placed on the analysis of this paper, which excludes the religious pedigree of Intelligent Design hypothesis and the affiliations of its proponents from consideration in the interest of evaluating a particular hypothetical situation. If this information is made available to objective, reasonable observers, it is far more likely that they would detect a religious message. In fact, the *Kitzmiller* opinion found a violation of the endorsement test primarily on these grounds. See 400 F. Supp. 2d at 708.

177. In fact, the policy in this hypothetical case would be even more coercive than the prayer

and would thus violate the Establishment Clause's "minimum guarantee" against coercion.

In summary, instruction on the Intelligent Design hypothesis in public school science courses fails at least two of the three tests that appear in the Supreme Court's Establishment Clause jurisprudence and therefore may not be presented without violating the First Amendment. The hypothesis' failure of these tests, however, is quite dependent on the specific epistemological perception of scientific knowledge and pedagogical structure of science courses. When viewed under the *Lemon* and coercion tests, the hypothesis fails because of the parallel structure of scientific and religious hypotheses; because science and religion, as causal-analytic systems, both seek causes to natural phenomena, the addition of supernatural agency to the scientific curriculum leads to instruction in a religious hypothesis. Given the particular assumptions of this paper, analysis of the Intelligent Design hypothesis under the endorsement test yields no clear result. Although the high epistemological truth-value students assign information gained in science courses and the heightened deference students are likely to give science instructors lead to a high probability that students would infer state endorsement of the hypothesis when presented in a science course, such inferences would likely be attenuated by complementary instruction on the Theory of Evolution. Because these considerations are unique to the hard sciences, however, a similar analysis performed on courses in the social sciences is likely to yield different constitutional conclusions.

3. *Religion in the social sciences*

While the Supreme Court has consistently found religion-infused public school science curricula to be in violation of the Establishment Clause, the Court has implied on at least two occasions that religious topics could be taught in the context of history courses without offending the First Amendment.¹⁷⁸ The reason for this intuitive distinction between the physical and social sciences' respective treatments of religion becomes apparent when religious instruction in the context of a social

in *Lee v. Weisman*, as attendance in science classes is far less voluntary than is attendance at a graduation ceremony. See 505 U.S. 577 (1992).

178. See *Abington Sch. Dist. v. Schempp*, 374 U.S. 203, 225 (1963) (stating that "[i]t certainly may be said that the Bible is worthy of study for its literary and historic qualities. Nothing we have said here indicates that such study of the Bible or of religion, when presented objectively as part of a secular program of education, may not be effected consistently with the First Amendment."). See also *Epperson v. Arkansas*, 393 U.S. 97, 106 (1968) (noting that "study of religions and of the Bible from a literary and historic viewpoint, presented objectively as part of a secular program of education, need not collide with the First Amendment's prohibition . . .").

science course is analyzed under the three Establishment Clause tests. The following analysis assumes that instruction in the social sciences adheres to the definition of the social sciences described in Section IV.B.1—namely, courses in the social sciences are those that focus on the behavior of human beings and in which the discussion of religious causal-analytic systems may be limited to the role such systems play in motivating individuals or groups.

Instruction on religious concepts in a social sciences course is first analyzed under the rubric of the *Lemon* test. As an initial matter, the entanglement prong presents no problem. The state is perfectly capable of accessing and including within their educational materials information about various religious groups without the aid or intrusion of the groups themselves. Secondly, there is a clear secular purpose to educating students of the social sciences on the important influence religious doctrine and organizations have wielded—and continue to wield—on human society. As Justice Clark noted in *Schempp*, “[i]t might well be said that one’s education is not complete without a study of . . . the history of religion and its relationship to the advancement of civilization.”¹⁷⁹

