**INTELLIGENT DESIGN**

*...the odds against DNA assembling by chance are 1040,000 to one [according to Fred Hoyle, Evolution from Space,1981]. This is true, but highly misleading. DNA did not assemble purely by chance. It assembled by a combination of chance and the laws of physics. Without the laws of physics as we know them, life on earth as we know it would not have evolved in the short span of six billion years. The nuclear force was needed to bind protons and neutrons in the nuclei of atoms; electromagnetism was needed to keep atoms and molecules together; and gravity was needed to keep the resulting ingredients for life stuck to the surface of the earth.*  
--Victor J. Stenger[\*](http://www.talkorigins.org/faqs/cosmo.html)

To explain the origin of the DNA/protein machine by invoking a supernatural Designer is to explain precisely nothing, for it leaves unexplained the origin of the Designer. You have to say something like 'God was always there', and if you allow yourself that kind of lazy way out, you might as well just say 'DNA was always there', or "Life was always there',  and be done with it.  --Richard Dawkins, [*The Blind Watchmaker : Why the Evidence of Evolution Reveals a Universe without Design*](http://www.amazon.com/exec/obidos/ISBN=0393315703/roberttoddcarrolA/) p. 141

... rarity by itself shouldn't necessarily be evidence of anything. When one is dealt a bridge hand of thirteen cards, the probability of being dealt that particular hand is less than one in 600 billion. Still, it would be absurd for someone to be dealt a hand, examine it carefully, calculate that the probability of getting it is less than one in 600 billion, and then conclude that he must not have been dealt that very hand because it is so very improbable. --John Allen Paulos, [*Innumeracy: Mathematical Illiteracy and its Consequences*](http://www.amazon.com/exec/obidos/ISBN=0679726012/roberttoddcarrolA/)

Intelligent design (ID) is an anti-evolution belief that asserts that naturalistic explanations of some biological entities are not possible and such entities can only be explained by intelligent causes.[\*](http://www.intelligentdesignnetwork.org/)  Advocates of ID maintain that their belief is scientific and provides empirical proof for the existence of God or Superintelligent aliens. They claim that intelligent design should be taught in the science classroom as an alternative to the [science](http://skepdic.com/science.html) of evolution. ID is essentially a hoax, since evolution is consistent with a belief in an intelligent designer of the universe. The two are not contradictory and they are not competitors. ID is proposed mainly by people at the [Discovery Institute](http://www.discovery.org/) and their allies, who feel science threatens their Biblical-based view of reality.

The arguments of the ID advocates may seem like a rehash of the [creationist](http://skepdic.com/creation.html) arguments, but the defenders of ID claim that they do not reject evolution simply because it does not fit with their understanding of the Bible. However, they present natural selection as implying the universe could not have been designed or created, which is nonsense. To deny that God has the power to create living things using natural selection is to assert something unknowable. It is also inconsistent with the belief in an omnipotent Creator.

One of the early-birds defending ID was UC Berkeley law professor [Philip E. Johnson](http://www.talkorigins.org/faqs/johnson.html), who seems to have completely misunderstood Darwin's theory of natural selection as implying (1) God doesn't exist, (2) natural selection could only have happened randomly and by chance, and (3) whatever happens randomly and by chance cannot be designed by God. None of these beliefs is essential to natural selection. There is no inconsistency in believing in God the Creator of the universe and in natural selection. Natural selection could have been designed by God. Or, natural selection could have occurred even if God did not exist. Thus, the first of several fallacies committed by ID defenders is the false dilemma. The choice is not either natural selection or design by God or some other Superintelligent creatures. God could have designed the universe to produce life by random events following laws of nature. God could have created Superintelligent aliens who are experimenting with natural selection. Superintelligent aliens could have evolved by natural selection and then introduced the process on our planet. There may be another scientific theory that explains living beings and their eco-systems better than natural selection. The possibilities may not be endless but they are certainly greater than the two considered by ID defenders.

Two scientists often cited by defenders of ID are Michael Behe, author of *Darwin's Black Box* (The Free Press, 1996),andWilliam Dembski, author of *Intelligent Design: The Bridge between Science and Theology* (Cambridge University Press, 1998). Dembski and Behe are fellows of the [Discovery Institute](http://www.discovery.org/), a Seattle research institute funded largely by Christian foundations. Their arguments are attractive because they are couched in mathematical or scientific terms and backed by what seems to be scientific competence. However, their arguments are identical in function to the [creationists' arguments](http://skepdic.com/creation.html): rather than provide positive evidence for their own position, they mainly try to find weaknesses in natural selection. As already noted, however, even if their arguments are successful against natural selection, that would not increase the probability of ID.

Behe is an Associate Professor of Biochemistry at [Lehigh University (read this disclaimer from his department)](http://www.lehigh.edu/~inbios/news/evolution.htm). Behe's argument is not essentially about whether evolution occurred, but how it had to have occurred. He claims that he wants to see "real laboratory research on the question of intelligent design."[\*](http://www.reall.org/newsletter/v07/n12/index.html)  Such a desire belies his indifference to the science/metaphysics distinction. There is no lab experiment relevant to determining whether God exists.

In any case, Behe claims that biochemistry reveals a cellular world of such precisely tailored molecules and such staggering complexity that it is not only inexplicable by gradual evolution, but that it can be plausibly explained only  by assuming an intelligent designer, i.e., God. Some systems, he thinks, can't be produced by natural selection because "any precursor to an irreducibly complex system that is missing a part is by definition nonfunctional (39)." He says that a mousetrap is an example of an irreducibly complex system, i.e., all the parts must be there in order for the mousetrap to function. In short, Behe has old wine in a new skin: the [argument from design](http://skepdic.com/design.html) wrapped in biochemistry. His argument is no more scientific than any other variant of the argument from design. In fact, most scientists, including scientists who are Christians, think Behe should cease patting himself on the back. As with all other such arguments, Behe's begs the question. He must assume design in order to prove a designer. The consensus seems to be that Behe is a good scientist and writer but a mediocre metaphysician.

