



# Whether Intelligent Design is Science

A Response to the Opinion of the Court in  
Kitzmiller vs Dover Area School District

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## Introduction

On December 20, 2005 Judge John Jones issued his opinion in the matter of *Kitzmiller*, in which I was the lead witness for the defense. There are many statements of the Court scattered throughout the opinion with which I disagree. However, here I will remark only on section E-4, "Whether ID is Science."

The Court finds that intelligent design (ID) is not science. In its legal analysis, the Court takes what I would call a restricted sociological view of science: "science" is what the consensus of the community of practicing scientists declares it to be. The word "science" belongs to that community and to no one else. Thus, in the Court's reasoning, since prominent science organizations have declared intelligent design to not be science, it is not science. Although at first blush that may seem reasonable, the restricted sociological view of science risks conflating the presumptions and prejudices of the current group of practitioners with the way physical reality must be understood.

On the other hand, like myself most of the public takes a broader view: "science" is an unrestricted search for the truth about nature based on reasoning from physical evidence. By those lights, intelligent design is indeed science. Thus there is a disconnect between the two views of what "science" is. Although the two views rarely conflict at all, the dissonance grows acute when the topic turns to the most fundamental matters, such as the origins of the universe, life, and mind.

Below I proceed sequentially through section E-4. Statements from the opinion are in italics, followed by my comments.

## Commentary

***(1) ID violates the centuries-old ground rules of science by invoking and permitting supernatural causation.***

It does no such thing. The Court's opinion ignores, both here and elsewhere, the distinction between an implication of a theory and the theory itself. As I testified, when it was first proposed the Big Bang theory struck many scientists as pointing to a supernatural cause. Yet it clearly is a scientific theory, because it is based entirely on physical data and logical inferences. The same is true of intelligent design.

***(2) The argument of irreducible complexity, central to ID, employs the same flawed and illogical contrived dualism that doomed creation science in the 1980's.***

The dualism is "contrived" and "illogical" only if one confuses ID with creationism, as the Court does. There are indeed more possible explanations for life than Darwinian evolution and young earth creation, so evidence against one doesn't count as evidence for the other. However, if one

simply contrasts intelligent causes with unintelligent causes, as ID does, then those two categories do constitute a mutually exclusive and exhaustive set of possible explanations. Thus evidence against the ability of unintelligent causes to explain a phenomenon does strengthen the case for an intelligent cause.

**(3) *ID's negative attacks on evolution have been refuted by the scientific community.***

To the extent that the Court has in mind my own biochemical arguments against Darwinism, and to the extent that "refute" is here meant as "shown to be wrong" rather than just "controverted", then I strongly disagree, as I have written in a number of places. If "refute" is just intended to mean "controverted", then that is obvious, trivial, and an injudicious use of language.. A "controversial" idea, such as ID, by definition is "controverted."

**(4) *ID is predicated on supernatural causation, as we previously explained and as various expert testimony revealed. ... (21:96-100 (Behe); P-718 at 696, 700 ("implausible that the designer is a natural entity").***

Again, repeatedly, the Court's opinion ignores the distinction between an implication of a theory and the theory itself. If I think it is implausible that the cause of the Big Bang was natural, as I do, that does not make the Big Bang Theory a religious one, because the theory is based on physical, observable data and logical inferences. The same is true for ID.

**(5) *ID proponents primarily argue for design through negative arguments against evolution, as illustrated by Professor Behe's argument that "irreducibly complex" systems cannot be produced through Darwinian, or any natural, mechanisms. (5:38-41 (Pennock); 1:39, 2:15, 2:35-37, 3:96 (Miller); 16:72-73 (Padian); 10:148 (Forrest)).***

In my remark here I will focus on the word "cannot." I never said or wrote that Darwinian evolution "cannot" be correct, in the sense of somehow being logically impossible, as the court implies (referencing exclusively to Plaintiffs' expert witnesses). In its use of the word "cannot" the Court echoes the unfair strategy of Darwinists to force skeptics to try to prove a negative, to prove that Darwinism is impossible. However, unlike in mathematics or philosophy, in science one cannot conclusively prove a negative. One can't conclusively prove that Darwinism is false any more than one can conclusively prove that the "ether" doesn't exist. With this unfair strategy, rather than demonstrating empirical plausibility, Darwinists claim that the mere logical possibility that random mutation and natural selection may in some unknown manner account for a system counts in their favor.

