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Pasha Razi

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# Effect of Intelligent Design, Evolution, and Creationism on Critical Thinking

Pasha Razi

## I. Introduction

The purpose of this paper is to discuss evolution, creationism, and intelligent design in the context of the public schools. The current jurisprudence prohibits creationism and intelligent design from being taught as science in public schools. While this prohibition was compelled by the Establishment Clause, the question that is most contested in the later cases is whether intelligent design is a religion or science. Ultimately, *Kitzmiller v. Dover Area School District* found intelligent design to be a religion and is the last court to opine on the issue. It seems that the courts are skeptical that intelligent design is wholly distinct from creationism.<sup>1</sup>

I plan on challenging the current jurisprudence by taking a deeper look at the effect each theory of creation (evolution, creationism, and intelligent design) has on our youth. While analyzing each theory, I keep in mind the main goals of cognitive development, the furthering of mankind through science, and the emotional health of our youth. Intelligent design, although a flawed theory, should not be categorized as a religion and should be available as a non-conclusive theory to facilitate the scientific method and critical thinking. The ultimate goal of furthering mankind through science is better achieved through a diverse body of information available to our youth. Removing the stigma in the scientific community associated with believing in an intelligent design to the universe could encourage more bright students to be interested in science.

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<sup>1</sup> *Kitzmiller v. Dover Area School District*, 400 F.Supp.2d 707 (M.D. Pa. 2005).

## Part I. Theories of the Origins of Life

Before discussing how the courts ruled on creationism and intelligent design, it is important to understand each theory as they relate to the origins of life. Each theory of origin has endless interpretations, each with enough difference to make them their own distinct theory. The following explanations are of the core concepts of each theory as they are accepted by the majority of their followers.

### A. Creationism (Young Earth Creationism)

Reviewing the most common understanding of creationism involves the literal interpretation of the Bible's book of Genesis. Genesis, translated from Greek to actually mean “the beginning,” provides the story that many people believe describes the beginnings of human life: “In the beginning, God created the heavens and the earth.”<sup>2</sup> Strict creationists believe this story as a fact - perhaps not proven scientifically, but to those believers, their faith fills in any gaps. Under this origin of life theory, the story is, as told in Genesis, that God created the earth and all life forms in a traditional twenty-four hours per day, six-day period (resting on the seventh day).<sup>3</sup>

This view of life's origin leads to a belief that the earth has existed for only a short period of time - less than ten thousand years (compared to alternative views that the earth has existed for billions of years). Those who hold this view are often accordingly dubbed “young-Earth” creationists.<sup>4</sup> Strict creationists, then, reject any notion that life has evolved or that life forms have changed over time in any significant way. In believing a literal interpretation of Genesis, strict creationists believe that the very first humans and all animals, were made - in their current

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<sup>2</sup> *Genesis* 1:1.

<sup>3</sup> *Id.*

<sup>4</sup> *McLean v. Arkansas*, 529 F.Supp. 1267 (E.D. Ark. 1982).

form, by God. Animals, plant life, and humans were made originally in the same form in which they exist today and only God controls any changes - not effects of science or natural conditions.

Although this belief is most often associated with a literal interpretation of Genesis, this belief of creationism is not limited to a belief in the Christian or Jewish God. The belief encompasses all beliefs that life appeared from nothing as an “act of creation” (ex nihilo) or that life - and some sense of order - emerged from what had previously been only chaos (demiurge).<sup>5</sup> Fundamental to any such views, however, is that a supreme being, a higher power, or a deity of some sort, guided this creation or emergence. This essential belief in a supreme being guides and unites creationists.<sup>6</sup> However, over time in the twentieth century, with the increasing awareness and discussion of evolution and scientific explanations for life's origin and changes to life forms over time, strict creationists found themselves losing ground in establishing the content of the material that would be taught to their children.

### **B. Intelligent Design (Old earth creationist)**

In an effort to accept mounting scientific proof with respect to the world and the universe around them, without abandoning their faith, a new sect of creationism emerged. This sect has gone by different names such as old earth creationism, intelligent design, or theistic evolution.<sup>7</sup> They are not used interchangeably as each has its own differences as to how involved the supreme creator is in the universe. In this paper, I will however, refer to all these variations as “intelligent design.” Intelligent design keeps the creationist notion that nature, and the entire universe, could not have come into existence without a supreme being as its ultimate cause. The theory accepts that the earth and the universe were created far more than just a few thousand years ago as has been the traditional belief among creationists. Old earth creationism posits that

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<sup>5</sup> *Id.* at 1255, 1266.

