

Equal Time for Intelligent Design? An Intimate Debate Case

by

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Introduction

How organisms originated on Earth is one of the most fundamental questions people have asked for centuries. It is generally believed that this is an appropriate topic to consider in a science classroom. Certain religious sects, especially the evangelical Christians in the United States, believe that theories such as Evolution undermine their religious beliefs. Some believe that an Intelligent Designer created the Universe together with the organisms on Earth just as we find them today while others believe that the Designer only entered at certain specific times (e.g., in the early stages of life). They argue that the Intelligent Design (ID) principle should be represented as an alternative explanation in the science classroom whenever Evolution is taught, or that ID should receive “equal time.”

Should Intelligent Design be included in public school science curricula alongside Evolution, yes or no? Before coming to a considered opinion regarding this controversial issue, you will examine two polarized positions during a classroom debate, making use of the instructional sheets linked below. Your instructor will provide you with ground rules for the debate.

Pro—Science Curricula That Include Evolution Should Also Include ID.

- Personal Story: “Letter from a Failed Atheist”
- Pro Information Sheet

Con—Science Curricula That Include Evolution Should NOT Include ID.

- Personal Story: “Finding Darwin’s God”
- Con Information Sheet

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Letter from a Failed Atheist upon Reading the *National Geographic*

The article was about the amazing adaptations that orchids have made to their environments in order to propagate successfully. As I read I was particularly intrigued by the reproductive strategy of one species, which involved the cooperation of a male wasp. Apparently the flower resembled very closely the female of this species of wasp, including having an opening in the proper place, so that the male wasp might just reach, by copulating with the flower, the pollen produced by the blossom. Flying on to the next flower the process would be repeated, and thus cross-pollination take place. And what made the flower attractive to the wasp in the first place was that it emitted pheromones (specific chemical attractants much used by insects to bring the sexes together) identical to the female of that species of wasp. With some interest I studied the accompanying picture for a minute or so. Then, with a terrific sense of shock, I realized that in order for that reproductive strategy to have worked at all, it had to be perfect the first time. No incremental steps could account for it, for if the orchid did not look like and smell like the female wasp, and have an opening suitable for copulation with the pollen within perfect reach of the male wasp's reproductive organ, the strategy would have been a complete failure.

I will never forget the sinking feeling that overwhelmed me, because it became clear to me in that minute that some kind of God in some kind of fashion must exist, and have an ongoing relationship with the processes by which things come into being. That in short, the creator God was not some antediluvian myth, but something real. And, most reluctantly, I also saw at once that I must search to find out more about that God.

Extract from a letter to Richard Dawkins from an American minister who had been an atheist but was converted by reading an article in the National Geographic. Quoted in R. Dawkins, River Out of Eden: A Darwinian View of Life, pp. 59–60 (New York: Basic Books, HarperCollins Pub., 1995).

Pro: Science Curricula That Include Evolution Should Also Include ID

How organisms originated on earth is one of the most fundamental questions people have asked for centuries. This question rightfully should be taught in the science classroom. For many years teachers have explained the presence of organisms saying the random process of evolution is the process that has brought this about. Recently, an alternative process has been proposed that is consistent with the *prima facie* evidence. Organisms look designed because they are. An Intelligent Design agent produced the origin and diversity of life on earth. This view is consistent with the views of the majority of Americans and we argue that both these views deserve equal time in the classrooms of the public schools.

1. *Fairness*: Intellectual honesty and fairness demand that ID be taught whenever Evolution is taught as they are both legitimate alternative explanations about the world and its organisms. Students should hear the arguments and decide for themselves as to which makes most sense.
2. *Paley's watch*: As William Paley (1802) suggested, the world and its inhabitants look designed. Organisms are beautifully adapted for their ways of life. The beaks of birds are all specially adapted for their life style: the hooked beak of the eagle for tearing meat, the fish catching beak of the pelican, the sharp pointed beak of the woodpecker for piercing grubs in the wood, the water straining beak of the duck—each perfectly suited for the kind of life their owners lead. These structures and complex arrangements of structures such as the human eye cannot be the result of random events.