The most pertinent question under the *Lemon* test, then, is whether the discussion of religious doctrine in the context of a social sciences course would have a principle or primary effect that either advances or inhibits religion. Obviously, religious doctrine could be presented in such a way in a social sciences course that either advantages or inhibits religion. However, neither effect *inevitably* flows from the study of religious material in the context of the social sciences. While religious notions taught as causal-analytic systems in the hard sciences—due to the structural similarities between scientific and religious systems and the students’ general epistemological perception that scientific claims are truthful—inherently advance religion, the social sciences allow room for objective, even-handed evaluation of religious notions and their effects on human behavior as well as an acknowledgment that such beliefs are subjective and not necessarily indicative of metaphysical truths. This is true because the social sciences often employ human beliefs as merely one causal factor affecting human behavior. Students in a history course, for example, might learn that Christian beliefs served as justification for the horrors of the Spanish Inquisition as well as an impetus driving the American abolitionist movement. Such an objective presentation would eliminate any advantages or disadvantages to the religion under scrutiny. A presentation of religion that conforms to the Supreme Court’s

179. *Schempp*, 374 U.S. at 225.

condition, “presented objectively as part of a secular program of education,” will pass this key prong of the *Lemon* test; treatments of religion that stray from objectivity, towards either an unduly negative or positive bent, would fail to meet the requirements of the Establishment Clause. In any case, the key observation is that the social sciences, in contrast to the hard sciences, allow for objective, secular treatment of religious beliefs. Therefore, the presentation of religious ideas in the context of a social sciences course would not necessarily have a principle or primary effect of advancing or inhibiting religion.

We next consider Justice O’Connor’s endorsement test. The analysis under this test is similar to that performed under the *Lemon* test. As mentioned above, the mere inclusion of religious material in the social sciences curriculum need not create any entanglement problems. The remaining question, then, is whether instruction about religion within a course on the social sciences would necessarily be read as state endorsement of religious ideas. There are several reasons to believe that a reasonable, objective observer, in the form of either a typical student or member of the community, would not presume state endorsement of religious notions merely by virtue of their inclusion in the social sciences curriculum. First of all, observers may very well infer state endorsement of the truth of the material presented to them in the context of the social sciences. However, the claims of truth regarding religious material as presented in the social sciences, by definition, need not be equivalent to claims of the truth of religious doctrine or accuracy of the religious causal-analytic system; rather, the relevant truth-claim in the social sciences may be that certain beliefs are (or were) held by certain people, and that these beliefs in some way influenced their behavior. It is state endorsement of this “upper tier” claim about the causal effects of subjective religious beliefs on the believers, and not the truth of the religious claims themselves, that, in the context of the social sciences, a reasonable, objective observer would likely perceive. Second, research shows that students typically view material taught in the social sciences, as opposed to the hard sciences, as less dependent on authority for validation. Students are therefore less likely to seek authority for—and thus less likely to perceive state endorsement of—claims presented in the context of the social sciences than they are for claims presented in a course on the hard sciences. For these reasons, the inclusion of religious material in the social sciences curricula need not violate the endorsement test.

Finally, we come to the coercion test of *Lee v. Weisman*. It was argued above that instruction on religious notions in the context of the hard sciences violated the Establishment Clause’s prohibition of

coercion. This conclusion was based on the rationale that, because of the structural similarity in scientific and religious systems, the infusion of supernatural agency into an otherwise scientific causal-analytic system resulted in a religious system. Social science courses, on the other hand, need not require students to participate in or observe religious exercises. Religion, in the context of the social sciences, may be presented as a historical fact and as a force motivating human behavior. Students of history or sociology need not engage in the religious practice of attributing causation for observed phenomena to the intervention of a supernatural agent; rather, students need only understand how belief in a supernatural agent might have affected the human subject of their study. It was argued in Section III.A.4 that the former exercise is fundamentally religious in nature. However, there is no reason to believe that the latter process is uniquely religious. Thus, the social sciences allow for treatment of religious material in a manner that does not coerce religious exercise. Nor is it necessary for the purposes of the social sciences to expose students to religious exercise in a manner analogous to the controversial prayer in *Lee v. Weisman*. Social science teachers, in the process of introducing the religious beliefs of the individual or group under study, need not perform the religious act of inferring supernatural agency from empirical data or claiming that supernatural agency is a valid means for understanding natural phenomena; rather, they may simply present the relevant ideas as the beliefs of a group external to the students who comprise the class. The presentation of religious ideas within the context of a social science course can therefore be accomplished without transgressing the Establishment Clause's "minimum guarantee."