In the history of science no successful theory has ever demonstrated that all rival theories are impossible, and neither should intelligent design be held to such an unreasonable, inappropriate standard. Rather, a theory succeeds by explaining the data better than competing ideas.

**(6) Professor Behe admitted in “Reply to My Critics” that there was a defect in his view of irreducible complexity because, while it purports to be a challenge to natural selection, it does not actually address “the task facing natural selection.” (P-718 at 695). Professor Behe specifically explained that “[t]he current definition puts the focus on removing a part from an already functioning system,” but “[t]he difficult task facing Darwinian evolution, however, would not be to remove parts from sophisticated pre-existing systems; it would be to bring together components to make a new system in the first place.”**

I “admitted” this “defect” in the definition of irreducible complexity in the context of discussing (in passing, in a long article) a zany hypothetical example that Robert Pennock concocted in his book, *Tower of Babel*. Pennock, a philosopher, wrote that a complex watch could be made by starting with a more complex chronometer (a very precise timepiece used by sailors) and carefully breaking it! — So therefore a watch isn't irreducibly complex! As I testified I have not bothered to address Pennock's point because I regard the example as obviously and totally contrived — it has nothing to do with biologically-relevant questions of evolution. That the words of my article are quoted by the Court without any reference to the context of Pennock's silly example appears invidious and is certainly confused.

**(7) Although Professor Behe is adamant in his definition of irreducible complexity when he says a precursor “missing a part is by definition nonfunctional,” what he obviously means is that it will not function in the same way the system functions when all the parts are present.**

Yes, it's obvious that's what I meant because that's exactly what I wrote in *Darwin's Black Box*: “An irreducibly complex system cannot be produced directly (that is, by continuously improving the initial function, which continues to work by the same mechanism)...” (DBB, p. 39) If it doesn't work the same way when a part is missing, then it can't be produced directly, which is just what I wrote. Nonetheless, I do agree that, for example, a computer missing a critical part can still “function” as, say, a door stop. That hardly constitutes a concession on my part.

**(8) Professor Behe excludes, by definition, the possibility that a precursor to the bacterial flagellum functioned not as a rotary motor, but in some other way, for example as a secretory system. (19:88-95 (Behe)).**

I certainly do not exclude that bald possibility merely by definition. In fact in *Darwin's Black Box* I specifically considered those kinds of cases. However, I classified those as indirect routes. Indirect routes, I argued, were quite implausible:

Even if a system is irreducibly complex (and thus cannot have been produced directly), however, one can not definitely rule out the possibility of an indirect, circuitous route. As the complexity of an interacting system increases, though, the likelihood of such an indirect route drops precipitously. (DBB, p. 40)

University of Rochester evolutionary biologist H. Alan Orr agrees that indirect evolution is unlikely:

we might think that some of the parts of an irreducibly complex system evolved step by step for some other purpose and were then recruited wholesale to a new function. But this is also unlikely. You may as well hope that half your car's transmission will suddenly help out in the airbag department. Such things might happen very, very rarely, but they surely do not offer a general solution to irreducible complexity. (Orr, H. A. Darwin v. intelligent design (again). Boston Review [Dec/Jan], 28-31. 1996)

There is no strict logical barrier to a Darwinian precursor to a bacterial flagellum having functioned as a secretory system and then, by dint of random mutation and natural selection, turning into a rotary device. There is also no absolute logical barrier to it having functioned as, say, a structural component of the cell, a light-harvesting machine, a nuclear reactor, a space ship, or, as Kenneth Miller has suggested, a paper weight. But none of these has anything to do with its function as a rotary motor, and so none of them explain that actual ability of the flagellum.

A bare assertion that one kind of complex system (say, a car's transmission) can turn into another kind of complex system (say, a car's airbag) by random mutation and natural selection is not evidence of anything, and does nothing to alleviate the difficulty of irreducible complexity for Darwinism. Children who are taught to uncritically accept such vaporous assertions are being seriously misled.