We do not know who or what the designer is (it could be a super intelligence, a time-traveling cell biologist, or extraterrestrials) but a design requires a designer. Indeed, the Nobel Prize winning biochemist Francis Crick and a colleague published a well known paper arguing that the first life on Earth was seeded here by aliens (“Directed Panspermia”), so the notion of an extraterrestrial super intelligence is not mere science fiction.

3. *Irreducible complexity*: Many biological structures such as the immune system and the flagellum of a bacterium are irreducibly complex; that is, the removing of one part destroys the system's function. Thus, they must have been produced together, and this implies a designer that put the system together all at once. Most cellular systems including photosynthesis, the blood clotting mechanisms, and a host of other metabolic pathways have not been explained by any biochemist interested in evolution. Some investigators have speculated about the evolution of these systems suggesting ways that parts of them could have come together, but they cannot explain where those parts come from in the first place. It seems self-evident that the first cells are self-contained units assembled concurrently. (M. Behe, 1996, *Darwin's Black Box: The Biochemical Challenge to Evolution*, New York: Touchstone-Simon & Shuster.)
4. *Simulations*: Computer programs that purport to simulate evolution and natural selection must be designed themselves. This is strong evidence that evolution works exactly the same way; a designer is needed.
5. *Homologies*: Evolutionists say that similarities among organisms (homologies) that occur in the anatomy and DNA sequences are evidence of evolution, but in fact they simply indicate that the organisms have the same designer.
6. *The Anthropic Principle*: The cosmos is finely tuned to permit human life, according to the Anthropic Principle. If any one of the fundamental constants were even slightly different, life would have been impossible. Martin Rees, Britain's Astronomer Royal, has identified these six cosmic numbers:
 - $\omega = 1$, the amount of matter in the universe, such that if ω were greater the universe would have collapsed and if it were smaller no galaxies would have formed;
 - $\epsilon = 0.007$, how firmly the atomic nuclei bind together, such that if ϵ were 0.006 or 0.008, matter could not exist as it does;
 - $D = 3$, the number of dimensions that we live in, such that if D were 2 or 4, life could not exist;
 - $N = 10^{36}$, the ratio of the strength of gravity to that of electromagnetism, such that if it had a few less

zeros, the universe would be too young and too small for life to evolve;

- $Q = 1/100,000$, the fabric of the universe, such that if Q were smaller the universe would be dominated by giant black holes; and
- $\lambda = 0.7$, the cosmological constant or “antigravity force,” that is causing the universe to expand at an accelerating rate, such that if the value were larger it would have prevented stars and galaxies from forming.

“Change these relationships and stars, planets, and life could not exist. Thus, this is not just the best of all possible worlds, it is the *only* possible world—and a world crafted with remarkable math skills, to boot” (M. Shermer, 2006, *Why Darwin Matters*, New York: Times Books). This is clear evidence of design.