<sup>6</sup> *Id.*

<sup>7</sup> *Kitzmiller v. Dover Area School District*, 400 F.Supp.2d 753 (M.D. Pa. 2005).

the earth is approximately four or five billion years old and the universe approximately ten to twenty billion years old.<sup>8</sup>

Intelligent design theorists, however, maintain that unguided evolution is not capable of producing the features we see in our universe. This is the theory's main difference between the creationism and scientific theories like evolution. This premise is based on the fact that the universe and the creation of life is too complex to be achieved through a random process such as natural selection.<sup>9</sup> The theory relies on non-material forces, such as agents, that can be causes for physical events and other entities.<sup>10</sup> Essentially, intelligent design accepts evolution and all other contentions that refute creationism. They accept that living systems need to be robust to be able to adapt to the constantly changing environment. However, they believe that God incorporated this capacity for robustness in living systems to match the continuously changing environment by including genetic diversity in living systems and by allowing further modification of this diversity through mutations.<sup>11</sup>

Intelligent design theorists opine that they are often labeled as old earth creationists in an attempt to discredit or disenfranchise their beliefs by relating it to creationism.<sup>12</sup> In reality, this theory has more in common with evolution (as it wholly accepts it) than with creationism. One could say that intelligent design differs from evolution simply on a philosophical note as the origins of our universe are still to be proven.

### **C. Evolution**

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<sup>8</sup> Robert C. Newman, *Progressive Creationism*, in *THREE VIEWS ON CREATION AND EVOLUTION* (John Mark Reynolds et al. eds., 1999).

<sup>9</sup> Stephen C. Meyer, *Not by chance: From bacterial propulsion systems to human DNA, evidence of intelligent design is everywhere*, NATIONAL POST, Dec. 1, 2005.

<sup>10</sup> Walter L. Bradley, *Response to Robert C. Newman*, in *THREE VIEWS ON CREATION AND EVOLUTION* (John Mark Reynolds et al. eds., 1999).

<sup>11</sup> *Id.*

<sup>12</sup> Meyer, *supra* 9.

Like creationism, “evolution” can mean different things. Sometimes it is used as a synonym for “Darwinism,” referring to both the theory defended by Charles Darwin in his *The Origin of Species*<sup>13</sup> and the subsequent refinements of Darwin's theory. Arguing from what he observed occurs when domestic breeders engage in selection, Darwin offered natural selection as the engine by which species adapt, survive, acquire new characteristics, and pass them on to their offspring:

“Owing to this struggle for life, any variation, however slight and from whatever cause proceeding, if they be in any degree profitable to an individual of any species, in its infinitely complex relations to other organic beings and to external nature, will tend to the preservation of that individual, and will generally be inherited by the offspring. The offspring, also, will thus have a better chance of surviving, for, of the many individuals of any species which are periodically born, but a small number can survive. I have called this principle, by which each slight variation, if useful, is preserved by the term of Natural Selection, in order to mark its relation to man's power of selection. We have seen that man by selection can certainly produce great results, and can adapt organic beings to his own uses, through the accumulation of slight but useful variations, given to him by the hand of Nature. But Natural Selection, as we shall hereafter see, is a power incessantly ready for action, and is as immeasurably superior to man's feeble efforts, as the works of Nature are to those of Art.”<sup>14</sup>

Darwin's theory is often referred to as *microevolution*.<sup>15</sup> This should be distinguished from *macroevolution*, the view that the complex diversity of living things in our world is the result of one bacterial cell evolving through small, incremental, and beneficial mutations over eons.<sup>16</sup> That is, all living beings share a common ancestor, giving the appearance of being designed, though in reality engineered by the unintelligent forces of natural selection.<sup>17</sup> Richard Dawkins states that “natural selection is the blind watchmaker, blind because it does not see ahead, does not plan consequences, has no purpose in view. Yet the living results of natural

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<sup>13</sup> Charles Darwin, ON THE ORIGIN OF THE SPECIES: A FACSIMILE OF THE FIRST EDITION (1967).

<sup>14</sup> *Id.* at 61.

<sup>15</sup> Newman, *supra* 8.

<sup>16</sup> *Id.*

<sup>17</sup> *Id.*

selection overwhelmingly impress us with the appearance of design as if by a master watchmaker, impress us with the illusion of design and planning.”<sup>18</sup>

Francis Crick, discoverer, with James D. Watson, of the molecular structure of deoxyribonucleic acid (DNA), presents with exceptional clarity the materialism of the evolutionary paradigm and its implications:

“In addition to our knowledge of basic chemistry and physics, the earth sciences (such as geology) and cosmic science (astronomy and cosmology) have developed pictures of our world and our universe that are quite different from those common when the traditional religions were founded. The modern picture of the universe, and how it developed in time, forms an essential background to our present knowledge of biology. That knowledge has been completely transformed in the last 150 years. Until Charles Darwin and Alfred Wallace independently hit on the basic mechanism driving biological evolution—the process of natural selection—the “Argument from Design” appeared unanswerable .... We now know that all living things, from bacteria to ourselves, are closely related at the biochemical level .... A modern neurobiologist sees no need for the religious concept of a soul to explain the behavior of humans and other animals .... Many educated people, especially in the Western world, ... share the belief that the soul is a metaphor and that there is no personal life before conception or after death.”<sup>19</sup>

This notion is referred to as naturalistic evolution, the view that the entire universe and all the entities in it can be accounted for by strictly material processes without resorting to any designer, creator, or non-material entity or agent as an explanation for either any aspect of the natural universe or the universe as a whole.<sup>20</sup>

## **II. Establishment Clause Constraints on Public School Curriculum**

### **A. No Religious Devotional Exercises**

While there is no national curriculum in the United States, states, school districts and national associations do require or recommend that certain standards be used to guide school instruction. In addition, federal law mandates that state standards be developed and improved in order for states to receive federal assistance. The U.S. Department of Education, International

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<sup>18</sup> Richard Dawkins, *THE BLIND WATCHMAKER* 5-6 (1986).