In summary, there is no reason to believe that religion could not be presented in social science courses without violating the Establishment Clause. Of course, it is certainly possible to infuse a social science course with an unconstitutional treatment of religion. For example, a history instructor could, when describing the influence of Christianity on the emancipation movement, improperly insist that the North's victory in the American Civil War was due to God's direct intervention on behalf of Southern slaves.¹⁸⁰ However, in contrast to the hard sciences, there is no inherent quality of the social sciences which renders instruction on religious material within their context a fundamentally religious practice. While religion-infused social science curricula must therefore be evaluated on a case-by-case basis, it is clear that the public school

180. That such a claim would be constitutionally improper does not imply that a complementary moral claim—that the North's temperament towards slavery was morally superior—would run afoul of the Establishment Clause.

curriculum is not entirely off-limits to religious material. It is feasible that the Intelligent Design hypothesis could be presented in a social science course—perhaps a history course that examines major cultural phenomena in twenty-first century America—without violating the First Amendment.

4. *Religion in the humanities*

In addition to the social sciences, Justices Clark and Fortas have suggested that instruction on religious notions might be permissible in the context of humanities classes (specifically, literature and comparative religion).¹⁸¹ An evaluation of religious beliefs as taught within the context of the humanities involves considerations quite distinct from those surrounding religious instruction within the sciences. On the one hand, students view knowledge gained in the humanities as even less authoritative than that presented in the context of the social sciences.¹⁸² Thus, students are unlikely to infer state endorsement of religious beliefs presented within the context of the humanities and, therefore, the presentation of religious ideas in humanities courses would be expected to pass Justice O'Connor's endorsement test. On the other hand, the treatment of causal-analytic systems in the humanities is more ambiguous than in the sciences. The humanities, unlike the social sciences, do not necessarily treat causal-analytic belief systems as merely a relevant characteristic of the human subjects of study. It was the peculiar treatment of causal-analytic systems in the social sciences that was shown to render the study of religious ideas within their context permissible under the *Lemon* and coercion tests. The key question, then, is whether religious ideas may be presented in humanities courses in a way that neither has a primary effect of advancing religion nor improperly coerces respect for religious exercise. On both of these counts, the specific nature of the academic discipline is likely to be determinative. We briefly explore the application of the *Lemon* and coercion tests to the presentation of religious beliefs in courses on comparative religion, literature, and philosophy.

In *Schempp*, Justice Clark implied that instruction on religious topics might be permissible in the context of the comparative study of religions.¹⁸³ While comparative religion is certainly a study of the beliefs

181. *Epperson*, 393 U.S. at 106; *Schempp*, 374 U.S. at 225.

182. See Michael B. Paulsen & Charles T. Wells, *Domain Differences in the Epistemological Beliefs of College Students*, 39 RES. IN HIGHER EDU. 365, 372–75 (1998).

183. *Schempp*, 374 U.S. at 225 (stating that “In addition, it might well be said that one’s education is not complete without a study of comparative religion. . . . Nothing we have said here

and behavior of human beings, and is therefore similar to social sciences, the comparative study of religion does not necessarily explore belief systems in the interest of understanding the motivations for non-religious human *action*. Rather, comparative religion courses focus more closely on religious *belief systems* for their own sake. What, then, explains Justice Clark's intuition that religious material might be presented as part of a comparative religion course without offending the First Amendment? There are two possible responses. First, it could be that the nature of comparative religion courses is such that the causal-analytic systems under study are attributed to groups external to and distinct from the group of students. In this sense, comparative religion courses are similar to courses in the social sciences in which students study groups with whom they are not expected to identify, and are quite different from courses in the hard sciences in which students are clearly expected to act like scientists.¹⁸⁴ Such an externalization of the causal-analytic beliefs might prove sufficient to eliminate the threat of coercion. Second, comparative religion courses come with a ready-made anti-establishment feature: namely, they provide such a wide survey and critical analysis of religions (and, perhaps, non-religions or anti-religions) that they convey no advantage or disadvantage to, and imply no state endorsement of, particular religions or religion in general. A balanced, objective survey of human religious beliefs might, by its very nature, simply avoid these Establishment Clause pitfalls.