**(9) Notably, the NAS has rejected Professor Behe's claim for irreducible complexity by using the following cogent reasoning:**

***[S]tructures and processes that are claimed to be 'irreducibly' complex typically are not on closer inspection.... The evolution of complex molecular systems can occur in several ways. Natural selection can bring together parts of a system for one function at one time and then, at a later time, recombine those parts with other systems of components to produce a system that has a different function. Genes can be duplicated, altered, and then amplified through natural selection. The complex biochemical cascade resulting in blood clotting has been explained in this fashion***

Well, that's a fine prose summary of the theory, but there is precious little experimental evidence that random mutation and natural selection can do what the NAS claim they can do. As I testified, in the 19<sup>th</sup> century prominent physicists overwhelmingly believed in the ether, not because of positive evidence for it, but because their theories of light required it. The "ether," however, does not exist. Nor do experiments exist that demonstrate the power of natural selection to make irreducibly complex biochemical systems, either directly or indirectly--proclamations of the National Academy notwithstanding. Again, children who are taught to mistake assertions for experimental demonstrations are being seriously misled.

***(10) Professor Behe has applied the concept of irreducible complexity to only a few select systems: (1) the bacterial flagellum; (2) the blood-clotting cascade; and (3) the immune system. Contrary to Professor Behe's assertions with respect to these few biochemical systems among the myriad existing in nature, however, Dr. Miller presented evidence, based upon peer-reviewed studies, that they are not in fact irreducibly complex.***

In this section, despite my protestations the Court simply accepts Miller's adulterated definition of irreducible complexity in which a system is not irreducible if you can use one or more of its parts for another purpose, and disregards careful distinctions I made in *Darwin's Black Box*. The distinctions can be read in my Court testimony. In short, the Court uncritically accepts strawman arguments.

***(11) In fact, on cross-examination, Professor Behe was questioned concerning his 1996 claim that science would never find an evolutionary explanation for the immune system. He was presented with fifty eight peer-reviewed publications, nine books, and several immunology textbook chapters about the evolution of the immune system; however, he simply insisted that this was still not sufficient evidence of evolution, and that it was not "good enough." (23:19 (Behe)).***

Several points:

1) Although the opinion's phrasing makes it seem to come from my mouth, the remark about the studies being "not good enough" was the cross-examining attorney's, not mine.

2) I was given no chance to read them, and at the time considered the dumping of a stack of papers and books on the witness stand to be just a stunt, simply bad courtroom theater. Yet the Court treats it seriously.

3) The Court here speaks of "evidence for evolution". Throughout the trial I carefully distinguished between the various meanings of the word "evolution", and I made it abundantly clear that I was challenging Darwin's proposed mechanism of random mutation coupled to natural selection. Unfortunately, the Court here, as in many other places in its opinion, ignores the distinction between evolution and Darwinism.

I said in my testimony that the studies may have been fine as far as they went, but that they certainly did not present detailed, rigorous explanations for the evolution of the immune system by random mutation and natural selection — if they had, that knowledge would be reflected in more recent studies that I had had a chance to read (see below).

4) This is the most blatant example of the Court's simply accepting the Plaintiffs' say-so on the state of the science and disregarding the opinions of the defendants' experts. I strongly suspect the Court did not itself read the "fifty eight peer-reviewed publications, nine books, and several immunology textbook chapters about the evolution of the immune system" and determine from its own expertise that they demonstrated Darwinian claims. How can the Court declare that a stack of publications shows anything at all if the defense expert disputes it and the Court has not itself read and understood them?

In my own direct testimony I went through the papers referenced by Professor Miller in his testimony and showed they didn't even contain the phrase "random mutation"; that is, they assumed Darwinian evolution by random mutation and natural selection was true — they did not even try to demonstrate it. I further showed in particular that several very recent immunology papers cited by Miller were highly speculative, in other words, that there is no current rigorous Darwinian explanation for the immune system. The Court does not mention this testimony.

***(12) We find that such evidence demonstrates that the ID argument is dependent upon setting a scientifically unreasonable burden of proof for the theory of evolution.***

Again, as I made abundantly clear at trial, it isn't "evolution" but Darwinism — random mutation and natural selection — that ID challenges. Darwinism makes the large, crucial claim that random processes and natural selection can account for the functional complexity of life. Thus the "burden of proof" for Darwinism necessarily is to support its special claim — not simply to show that common descent looks to be true. How can a demand for Darwinism to convincingly support its express claim be "unreasonable"?