7. *Multiple motives*: Critics of the Intelligent Design model state that organisms are not designed perfectly. Behe (1996) answers this by saying, “Clearly, designers who have the ability to make better designs do not necessarily do so. For example, in manufacturing, ‘built-in obsolescence’ is not uncommon—a product is intentionally made so it will not last as long as it might, for reasons that supersede the simple goal of engineering excellence I do not give my children the best fanciest toys because I don’t want to spoil them, and because I want them to learn the value of a dollar. The argument from imperfection overlooks the possibility that the designer might have multiple motives, with engineering oftentimes relegated to a secondary goal The reasons that a designer would or would not do anything are virtually impossible to know.”
8. *Vestigial organs*: Evolutionists claim that an intelligent designer would never have produced functionless structures such as the appendix, and cave fish without eyes that can see. They argue that much of the DNA is “junk” without any use. Behe (1996) says there are three simple answers to this criticism:
 - We may not have discovered the function of these “vestigial structures” yet. The tonsils were once thought to be useless and now we know they are an integral part of the immune system. Moreover, physicians know that the appendix is not functionless; it contains cells that are part of the immune system. We have now discovered that some of the DNA that we thought was “junk” indeed serves important structural roles.
 - Even if you accept the fact that structures or chemicals like pseudogenes occur (i.e. genes that look “ancestral” but are “turned off”), you still have to account for them. Even to make a pseudogene requires a dozen sophisticated proteins.
 - A designer clearly might have designed an apparently useless structure that will have use at some future time in the history of the organism.
9. *Randomness and probability*: Evolutionists continually speak of the random effects of evolution; Stephen Jay Gould, noted evolutionary writer, has written about the contingency effects of evolution. That is, if you played the tape of evolution over again then the results would be different each time. To that we reply: the world hardly looks random. Indeed, even Aristotle pointed out there is a *Scala Naturae* or the ladder of life where inanimate objects are on the bottom, plants are on the next rung, then simple animals like worms, next and higher up, vertebrates and mammals, with humans occupying the highest rung. Ecosystems with hundreds and thousands of organisms are not random collections of species but a highly integrated network. The noted Nobel Prize winning astronomer, Fred Hoyle, has reportedly said that the probability of life originating on Earth is no greater than the chance that a hurricane, sweeping through a scrap yard, would have the luck to assemble a Boeing 747. We can make the same statement about the random effects that are supposedly involved in the evolution of any complex organism, be it man or beast. The world is not random and random events could not have produced it.
10. *Consciousness and higher faculties*: Evolutionists claim that they can essentially ascribe all characteristics of organisms to processes such as random variation and natural selection. Yet, it is clear that these processes *cannot* explain consciousness, language and musical abilities, morality, religion and the soul. In fact, Alfred

Russell Wallace, co-discoverer of evolution with Charles Darwin, adamantly insisted that “natural selection cannot account for mathematical, artistic, or musical genius, as well as metaphysical musings, and wit and humor; and that something in ‘the unseen universe of Spirit’ had interceded at least three times in history: (1) The creation of life from inorganic matter. (2) The introduction of consciousness in the higher animals. (3) The generation of the above-mentioned faculties in mankind. He also believed that the *raison d’être* of the universe was the development of the human spirit.”

(See http://en.wikipedia.org/wiki/Alfred_Russel_Wallace and A.R. Wallace, 1889, *Darwinism; An Exposition of the Theory of Natural Selection With Some of Its Applications*, London: Macmillan & Co.)

11. *Politics and law:* The recent legal case brought by the ACLU against the Dover Area School District was not a church vs. state issue, it was about a free speech issue. Here is the statement from the Discovery Institute.

In *Kitzmiller v. Dover Area School District*, the ACLU is suing the school board of Dover, Pennsylvania for adopting a policy that requires students to be informed about the theory of intelligent design. The ACLU claims that the Dover policy violates the Establishment Clause of the First Amendment by promoting a religious doctrine. While Discovery Institute does not support efforts to require the teaching of intelligent design in public schools, it also strongly opposes the ACLU’s attempt to censor classroom discussion of intelligent design. Dr. John West, Associate Director of Discovery Institute’s Center for Science and Culture, has released the following statement explaining the Institute’s position:

“Eighty years ago the ACLU went to court in Tennessee to defend the right of John Scopes to teach his students about evolution. Today, the ACLU is betraying the principle of academic freedom by seeking a government-imposed gag-order on teachers and students that would prevent even voluntary discussions of intelligent design in the science classroom. All Americans who cherish free speech should reject the ACLU’s effort to decide the debate over evolution through court orders rather than the free marketplace of ideas.

“Apparently the ACLU has come to believe that some ideas are just too dangerous for students and teachers to discuss. On the one hand, it insists that the First Amendment protects a teacher’s right to teach evidence supporting Darwin’s theory. On the other hand, it claims that the same First Amendment forbids teachers from discussing dissenting scientific theories. It looks like the ACLU believes that free speech only applies to one side of the evolution debate. This is a blatant double-standard.

“Discovery Institute strongly opposes the ACLU’s effort to make discussions of intelligent design illegal. At the same time, we disagree with efforts to get the government to require the teaching of intelligent design. Misguided policies like the one adopted by the Dover School District are likely to be politically divisive and hinder a fair and open discussion of the merits of intelligent design among scholars and within the scientific community, points we have made repeatedly since we first learned about the Dover policy in 2004. Furthermore, most teachers currently do not know enough about intelligent design or have sufficient curriculum materials to teach about it accurately and objectively.

