

## Intelligent Design and Creationism in our Schools

William Travis Kern

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

**I describe and elaborate what both ID/Creationism and evolution, and their respective claims, are; I also explain which are allowed in a high school science classroom. Before one can decide whether any view belongs in the science classroom, one must know what the basis is for claiming *any* explanation is science; this is particularly important when dealing with origins. Finally, I will explain the legal precedence for understanding why ID and Creationism cannot be included in any science class. It may, however, still be included in the curriculum by teaching them in a humanities class.**

Most people have thought about how this Earth and its inhabitants came to be. Biblical literalists believe that an all-powerful deity created Earth and its inhabitants six to ten thousand years ago in their present state via a miraculous set of proclamations. Others think that a deity or entity may have designed the universe to work like an engineered machine. Still others think that the creatures and the rest of the Earth were brought about organically through evolution (whether guided, or not) by a deity. There are other varieties of thought, but these three are arguably the key ones.

In American public education, children are supposed to be taught, at least in science classes, the theory of evolution by natural selection because it has gone through extensive and necessary testing to be a valid scientific explanation. Creationism and Intelligent Design (ID) simply have not achieved the validation needed. This lack of scientific imprimatur can cause problems with religious families who believe that

Creationism or ID is the only correct way of thinking and that evolution contradicts their beliefs. This concern led first to a movement to get ‘scientific creationism’ taught in schools; when that failed, the movement to teach ‘Intelligent Design’ (ID) was tried. The Discovery Institute tried to get ID in public schools by making claims, for one example, that evolution is ‘only’ a theory and thus cannot be proven fully as in a laboratory.<sup>1</sup> Here, I describe and elaborate on both ID and evolution (and their respective claims); I also explain which are allowed in a high school science classroom.

### Intelligent Design Creationism

Before one can decide whether these views belong in the science classroom, one must know what the basis is for claiming ID, or any explanation of historical origins, is science. A basic definition of ID is “the view that it is possible to infer from empirical evidence that certain features of the universe and of living things are best explained by an intelligent cause, not an

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<sup>1</sup> The example of natural selection as ‘only a theory’ is based, at least partially, on a false distinction between laboratory sciences and the historical sciences. There are other arguments such as the fact that ‘theory’ in science means an explanation that is so robust and repeatedly tested as to organize and

explain all the data into a coherent and logical form. For a good reference detailing and critiquing the claims of ID, see Pennock, 2001; for a good historical account of the Seventh Day Adventist origins of scientific creationism and flood geology, see Numbers, 2006.

undirected process such as natural selection"<sup>2</sup> What this is saying is that there are certain aspects in the world and in living things that could not have arisen without an intelligence causing and directing them.

Instead, there is someone who designed it to happen in a particular way because it is too complex to happen via undirected natural processes. While this may sound almost like Creationism, one must realize the differences. In Creationism, there is typically the God of the bible who creates everything, just how it is now; so there is no evolution and the Earth is very young. In ID, there is no identity given to the designer or god, thus one does not have to believe in the God of the Bible to accept it.<sup>3</sup> One *could* believe aliens from another planet were the designers. In ID, there can still be evolution, but one would say that each species was designed teleologically (with an end goal or purpose) so that it would eventually become what it is now. The problem with these claims is that they cannot be tested. In fact, whether something was designed or not is simply an *a priori* human perception of what is or is not 'designed.' Consequently, ID cannot be science.

One of the most common arguments for ID is the argument of "irreducible complexity." Michael J. Behe was one of the first to use this term; he defines it as "a single system that is necessarily composed of several well-matched, interacting parts that contribute to the basic function, and where the removal of

any one of the parts causes the system to effectively cease functioning."<sup>4</sup> In simpler terms, if there is a system and if one part of the system is removed, the whole contraption collapses.