Literature is yet another domain in which religious material might be presented in public schools. Both Justices Clark and Fortas have suggested that religious texts, including the Christian Bible, might permissibly be studied in public schools for its literary qualities.¹⁸⁵ Whether such a presentation complies with the Establishment Clause likely depends on the particular manner in which literature is evaluated in a given course. Donald lists thirteen distinct methods of literary criticism that might be applied to evaluate a text, including (among others) moral and philosophical criticism, historical criticism, rhetorical criticism, formalism, and structuralism.¹⁸⁶ An evaluation of a religious text under the rubric of moral and philosophical criticism, which focuses on the truth and usefulness of a work's substantive ideas, would almost certainly violate the Establishment Clause. However, an analysis of a

indicates that such study of the Bible or of religion, when presented objectively as part of a secular program of education, may not be effected consistently with the First Amendment.”).

184. Duschl & Hamilton, *supra* note 159, at 5 (implying that a goal of scientific education should be to encourage students to “do science,” and not simply learn “about science”).

185. *Epperson*, 393 U.S. at 106; *Schempp*, 374 U.S. at 225.

186. DONALD, *supra* note 159, at 248–49.

religious text by means of historical and rhetorical criticism, which emphasizes the relation of the text to historical events, or under the lenses of formalism and structuralism, which evaluates the grammatical, syntactic and structural merits of a text, could potentially satisfy the *Lemon* and coercion tests. The relevant distinction is in the way the various methods of criticism treat the substantive ideas, including any causal-analytic claims, presented within a literary work. Where moral and philosophical criticism is primarily concerned with the merits of a text's substantive claims, the other methods remain indifferent to the truth of a given work's substantive ideas. Literary analysis of a religious text that maintains indifference towards the text's substantive claims would likely pass both the coercion and *Lemon* tests. Such a presentation would not coerce students to practice religion because the literary and historical analysis of a religious text is not necessarily a religious endeavor. And, the secular purposes of such study—including instructing students on the historical relevance of religious texts as well as their influence on literature—overwhelm any benefit or detriment that would accrue to religion. However, the presentation of a religious text in public schools under any circumstances carries a high risk of abuse. The balance between secular purposes and undue benefit to religion is, in this case, a precarious one. If the Bible or another religious text is to be presented in public schools, it must be treated as merely a work of literature, written by mortal men. Any implication that the work possesses special significance (aside from its influence on history, literature, art, etc.) would convey an undue advantage to religion, resulting in an Establishment Clause violation.

Finally, we consider the discipline of philosophy. Unlike history, comparative religion, and literature, the Supreme Court has never specifically implied that religious notions could be presented in the context of a philosophy course. However, philosophy is a domain in which religious ideas would be expected to arise in an ambiguous epistemological and metaphysical context and, therefore, presents an interesting case for application of the principles elaborated in this paper. For example, a comprehensive study of western philosophy would almost certainly include the works of pluralists, such as René Descartes, who propose the existence of substances external to the natural realm. Typically, these supernatural substances take the form of supernatural agents such as God or the soul. Under the supernatural agency definition, pluralist philosophy would be identified as religious, despite its abstract and sophisticated nature.¹⁸⁷ Also, it could be that the Intelligent Design

187. In this sense, the pluralist philosophy is highly analogous to the Intelligent Design hypothesis.

hypothesis finds an academic home in philosophy. Should these ideas be excluded from a public school education in philosophy? The answer is unclear from the perspectives of both epistemological perception and pedagogical structure. More research is needed to determine how students perceive knowledge gained in the context of philosophy courses, but at least one study has shown that scholars (but not necessarily students) view philosophy, when compared to a set of thirty-six academic subjects, as most similar to the study of history.¹⁸⁸ Assuming their perception of a subject tracks that of university-level scholars, students might therefore view knowledge gained in the context of a philosophy course as epistemologically equivalent to that obtained in courses on the social sciences. This suggests that philosophy is an area in which the risk of inferred state endorsement is low. In addition to students' epistemological perception of the material presented in a philosophy course, the manner in which causal-analytic systems are presented may allow for the inclusion of religious material in philosophy courses. The nature of the subject matter one would expect to be taught in a philosophy course allows for both hard science-type and social science-type treatment of causal-analytic systems. On the one hand, philosophy courses might present the notions of dualism and Intelligent Design as legitimate causal-analytic systems in the science-type sense (i.e., as a legitimate system with which to understand observed phenomena). On the other hand, it may be that philosophy classes (at least, on the level at which they are most likely to be taught in pre-college education) function more like social science courses, merely enumerating and exploring a history of philosophical thought rather than presenting particular philosophical ideas as useful or "true" causal-analytic systems. The constitutionality of teaching pluralism would therefore depend on the manner in which the topic is presented in a philosophy course.