<sup>19</sup> Francis Crick, *THE ASTONISHING HYPOTHESIS: THE SCIENTIFIC SEARCH FOR THE SOUL* 5-7 (1994).

<sup>20</sup> *Id.*

Affairs Office posted a directory of national subject benchmark standards which outlines the benchmark standards for a variety of subjects developed by national professional associations and compiled by the federally funded Mid-Continent Regional Education Laboratory (MCREL).<sup>21</sup> Traditionally, the core subjects are mathematics and language arts and literacy, which are frequently the only subjects on standardized tests. MCREL, however, provides suggested benchmarks for teaching science and “understanding biological evolution and the diversity of life.”<sup>22</sup> Interestingly enough, the concept of natural selection is not introduced until level IV (Grade 9-12). Prior to high school, according to MCREL, only a basic understanding of biological evolution is required. This includes classifying living things, understanding a unity among living things even though they look different, and the basic idea that certain biological adaptations enhance reproductive success.<sup>23</sup>

Restrictions on the public school curriculum have come from a number of Supreme Court decisions. Through the mid-twentieth century, it was common to begin the public school day with Bible reading and prayer. In 1963, *Abington School Dist. v. Schempp*,<sup>24</sup> addressed the Establishment Clause issue in the context of state action requiring that schools begin each day with readings from the Bible. Maryland and Pennsylvania adopted similar statutes requiring schools to read verses from the Holy Bible, without comment, at the opening of each public school on each school day. Both states allowed any child to be excused from such Bible reading, or attending such Bible reading, upon the written request of his parent or guardian.<sup>25</sup> The Court rejected the contention that the Establishment Clause forbids only governmental preference of

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<sup>21</sup> U.S. DEPARTMENT OF EDUCATION INTERNATIONAL STRATEGY 2012–16, *Succeeding Globally Through International Education and Engagement* (2012), available at <http://www2.ed.gov/about/inits/ed/international/international-strategy-2012-16.pdf>.

<sup>22</sup> *Id.*

<sup>23</sup> *Id.* (While this may sound like natural selection, it is merely an introduction on how some species adapt to survive and not taught as the cause of present day life form.).

<sup>24</sup> *Abington School Dist. v. Schempp*, 374 U.S. 203 (1963).

<sup>25</sup> *Id.*



one religion over another by citing to *Everson v. Board of Education*, “(n)either a state nor the Federal Government can set up a church. Neither can pass laws which aid one religion, aid all religions, or prefer one religion over another.”<sup>26</sup> Further citing *Everson*, the court recounted that the First Amendment requires the state to be a neutral in its relations with groups of religious believers and non-believers; it does not require the state to be their adversary.<sup>27</sup>

After applying the Establishment Clause principles to the cases at bar, the court found that the States are requiring the selection and reading at the opening of the school day of verses from the Holy Bible and the recitation of the Lord's Prayer by the students to be a direct violation. These exercises are prescribed as part of the curricular activities of students who are required by law to attend school. They are held in the school buildings under the supervision and with the participation of teachers employed in those schools.<sup>28</sup> The court held that the opening exercise is a religious ceremony and was intended by the State to be so. The fact that individual students may be absent during the exercise did not mitigate the Establishment clause violation.<sup>29</sup>

The court further opined that one's education is not complete without a study of comparative religion or the history of religion and its relationship to the advancement of civilization. “It 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.”<sup>30</sup> The conclusion of the court has established that while schools may teach about religion, they may not teach religion in a devotional way.

## **B. No Religion in the Science Curriculum**

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<sup>26</sup> *Id.* at 220 (citing *Everson v. Board of Education*, 330 U.S. 1 (1947)).

<sup>27</sup> *Id.*

<sup>28</sup> *Id.* at 222.

<sup>29</sup> *Id.*

<sup>30</sup> *Id.* at 224.

The following cases are in response to attempts to control teaching evolution and creationism in public schools. This prelude is important to set the stage for later decisions regarding intelligent design as they look back at these earlier cases to infer that intelligent design is just augmented creationism to achieve the goal they were not able to do outright. While that notion is not legally justifiable, it gives valuable insight to how the Judges view challenges to evolution and why the outcome was not favorable for intelligent design.

In *Epperson v. Arkansas*,<sup>31</sup> the Supreme Court held that Arkansas statutes forbidding the teaching of evolution in public schools and in colleges and universities, supported in whole or in part by public funds, are contrary to the Establishment Clause. In addressing the history of constitutional issues and classrooms, the Court stated that even as early as 1923 it had “not hesitat[ed] to condemn . . . ‘arbitrary’ restrictions upon the freedom of teachers to teach and of students to learn.”<sup>32</sup> The court stated that the Epperson issue could be resolved on the narrow terms of the Establishment Clause (The State could not have a law that aided one - or all - religions or that preferred one religion over any other).<sup>33</sup>

In analyzing whether any religion was being preferred with the Arkansas law, the court said, “There can be no doubt” that the antievolution law was in place because evolution conflicted with the explanation of origin of life as given in the Book of Genesis.<sup>34</sup> In fact, the court noted that no other explanation was available for the law other than the “fundamentalist sectarian conviction.”<sup>35</sup> Based on the lack of any nonreligious explanation for the law the Court held it was not an act of religious neutrality. The rationale being that Arkansas had not banned all discussion of the origin of man, but only discussions that involved evolution (a theory thought to

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<sup>31</sup> *Epperson v. Arkansas*, 393 U.S. 98 (1968).