His argument hinges on the notion of "irreducibly complex systems," systems that could not function if they were missing just one of their many parts. "Irreducibly complex systems ... cannot evolve in a Darwinian fashion," he says, because natural selection works on small mutations in just one component at a time. He then leaps to the conclusion that intelligent design must be responsible for these irreducibly complex systems. Biology professor (and Christian) Kenneth Miller responds:

The multiple parts of complex, interlocking biological systems do not evolve as individual parts, despite Behe's claim that they must. They evolve together, as systems that are gradually expanded, enlarged, and adapted to new purposes. As Richard Dawkins successfully argued in *The Blind Watchmaker*, natural selection can act on these evolving systems at every step of their transformation.[\*](http://biomed.brown.edu/Faculty/M/Miller/Behe.html)

Professor Bartelt writes:

if we assume that Behe is correct, and that humans can discern design, then I submit that they can also discern poor design (we sue companies for this all the time!). In *Darwin's Black Box*, Behe refers to design as the "purposeful arrangement of parts." What about when the "parts" aren't purposeful, by any standard engineering criteria? When confronted with the "All-Thumbs Designer" - whoever designed the spine, the birth canal, the prostate gland, the back of the throat, etc, Behe and the ID people retreat into theology.[\*](http://www.reall.org/newsletter/v07/n12/index.html) [I.e., *God can do whatever He wants*, or *We're not competent to judge intelligence by God's standards*, or *being an* intelligent *designer does not mean being a* good *or* perfect *designer.*]

H. Allen Orr writes:

Behe's colossal mistake is that, in rejecting these possibilities, he concludes that no Darwinian solution remains. But one does. It is this: An irreducibly complex system can be built gradually by adding parts that, while initially just advantageous, become - because of later changes - essential. The logic is very simple. Some part (A) initially does some job (and not very well, perhaps). Another part (B) later gets added because it helps A. This new part isn't essential, it merely improves things. But later on, A (or something else) may change in such a way that B now becomes indispensable. This process continues as further parts get folded into the system. And at the end of the day, many parts may all be required.[\*](http://cogweb.ucla.edu/Abstracts/Orr_on_Behe_97.html)

Finally, Behe's argument assumes that natural selection will never be able to account for anything it cannot account for now. This begs the question. In fact, some of the things that Behe and other ID defenders have claimed could not be explained by natural selection have in fact been explained by natural selection ([Miller 2004](http://www.millerandlevine.com/km/evol/design2/article.html)).

**Dembski**

[William Dembski](http://www.designinference.com/documents/PDF_Current_CV_Dembski.pdf) is the director of the Center for Science and Theology at Southern Baptist Theological Seminary in Louisville, Kentucky.  According to  R. Albert Mohler Jr., president of the Southern Baptist Theological Seminary, the Center for Science and Theology was established as "a representation of our commitment to be very serious about the task of the Christian worldview, its development [and] its application."[\*](http://www.sbcbaptistpress.org/bpnews.asp?ID=19115)

Dembski's training is in mathematics, philosophy, and theology. He is also a senior fellow at the Discovery Institute, a Christian think tank devoted largely to debunking evolution. Dembski has written [several books attacking evolution and supporting ID](http://www.amazon.com/exec/obidos/search-handle-url/index=stripbooks&field-author=william%20dembski&results-process=default&dispatch=search/ref=pd_sl_aw_tops-1_stripbooks_8168165_1/103-6165177-1211028). Even his critics admit that his books are "generally well written and packed with provocative ideas."[\*](http://www.newyorker.com/fact/content/articles/050530fa_fact) He claims that he can prove that it is [highly improbable](http://www.csicop.org/creationwatch/probability-one.html) that life and the universe happened by chance and by natural processes; they are most likely the result of intelligent design by God. He also claims that "the conceptual soundness of a scientific theory cannot be maintained apart from Christ (*Intelligent Design: The Bridge between Science and Theology*, 1998, p. 209)," a claim which belies his metaphysical bias.

His basic argument is that some things could not have been produced by chance. He believes that an object must be the product of intelligent design if it shows “specified complexity.” If you came home and found "I love you" spelled out in potato chips on the couch, the probability of something so specific and complex being the result of chance is nearly zero. Dembski thinks some things in nature clearly demonstrate specified complexity, e.g., the eye. A similar argument was made by William Paley (1743-1805), the Archdeacon of Carlisle, in his *Natural Theology* (1802). It is true that Darwin himself admitted that it seems absurd 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....

However, he reasoned that

if numerous gradations from a perfect and complex eye to one very imperfect and simple, each grade being useful to its possessor, can be shown to exist; if further, the eye does vary ever so slightly, and the variations be inherited, which is certainly the case; and if any variation or modification in the organ be ever useful to an animal under changing conditions of life, then the difficulty of believing that a perfect and complex eye could be formed by natural selection, though insuperable by our imagination, can hardly be considered real.

Science has proved Darwin right ([Patterson 2002](http://www.origins.tv/darwin/eyes.htm)). We now know that the vision system consists of many different components that perform specialized tasks such as detecting edges or motion. The optic nerve takes two pathways to the brain and one obviously evolved much earlier than the other. Different kinds of visual systems have evolved at different times in different species. All these systems could have been produced by an intelligent designer but none of them requires one. Numerous gradual changes and adaptations are sufficient to explain even the most complex visual system.

Dembski also uses a number of mathematical notions to debunk evolution. "In 2002, he focused on so-called No Free Lunch, or N.F.L., theorems, which were derived in the late nineties by the physicists David H. Wolpert and William G. Macready."[\*](http://www.newyorker.com/fact/content/articles/050530fa_fact) Since most of us are [innumerate](http://www.amazon.com/exec/obidos/ISBN=0679726012/roberttoddcarrolA/), the arguments may seem dazzling. However, as H. Allen Orr notes: "Despite all the attention, Dembski’s mathematical claims about design and Darwin are almost entirely beside the point."[\*](http://www.newyorker.com/fact/content/articles/050530fa_fact)

The most serious problem in Dembski’s account involves specified complexity. Organisms aren’t trying to match any “independently given pattern”: evolution has no goal, and the history of life isn’t trying to get anywhere. If building a sophisticated structure like an eye increases the number of children produced, evolution may well build an eye. But if destroying a sophisticated structure like the eye increases the number of children produced, evolution will just as happily destroy the eye. Species of fish and crustaceans that have moved into the total darkness of caves, where eyes are both unnecessary and costly, often have degenerate eyes, or eyes that begin to form only to be covered by skin—crazy contraptions that no intelligent agent would design. Despite all the loose talk about design and machines, organisms aren’t striving to realize some engineer’s blueprint; they’re striving (if they can be said to strive at all) only to have more offspring than the next fellow.