One metaphor to illustrate this is a mouse trap. Behe explains that a mouse trap is composed of five parts; the base, the catch, the spring, the hammer and the hold-down bar. If one of these parts is taken away from the mousetrap, the mousetrap loses its function and can no longer catch mice. The flagella, claims Behe, is an example for irreducible complexity that is seen in living organisms. Behe argues that it is irreducibly complex because if one of the proteins is removed, it ceases to work. Another example is the "clotting cascade" in vertebrates. For this example, all of the parts must be there in order for blood to clot and because they have always been necessary for the clotting process, they could not have been added through natural selection. ID says that these mechanisms could not have been created through evolution from scratch, and because of this, they must have been implemented by means of a designer. While this seems to be a good argument at first, it falls apart under the critique by Kenneth Miller.<sup>5</sup>

### **Evolution by Natural Selection**

The theory of evolution by natural selection is what is being taught in most science classes today. It has gone through the rigorous process of scientific hypothesis

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<sup>2</sup> Intelligent design, 2013. Whether or not natural selection is "undirected" is not addressed by science. Unfortunately, this definition shows a misunderstanding of natural selection. Whether or not natural selection is "undirected" was never adjudicated by Darwin or modern day neo-Darwinists. One can have completely naturalistic evolution where nothing other than pure physicalism is involved (e.g. of the Richard Dawkins variety) *or* supernatural evolution where a deity *might* be used to

explain the process at some point even if that deity was invoked only as the originator of all natural laws (e.g. the position of BioLogos and indeed of Charles Darwin as well).

<sup>3</sup> Nevertheless, most would agree, including Judge Jones in the Dover v Kitzmiller case, that ID's implication is the Abrahamic God of the bible.

<sup>4</sup> Behe, 2010, p.428..

<sup>5</sup> Miller, 2010.

testing in order to be eligible for inclusion into a high school biology textbook. A broad definition of evolution, then, is “any heritable change in a population of organisms over time. Changes may be slight or large, but must be passed on to the next generation (or many generations) and must involve populations, not individuals.”<sup>6</sup> Evolution does not happen to individuals; adapting to an environment at the individual level is homeostasis. Evolution occurs in populations whenever the frequency of alleles change in the gene pool of that population often in response to a selective change in environment.

There are two major parts to evolution: the theory of descent with modification from a common ancestor and the theory of natural selection. The theory of common descent claims that all organisms arose from a common ancestor. Through factors such as geographic isolation, the species adapts and eventually a branching process can occur causing a new species to arise from the previous one. The most important thing for the theory is that all species came from some organism that preceded it. Otherwise, there would have to be multiple instances of ‘saltations’ or spontaneous generation.<sup>7</sup>

The theory of natural selection can be defined as a “mechanism whereby biological individuals that are endowed with favorable or deleterious traits reproduce more [or less!] than other individuals that do not possess such traits”<sup>8</sup> This is sometimes

referred to as survival of the fittest. It is simply saying that if an organism has a trait that helps it survive long enough to reproduce, it will more likely produce progeny and pass those traits on to the population. If the organism has a trait that is unfavorable, then it will be less likely to pass it on due to poorer chances of reproducing. These ideas combine to form the core of the theory of evolution. Natural selection is *not* ‘survival of the fittest’ (Huxley’s inaccurate Victorian progress phrase) it is all about *proliferation of the slightly more adequate*.<sup>9</sup>

### Arguments against ID as Science

Kenneth Miller is a Christian who teaches at Brown University in Rhode Island; he advocates evolution and co-authors many high school biology textbooks. He has defended the teaching of evolution in science classes arguing against the proposal that ID be taught as an alternative. He has clearly understood the arguments for ID and has successfully rebutted their arguments. First, he notes that when people argue for ID, their primary argument is that evolution does not explain everything, so there must be something else; their proof, then, is based on the perceived inadequacy of evolution to account for these complex features.<sup>10</sup>

The idea of irreducible complexity, one of ID’s main arguments, is unconvincing to Miller. The claim is that there are complex features that cannot be eliminated at all or the structure stops working completely. This

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<sup>6</sup> Evolution, 2013.

<sup>7</sup> Saltation is a historical term to refer to spontaneous generation; an easy way to grasp these terms is to say “life and all species arose by multiple *poofings*.” Consequently, we would have to propose a *poofer* to magically do all the *poofings*.

<sup>8</sup> *ibid*.

For a litany of examples illustrating how robust evolutionary explanation is, see the many Stephen J Gould articles in *Natural History* magazine or his

plethora of books. Neil Shubin provides some of the more lucid and recent presentations of this same robustness in *Your Inner Fish* (2009) and *The Universe Within* (2013); both books are published by Random House in New York.