<sup>32</sup> *Id* at 100.

<sup>33</sup> *Id* at 106.

<sup>34</sup> *Id* at 107–109.

<sup>35</sup> *Id*.

be in conflict with a literal reading of the Bible). Due to that lack of neutrality, the law was unconstitutional under the Establishment Clause.

In 1982 a federal district court addressed a “balanced treatment” statute. In *McLean v. Arkansas Board of Education*,<sup>36</sup> a civil rights action that was brought to enjoin the enforcement by the Board of Education and its members, the Director of Department of Education, and the State Textbooks and Instructional Materials Selecting Committee of a statute requiring public schools to give balanced treatment to creation science and to evolution science.<sup>37</sup> Judge Overton employed the three-prong Lemon test<sup>38</sup>, noting that failure of any prong would lead to a violation of the Establishment Clause. The District Court held that the statute violated the First Amendment prohibition against establishment of religion where it was simply and purely effort to introduce Biblical version of creation into public school curriculum and thus its specific purpose was to advance religion. The fact that creation science was inspired by Book of Genesis and that statutory definition of creation science was consistent with literal interpretation of Genesis left no doubt that primary effect of the statute was advancement of particular religious beliefs.<sup>39</sup>

Despite failing the Lemon test, the court in Mclean further discussed whether creation science, as defined in Section 4(a) of the statute, is really science.<sup>40</sup> Judge Overton used the following definition of science, drawn from the work of Michael Ruse: “(1) It is guided by

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<sup>36</sup> *McLean v. Arkansas Board of Education*, 529 F.Supp. 1255 (E.D. Ark.1982).

<sup>37</sup> Ark.Stat.Ann. s 80-1663, et seq. (1981 Supp.).

<sup>38</sup> *Lemon v. Kurtzman*, 403 U.S. 602, (1971).

<sup>39</sup> *McLean*, 529 F.Supp. at 1266.

<sup>40</sup> “‘Creation-science’ means the scientific evidences for creation and inferences from these scientific evidences. Creation-science includes the scientific evidences and related inferences that indicate: (1) Sudden creation of the universe, energy, and life from nothing; (2) The insufficiency of mutation and natural selection in bringing about development of all living things from a single organism; (3) Changes only within fixed limits of originally created kinds of plants and animals; (4) Separate ancestry for man and apes; (5) Explanation of the earth's geology by catastrophism, including the occurrence of a worldwide flood; and (6) A relatively recent inception of the earth and living kinds.” *Id* at 1264.

natural law; (2) It has to be explanatory by reference to natural law; (3) It is testable against the empirical world; (4) Its conclusions are tentative, i.e., are not necessarily the final word; and (5) It is falsifiable.”<sup>41</sup> Judge Overton found that creation-science postulates non-natural explanations for the existence of the universe, life, and the immutability of species (violating points one, two, and three), relies exclusively on creationist writings (violating points one, two, and four), and is “dogmatic, absolutist and never subject to revision” (violating points four and five). Thus, creation-science does not count as science.<sup>42</sup>

The defendants also argue that evolution is, in effect, a religion, and that by teaching a religion which is contrary to some students' religious views, the state is infringing upon the student's free exercise rights under the Free Exercise Clause of the First Amendment. They further argue that the teaching of evolution alone presents both a free exercise problem and an establishment problem which can only be redressed by giving balanced treatment to creation science, which is admittedly consistent with some religious beliefs. Judge Overton not only found the argument lacking in legal merit but also contradictory. He stated, “If creation science is, in fact, science and not religion, as the defendants claim, it is difficult to see how the teaching of such a science could ‘neutralize’ the religious nature of evolution. Assuming for the purposes of argument, however, that evolution is a religion or religious tenet, the remedy is to stop the teaching of evolution; not establish another religion in opposition to it.”<sup>43</sup>

The current controlling law on this issue is found in *Edwards v. Aguillard*.<sup>44</sup> Before the federal district court issued its opinion in McLean in January 1982, the Louisiana Legislature had passed a similar bill mandating balanced treatment: the Balanced Treatment for Creation-Science

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<sup>41</sup> *Id* at 1266.

<sup>42</sup> *Id*.

<sup>43</sup> *Id* at 1274.

