

---

## Intelligent Design: Should We Teach It?

Sarah-Kate Oliver

Department of Biology; College of Arts and Sciences  
Abilene Christian University

**Belief about the origins of the universe and mankind is an important aspect of most world religions. While many ‘progressive’ Christians view the Genesis accounts of creation as mythical or allegorical, some ‘fundamentalist’ Christians claim it is a literal and historical account of the origins of life. The scientific community, on the other hand, views Darwin’s Theory of Evolution as the definitive explanation of the origin of all species on Earth including humans. As science has continued to line up behind evolution, it has been integrated into the public school curriculum. The question examined by this paper is: should the ‘plain sense’ or literal hermeneutic of the Genesis accounts of creation (commonly referred to as ‘Creationism’ or, more recently, ‘Intelligent Design’), be taught in public schools as an alternative explanation for the evolutionary understanding of the origins of life?**

Opinions about the orthodox way in which to read and interpret Genesis 1-3 have been varied and dynamic throughout the history of the Christian faith. Many early Christians such as St. Augustine and St. Thomas Aquinas did not interpret the Genesis account of creation literally, but rather as an allegory. More recently, particularly since the Protestant reformation, many Christians read the creation account in Genesis as the historical record of the earth’s origin. Viewed in this way, a reading of the Genesis stories points the reader toward the conclusion that all the creatures inhabiting the Earth were spoken into creation by God over the course of a few days. This conclusion is reinforced in John’s gospel through the “Logos” account which states “Through him all things were made; without him nothing was made that has been made” (John 1:2 *New International Version*). For many Christians, a sense of spiritual identity and comfort is found in the notion that they were specifically created by God. To them, the idea that modern life forms evolved through a series of seemingly random, incremental adaptations and

mutations threatens their beliefs and the notion of humans having been created “in God’s image”. Simply put, many Christians have come to view Darwin’s theory of evolution as inconsistent with some of the central tenets of their faith. Consequently, the teaching in public schools of evolution as the scientific explanation for all species on earth including humans has been, and remains, very threatening and problematic for some believers.

### Creationism in Public Schools: A Brief Legal History

The integration of creationism into the biology curriculum of public schools has been a highly contested issue within the court system since the famous Scopes trial of the 1920s. The legal question hinges on the Establishment clause of the First Amendment of the United States Constitution. The Establishment clause is in place to protect the right of religious freedom, and does so by preventing the government from establishing a national religion or passing legislation that favors

one religion to another.<sup>1</sup> Since the 1920s, proponents of creationism have demanded that it be included as a part of the required educational standards in almost every state. Among some of the most notable cases dealing with the teaching of “Creation Science,” are *McLean v. Arkansas Board of Education*, *Webster v. New Lennox School District*, and *Kitzmiller et. al. v. Dover*.

In 1981, *McLean v Arkansas Board of Education* challenged the constitutional legitimacy of Act 590, or the “Balanced Treatment for Creation-Science and Evolution-Science Act.” This act was put in place to mandate that schools give equal treatment to creation-science and evolution-science. Upon examination of the definitions of creation-science and evolution-science used within Act 590, the Court determined that the definition of creation-science was “unquestionably religious.” This decision was based on the overwhelming similarity of creation science to the creation story told in the first 11 chapters of Genesis. The Court found that the religious motives behind the Act put it in conflict with the Establishment Clause, and ultimately rejected the Act as unconstitutional.<sup>2</sup>

The case of *Webster v. New Lennox School District* in 1990 dealt with confusion surrounding whether or not the District prohibiting the teaching of “creation-science” was a violation of a teacher’s First Amendment right to freedom of speech. Mr. Webster, a history teacher in the New Lennox School District, was investigated because of complaints that his teaching methods violated the Establishment Clause when he taught “creation-science” theory in order to refute a statement in the textbook that the world is over four billion years old. The superintendent of the school district dictated that Mr. Webster was not to teach

creation-science because it had been held in federal courts that this was religious advocacy. Webster argued that prohibiting him from teaching creation-science was a violation of his first amendment right. The court held that the school district had the responsibility to ensure that the Establishment Clause was not violated, and that Webster’s rights had not been violated.<sup>3</sup>