V. DOES TEACHING THE THEORY OF EVOLUTION VIOLATE THE ESTABLISHMENT CLAUSE?

While it is clear that teaching the Intelligent Design hypothesis in science courses violates the Establishment Clause, it has been suggested that public school instruction on the Theory of Evolution also violates the Establishment Clause. Two distinct arguments have been proposed in

188. Anthony Biglan, *The Characteristics of Subject Matter in Different Academic Areas*, 57 J. OF APPLIED PSYCHOL. 195, 195–203 (1973). The similarity was judged along three dimensions: "(a) existence of a paradigm, (b) concern with application, and (c) concern with life systems." *Id.* at 195.

this regard. First, it has been asserted that the Theory of Evolution has attained the status of a religious belief,¹⁸⁹ and thus public school instruction on neo-Darwinist principles represents a straight-forward violation of the Establishment Clause. However, the Darwinism-as-religion argument relies on a rather abstract, liberal definition of religion that is not generally accepted by the anthropological community. Such an understanding is certainly inconsistent with legal definitions of religion, which view non-theistic religion as a rare exception to the general equation of religion and theism.¹⁹⁰ While two Supreme Court opinions have implied the possibility that certain non-theistic systems might qualify as religions,¹⁹¹ the Theory of Evolution almost certainly amounts to an “essentially . . . philosophical view” and, therefore, is not entitled to legal status as a non-theistic religious belief.¹⁹²

Another argument proposes that because the Theory of Evolution directly contradicts religious claims, it is a violation of constitutionally-mandated neutrality towards religion to instruct students on Darwinism without including complementary material on the religious beliefs that the theory contradicts.¹⁹³ If the Establishment Clause prohibits teaching these religious views, say the proponents of this theory, then Darwinism must be excluded as well.¹⁹⁴ In a general sense, the premise of this claim is incorrect: the Theory of Evolution need not contradict the general religious claim that supernatural agents cause certain natural phenomena. The principle of methodological naturalism that underlies science does not equate to the strong metaphysical claim that natural causes are the only causes that exist;¹⁹⁵ rather, methodological naturalism represents the weaker claim that science should merely limit its search for causal mechanisms to those found within the natural world. Under this view, a scientist would admit that supernatural causes may, in fact, exist, but insist that speculation about such causes is simply not the province of science. In other words, because the principle of methodological naturalism falls short of the claim that science is the ultimate and exclusive source for metaphysical truth, an understanding of science based on methodological naturalism allows room for the Theory of

189. See generally MARY MIDGLEY, *EVOLUTION AS A RELIGION* (revised ed. 2002).

190. See discussion *supra* Part III.A.

191. See discussion *supra* Part III.A.2.

192. *United States v. Seeger*, 380 U.S. 163, 165 (1965).

193. See, e.g., Timothy A. Crater et al., *Suggested Findings of Fact and Conclusions of Law Concerning Kansas Science Education Standards* 56–57 (2005), <http://www.kansasscience2005.com/Findings%20of%20fact%20final.pdf> (arguing that Kansas state science standards which defined science as a naturalistic enterprise violate government neutrality towards religion).

194. *Id.*

195. Such a claim is the essence of *ontological*—as opposed to *methodological*—naturalism.

Evolution to coexist with religious causal-analytic systems.