<sup>44</sup> *Edwards v. Aguillard*, 482 U.S. 578 (1987).

and Evolution-Science in Public School Instruction Act. Louisiana's "Creationism Act" forbids the teaching of the theory of evolution in public elementary and secondary schools unless accompanied by instruction in the theory of "creation science." The Act does not require the teaching of either theory unless the other is taught. It defines the theories as "the scientific evidences for [creation or evolution] and inferences from those scientific evidences. This action was brought by Louisiana parents, teachers, and religious leaders challenging constitutionality of the Act. The Supreme Court held that: (1) the Act serves no identified secular purpose, and (2) the Act has as its primary purpose the promotion of a particular religious belief and is thus unconstitutional as an establishment of religion under *Lemon*.<sup>45</sup>

The court held that the Act is facially invalid as it violated the Establishment Clause of the First Amendment, because it lacks a clear secular purpose. Specifically, the Act did not further its stated secular purpose of "protecting academic freedom" and fails to further the goal of "teaching all of the evidence."<sup>46</sup> Forbidding the teaching of evolution when creation science is not also taught undermines the provision of a comprehensive scientific education. The court also noted that "a law intended to maximize the comprehensiveness and effectiveness of science instruction would encourage the teaching of all scientific theories about human origins. Instead, this Act has the distinctly different purpose of discrediting evolution by counter-balancing its teaching at every turn with the teaching of creationism."<sup>47</sup>

By the time of *Edwards*, the court had been employing the endorsement test as well as the *Lemon* test for analyzing Establishment Clause challenges.<sup>48</sup> The court also held that the Act impermissibly endorses religion by advancing the religious belief that a supernatural being

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<sup>45</sup> *Id* at 578.

<sup>46</sup> *Id* at 586.

<sup>47</sup> *Id* at 579.

<sup>48</sup> *Lynch v. Donnelly*, 465 U.S. 668 (1984).

created humankind.<sup>49</sup> The Act's primary purpose was to change the public school science curriculum to provide persuasive advantage to a particular religious doctrine that rejects the factual basis of evolution in its entirety.<sup>50</sup> Thus, the Act is designed either to promote the theory of creation science that embodies a particular religious tenet or to prohibit the teaching of a scientific theory disfavored by certain religious sects. In either case, the Act violates the First Amendment.

Although the Act was struck down, Justice Brennan left the issue open for the future by noting that this opinion is not to imply that a legislature could never require that scientific critiques of prevailing scientific theories be taught. He further opined that teaching a variety of scientific theories about the origins of humankind to schoolchildren might be validly done with the clear secular intent of enhancing the effectiveness of science instruction.<sup>51</sup> However, that was not the case here as creationism was not science and the Creationism Act's primary purpose was to endorse a particular religious doctrine.

Almost 20 years after *Edwards*, a federal district court *Kitzmiller v. Dover* addressed the issue of teaching intelligent design in public schools and is currently the most recent and only decision on this point.<sup>52</sup> Pennsylvania parents of school-aged children and member of high school science faculty brought action against school district and school board, challenging the constitutionality of the district's policy on teaching of intelligent design in a high school biology class, which required students to hear a statement mentioning intelligent design as an alternative to Darwin's theory of evolution.

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<sup>49</sup> *Edwards*, 482 U.S. at 578.

<sup>50</sup> *Id.*

<sup>51</sup> *Id.* at 594.

<sup>52</sup> *Kitzmiller v. Dover Area School Dist.*, 400 F.Supp.2d 707 (M.D. Pa. 2005).

On October 18, 2004, the Defendant Dover Area School Board of Directors passed by a 6–3 vote the resolution that students will be made aware of gaps/problems in Darwin's theory and of other theories of evolution including, but not limited to, intelligent design.<sup>53</sup> On November 19, 2004, the Dover Area School District announced by press release that, commencing in January 2005, teachers would be required to read the following statement to students in the ninth grade biology class at Dover High School:

“The Pennsylvania Academic Standards require students to learn about Darwin's Theory of Evolution and eventually to take a standardized test of which evolution is a part. Because Darwin's Theory is a theory, it continues to be tested as new evidence is discovered. The Theory is not a fact. Gaps in the Theory exist for which there is no evidence. A theory is defined as a well-tested explanation that unifies a broad range of observations. Intelligent Design is an explanation of the origin of life that differs from Darwin's view. The reference book, *Of Pandas and People*, is available for students who might be interested in gaining an understanding of what Intelligent Design actually involves. With respect to any theory, students are encouraged to keep an open mind. The school leaves the discussion of the Origins of Life to individual students and their families. As a Standards-driven district, class instruction focuses upon preparing students to achieve proficiency on Standards-based assessments.”<sup>54</sup>

The court then proceeded to apply both the Lemon test and the Endorsement test to analyze the constitutionality of the intelligent design policy.

The Endorsement test was applied to answer whether the intelligent design policy in fact conveys a message of endorsement or disapproval of religion, with the reasonable, objective observer being the hypothetical construct to consider the issue.<sup>55</sup> More specifically, the court continued to answer the question whether an objective observer would know that intelligent design and teaching about gaps and problems in evolutionary theory are creationist, religious strategies that evolved from earlier forms of creationism. The court was able to infer a religious nature of intelligent design by tracing the case law surrounding the issue. After citing to

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<sup>53</sup> *Id.* at 708.

<sup>54</sup> *Id.*

<sup>55</sup> *Id.* at 715.