The 2005 case of *Kitzmiller v. Dover Area School District* in Pennsylvania is perhaps the most notable case in recent years. Members of the Board of the Dover Area School District took issue with the Darwinian theory of evolution explained in the district’s biology textbook. The Board made the decision to require that biology teachers read a disclaimer that discounted the esteem with which Darwin’s theory of evolution is held within scientific communities and presented creationism as an alternative theory for the origins of the universe. When parents of students within the Dover Area School District caught word of this disclaimer, they filed a suit against the district claiming that the Board had violated the constitution by issuing this mandate. The Court concluded that the Board did, in fact, violate the Establishment Clause by requiring teachers to read the disclaimer.<sup>4</sup>

These cases do not provide a comprehensive history of the legal battle between evolutionary theory and creationism; however, they provide insight into the overwhelming number of cases that have been ongoing for close to a century now. Time and again, courts have upheld that the teaching of creationism as science in a public school classroom violates the Establishment clause due to the conclusion that it is not science, but rather a religious teaching with evangelical motives behind it.

---

<sup>1</sup> Establishment Clause Overview, 2011

<sup>2</sup> U. S. District Court for the Eastern District of Arkansas, 1982

<sup>3</sup> U. S. Court of Appeals for the Seventh Circuit, 1990

<sup>4</sup> U. S. Supreme Court, 2005

## Intelligent Design: The Theology

Against this backdrop of repeated legislative and legal failures, proponents of creationism in recent years have effectively “re-branded” their belief with a new name: Intelligent Design (ID). ID suggests that the best explanation for the origin of the universe is that it was designed by an intelligent entity.<sup>5</sup> As proposed by its advocates, ID is a retelling of two Biblical creation stories using scientific terminology in an effort to make it acceptable for teaching in public schools.<sup>6</sup> While most advocates for Intelligent Design will not assign an identity to the “Intelligent Designer,” the parallels between the creation story in Genesis and ID Theory are striking, and it is not a far leap to conclude that the “Intelligent Designer” proponents of the movement have in mind is the God of the Christian Bible. The refusal to identify the designer is merely an attempt to further disguise this branch of creationism.

With the integration of evolutionary theory into the curriculum of biology classrooms around the country, evangelicals were in need of a theory that was compatible with a literal interpretation of Genesis but was distanced enough from Christianity to stand a fighting chance in the courtroom. ID is the product of this requirement. Proponents of this movement desire its inclusion into the biology curriculum not because it is a scientific explanation for the origin of life, but because of an evangelical agenda. Due to these biblical roots, ID is inherently theistic.<sup>7</sup>

## Intelligent Design: The Science

Setting aside for a moment its theistic roots, proponents of ID claim that it deserves equal standing with evolution in

science classrooms as they are both “theories.” While it is a common misconception among the general public that a scientific theory and a hypothesis are one in the same, within the scientific community there is a clear distinction between the two. A hypothesis is a testable explanation of an observed phenomenon. A scientific theory begins as a hypothesis and is only accepted once it has been repeatedly tested and supported by empirical data.<sup>8</sup> Evolution is confirmed by data from numerous branches of biology including paleontology, genetics, developmental biology, and molecular biology.<sup>9</sup> In contrast, ID offers little to no empirical data in support of its claims. On the contrary, some of ID’s fundamental assumptions have been challenged by recent research.

Behe offers “scientific” evidence of ID in the form of irreducible complexity. In Behe’s *Darwin’s Black Box* irreducible complexity is defined as “a single system composed of several well-matched, interacting parts that contribute to the basic function, wherein the removal of any one of the parts causes the system to effectively cease the system to effectively cease functioning.”<sup>10</sup> In other words, because a system requires all components to serve a function it cannot be reduced to a more simple form. Behe elaborates on this concept of irreducible complexity when he states that “[a]n irreducibly complex system cannot be produced directly (that is, by continuously improving the initial function, which continues to work by the same mechanisms) by slight, successive modifications of a precursor system, because any precursor to an irreducibly complex system that is missing a part is by definition

---

<sup>5</sup> Woodill 2015, 1

<sup>6</sup> *ibid*, 2

<sup>7</sup> Woodill 2015, 2

<sup>8</sup> National Academy of Sciences 1999, 2

<sup>9</sup> *ibid*, 3

<sup>10</sup> Behe 2006, 39

nonfunctional.”<sup>11</sup> The explanation that is offered by ID to account for these irreducibly complex systems is the intelligent designer. This idea of irreducible complexity has famously been applied to the mousetrap, eyeball, and the bacterial flagellum in an attempt to assert ID as a scientific theory.