<sup>9</sup> Daniel K. Brannan, personal communication. This is what I like to call, *Brannan’s Theorem* of natural selection.

<sup>10</sup> Miller, 2007.

is followed with the claim that there is no way for evolutionary processes to have produced all the individual elements in a way to form a whole system (e.g., the flagella example). Miller argues that these complex systems are composed of smaller systems which actually *do* have a function even prior to being co-opted to work within a larger whole. This would mean that if a protein was removed from the system, the overall system would stop but the smaller system that it is composed of would continue to keep working.

One example that Miller gives is the Type 3 secretory system in some bacteria. It is composed of ten of the proteins that are in the flagella and has the function of injecting poisons into other cells.<sup>11</sup> Miller uses this to falsify irreducible complexity. This would mean that evolution did not just create the flagella out of thin air, but instead means that through evolution, these smaller systems were able to gain the advantages over other systems over millennia until these systems were able to form the flagella.

### **What should we teach?**

Ultimately, the question boils down to what should be taught in science classrooms: evolution or ID? There have been school districts that have tried to teach alternatives to evolution, but their decisions have consistently been overturned by the courts. One of the problems with ID is that no identity to the designer is given. When most people hear of a designer that created things in an orderly manner that evolution could not, their minds immediately think of the Abrahamic God. In 2004, the Dover Area

School District opted to include ID as an alternative to evolution in their science classes; the science teachers objected. The school board claimed that “Students will be made aware of gaps/problems in Darwin's theory and of other theories of evolution including, but not limited to, ID. Note: Origins of Life is not taught.”<sup>12</sup> This claim echoes what Miller said about ID, that their biggest argument is that evolution does not explain everything so ID must have some support.

Dover was taken to court since they were infringing upon the establishment clause of the First Amendment. The essential argument for ID was that it could be used to fill the perceived gaps in evolution: when something could not be explained through the science of evolution, the teacher could use ID to fill the gap. The student asks a question about something which the teacher cannot explain scientifically; the teacher responds that there is a designer that created it in a way for it to happen. Thus, some sort of ‘god as the designer’ is implied.<sup>13</sup> This violates the Establishment Clause since the existence of gods establishes a religion that is supported by the state.

Another problem with teaching ID is whether or not it is really science. There are many people who do not believe that ID meets the requirements to be considered real science. The problem is that ID is *not* testable. To test ID, you would have to find the designer. If the designer is a supernatural being, testing is simply something that cannot be done. The only other possibility would be that of an extraterrestrial being

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<sup>11</sup> *ibid.*

<sup>12</sup> *Kitzmiller v. Dover Area School District*, 2005.

<sup>13</sup> A number of other metaphors could be used as well: god the machinist, god the engineer, god the artificer. None of these honor the God of Creation; they merely create God in human's image.

who designed the rest of the universe. This brings about other problems. If there is an extraterrestrial being that designed life, then what designed this physical being? The other problem would be getting people to take you serious about an extraterrestrial being.

Evolution, on the other hand, can be studied physically (not supernaturally) through the fossil records and by microevolutionary processes that support macroevolution. In the interview with Miller, he notes that ever since Behe introduced his idea of irreducible complexity, there has not been a single paper or scientific evidence to back it up.<sup>14</sup> On the other hand, when one searches for papers on evolution in science journals, the number of articles adds up to hundreds per week.

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#### Conclusion

The bottom line is that ID should not be taught in schools because it is simply not scientific. It cannot be tested like evolution can. In a lecture given by Miller, he covers the requirements for scientific information getting into a high school text book. There are several steps that involve testing and evidence; ID cannot make it past these steps. Miller testified in the Dover trial where he referenced the scientists representing ID who themselves stated that ID it is not science. Professor Minnich spoke on behalf of ID and said that he "acknowledged that for ID to be considered science, the ground rules of science have to be broadened to allow consideration of supernatural forces."<sup>15</sup> If one has to change the ground rules of science to consider something else science, then it is simply not science.

<sup>14</sup> *op. cit.* ref. 5

<sup>15</sup> Miller, no date.