*Epperson* and *McLean*, the court stated that religious opponents of evolution began “cloaking religious beliefs in scientific sounding language,” and relates intelligent design in its current form to creation science.<sup>56</sup> The court opined that after the *Edwards* case was decided, intelligent design came into existence from creation science.

Next, careful analysis of the language, contained in the disclaimer that teachers would have to read to the students, revealed a subtle favoring of intelligent design over evolution. The first paragraph indicates that teaching evolution is mandated by Pennsylvania academic standards, whereas no similar disclaimer was used when introducing intelligent design. The second paragraph which states that Darwin's Theory is a theory, not fact, and it continues to be tested as new evidence is discovered. This statement is misleading as they are told that “gaps” exist within evolutionary theory without any indication that other scientific theories might suffer the same supposed weakness. In aggregate, the court held that a reasonable observer could hold that this was an endorsement of religion.<sup>57</sup>

Perhaps the most important question the court in *Kitzmiller* endeavored to answer was whether intelligent design is science. The court held that it was not because (1) intelligent design violates the centuries-old ground rules of science by invoking and permitting supernatural causation; (2) the argument of irreducible complexity, central to intelligent design, employs the same flawed and illogical contrived dualism that doomed creation science in the 1980's; and (3) intelligent design's negative attacks on evolution have been refuted by the scientific community.<sup>58</sup> These positions were supported by lengthy and sophisticated expert testimonies.

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<sup>56</sup> *Id.* at 717.

<sup>57</sup> *Id.* at 734.

<sup>58</sup> *Id.* at 735.



*Kitzmiller* cited to a 1997 case, *Tangipahoa Parish Bd. of Educ. v. Freiler*, which discussed the issue of reading a disclaimer before teaching evolution.<sup>59</sup> Unlike *Kitzmiller*, the disclaimer in this case did advocate for intelligent design. In 2000, parents of public school children sued to enjoin their school board from mandating that a disclaimer be read immediately before the teaching of evolution in all elementary and secondary classes. The disclaimer stated:

“It is hereby recognized by the Tangipahoa Parish Board of Education, that the lesson to be presented, regarding the origin of life and matter, is known as the Scientific Theory of Evolution and should be presented to inform students of the scientific concept and not intended to influence or dissuade the Biblical version of Creation or any other concept. It is further recognized by the Board of Education that it is the basic right and privilege of each student to form his/her own opinion or maintain beliefs taught by parents on this very important matter of the origin of life and matter. Students are urged to exercise critical thinking and gather all information possible and closely examine each alternative toward forming an opinion.”<sup>60</sup>

The statement was to be read any time the scientific theory of evolution is to be presented, whether from textbook, workbook, pamphlet, other written material, or oral presentation in classes of elementary or high school. The court held that the disclaimer was not sufficiently neutral to prevent it from violating the Establishment Clause. The motion for rehearing at the Circuit Court of Appeals was denied.<sup>61</sup> But the dissenting judges wanted to leave door open for future critiques of the theory of evolution:

“In denying rehearing, we emphasize that we do not decide that a state-mandated statement violates the Constitution simply because it disclaims any intent to communicate to students that the theory of evolution is the only accepted explanation of the origin of life, informs students of their right to follow their religious principles, and encourages students to evaluate all explanations of life's origins, including those taught outside the classroom. We decide only that under the facts and circumstances of this case, the statement of the Tangipahoa Parish School Board is not sufficiently neutral to prevent it from violating the Establishment Clause.”<sup>62</sup>

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<sup>59</sup> 975 F. Supp. 819 (E.D. La. 1997), affirmed 185 F.3d 337 (5<sup>th</sup> Cir. 1999).

<sup>60</sup> 185 F.3d at 341.

<sup>61</sup> 201 F.3d 602 (2000).

<sup>62</sup> 201 F.3d at 603.

The court is suggesting that it was not the School Board members' strong belief that evolution should not be taught as fact that violated the Establishment Clause, but because it conflicted with their belief in the Biblical theory of creation that culminated in the much more complicated disclaimer.<sup>63</sup>

### **III. Effect on the Youth**

Whenever religion becomes the topic of litigation it is easy to lose sight of what the competing interests truly are through the extensive analysis and case law. One could only presume (hopefully) that when someone advocates for a curriculum change in public schools that it is to further our youth and not to further a personal religious agenda. I find it disturbing that decisions can be made regarding the curriculum without any reference to what the potential effect it will have on the actual audience. I plan on challenging the current jurisprudence by taking a deeper look at the effect each theory of creation (evolution, creationism, and intelligent design) has on our youth both academically and emotionally.

#### **A. Linking Intelligent Design to Critical Thinking**

While the court sifts through the political and substantive debacle of teaching intelligent design, I took an objective look at statistical data regarding academic performance of our youth. The National Center for Education Statistics compiles data from every state with respect to mathematics, reading, writing, and science and provides a national average.<sup>64</sup> In conjunction with data provided from the Education Commission of the States<sup>65</sup>, which tracks policies dealing with evolution in select states, I was able to see the effect of such policies on the youth's academic performance.

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<sup>63</sup> The U.S. Supreme Court denied cert. over a three justice dissent. 530 U.S. 1251 (2000).