Irreducible complexity is applied to the five-part mousetrap in order to provide the general public with an everyday example of the concept. The five-part mousetrap consists of the base, catch, hammer, spring, and holding bar. The argument of irreducible complexity relies on the notion that each of these components must be present and operational in order for the system to properly function (i.e. for a mouse to be caught).<sup>12</sup> Irreducible complexity also asserts that components of an irreducibly complex system are rendered nonfunctional outside of their system. Miller illustrates how this claim presents a flaw in the application of irreducible complexity to the mousetrap when he proposes that with the removal of the catch and the holding bar, the trap can easily be reconfigured into a three-part spitball launcher.<sup>13</sup> Miller has also used the idea that a mousetrap can be reconfigured to function as a tie clip to discredit the claim of irreducible complexity.

The mammalian eye is a biological system that is often used by proponents of ID to claim legitimacy of irreducible complexity as scientific evidence. The eyeball is considered irreducibly complex by the proponents of ID because they thought natural selection had not yet provided a comprehensive explanation for the evolution of this biological system. This argument quickly gained traction in the ID community

because of the following quote from Darwin’s *Origin of Species*: “To suppose that the eye with all its inimitable contrivances for adjusting the focus to different distances, for admitting different amounts of light, and for the correction of spherical and chromatic aberration, could have been formed by natural selection, seems, I freely confess, absurd in the highest degree.”<sup>14</sup>

However; this is a small excerpt from an over 150-year old passage in which Darwin admitted that natural selection may be difficult to accept at first, much like it was initially difficult to accept that the Earth revolves around the sun; but he followed his statement with the assertion that one’s inability to imagine the precise pathway by which a mammalian eye evolved does not discredit natural selection. While the complete pathway of evolution of the mammalian eye had not yet been discovered, we know today that there are several seemingly more primitive versions of the eye found in nature; all of these are likely incremental steps taken in the production of the complex eye seen in mammals today. Among these proposed evolutionary steps are the green algae containing light sensitive patches used for detecting light for photosynthesis, flatworms containing a pit of light-sensitive cells to detect the shadow of predators, snails with blurry vision that is utilized in the search for food, and a wide variety of vertebrates with clear vision used for a myriad of purposes.<sup>15</sup>

The argument that the mammalian eyeball must be considered irreducibly complex due to a lack of evolutionary explanation has also been used as justification for an argument of the “God of the gaps” variety. As described by Malcolm

---

<sup>11</sup> Behe 2006, 39

<sup>12</sup> Miller 2008

<sup>13</sup> *ibid*

<sup>14</sup> Darwin 1979, 217

<sup>15</sup> Elissor 2016

Jeeves and R. J. Berry, an argument that favors the “God of the gaps” is one that explains away gaps of knowledge in scientific disciplines as the work of a higher theistic being that cannot be understood. Jeeves and Barry caution against making such arguments as they could be detrimental to one’s personal faith. What happens once these gaps of knowledge are filled? The foundation on which one has built belief about how their God interacts with systems in the universe is suddenly explained by physical phenomenon, and the individual is left with a fractured faith.<sup>16</sup> Therefore, proponents of the Intelligent Design movement should exert caution when asserting that mammalian eyeballs are irreducibly complex because the evolutionary explanation has not yet been discovered.

Historically, the ID movement’s most compelling evidence for irreducible complexity has been the bacterial flagellum. It has been so widely used to further the ID position that the flagellum has been referred to as the poster child of ID. The flagellum is a highly complex structure comprised of proteins that are used by bacteria for motility. Essentially, the flagellum is a microscopic metaphorical “motor” that whips a tail which propels the bacterial cell forward. It has been argued that this cell structure is irreducibly complex because in the absence of any one protein, the system ceases to function.<sup>17</sup> Additionally, the lack of knowledge about the evolution of the flagella lends itself to Behe’s idea that natural selection is only capable of affecting systems that are pre-existent in nature.<sup>18</sup> In other words, because there is no knowledge of a more primitive version of a flagellum, it must have been intelligently designed.<sup>19</sup>