The 19<sup>th</sup> century ether theory of the propagation of light could not be tested simply by showing that light was a wave; it had to test directly for the ether. Darwinism is not tested by studies showing simply that organisms are related; it has to show evidence for the sufficiency of random mutation and natural selection to make complex, functional systems.

***(13) As a further example, the test for ID proposed by both Professors Behe and Minnich is to grow the bacterial flagellum in the laboratory; however, no-one inside or outside of the IDM, including those who propose the test, has conducted it. (P-718; 18:125-27 (Behe); 22:102-06 (Behe)).***

If I conducted such an experiment and no flagellum were evolved, what Darwinist would believe me? What Darwinist would take that as evidence for my claims that Darwinism is wrong

and ID is right? As I testified to the Court, Kenneth Miller claimed there was experimental evidence showing that complex biochemical systems could evolve by random mutation and natural selection, and he pointed to the work of Barry Hall on the *lac operon*. I explained in great detail to the Court why Miller was exaggerating, was incorrect, and made claims that Barry Hall himself never did. *However, no Darwinist I am aware of subsequently took Hall's experiments as evidence against Darwinism.* Neither did the Court mention it in its opinion.

The flagellum experiment the Court described above is one that, if successful, would strongly affirm Darwinian claims, and so should have been attempted long ago by one or more of the many, many adherents of Darwinism in the scientific community. That none of them has tried such an experiment, and that similar experiments that were tried on other molecular systems have failed, should count heavily against their theory.

***(14) We will now consider the purportedly “positive argument” for design encompassed in the phrase used numerous times by Professors Behe and Minnich throughout their expert testimony, which is the “purposeful arrangement of parts.” ... As previously indicated, this argument is merely a restatement of the Reverend William Paley’s argument applied at the cell level. Minnich, Behe, and Paley reach the same conclusion, that complex organisms must have been designed using the same reasoning, except that Professors Behe and Minnich refuse to identify the designer, whereas Paley inferred from the presence of design that it was God.***

Again, repeatedly, the Court confuses extra-scientific implications of a scientific theory with the theory itself. William Paley would likely think that the Big Bang was a creative act by God, but that does not make the Big Bang theory unscientific. In fact I myself suspect that the Big Bang may have been a supernatural act, but I would not say that science has determined the universe was begun by God — just that science has determined the universe had a beginning. To reach to a conclusion of God or the supernatural requires philosophical and other arguments beyond science.

Scholarly diligence in making proper distinctions should not be impugned as craftiness. I do not “refuse to identify the designer” as the Court accuses. Starting in *Darwin’s Black Box* and continuing up through my testimony at trial, I have repeatedly affirmed that I think the designer is God, and repeatedly pointed out that that personal affirmation goes beyond the scientific evidence, and is not part of my scientific program.

***(15) — Expert testimony revealed that this inductive argument is not scientific and as admitted by Professor Behe, can never be ruled out. (2:40 (Miller); 22:101 (Behe); 3:99 (Miller)).***

Whether the induction is “scientific” of course depends on the definition of science. The induction is based on reasoning from physical evidence, which in my view does make it scientific.

As far as design being “never ruled out”, as I explained earlier science never rules anything out as a matter of logic; that is, science can't prove in some absolute sense that something doesn't exist. The task of science is simply to adduce evidence to help support one view or weigh against another.

**(16) *Indeed, the assertion that design of biological systems can be inferred from the “purposeful arrangement of parts” is based upon an analogy to human design. ... Professor Behe testified that the strength of the analogy depends upon the degree of similarity entailed in the two propositions; however, if this is the test, ID completely fails.***

The Court has switched in the space of a paragraph from calling the argument for ID an “inductive argument” to calling it an “analogy”. That is a critical confusion. As I testified, the ID argument is an induction, not an analogy. Inductions do not depend on the degree of similarity of examples within the induction. Examples only have to share one or a subset of relevant properties. For example, the induction that, *ceteris paribus*, black objects become warm in the sunlight holds for a wide range of dissimilar objects. A black automobile and a black rock become warm in the sunlight, even though they have many dissimilarities. The induction holds because they share a similar relevant property, their blackness. The induction that many fragments rushing away from each other indicates a past explosion holds for both firecrackers and the universe (in the Big Bang theory), even though firecrackers and the universe have many, many dissimilarities. Cellular machines and machines in our everyday world share a relevant property — their functional complexity, born of a purposeful arrangement of parts — and so inductive conclusions to design can be drawn on the basis of that shared property. To call an induction into doubt one has to show that dissimilarities make a relevant difference to the property one wishes to explain. Neither the judge nor the Darwinists he uncritically embraces have done that in respect to intelligent design.