<sup>64</sup> The National Center for Education Statistics, <http://nces.ed.gov> (last visited Feb. 9, 2016).

<sup>65</sup> The Education Commission of the States, <http://www.ecs.org/state-legislation-by-state> (last visited Feb. 9, 2016).

California, New Mexico, and South Carolina have similar state standards that support evolution education. These standards require that students be given a firm grounding in the various aspects of current evolutionary theory, which includes analyzing the fossil record, Darwin's contribution to the theory and the different lines of scientific evidence that support the theory.<sup>66</sup> Surprisingly, all three states scored significantly lower than the national average in all sections (mathematics, reading, writing, and science).<sup>67</sup>

Kansas, Alabama, Kentucky, and Georgia on the other hand are all states that have policies that retain some skepticism or a disclaimer as to evolution. This is done through subtle indicators in the curriculum such as (1) pointing out that fossil record is not consistent with gradual, unbroken sequences postulated by biological evolution, (2) macroevolutionary explanations generally are not based on direct observations and often reflect historical narratives based on inferences from indirect or circumstantial evidence, (3) or requiring students to understand scientific criticisms of the proposed explanations of the origin of life.<sup>68</sup> The results for this category of states was rather mixed. Kentucky and Kansas performed at the national average on all sections but scored higher in science. Alabama and Georgia scored slightly less than the national average on all sections but still higher than California, New Mexico, and South Carolina.<sup>69</sup>

Minnesota and Ohio have standards addressing critical analysis with respect to scientific theories. The premise behind this standard is that scientists must perform critical analysis of any theory to test its validity. Accordingly, these states have benchmarks addressing the student's

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<sup>66</sup> *Id.*

<sup>67</sup> The National Center for Education Statistics, <http://nces.ed.gov> (last visited Feb. 9, 2016).

<sup>68</sup> The Education Commission of the States, <http://www.ecs.org/state-legislation-by-state> (last visited Feb. 9, 2016).

<sup>69</sup> The National Center for Education Statistics, <http://nces.ed.gov> (last visited Feb. 9, 2016).

ability to critically analyze scientific theories, including the theory of evolution.<sup>70</sup> It should be noted however, that inclusion in this category should not be interpreted to mean that the science standards in these states are opposed to the teaching of evolution in public schools under their jurisdiction.<sup>71</sup> These states focus on helping the student to distinguish among hypothesis, theory and law as scientific terms and how they are used to answer a specific question in order to understand the nature of scientific ways of thinking and that scientific knowledge changes and accumulates over time.<sup>72</sup> Both states scored significantly higher than the national average in every category, scoring exceptionally high in science.<sup>73</sup>

The data suggests that focusing on the critical thinking aspect of scientific theories can have a beneficial effect on overall test scores. Critical thinking involves the objective analysis and evaluation of an issue in order to form a judgment. Including intelligent design in a curriculum may foster this type of thinking if appropriately implemented. The method Minnesota and Ohio used seems to achieve the goal by including other theories in the origins of life in a more subtle manner. Rather than artificially inserting skepticism as to the theory of evolution (like Kansas, Alabama, Kentucky, and Georgia), Minnesota and Ohio gave the students the tools to reach their own skepticism.

A curriculum that abandons spoon feeding children the theory of evolution as a definitive answer and creates a system where each student will use the scientific method to arrive at a conclusion could yield endless benefits in cognitive development of a child. This would include providing the students with all the objective facts and allowing them to perform critical analysis of any theory to test its validity. The focus that is relevant to intelligent design is helping the

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<sup>70</sup> The Education Commission of the States, <http://www.ecs.org/state-legislation-by-state> (last visited Feb. 9, 2016).

<sup>71</sup> *Id.*

<sup>72</sup> *Id.*

<sup>73</sup> The National Center for Education Statistics, <http://nces.ed.gov> (last visited Feb. 9, 2016).

student distinguish among hypothesis, theory and law as scientific terms and how they are used to answer a specific question in order to understand the nature of scientific ways of thinking and that scientific knowledge changes and accumulates over time. By understanding that concept, it guarantees that students will understand evolution as a theory and thus invites further explanations.

The courts in *Freiler*, *Kitzmiller*, and *Edwards* have consistently held that the secular purpose of fostering critical thinking in children through open-ended explanations of the origins of life is not necessary because the teachers already have the latitude to emphasize that evolution is a theory. Thus, the courts look to the history and jurisprudence of similar cases and find that the only purpose of including intelligent design is to endorse religion. That inference the court makes seems very flawed. As the statistical analysis above noted, critical thinking with respect to teaching science translated to higher scores across the board in math and English as well. It would be concerning to know that children within the same school system could potentially receive a largely different education based on the teachers' discretion.

### **B. Curriculum of Critical Thinking and Establishment Clause**

A truly neutral scheme mandating teachers to teach evolution in a way that would foster critical thinking and allow students the make their own inferences, whether to believe in intelligent design or not, would likely pass the endorsement test and Lemon test. It would have a secular purpose of enhancing public school education, it would not assist nor inhibit any religious group as the children will only be given the tools to choose (not coerced in any way), and it would not foster governmental entanglement.