That said, it is true that the historical claims of the Theory of Evolution are inconsistent with the doctrine of some specific faiths. Thus, it would seem that teaching evolution in the public schools violates *Lemon's* prohibition of policies that either advance *or inhibit* religion. However, the Supreme Court has consistently applied a preference for the secular curriculum when it has come into conflict with religious doctrine. This preference is based on the observation that, although many secular areas of study contradict specific theological claims, such contradiction is not the primary effect of secular education. For instance, in *Edwards v. Aguillard*, the Court struck down a balanced-treatment statute that would have required Louisiana schools to teach creationism if the Theory of Evolution was presented.¹⁹⁶ The balanced-treatment legislation was trumpeted by its proponents as a paragon of church-state neutrality.¹⁹⁷ However, the Court disagreed, finding no secular purpose and striking down the legislation as a violation of the Establishment Clause.¹⁹⁸ *Edwards* thus indicates that the Establishment Clause brooks no instruction on religious beliefs in science courses under the pretense of academic neutrality, but it does not answer whether instruction on scientific theories contradictory to religious doctrine runs afoul of the Establishment Clause. That answer was given in *Epperson*, in which the Court unequivocally stated that the First Amendment neither requires nor even *allows* the omission of scientific material from the public school science curriculum on the ground that the material conflicts with religious doctrine.¹⁹⁹ If evolution cannot be removed from the classroom for religious reasons without affecting an unconstitutional establishment, then it can hardly be said that instruction on evolutionary theory amounts to an establishment of religion. Despite the fact that the Theory of Evolution contradicts the historical claims of many religious faiths, the Court has clearly implied that the theory's inclusion in public school curricula does not amount to an unconstitutional establishment of religion.

196. *Edwards v. Aguillard*, 482 U.S. 578, 582 (1987).

197. *Id.* at 619–26.

198. *Id.* at 595–96.

199. *Epperson v. Arkansas*, 393 U.S. 97, 106–07 (1968) (stating that the First Amendment “forbids alike the preference of a religious doctrine or the prohibition of theory which is deemed antagonistic to a particular dogma”); *see also* *Joseph Burstyn, Inc. v. Wilson*, 343 U.S. 495, 505 (1952) (insisting that “the state has no legitimate interest in protecting any or all religions from views distasteful to them . . .”).

VI. CONCLUSION

This paper has argued that while instruction on the Intelligent Design hypothesis in a public school science-type curriculum would violate the Establishment Clause, it is possible to present religious ideas in public schools without transgressing the First Amendment. In developing this argument, two important concepts were proposed. First, although comprehensively cataloguing the range of beliefs that qualify as religious under the First Amendment is likely an impossible task, a useful test that defines religious ideas as those that invoke supernatural agency to explain observed phenomena was proposed. Under this test, the Intelligent Design hypothesis was shown to qualify as a religious notion. Second, it was shown that the various academic domains differ significantly in their treatment of causal-analytic systems as well as their perceived epistemological character. The particular characteristics of the hard sciences make courses in these subjects ill-suited for constitutionally permissible instruction on religious ideas. However, as implied by Justices Fortas and Clark, the social sciences and humanities offer a more suitable pedagogical environment for the presentation of religious beliefs in a manner consistent with the strictures of the Establishment Clause. Thus, while the Intelligent Design theory may not be taught as a scientific theory, similarly religious ideas could be presented as part of the social sciences or humanities curriculum.

It is important to note that the analysis in this paper proceeded irrespective of the intellectual pedigree of the Intelligent Design hypothesis as well as the motivations or religious affiliations of Intelligent Design advocates. Although the motivations of policymakers and the known history of an advocacy movement are clearly relevant to the evaluation of a given policy under the Establishment Clause, by ignoring these features of the Intelligent Design hypothesis, it is possible to craft an analysis of more general application. The Intelligent Design hypothesis is similar to many ideas, such as pluralist metaphysics, that are of undeniable academic interest. Understanding how the *substance* of the Intelligent Design hypothesis interacts with the Establishment Clause thus gives us a framework to evaluate the establishment consequences of public school instruction on analogous concepts that lack clear ties to religious organizations or advocacy groups. Under the framework established in this paper, the presentation of such concepts would likely be permissible in courses on the social sciences and humanities, but not in the hard sciences. While the former allows for secular, objective study of religious ideas, the latter presents the risk of state indoctrination—a risk the Establishment Clause will not tolerate.