Another problem with Dembski’s arguments concerns the N.F.L. theorems. Recent work shows that these theorems don’t hold in the case of co-evolution, when two or more species evolve in response to one another. And most evolution is surely co-evolution. Organisms do not spend most of their time adapting to rocks; they are perpetually challenged by, and adapting to, a rapidly changing suite of viruses, parasites, predators, and prey. A theorem that doesn’t apply to these situations is a theorem whose relevance to biology is unclear. As it happens, David Wolpert, one of the authors of the N.F.L. theorems, recently denounced Dembski’s use of those theorems as “fatally informal and imprecise.” Dembski’s apparent response has been a tactical retreat. In 2002, Dembski triumphantly proclaimed, “The No Free Lunch theorems dash any hope of generating specified complexity via evolutionary algorithms.” Now he says, “I certainly never argued that the N.F.L. theorems provide a direct refutation of Darwinism.” ([Orr 2005](http://www.newyorker.com/fact/content/articles/050530fa_fact)) [Note: "Darwinism" is not a scientific term; it is a polemical term—like *Maoism*—designed to incite opposition to evolution.]

According to another critic - physicist Vic Stenger ([*"The Emperor's New Designer Clothes"*](http://www.csicop.org/sb/2000-12/reality-check.html)*) -* Dembski uses math and logic to derive what he calls *the law of conservation of information*. "He argues that the information contained in living structures cannot be generated by any combination of chance and natural processes....Dembski's law of conservation of information is nothing more than "conservation of entropy," a special case of the second law [of thermodynamics] that applies when no dissipative processes such as friction are present." However, the fact is that "entropy is created naturally a thousand times a day by every person on Earth. Each time any friction is generated, information is lost."

As H. Allen Orr writes:

In the end, it’s hard to view intelligent design as a coherent movement in any but a political sense.

It’s also hard to view it as a real research program. Though people often picture science as a collection of clever theories, scientists are generally staunch pragmatists: to scientists, a good theory is one that inspires new experiments and provides unexpected insights into familiar phenomena. By this standard, Darwinism is one of the best theories in the history of science: it has produced countless important experiments (let’s re-create a natural species in the lab—yes, that’s been done) and sudden insight into once puzzling patterns (that’s why there are no native land mammals on oceanic islands). In the nearly ten years since the publication of Behe’s book, by contrast, I.D. has inspired no nontrivial experiments and has provided no surprising insights into biology. As the years pass, intelligent design looks less and less like the science it claimed to be and more and more like an extended exercise in polemics. ([Orr 2005](http://www.newyorker.com/fact/content/articles/050530fa_fact))

**pseudoscience**

ID isn't scientific and it isn't an alternative to natural selection or any other scientific idea. The universe would appear the same to us whether it was designed by God or not. Science tries to explain how the world works, not *why* we have this world rather than some other world. It is not part of science to try to prove the world was or was not designed by God. It is not the job of science to try to explain the probability of biological developments happening by chance or not. If anyone wants to speculate about such matters, they are free to do so—as *metaphysicians*. ID is not scientific, but metaphysical. The fact that it has empirical content doesn't make it any more scientific than, say, [Spinoza's](http://www.mtsu.edu/~rbombard/RB/Spinoza/ethica-front.html) metaphysics or so-called [creation science](http://skepdic.com/creation.html).

ID is a pseudoscience because it claims to be scientific but is in fact metaphysical. It is based on several philosophical confusions, not the least of which is the notion that *the empirical is necessarily scientific*. This is false, if by 'empirical' one means *originating in or based on observation or experience.* Empirical explanations can be scientific or non-scientific. Freud's idea of the Oedipus complex is empirical but it is not scientific. Jung's notion of the collective unconscious is empirical but it is not scientific. Biblical creationism is empirical but it is not scientific. Poetry can be empirical but not scientific.

On the other hand, if by 'empirical' one means *capable of being confirmed or disproved by observation or experiment* then ID is not empirical. Neither the whole of nature nor an individual eco-system can be proved or disproved by any set of observations to be intelligently designed.

[Science](http://skepdic.com/science.html) does have some metaphysical assumptions, not the least of which is that the universe follows laws. But science leaves open the question of whether those laws were designed. That is a metaphysical question. Believing the universe or some part of it was designed or not does not help understand *how* it works. If I ever answer an empirical question with the answer "because God [or Superintelligent aliens, otherwise undetectable] made it that way" then I have left the realm of science and entered the realm of metaphysics. Of course scientists have metaphysical beliefs but those beliefs are irrelevant to strictly scientific explanations. Science is open to both [theists](http://skepdic.com/theist.html) and [atheists](http://skepdic.com/atheism.html) alike.

If we grant that the universe is *possibly* or even *probably* the result of intelligent design, what is the next step? For example, assume a particular eco-system is the creation of an intelligent designer. Unless this intelligent designer is one of us, i.e., human, and unless we have some experience with the creations of this and similar designers, how could we proceed to study this system? If all we know is that it is the result of ID but that *the designer is of a different order of being than we are*, how would we proceed to study this system? It is presumptuous to assume that an intelligent designer would create an eye the way a human engineer would design a similar system with a similar function. By appealing to an "intelligent designer" to explain some complex phenomenon is to explain nothing about that phenomenon's relation to its alleged designer. The theory illuminates nothing.