“Rather than require students to learn about intelligent design, what we recommend is that teachers and students study more about Darwinian evolution, not only the evidence that supports the theory, but also scientific criticisms of the theory.”

<http://www.discovery.org/scripts/viewDB/index.php?command=view&id=284>

Finding Darwin's God

The great hall of the Hynes Convention center in Boston looks nothing like a church. So what was I doing there, smiling in the midst of an audience of scientists, shaking my head and laughing to myself as I remembered another talk, given long ago, inside a church to an audience of children? [M]y first Communion. I was eight years old sitting with the boys on the right side of our little church (the girls sat on the left) and Father Murphy, our pastor was speaking.

Trying to put the finishing touches on our year of preparation for the sacrament, father was trying to impress us with the reality of God's power in the world

“Look at the beauty of a flower. The Bible tells us that even Solomon in all of his glory was never arrayed as one of these. And do you know what? Not a single person in the world can tell us what makes a flower bloom. All of those scientists in their laboratories, the ones who can split the atom and build jet planes and televisions, well, not one of them can tell you how a plant makes flowers Flowers, just like you, are the work of God.”

I was impressed. No one argued, no one wisecracked. We filed out of the church like good little girls and boys, ready for our First Communion the next day. And I never thought of it again, until this symposium on developmental biology. Sandwiched in between two speakers working on more fashionable topics in animal development was Elliot M. Meyerowitz, a plant scientist at Caltech

[By crossing various plant mutants, Meyerowitz and his team were] able to identify four genes that have to be turned on or off in a specific pattern to produce a normal flower. Each of these genes, in turn sets off a series of signals that “tell” the cells of a brand new bud to develop as sepals or petals rather than ordinary leaves To me, sitting in the crowd thirty-seven years after my First Communion, the scientific details were just the icing on the cake. The real message was “Father Murphy, you were wrong.” God doesn't make a flower. The floral induction genes do

Before the age of science, one might have argued that the world would never yield its secrets to the feeble powers of the human mind. Neither the towers of heaven nor the depths of the earth were accessible to man, and life in all of its forms seemed the greatest mystery of all. As we know, all of that has changed. We have walked on the moon, probed the depths of the skies, and even decoded the secrets of life. The good old days of utter mystery may not be gone, but they are fading fast. And a scientific detective list of solved cases, like it or not, includes evolution.

Adapted from Kenneth R. Miller, Finding Darwin's God: A Scientist's Search for Common Ground Between God and Evolution, pp.260–263 (New York: HarperCollins Pub. Perennial ed., 2002).

Con: Science Curricula That Include Evolution Should *Not* Include ID

How organisms originated on earth is one of the most fundamental questions people have asked for centuries. This question rightfully deserves a place within a science curriculum, however only scientifically grounded theories should be entertained as answers. For centuries people explained natural events in terms of miracles and gods. Now scientific answers replace many of these ideas. Certain religious sects, especially the evangelical Christians in the United States, believe that theories such as Evolution undermine their religious beliefs. Some believe that an Intelligent Designer created the Universe together with the organisms on earth just as we find them today while others believe that the Designer only entered at certain specific times (e.g., in the early stages of life). They argue that the ID principle should be represented in the science classroom if evolution is taught. This is not acceptable for the following reasons.

