

DOES ID = DI?

Reflections on the Intelligent Design Movement

by

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Preliminary remarks

I was asked to speak today on the topic of the Intelligent Design movement that is gaining attention mostly in the US. The Planning Committee suggested that, although the ID movement is not prominent in the UK, your membership might find it of some value to become more aware of what this movement represents and how it is being received. And since questions regarding the character and detection of divine action are central to the ID agenda, a conference on the question, *How Does God Act in the World?* provides a particularly fitting context for our examination of the ID movement.

Given the usual limitations of time, I shall have to be brief and will be unable to provide documentation for many of my judgments.¹

The Cultural Context of the ID Movement

Religiously motivated opposition to scientific theories, especially to theories about biotic evolution, is not a new phenomenon. Nonetheless, both the *forms* of opposition and the *labels* devised to name the opposing viewpoints do change over time.

Young-earth special creationism, for instance, is rooted in the conviction that the first three chapters of Genesis constitute a factual chronicle of divine creative acts. Read as a chronicle, the text appears to posit that over a period of six 24-hour days God conferred form on the material that was given being at the beginning of time, perhaps 6,000 years ago. From that viewpoint, biological evolution is *unnecessary* (because each basic kind of living creature was given its form by an independent form-conferring act) and it is generally considered to be *impossible* as well (either because matter was never given the requisite capabilities to organize into living forms, or because of insufficient time).

Old-earth special creationism, on the other hand, accepts the scientifically-derived chronology of cosmic history. Nonetheless, it retains a commitment to the necessity of special creation and the impossibility of biological evolution.

The way in which special creationist beliefs are presented varies considerably with context. Within their own religious communities, special creationists are free to argue their cases by appeal to the Bible or to theological commitments. But efforts to get special creationism into the public school science classroom required the adoption of a different strategy. Consequently, an approach called *scientific creationism* was formulated without reference to its religious roots and was intended to function as a *scientific* alternative to biological evolution.

Judged on its scientific merit, however, scientific creationism is generally considered to be a dismal failure. This failure, combined with other considerations, has led most special creationists to abandon their call to present scientific creationism in the public school science classroom as an alternative to evolutionary theory.

But it is important to realize that the fundamental religious concerns that originally led to the scientific creationist movement remain undiminished. There are still large numbers of parents who find the teaching of evolution to be religiously offensive. Whether the public school intends it or not, teaching biological evolution without offering some creationism-like alternative is taken by many religiously devout parents to be a violation of the religious neutrality that the state

is required to maintain. To parents who are committed to special creationism of any sort, it appears as if the public school is promoting the religion of the enemy—often designated as *Darwinism*.

These parents have been heartened over the last decade by the growing visibility and political vigor of a relatively new movement that calls its viewpoint “Intelligent Design” (ID). Its beginning is best marked, I believe, with the publication of the book, *Darwin on Trial*, by Berkeley law professor Phillip E. Johnson.ⁱⁱ In that popular book Johnson decried the way in which, in his judgment, the preachers of Darwinism had come to dominate the secular educational system by insisting that biological evolution be taught as an established fact. By Johnson’s measure, Darwinism was popular not because it was substantiated by the weight of empirical evidence, but because it functioned to promote the naturalistic worldview of an entrenched scientific establishment.

I believe the next major advance for the growing ID movement was the publication of the book, *Darwin’s Black Box*, by biochemist Michael J. Behe.ⁱⁱⁱ Behe called attention to a number of specific biological systems and biotic structures that struck him as exhibiting a quality—he called it *irreducible complexity*—so remarkable that it could not possibly be the outcome of unguided natural processes alone. Therefore, argued Behe, these structures must have been *intelligently designed*.

Meanwhile, yet another academician with attractive credentials (advanced degrees in philosophy, mathematics, and theology) was working on a theoretical strategy that, in his judgment, placed the full analytical power of formal logic, mathematics and information theory on the side of the ID movement. In his recent book, *No Free Lunch*, William A. Dembski argues at length (as he did in his earlier work *The Design Inference*) that there are natural objects in the world that we can clearly identify as objects that could not be the outcome of natural processes alone.^{iv} From this he concludes that they must, therefore, be the products of *intelligent design*.

Johnson, Behe, Dembski and other advocates of ID ask that claims of this sort to be evaluated as *scientific* claims, with all concerns about religious motivation set aside. We could do that, but I

believe that our first steps toward an understanding of the ID movement must be to become familiar with its fundamental goals and its peculiar vocabulary. Knowing the movement's goals will help us understand some elements of its rhetorical strategy. Becoming familiar with the movement's vocabulary is necessary because of a strategy that I find to be characteristic of ID literature: key terms that are essential to the development of the case for ID are often given meanings quite different from what their normal usage might suggest.