The ID proponents are fighting a battle that was lost in the 17th century: the battle for understanding nature in terms of final causes *and* efficient causes. Prior to the 17th century, there was no essential conflict between a mechanistic view of nature and a teleological view, between a naturalistic and a super-naturalistic view of nature. Nature could be thought of as a vast purposive mechanism. With the notable exception of [Leibniz](http://www.philosophypages.com/hy/4j.htm#god) and his intellectual descendents, just about everyone else gave up the idea of scientific explanations needing to include theological ones. Scientific progress became possible in part because scientists attempted to describe the workings of natural phenomena without reference to their creation, design, or ultimate purpose. God may well have created the universe and the laws of nature, but nature is still a machine, mechanically changing and comprehensible as such. God became an unnecessary hypothesis. Or, if one couldn't live without God, one could identify God with Nature, as Spinoza did, and argue that belief in final causes or purposes in nature is demeaning to God and the height of folly for man.[\*](http://www.siue.edu/~evailat/final-causes.html)

**should ID be taught in public schools?**

Ever since the failure of the [creation science](http://skepdic.com/creation.html) movement, a number of activists—many of them young-Earth Christians—have been trying to discredit evolution by claiming that ID is a scientific alternative to natural selection. These people, led by [Phillip Johnson](http://www.eastbayexpress.com/Issues/2005-07-27/news/feature.html) and the folks at the Discovery Institute, have been very successful in convincing member of the media, [politicians](http://www.sacbee.com/24hour/religion/story/2627875p-11104967c.html), school boards, and the general public ([scientifically illiterate as it is](http://www.csmc.edu/6603.html)[\*](http://www.geocities.com/lclane2/dean4.html)) that the evolution is a "theory in crisis" and that ID is a viable alternative to evolution.[\*](http://www.ncseweb.org/pressroom.asp?year=2005) These two claims might well be called the *ID twin towers*. Neither of these claims is true but it doesn't matter at this point because they are so widely believed that we must still ask whether ID should be taught in our biology classrooms. There is also much hypocrisy and deceit in a movement that does not refer to God in published documents as the intelligent designer, but opens its public presentations with a Christian prayer and doesn't hesitate to refer to God when alternatives such as aliens as the designers are brought up.[\*](http://skepdic.com/refuge/bunk19.html) Dembski puts it this way:

Intelligent design is a modest position theologically and philosophically. It attributes the complexity and diversity of life to intelligence, but does not identify that intelligence with the God of any religious faith or philosophical system. The task for the Christian who accepts intelligent design is therefore to formulate a theology of nature and creation that makes sense of intelligent design in light of one’s Christian faith.[\*](http://www.beliefnet.com/story/172/story_17219_1.html#cont)

In other words, you Christians know who the intelligent designer is even though we don't mention Him by name!

As evidence of how widespread the belief is in the ID twin towers consider that the President of the United States (who has probably never even heard of Behe or Dembski, much less read anything by them[\*](http://mediamatters.org/items/200508030005)) has stated publicly that ID should be taught in our schools.[\*](http://sfgate.com/cgi-bin/article.cgi?f=/n/a/2005/08/01/national/w200833D87.DTL) The National Science Teachers Association (NSTA), the world's largest organization of science educators, issued a press release saying it was "stunned and disappointed that President Bush is endorsing the teaching of intelligent design -- effectively opening the door for non-scientific ideas to be taught in the nation's K-12 science classrooms."[\*](http://www.prnewswire.com/cgi-bin/stories.pl?ACCT=104&STORY=/www/story/08-03-2005/0004081557&EDATE=) I understand why the teachers are disappointed but they shouldn't be stunned. President Bush's opinion is shared by millions of Americans. According to a recent Harris poll, only 12% of Americans think evolution should be taught to the exclusion of creationism and ID.[\*](http://www.skepdic.com/news/newsletter57.html#8) In any case, John Marburger, the  president's science advisor, clarified Bush's remarks by telling the press that “evolution is the cornerstone of modern biology” and ''intelligent design is not a scientific concept.'' He said it would be over-interpreting Bush’s comments to interpret them to mean that the president thinks intelligent design should be placed on an equal footing with evolution. "If such things are to be taught in the public schools," said Marburger, "they belong in a course on comparative religion, which is a particularly appropriate subject for our children given the present state of the world."[\*](http://www.physorg.com/news5618.html)

Bush's comments gave the media an excuse to jump into the fray. The August 15, 2005, [cover](http://img.timeinc.net/time/images/covers/20050815_107.jpg) of *Time* magazine, for example, has Michelangelo's Sistine chapel creator pointing the finger at a chimp. *Does God have a place in the science classroom?* asks *Time*. The article provides an overview of the controversy with a nice map of the anti-evolution proposals that have been put forth in this century by state boards of education, state legislatures, and local boards of education. Very few states are unblemished.

[Jake Tapper](http://abcnews.go.com/WNT/story?id=127673), an ABC news reporter, recently stated while doing [a story on a young-Earth theme park in Kentucky](http://abcnews.go.com/WNT/Beliefs/story?id=1030003&page=1): "Religious views of creation that challenge accepted science are gaining support across the country." Others in the media often refer to ID as a growing new challenge to a faltering natural selection.[\*](http://query.nytimes.com/gst/abstract.html?res=F60617F7345B0C768CDDA10894DD404482)

A number of state and local school boards have brought ID into their classrooms. In 1999, the Kansas Board of Education rejected evolution as a scientific principle. The 10-member board voted six to four to eliminate evolution from the science curricula. The Kansas Board did not ban the teaching of evolution. Only the legislature has that kind of power. The Board simply deleted any mention of evolution and the Big Bang theory from the science curriculum and from the materials used to test graduating students. Creationists such as Board Member Steve Abrams, a former head of the state Republican Party, hailed the decision as a victory in the war against evolutionists. Creationists want children to believe that God made them and every other species individually for a purpose. They do not want children to think that a divine power might be behind the Big Bang or evolution of species because that opens the possibility that God might not exist. Creationism maintains that God created everything, a belief that leaves no room for an explanation of the existence and nature of things without reference to God. Abrams wanted to add to the science curriculum standards the assertion that "the design and complexity of the design of the cosmos requires an intelligent designer," but his circular reasoning was voted down.