1. *Bad designs:* Organisms are not intelligently designed. No intelligent designer would have designed the human eye so poorly with a reversed retina and a blind spot in the middle. Most people in the United States either wear corrective lenses or have corrective surgery on their eyes. This is not intelligent design. Older people in the world have trouble with back pain, prostate trouble and other ailments that are due to poor design features. The esophagus and the trachea cross each other in the human throat, and because of this imperfect design many people end up choking on food that goes down the wrong way. This design would be corrected simply by having the two tubes completely separate one from another. Not only are these designs imperfect, it is also critical to note that we are able to explain “the imperfections” by looking at the evolutionary history of the organisms. That is, we can see how the crossover system of the esophagus and the trachea is a legacy of evolutionary history which began in fish.
2. *Vestigial organs:* Vestigial organs exist in all organisms. These are organs that have no apparent function or reduced function. For example, in humans we have the appendix, the muscles that wiggle the ears, the coccyx or tail bone, and goose bumps. There are many species of animals that live in caves (e.g., fish, salamanders) with degenerate eyes that cannot see. Snakes have one functionless lung and birds have one functionless ovary. There are flightless birds (e.g., kiwis, ostriches) with wings that are too puny to be useful. There are whales with tiny back legs having all of the normal bones (but miniaturized) that are embedded in their tissues. DNA has many known pseudogenes that are never turned on. Intelligent designers will argue that these structures really aren't functionless; they do have functions, it's just that scientists haven't identified them yet.

Again, the critical point is that not only are the structures functionless, but that biologists are able to explain *how* this happened by using the evolutionary approach: the ancestors of the organisms once had functioning structures, but when they occupied new habitats (such as caves) or adopted new patterns of behavior, these organs began to regress since they were no longer under selective pressure and advantageous to their owners.

3. *Extinction:* Paleontologists have determined that perhaps 500 million species that once existed on this planet have become extinct. These are clearly failed designs. This cannot be the work of an Intelligent Designer, yet it is easily explained by competition and natural selection among species vying for limited resources.
4. *Embryological argument:* There are many structures that are made by an embryo that are reabsorbed or drastically modified before birth. For example, whale embryos develop hair and then discard it by the time of birth. The whale embryo first makes a normal nostril at the end of its snout and then it shifts to the top of the head to form a blowhole. Why wouldn't an intelligent designer wishing a hairless whale and one with a blowhole simply design it that way to start with? In mammalian embryos, gill supports and blood vessels to supply them are first made and then reabsorbed. All such developments are incomprehensible to a person arguing in favor of the creation model except to say that we cannot understand the mind of the creator. On the other hand, all of these are perfectly understandable if we accept the fact that ancestral genes are still present.

5. *God of the gaps*: There are many things that scientists do not yet understand. There are gaps in our knowledge. Years ago we did not understand why the planets move the way they do, or what lightening is, or how heredity is transmitted. Now we do. People originally ascribed these unknown events to gods and miracles. As science advances these gaps in our knowledge decrease. Some Intelligent Design proponents such as Michael Behe say that we shall never come up with an explanation for how certain biochemical processes evolve because they are “irreducibly complex” and can only have been intelligently designed. The ID proponents simply give up and declare these to be miracles. This is the antithesis of a scientist’s approach. They are arguing from the position of “personal incredulity,” i.e. that just because they cannot personally *imagine* how such things can happen, they believe that they *cannot* happen (R. Dawkins, 2006, *The God Delusion*, New York: Bantam Press). Philosopher David Hume pointed out in the eighteenth century that just because we cannot provide a natural explanation for a phenomenon does not allow us to conclude that a miracle was involved.

All of the systems that Behe claims to be irreducibly complex have been well studied and have been shown not to be so. For example, the blood clotting cascade works perfectly well in whales that are missing a part of the cascade, and blood still clots in puffer fish despite their missing three parts. Thus, it is easy to see how these systems could be built up slowly over millennia one piece at a time.

Theologians such as Dietrich Bonhoeffer are particularly distressed with the gaps argument because as science fills in the gaps there is a slow erosion of God’s Powers: “... God is threatened with eventually having nothing to do and nowhere to hide” (Dawkins, 2006).

6. *Politics and law*: The Intelligent Design argument was not successful in the infamous legal case argued in Dover, Pennsylvania, where equal time was demanded for alternative teaching of biology. The conservative judge correctly identified that the defendants and witnesses who were arguing for Intelligent Design believed that the “Designer” was God. Thus, the school policy was in violation of the US Constitution and the separation of church and state clause.

U.S. District Judge John E. Jones delivered a stinging attack on the Dover Area School Board, saying its first-in-the-nation decision in October 2004 to insert intelligent design into the science curriculum violates the constitutional separation of church and state. Jones decried the “breathtaking inanity” of the Dover policy and accused several board members of lying to conceal their true motive, which he said was to promote religion.