This argument for the intelligent design of the flagellum began to disintegrate when microbiologists found that the proteins comprising the flagella show homology to functional proteins elsewhere in the cell, particularly the Type III Secretory System (TTSS). The TTSS facilitates the pumping of proteins from a bacterial cell into a host. The proteins that comprise the base of the TTSS are so similar structurally that they are nearly identical. The discovery of these structural similarities between the TTSS and the bacterial flagellum negate the previously stated argument for the intelligent design of the flagella. The variety of functions demonstrated by the proteins found in the flagella make it impossible for them to be a product of ID, but rather suggest that it is a product of natural selection.<sup>20</sup>

Each case presented above for irreducible complexity has been refuted with a reasonable and supported explanation through the lens of natural selection. This leaves ID with no measurable data to support itself as a scientific theory, defined earlier as a hypothesis that has been tested several times over and supported with empirical data. One might attempt, then, to assert that ID should be considered a hypothesis that is simply still under review. However; with no conceivable way to measure the degree to which a structure or an organism has been “designed,” this hypothesis will never be recognized as a scientific theory, and will, in turn, never carry as much weight as Darwin’s theory of evolution by natural selection, which has achieved the status of scientific theory.

### Conclusion

In examining the central question of this paper, it is instructive to consider the

---

<sup>16</sup> Jeeves and Berry 1998

<sup>17</sup> Miller 2008

<sup>18</sup> Behe 2002, 74

<sup>19</sup> Miller 2008

<sup>20</sup> *ibid.*



purpose of public schools. Public schools are governmental entities, funded by tax dollars, the aim of which is to provide quality education to all students. As a governmental entity, public schools must observe the Establishment Clause of the Constitution and not engage in the evangelization of their students to any particular religion. Additionally, in order to provide quality education, public schools have a responsibility to teach their students information that is considered sound and

reliable. In reviewing the facts about Intelligent Design, I find that it fails both of these tests. First, its similarity to the creation accounts in the Bible reveal its evangelical motives; it is nothing more than a new framework for describing Creationism. Second, it does not hold up to scientific scrutiny and has been widely discredited; it is bad science. For these reasons, I believe that ID should not be taught in public school science classrooms.

### Literature Cited

- Behe, Michael J. (2006). *Darwin's black box: The biochemical challenge to evolution*. New York :Free Press,
- Behe, Michael J., (2002). The Challenge of Irreducible Complexity. *Natural History*, 74.
- Darwin, C. (1979). *The Origin of Species*. New York, NY: Gramercy Books.
- Elissor. (2016). Irreducible complexity? - Evolution of the eye explained [Video file]. Retrieved October 11, 2016, from <https://www.youtube.com/watch?v=DZ9uMb8GqNY>
- Establishment Clause Overview. (2011). *First Amendment Center*. Retrieved November 02, 2016, from <http://www.firstamendmentcenter.org/establishment-clause>
- Jeeves, M. A., & Berry, R. J. (1998). *Science, life, and Christian belief: A survey of contemporary issues*. Grand Rapids, MI: Baker Books.
- Miller, K. R. (2008). *Only a theory: Evolution and the battle for America's soul*. New York: Viking Penguin.
- National Academy of Sciences. (1999). *Science and creationism: A view from the National Academy of Sciences*. Washington, DC: National Academy Press.
- U. S. Supreme Court. *Kitzmiller v. Dover Area School District*, 400 F. Supp. 2d 707 (M.D. Pa. 2005) Retrieved September 25, 2016, from [http://www.talkorigins.org/faqs/dover/kitzmiller\\_v\\_dover\\_decision.html](http://www.talkorigins.org/faqs/dover/kitzmiller_v_dover_decision.html)
- U. S. District Court for the Eastern District of Arkansas. *McLean v. Arkansas Board of Education*. 529 F. Supp 1255, 1258-1264 (1982) Retrieved November 02, 2016, from <http://www.talkorigins.org/faqs/mclean-v-arkansas.html>
- U. S. Court of Appeals for the Seventh Circuit. *Webster v. New Lennox School District*. 917 F.2d 1004 (1990) Retrieved November, 02, 2016, from <https://ncse.com/creationism/legal/webster-v-new-lenox>
- Woodill, S. (2015). The Christian Core of Intelligent Design. *Zygon: Journal of Religion & Science*, 50(2), 271-286. doi:10.1111/zygo.12171