Nevertheless, the Kansas Board recognized micro-evolution - natural selection within a species - as a fact. Perhaps the six who voted for the new standards do not understand that natural selection within species was what stimulated Darwin to his general theory of evolution. Nor do they seem to understand that you can't have a theory of evolution without the fact of evolution (any more than you could have a theory of planetary motion without the fact of planetary motion). Scientific theories are explanations as to how things happen. You don't try to explain how something happened unless it happened. Natural selection is one theory as to how evolution happened. It assumes evolution is a fact.

In 2002 an election returned a majority to the Kansas state board of education who were in favor of teaching just science in the biology classroom. In 2004 another election tipped the scales back in favor of the ID folks. The new group called for hearings to decide whether ID would be taught. The hearings were [boycotted](http://www.ncseweb.org/resources/news/2005/KS/128_biologists_snub_39kangaroo__3_30_2005.asp) by the scientific community, party because they felt the board had already made up its mind about ID and evolution, and partly because they did not want to convey the appearance of scientific legitimacy on the ID movement. On August 9, 2005, the Kansas State Board of Education voted 6-4 in favor of new state science standards composed with the aid of a local "intelligent design" group, the Intelligent Design Network, that "systematically deprecates the scientific status of evolution."[\*](http://www.ncseweb.org/resources/news/2005/KS/78_flawed_draft_of_kansas_standar_8_10_2005.asp) Not only were the standards approved, but the board rewrote the definition of science, so that it is no longer limited to the search for natural explanations of phenomena.[\*](http://www.newscientist.com/channel/opinion/dn8289.html) Similar proposals have been passed in school districts in Ohio, Pennsylvania, Minnesota, and New Mexico. However, eight school board members who passed an anti-evolution standard in Dover, Pennsylvania, were all voted out of office in November 2005. The newly elected group all support ID but think it is a religious doctrine and should be taught in a philosophy or world religions class.

Politically active creationists failed in their attempts to have creationism taught alongside evolution as a science. The Supreme Court ruled that compelling the teaching of creationism was tantamount to teaching religion, which state schools may not do under the First Amendment separation clause. The so-called creation science movement, however, is not dead. They have just changed tactics. The goal now is to debunk evolution wherever possible, using any means necessary. One of their favorite tactics today is to blame all sin and crime on lack of proper Bible study and the teaching of "godless" theories such as natural selection and the Big Bang theory. Marc Looy of the creationist group Answers in Genesis hailed the Kansas school board decision because

students in public schools are being taught that evolution is a fact, that they're just products of survival of the fittest....It creates a sense of purposelessness and hopelessness, which I think leads to things like pain, murder, and suicide.

That there is no scientific evidence to support these claims is a matter of indifference to those who believe them.

In Alabama, biology textbooks carry a warning that says that evolution is "a controversial theory some scientists present as a scientific explanation for the origin of living things. . . .No one was present when life first appeared on earth. Therefore, any statement about life's origins should be considered as theory, not fact." Right. In Alabama, I guess, if you wake up to snow on the ground, but no one saw it snowing, then you may only propose a theory as to the origin of the snow. The great state of Alabama apparently is banking on their students being too dumb to recognize language that tries to deceive and manipulate them.

The school board in Cobb County, Georgia, was perhaps inspired by Alabama. In 2003, the board claimed it was just encouraging critical thinking when it required a sticker be placed in all biology texts that states:

This textbook contains material on evolution. Evolution is a theory, not a fact, regarding the origin of living things. This material should be approached with an open mind, studied carefully and critically considered.

Six parents and the American Civil Liberties Union filed a federal lawsuit against the Cobb County school board over the disclaimer stickers.  In August 2005, U.S. District Judge Clarence Cooper ordered the school system to remove the stickers. The disclaimers, ruled Judge Cooper, are an unconstitutional endorsement of religion.

By denigrating evolution, the school board appears to be endorsing the well-known prevailing alternative theory, creationism or variations thereof, even though the sticker does not specifically reference any alternative theories.

The school board issued a statement indicating that they just don't get it.

The textbook stickers are a reasonable and evenhanded guide to science instruction and encouraging students to be critical thinkers.

The plaintiffs had argued that the disclaimers violated the separation of church and state and unfairly singled out evolution from all other scientific theories as suspect.

Judge Cooper wisely stated in his decision

While evolution is subject to criticism, particularly with respect to the mechanism by which it occurred, the sticker misleads students regarding the significance and value of evolution in the scientific community.

It certainly does. There are no stickers in the physics or chemistry books. There are none in the social science books. The only theory singled out by the school board is evolution and the reason was obvious to the judge: the theory of evolution is understood as implying that God didn't make the species one by one and that God isn't even necessary for making any species at all. If evolution is correct, the school board members and the thousands of parents (2,300, to be exact) who support them believe that then their religious views are wrong. Accepting evolution is as much as accepting atheism. It is the same as believing we have no souls and are nothing but material beings with no possibility of an afterlife. According to recent polls, about 35% of Americans believe that evolution implies no God, no soul, no afterlife, no truth in the Bible. (Other polls put the number as high as 55%. I suspect the different result is due to the way the questions were asked and the kind of responses allowed.) A 2005 national survey by the Harris polling agency found that 54% say they do not believe humans evolved from earlier species, while 64% believe that human beings were created directly by God.

As a result of [the decision in the Cobb county case](http://www.ncseweb.org/selman/), the school district in Beebe, Arkansas - at the urging of the American Civil Liberties Union - removed stickers they had ordered to be placed in science textbooks ten or fifteen years earlier. The stickers described evolution as "controversial" and mentioned an "intelligent designer" as a possible explanation for the origin of life. Authorities in Alabama, however, did not follow suit. They claimed they didn't see how the ruling in Georgia applied to them.