A six-week trial over the issue yielded “overwhelming evidence” establishing that intelligent design “is a religious view, a mere re-labeling of creationism, and not a scientific theory,” said Jones, a Republican and a churchgoer appointed to the federal bench three years ago.

<http://www.msnbc.msn.com/id/10545387/>

7. *Fairness*: Scientists and teachers have an obligation to present to the public their best understanding of the physical nature of the universe. For 150 years the prevailing paradigm has been that organisms change over time—i.e., they evolve. The evidence is present in the fossil record, as well as in the anatomy, embryology and genetics of organisms. Anyone that is going to challenge the established facts and theory must present a credible alternative with overwhelming evidence. “Extraordinary claims demand extraordinary evidence.” The advocates of Intelligent Design provide little or no evidence except to proclaim that our present understanding of evolution cannot explain everything; but that is the state of all science—that is why scientists continue to work.

Scientists do not have the obligation to present to students every crackpot idea that comes along. Not every theory has equal merit and it would not be fair to pretend that they do. Scientists *do* have the obligation to present the evidence as they understand it. Religion and miracles do not belong in the science classroom.

8. *Equal time for whom?* ID proponents argue that their views should have equal time with evolution to explain the natural world. Eugenie Scott has identified eight different positions one might take on the creation-evolution debate (<http://www.natcensci.ed.org/>). Moreover, there are hundreds of creation stories from other cultures including a “No Creation Story” from India where the world has always existed as it is now. If these stories were granted equal time when would science ever be taught? (M. Shermer, 2006, *Why Darwin Matters*, New York: Times Books.)
9. *Testability and convergence:* There is no obvious way that we can test the concept of an Intelligent Designer, especially one with supernatural powers. By definition, they can perform miracles. How does one test miracles? In contrast, the tenets of evolution can be and have been repeatedly tested by scientists. There is a convergence of evidence from all branches of science all pointing to the same conclusion that organisms including humans evolved from organisms very different than themselves.
10. *Non-intelligence:* Intelligent Design proponents say that organisms look designed because they are. We agree. They are designed, but the “designer” is natural selection working on the chance variations and mutations that are present in the population. Natural selection is not intelligent—it is a non-intelligent (rather than unintelligent) process whereby those members of a population who survive and reproduce most successfully will be the most successful in passing genes with their characteristics to the next generation. The question of intelligence is irrelevant and simply not the issue.
11. *False dichotomy:* ID proponents spend virtually all of their time criticizing the supposed inadequacies of modern biology and evolution—arguing that if evolution has flaws then Intelligent Design must be accepted as the only other game in town. Obviously, just because evolution is flawed does not mean that ID is correct. There may be other possibilities. The ID argument must advance its own case using evidence and not just criticism—this they have failed to do.
12. *The Anthropic Principle:* Physicists John Barrow and Frank Tipler in their 1988 book *The Anthropic Cosmological Principle* (New York: Oxford University Press) state:

It is not only man that is adapted to the universe. The universe is adapted to man. Imagine a universe in which one or another of the fundamental dimensionless constants of physics is altered by a few percent one way or other. Man could never have come into being in such a universe.

In fact, ID creationists argue the universe could not have existed at all—unless it was designed for life and us! There are several replies to this:

 - The universe is not finely tuned to life. Most of it is empty space and the matter that we know about is inhospitable to life. In fact, for most of its history life did not exist on Earth either. Further, it may be that the so-called “constants” of nature have varied over time, making the universe only finely tuned now!
 - Our universe is not finely tuned to us; we are finely tuned to it. There may be other life forms that could be based on other physics.
 - There may be other universes. String theory predicts 10^{500} possible worlds with different self-consistent laws and physics. We may live in a *multiverse*, in which our universe is one of many bubble universes all with different laws. Theoretical physicist Stephen Hawking imagines that baby universes may lead to the spontaneous creation of tiny universes out of nothing. (Shermer, 2006).
13. *Designer design:* If we accept the ID argument, we are still left with the question “Who designed the Designer?” (Dawkins, 2006).