**(17) *Unlike biological systems, human artifacts do not live and reproduce over time. They are non-replicable, they do not undergo genetic recombination, and they are not driven by natural selection. (1:131-33 (Miller); 23:57-59 (Behe)).***

Despite Darwinian claims, none of these factors has ever been shown to account for the molecular machinery of life, so we have no reason to think they affect the induction. (See above.)

**(18) *For human artifacts, we know the designer's identity, human, and the mechanism of design, as we have experience based upon empirical evidence that humans can make such things, as well as many other attributes including the designer's abilities, needs, and desires. ...Professor Behe's only response to these seemingly insurmountable points of disanalogy was that the inference still works in science fiction movies. (23:73 (Behe)).***

Again, the Court confuses an analogy with an induction. Our knowledge of the nature of the designer is not necessary for a conclusion of design based on induction, any more than knowledge of what caused the Big Bang was necessary before we could inductively conclude that the universe had an explosive beginning. Although the Court appears to disdain science fiction movies, the induction works in science as well. The SETI project (Search for Extraterrestrial Intelligence) is based on our ability to recognize the effects of nonhuman, alien intelligence. It was featured in the science-fiction film *Contact*, for example, based upon a work by Carl Sagan.

***(19) This inference to design based upon the appearance of a “purposeful arrangement of parts” is a completely subjective proposition, determined in the eye of each beholder and his/her viewpoint concerning the complexity of a system.***

The court implies that apprehending design is akin to judging if a piece of artwork is attractive — a matter of personal taste. Yet Darwin's theory is widely touted as explaining the strong appearance of design in biology; if such appearance is just a “completely subjective proposition”, what is Darwin's theory explaining? The Court neglects to mention that the “completely subjective” appearance of design is — in the view of the adamantly Darwinian evolutionary biologist Richard Dawkins — “overwhelming”. I testified to that, to Dawkins' proclamation that “Biology is the study of complicated things that give the appearance of having been designed for a purpose”, and to other similar statements. I showed the Court a special issue of the journal *Cell* on “Macromolecular Machines” which contained articles with titles such as “Mechanical Devices of the Spliceosome: Motors, Clocks, Springs, and Things”. If strong opponents and proponents of design both agree that biology appears designed, then the appearance should not be denigrated by Judge Jones as subjective.

***(20) As Plaintiffs aptly submit to the Court, throughout the entire trial only one piece of evidence generated by Defendants addressed the strength of the ID inference: the argument is less plausible to those for whom God's existence is in question, and is much less plausible for those who deny God's existence. (P-718 at 705).***

As I pointed out in my direct testimony to the Court, the Big Bang theory also was deemed less plausible by some scientists who disliked its supposed extra-scientific implications. I showed the Court an editorial in the prestigious journal *Nature* that carried the title “Down with the Big Bang”, and called the Big Bang a “philosophically unacceptable” theory which gave succor to “Creationists”. Because real people — including scientists — do not base all of their judgments on strictly scientific reasoning, various scientific theories can be more or less appealing to people based on their supposed extra-scientific implications. It is unfair to suggest ID is unique in that regard.

## Conclusion

The Court's reasoning in section E-4 is premised on: a cramped view of science; the conflation of intelligent design with creationism; an incapacity to distinguish the implications of a theory from the theory itself; a failure to differentiate evolution from Darwinism; and strawman arguments against ID. The Court has accepted the most tendentious and shopworn excuses for Darwinism with great charity and impatiently dismissed evidence-based arguments for design.

All of that is regrettable, but in the end does not impact the realities of biology, which are not amenable to adjudication. On the day after the judge's opinion, December 21, 2005, as before, the cell is run by amazingly complex, functional machinery that in any other context would immediately be recognized as designed. On December 21, 2005, as before, there are no non-design explanations for the molecular machinery of life, only wishful speculations and Just-So stories.



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