On March 9, 2004, the Ohio state board of education approved by a 13-5 margin what it called a "Critical Analysis of Evolution" plan. An early draft of the plan made an explicit reference to [*Icons of Evolution*](http://www.ncseweb.org/icons/) by Jonathan Wells, a senior fellow at the Discovery Institute. The final plan made no mention of Wells or his book, but critics of the plan said it contained many of the concepts in Icons. Defenders of the decision call it a victory for common sense over scientific dogmatism. In reality, it is a victory for those who would have politicians deciding what is proper science. The first question in the "student reflection" portion of the "Critical Analysis of Evolution" is "Why is it important for scientists to critically analyze evolution?" We call this a loaded question in my critical thinking classes. The question assumes that most scientists haven't or don't critically analyze evolution, or that they don't realize it is important to do so. It assumes that scientists need to be reminded of both the question and its importance. To provide students with a lesson plan that implies that scientists have put forth their views on evolution without critical analysis would be ludicrous if it weren't so dangerous. Bettysue Feuer, regional director of the Anti-Defamation League, noted that the [wedge document](http://www.antievolution.org/features/wedge.html) is at work here. If you teach that there is a controversy over evolution, intelligent design advocates get their foot in the door, and can push their religious agenda.

In Missouri Rep. Wayne Cooper sponsored legislation calling for the teaching of intelligent design alongside evolution in public elementary and secondary schools. Said Cooper: "We just want people to quit passing on their philosophic bias as though it is the truth when it's not proven." He also asserted: "If we're just a piece of matter in a meaningless universe, you're going to treat yourself different than if you're a designed product." Call me old-fashioned but I can't think of anything more degrading that being a piece of matter designed to fulfill some divine being's plan. I don't have quite the admiration Mr. Cooper does for the idea of being created to worship and obey a master. This might give his life meaning but it seems demeaning to me.

If we are going to allow the Christian version of intelligent design to be taught in our science classrooms, to be fair we should also allow the atheistic [Raelians](http://skepdic.com/raelian.html) have their say. The following is from a press release from that group:

His Holiness Rael draws the exceptional accuracy of his scientific and humanitarian vision from the Message He received in 1973 from the Elohim, a very advanced race of human beings from a distant planet within our galaxy. The Elohim created all life on Earth scientifically using DNA (including humans in their image) and were mistaken for God, which explains why the name Elohim is present in all original Bibles. The Bible is, in fact, an atheist book describing the scientific creation of life on Earth. The new concept of "Intelligent Design" fits perfectly with this explanation of our origins. Thirty years ago the Elohim explained to Rael that human cloning coupled with memory transfer would one day allow humans to live forever on Earth. Today this prediction is close to becoming a reality, as it has been for millennia on the Elohim's planet. It is, in fact, how the Elohim resurrected Jesus, their messenger, as well as many others whom they sent to guide humanity and who now live on their planet.

A "critical analysis" of evolution shouldn't exclude Rael's vision, especially since the master himself thinks ID fits with his godless religion and an atheistic Bible. That's certainly an "alternative" viewpoint that you won't find in most science texts. What are the odds that Ohio—or any other state—will include it or [other alternatives](http://www.venganza.org/) in a "Critical Analysis of Evolution" plan?

In October, 2004, the Dover Area School Board in York, Pennsylvania, voted 6-3 to add ID to the district’s biology curriculum. One Dover board member resigned in tears after the vote, saying she was tired of being asked if she was "born again." Only one community member spoke in favor of the ID proposal and he home-schools his kids. William Buckingham, one of the board members who led the fight for ID inclusion in the biology curriculum, was reported in the local newspaper as having "challenged people’s literacy, knowledge of American history and patriotism throughout the night." The following month the school district chose four new board members (from 13 candidates): "a preacher, a home-schooler who doesn't send his kids to public school because of his religious beliefs, and two others with barely any experience in government." No one who spoke out against intelligent design was selected. As noted above, however, all eight school board members who supported the ID requirement were voted out of office in 2005. The new board members want to see ID taught in a non-science course.

Several Dover parents filed suit against the school district on the grounds that introducing ID into the science classroom was unconstitutional because ID is a thinly disguised religious idea. In December 2005, federal Judge John E. Jones III [ruled](http://www.pamd.uscourts.gov/kitzmiller/kitzmiller_342.pdf) (Kitzmiller v. Dover) that ID must meet the same fate that [creationism](http://skepdic.com/creation.html) met in 1987 when the [Supreme Court ruled](http://www.talkorigins.org/faqs/edwards-v-aguillard.html) religious doctrines can't be promoted in secular institutions under the Establishment Clause of the First Amendment. Judge Jones wrote in his decision:

The citizens of the Dover area were poorly served by the members of the Board who voted for the ID Policy. It is ironic that several of these individuals, who so staunchly and proudly touted their religious convictions in public, would time and again lie to cover their tracks and disguise the real purpose behind the ID Policy....

The breathtaking inanity of the Board’s decision is evident when considered against the factual backdrop which has now been fully revealed through this trial.

Judge Jones was not fooled by the hypocritical claims of ID advocates that they are just critical thinkers defending science, freedom of speech, and fair play. Despite the fact that the whole world has been made aware of the game the ID folks have been playing, [John G. West of the Discovery Institute](http://www.discovery.org/scripts/viewDB/index.php?command=view&id=3114&program=CSC&callingPage=discoMainPage) defiantly wrote after the decision was handed down:

Evolutionists used to style themselves the champions of free speech and academic freedom against unthinking dogmatism. But increasingly, they have become the new dogmatists, demanding judicially-imposed censorship of dissent.

As Mr. West knows, no judge has censored ID. Those who advocate this philosophical anti-science idea are still free to express their views. The fact is, conservative Republican Judge Jones recognized that ID is no more a serious scientific contender to natural selection than creation in six days by an invisible guy in the sky or creation of earthly life forms in an alien laboratory on some other planet. But don't expect the ID folks at the Discovery Institute to come clean and admit their program of deception. They're on a mission to confuse people about evolution and seem to believe that the end justifies the means. If they have to lie and deceive to get people to doubt evolution, then so be it.

Meanwhile, in Blufton, Indiana, the local school board announced that ID will continue to be a part of Bluffton-Harrison’s High School science curriculum. The school board voted 4-1 to continue requiring the district’s science educators to discuss “appropriate theories” — such as intelligent design and evolution — and give a “fair and balanced” presentation when teaching about the origin of the universe and life. The Discovery Institute folks must be smiling: an issue that has nothing to do with balance and fairness has been turned into a fairness issue.