The courts have expressed their fear that teaching intelligent design is just a way for creationists to inject their religious agenda in the public schools. While this fear is valid, the

scheme discussed above would limit these risks by correctly distinguishing fact from theory and not foreclosing any hypothesis that can be tested. Additionally, the fact that intelligent design is not mutually repugnant to the theory of evolution further mitigates the risk of improperly allowing religion to be taught in the schools. As *Freiler* made clear, disclaimers that communicate to students that the theory of evolution is not the only accepted explanation of the origin of life and encouraging them to evaluate all explanations of life's origins is not invalid if made for the appropriate reason.<sup>74</sup> This seems like an endless losing battle for intelligent design as it will always be linked to its creationist past.

The notion, described in Section I of this paper, which Francis Crick discussed regarding naturalistic evolution demonstrates how scientific theories are not pure science and can contain philosophical or even religious implications. Crick supported the view that the entire universe and all the entities in it can be accounted for by strictly material processes without resorting to any designer, creator, or non-material entity or agent as an explanation for either any aspect of the natural universe or the universe as a whole. Intelligent design only differs from evolution by resorting to a non-material entity rather than random occurrences. Whether the universe is random or designed by a higher power is a philosophical discussion, not a scientific one. This shows that scientific theories can be linked with philosophical or religious worldviews, and in fact often begin as such, but does not make them a religion.

A 1965 case, *United States v. Seeger*,<sup>75</sup> and a 1970 case, *Welsh v. United States*,<sup>76</sup> both involved individuals that refused to participate in the armed forces. While these cases are not specifically on point, they demonstrate how the relationship between philosophical views and religion are not completely distinct. In *Welsh* the Court held that if an individual deeply and

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<sup>74</sup> *Tangipahoa Parish Bd. of Educ. v. Freiler*, 185 F.3d 337 (5<sup>th</sup> Cir. 1999).

<sup>75</sup> *United States v. Seeger*, 380 U.S. 163 (1965).

<sup>76</sup> *Welsh v. United States*, 398 U.S. 333 (1970).

sincerely holds beliefs which are purely ethical or moral but “which nevertheless impose upon him duty of conscience to refrain from participating in any war at any time, such individual is entitled to conscientious objector exemption.”<sup>77</sup> The Court further held that statements by Welsh that he believed taking of life to be morally wrong amounted to traditional religious convictions.<sup>78</sup>

Similarly, the court in *Seeger* held that the test of belief “in a relation to a supreme being” within statute is one that is sincere and meaningful and occupies a place in life of its possessor parallel to that filled by orthodox belief in God.<sup>79</sup> The interpretation set forth in *Seeger* and *Welsh* could even categorize Darwinism as a religion. The sincere and meaningful belief in the random force of evolution is parallel to the force that would normally be considered a supreme being. Although it is clear that evolution is in fact science and not a religion, it is important to note that just because a religion can be linked to a philosophy or theory it does not make it a religion.

### **C. Emotional Health**

An intangible factor that should also be considered when deciding curriculum standards is the emotional development of the students. In today’s scientific culture there is a stigma associated with believing in a higher power. As Crick stated, we live in a scientific world where everything can be explained without reference to a higher power.<sup>80</sup> This results in a detrimental ultimatum of abandoning your faith for science, or abandoning your interest in science for faith. While some people are content accepting the random, purposeless, and insignificant nature of life on earth as it relates to time and space in our universe, others require a different explanation.

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<sup>77</sup> *Id* at 340.

<sup>78</sup> *Id* at 342.

<sup>79</sup> *Seeger*, 380 U.S. at 166.

<sup>80</sup> Francis Crick, THE ASTONISHING HYPOTHESIS: THE SCIENTIFIC SEARCH FOR THE SOUL 5-7 (1994).

For many, believing in a universe in which there is order and purpose created by a higher power is a calming notion. So long as believing in this “designer” or “power” does not conflict with established scientific law the emotional benefits will greatly outweigh any potential religious implications. Accordingly, there would likely be little harm in allowing children to perhaps reach a different philosophical conclusion while simultaneously exercising critical thinking and learning about the world around them.

## **Conclusion**

The current jurisprudence prohibits creationism and intelligent design from being taught as science in public schools. While this prohibition is compelled by the Establishment Clause, the question that is most contested in the later cases is whether intelligent design is a religion or science. At least one district court has found intelligent design to be a religion. It seems that the courts are skeptical that intelligent design is wholly distinct from creationism.

Although the courts have strongly defended the integrity of the public school curriculum, and struck down all attempts to introduce a different view on the origins of life, the issue is far from settled. Judges have consistently inserted language stating that disclaimers or curriculum schemes that are meant to truly foster critical thinking would be appropriate. This is promising. There is no doubt that caution should be taken when addressing issues that involve a vulnerable population, like school age children; however it is our duty as humans to further mankind by promoting the cognitive development and the emotional health of our youth. Intelligent design, although a flawed theory, should not be categorized as a religion and should be available as a non-conclusive theory to facilitate the scientific method and critical thinking. The ultimate goal of furthering mankind through science is better achieved through a diverse body of information available to our youth. Removing the stigma in the scientific community associated with



believing in an intelligent design to the universe could encourage more bright students to be interested in science.