So, should we teach ID in our biology classrooms even though ID is not a viable alternative to natural selection? The answer is "yes, if we teach ID properly." The answer is "no" if we are asked to teach ID as a viable scientific idea worth spending precious classroom time on. To teach ID properly would be to demonstrate to the students that nothing of scientific interest follows after one posits an external agent to explain something. To say the eye was designed by God or an alien race is to say: *Stop, go no further in trying to understand this; give up; don't do science*. Students might be taught that ID is just the kind of belief that some philosophers and theologians find interesting but since it doesn't lead to any deeper understanding of biological mechanisms, doesn't lead to new discoveries or research ventures, and doesn't have any practical scientific applications, it is left to those in other fields to pursue. A good biology teacher ought to be able to explain why ID, even if true, is of little scientific interest in about 15 or 20 minutes. That should leave plenty of time to instruct their students in science.

**See also** [atheism](http://skepdic.com/atheism.html), [argument from design](http://skepdic.com/design.html), [Cambrian explosion](http://skepdic.com/cambrian.html), [creationism](http://skepdic.com/creation.html), [god](http://skepdic.com/gods.html), [Occam's razor](http://skepdic.com/occam.html), and [theism](http://skepdic.com/theist.html).

**Further Reading**

[**reader comments**](http://skepdic.com/comments/desigcom.html)

* [Onward Christian Soldiers: The Holy War on Science](http://www.skepdic.com/essays/secondcrusade.html) by Robert Todd Carroll
* [The Tyranny of Design](http://www.nature.com/news/2004/040705/pf/040705-1_pf.html) by Henry Gee
* [The Panda's Thumb](http://www.pandasthumb.org/) - explaining the theory of evolution
* [TalkDesign.org](http://www.talkdesign.org/) - critical examination of the ID movement
* [Understanding Evolution](http://evolution.berkeley.edu/) website for teachers (UC Berkeley)
* [ICONS OF EVOLUTION? Why much of what Jonathan Wells writes about evolution is wrong](http://www.ncseweb.org/icons/) by Alan D. Gishlick
* [An examination of Christian belief by Merle Hertzler](http://www.geocities.com/questioningpage/index.html)
* [The Crusade Against Evolution](http://www.wired.com/wired/archive/12.10/evolution.html?pg=2&topic=evolution&topic_set=) by Evan Ratliff
* [Evolution in (Brownian) space: a model for the origin of the bacterial flagellum by N. J. Matzke](http://www.talkdesign.org/faqs/flagellum.html)
* [Intelligent Design: Humans, Cockroaches, and the Laws of Physics](http://www.talkorigins.org/faqs/cosmo.html) Victor J. Stenger (1997)
* [Intelligent Design: The New Stealth Creationism](http://www.infidels.org/library/modern/vic_stenger/stealth.pdf) by Victor J. Stenger (2000) [pdf format]
* [Cosmythology: Was the Universe Designed to Produce Us?](http://www.skeptic.com/archives36.html) By Victor J. Stenger
* [Design Yes, Intelligent No A Critique of Intelligent Design Theory and Neo-Creationism](http://www.infidels.org/library/modern/features/2000/pigliucci1.html) by Massimo Pigliucci
* [The "New" Creationism](http://slate.msn.com/default.aspx?id=104349) by Robert Wright (Slate.com)
* ['Intelligent Design' Meets Artificial Intelligence](http://www.csicop.org/si/2001-03/intelligent-design.html) by Taner Edis, Skeptical Inquirer (March/April 2001).
* [Nutty Professors, or Some Addled Academics?](http://www.csicop.org/sb/9412/nutty.html) Robert A. Baker
* [NATURALISM IS AN ESSENTIAL PART OF SCIENCE AND CRITICAL INQUIRY](http://www.freeinquiry.com/naturalism.html) by Steven D. Schafersman
* [Talk Reason](http://www.talkreason.org/index.cfm) - a collection of articles opposing so-called intelligent design theory
* [Darwin on Religion](http://www.update.uu.se/~fbendz/library/cd_relig.htm) from his Autobiography
* [Evolution & Creationism: Terminology in Conflict](http://www.csicop.org/specialarticles/terminology.html) by Richard Joltes
* [Unintelligent Design](http://www.nytimes.com/2005/02/20/magazine/20WWLN.html?oref=login) By JIM HOLT
* [Creationism: God's gift to the ignorant](http://www.timesonline.co.uk/printFriendly/0,,1-196-1619264,00.html) by Richard Dawkins

A list of scientific papers which refute Behe can be found in [Publish or Perish - Some Published works on Biochemical Evolution](http://www.talkorigins.org/faqs/behe/publish.html).

There are a number of critiques of Behe's claims and Dembski's work available on the Internet. Here is a partial list:

* [Answering the Biochemical Argument from Design Kenneth R. Miller Brown University](http://www.millerandlevine.com/km/evol/design1/article.html)
* [MASTER PLANNED by H. ALLEN ORR Why intelligent design isn’t. *The New Yorker* (published as "Devolution")Issue of 2005-05-30](http://www.newyorker.com/fact/content/articles/050530fa_fact)
* [Darwin in Mind: 'Intelligent Design' Meets Artificial Intelligence What's Wrong with the Information Argument Against Evolution?](http://www.csicop.org/si/2001-03/intelligent-design.html) by Taner Edis
* [The Case of the Tell-Tale Traces: A Mystery Solved; a Skyhook Grounded by Daniel Clement Dennet](http://ase.tufts.edu/cogstud/papers/behe.htm)
* [Does Irreducible Complexity Imply Intelligent Design? by Mark Perakh](http://www.csicop.org/si/2005-11/id.html)
* [A Rebuttal of Behe by Clare Stevens](http://www.btinternet.com/~clare.stevens/behenot.htm)
* [Darwin v. intelligent design (Again) The latest attack on evolution is cleverly argued, biologically informed-and wrong. H. Allen Orr](http://www.bostonreview.net/br21.6/orr.html)
* [A Central IL Scientist Responds to the Behe's "Black Box"](http://www.reall.org/newsletter/v07/n12/index.html) by Karen Bartelt, organic chemist and an Associate Professor of Chemistry at Eureka College in Eureka, IL.
* [Behe's Empty Box](http://www.world-of-dawkins.com/Catalano/box/behe.shtml)
* [Darwin's Black Box Irreducible Complexity or Irreproducible Irreducibility?](http://www.talkorigins.org/faqs/behe/review.html)  by Keith Robison
* [Review of Darwin's Black Box](http://biomed.brown.edu/Faculty/M/Miller/Behe.html) by [Kenneth R. Miller](http://bms.brown.edu/faculty/m/kmiller/), Professor of Biology, Brown University
* [Review of Darwin's Black Box](http://www.infidels.org/library/modern/peter_atkins/behe.html) by Peter Atkins, Oxford University
* [Review of Darwin's Black Box](http://home.wxs.nl/~gkorthof/korthof8.htm) by Gert Korthof
* [The Flagellum Unspun The Collapse of "Irreducible Complexity" by Kenneth R. Miller, Brown University](http://www.millerandlevine.com/km/evol/design2/article.html)
* [Are the Odds Against the Origin of Life Too Great to Accept?](http://www.infidels.org/library/modern/richard_carrier/addendaB.html) by Richard Carrier
* [The Triumph of Evolution...And the Failure of Creationism](http://www.amazon.com/exec/obidos/ISBN=0716736381/roberttoddcarrolA/) by Niles Eldredge
* [Review of: J. P. Moreland (ed.) The Creation Hypothesis](http://www.infidels.org/library/modern/graham_oppy/review-m.html)
* [Why Are Scientists Confident that Complex Biological Systems Evolved Gradually?](http://www.csicop.org/creationwatch/actualism.html) by Jason Rosenhouse

Arnhart, Larry. "Evolution and the New Creationism - a Proposal for Compromise," Skeptic Vol. 8 No. 4, 2001, pp. 46-52.

[Barlow, Connie. *The Ghosts of Evolution*  (Basic Books, 2001).](http://www.amazon.com/exec/obidos/ISBN=0465005519/roberttoddcarrolA/)

[Buller, David J. (2005). *Adapting Minds: Evolutionary Psychology and the Persistent Quest for Human Nature.* MIT Press.](http://www.amazon.com/exec/obidos/ISBN=0262025795/roberttoddcarrolA/)

[Darwin, Charles. *From So Simple a Beginning: Darwin's Four Great Books* (*Voyage of the H.M.S. Beagle, The Origin of Species, The Descent of Man, The Expression of Emotions in Man and Animals*). ed. E. O. Wilson.](http://www.amazon.com/exec/obidos/ISBN=0393061345/roberttoddcarrolA/)

[Dawkins, Richard. *The Blind Watchmaker: Why the Evidence of Evolution Reveals a Universe Without Design* (W Norton & Co., 1996).](http://www.amazon.com/exec/obidos/ISBN=0393315703/roberttoddcarrolA/)

[Dembski, William A. and Michael Ruse. (2004). eds. *Debating Design: From Darwin to DNA.* Cambridge University Press.](http://www.amazon.com/exec/obidos/ISBN=0521829496/roberttoddcarrolA/)

[Dennett, Daniel Clement. *Darwin's Dangerous Idea: Evolution and the Meanings of Life* (New York : Simon & Schuster, 1995).](http://www.amazon.com/exec/obidos/ISBN=068482471X/roberttoddcarrolA/)

[Denton, Michael (1986). *Evolution : A Theory In Crisis*. Adler & Adler.](http://www.amazon.com/exec/obidos/ISBN=091756152X/roberttoddcarrolA/) [The book that got Behe started!]

[Forrest, Barbara and Paul R. Gross (2003). *Creationism's Trojan Horse: The Wedge of Intelligent Design.* Oxford University Press.](http://www.amazon.com/exec/obidos/ISBN=0195157427/roberttoddcarrolA/)

[Gould, Stephen Jay. *Ever Since Darwin* (New York: W.W. Norton & Company, 1979).](http://www.amazon.com/exec/obidos/ISBN=0393308189/roberttoddcarrolA/)

[Gould, Stephen Jay. "Evolution as Fact and Theory," in *Hen's Teeth and Horse's Toes* (New York: W.W. Norton & Company, 1983).](http://www.amazon.com/exec/obidos/ISBN=0393311031/roberttoddcarrolA/)

[Katz, Leonard D. (2000). ed. *Evolutionary Origins of Morality : Cross-Disciplinary Perspectives*. Imprint Academic.](http://www.amazon.com/exec/obidos/ISBN=090784507X/roberttoddcarrolA/)

[Larson, Edward. *Evolution: The Remarkable History of a Scientific Theory* (Modern Library 2004).](http://www.amazon.com/exec/obidos/ISBN=0679642889/roberttoddcarrolA/)

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[Pennock, Robert T. *Tower of Babel: The Evidence Against the New Creationism* (Cambridge, MA: the MIT Press, 1999).](http://www.amazon.com/exec/obidos/ISBN=0262661659/roberttoddcarrolA/)

[Peoples, Hervey Cunningham. *The Human Question: What People Believe About Evolution, Human Origins, and the Beginning of Life* (Red Lion Press 2003).](http://www.amazon.com/exec/obidos/ISBN=0972233067/roberttoddcarrolA/)

[Richerson, Peter J. and Robert Boyd. (2004). *Not By Genes Alone: How Culture Transformed Human Evolution*. University of Chicago Press.](http://www.amazon.com/exec/obidos/ISBN=0226712842/roberttoddcarrolA/)

[Scott, Eugenie C. (2005)*. Evolution vs. Creationism : An Introduction*. Greenwood Press.](http://www.amazon.com/exec/obidos/ISBN=0313321221/roberttoddcarrolA/)

[Trotman, Clive. (2004). *The Feathered Onion: Creation of Life in the Universe*. Wiley & Sons.](http://www.amazon.com/exec/obidos/ISBN=0470871873/roberttoddcarrolA/)

[Young, Matt and Taner Edis (2004). Editors.*Why Intelligent Design Fails: A Scientific Critique of the New Creationism.* Rutgers University Press](http://www.amazon.com/exec/obidos/ISBN=081353433X/roberttoddcarrolA/)