ID's Mission: The Defeat of Naturalism

In the judgment of leading ID advocates, the worldview of *naturalism* has effectively dominated not only the arenas of higher education and professional science but also the pre-college public educational system. Support for the ID movement comes primarily from persons who agree with this assessment and are deeply disturbed by it. *The ID movement is committed to the defeat of naturalism.* But naturalism comes in many variant forms that must be carefully distinguished from one another. I find the following distinctions essential:

(1) Following theologian David Ray Griffin, I use the term *maximal naturalism* to denote the comprehensive worldview built on the premise that Nature (considered to be a purely physical/material thing) is all there is—there is no other form of being, no God or gods—and that there is no ultimate purpose in Nature's existence, character, or historical development.

(2) I use the term *minimal naturalism* to denote the family of worldviews that make no commitment either for or against the existence of any deity, but do reject the idea of *supernatural* action in which a deity would interrupt the flow of natural actions by coercively overpowering or superceding the actions of members of the universe.

(3) *Naturalistic theism* builds its worldview on the premise that there is a God who acts purposefully and effectively in the world, but this divine action is always persuasive and never coercive. In contrast to the several forms of *supernaturalistic* theism, naturalistic theism rejects supernatural action on the metaphysical grounds that it would violate the essential natures of God, the world, and the God-world relationship.

(4) The term *methodological naturalism* is often employed to denote the idea that the natural sciences have the competence to investigate natural actions alone and that science must remain agnostic with regard to any form of divine action.

Which of these forms of naturalism does the ID movement reject? There may be some variation in the ID literature, but the consensus seems to be that it doesn't really matter very much. In the judgment of most ID proponents, the distinctions outlined above are effectively meaningless because all of these versions of naturalism agree on the key proposition that the ID movement rejects—that there is no way to detect divine action empirically.

One of the chief claims of the ID movement is that design is *empirically detectable*. That being the claim, then each and every one of the forms of naturalism listed above—because they uniformly reject the empirical detectability of divine action—is the target for defeat. To the ID movement, any God whose actions are not empirically detectable would be of no value in defeating naturalism.

But if *naturalism* is the enemy, why is so much of ID's rhetoric directed toward *Darwinism*? The answer, I believe, is that Darwinism is taken to be the conjunction of biological evolution and purposeless maximal naturalism. The label "Darwinism" is commonly employed to characterize biological evolution as a way of accounting for the formational history of life that is both "thoroughly naturalistic" and "nonteleological." But which form of naturalism does "thoroughly naturalistic" entail? If it involves only *minimal* or *methodological* naturalism, then a number of theistic worldviews could accommodate it. Some theists would even welcome it. But if the term Darwinism is presumed to entail *maximal* naturalism, then Darwinism effectively becomes an atheistic worldview. This is, I believe, the rhetorical impact most commonly intended in ID literature, especially when the reader is offered the binary choice—*either Darwinism or design*. In ID literature, the term "Darwinism" is effectively used as a label that tells the reader, *Warning! Maximal naturalism included*.

Similar concerns must be raised when Darwinism is referred to as a “nonteleological” theory. If the characterization “nonteleological” entails the rejection of purpose or intention *at all levels of consideration*, then “Darwinism” is once again functioning effectively as a substitute label for “maximal naturalism.”^v

There is, however, some disagreement within the ranks of ID advocates about whether something like the common ancestry thesis itself entails maximal naturalism, or whether common ancestry is acceptable so long as it requires something more than natural processes alone. Johnson, for instance, holds common ancestry and maximal naturalism to be inseparable, while Behe and Dembski accept common ancestry, provided that it is dependent on natural processes being occasionally supplemented by acts of intelligent design.

Dembski expresses his position as follows:

...intelligent design is not a form of anti-evolutionism. [On the contrary, ID is] fully compatible with large-scale evolution over the course of natural history, all the way up to what biologists refer to as “common descent.”^{vi}

But...intelligent design is not willing to accept common descent as a consequence of the Darwinian mechanism. The Darwinian mechanism claims the power to transform a single organism ... into the full diversity of life that we see both around us and in the fossil record. If intelligent design is correct, then the Darwinian mechanism of natural selection and random variation lacks that power.^{vii}

The Darwinian Mechanism

The question then becomes, what is “the Darwinian mechanism”? Does it, for instance, include all natural processes that may have contributed to the formational history of life on earth? There is some ambivalence and inconsistency in the ID literature on this matter, but my judgment is that most references to “the Darwinian mechanism” exclude a number of relevant natural processes that may have played important roles in life’s formational history. Behe and Dembski,

for example, consider only the most strictly gradualistic form of variation and selection. Biological events that go beyond the most minuscule of mutations are placed outside the category of “Darwinian” processes. In some cases, the process of natural selection is limited by the demand that selection be based—from beginning to end—only on the final function of some structure. The roles of functional precursors that may have had functions different from the final one are effectively excluded.

Another restriction on the menu of *relevant* natural processes considered by Dembski arises from his requirement that scientific explanations regarding evolutionary processes, if they are to be included in his consideration, must be *causally specific*. Full causal specificity—a listing of every relevant process and its effects—is, of course, the goal of all scientific explanations, but it is often very difficult to achieve, especially in the reconstruction of life’s formational history. That’s just a fact of life in evolutionary biology, as well as in many other areas of science.

That being the case, then Dembski’s demand for full causal specificity becomes highly problematic. Many scientific hypotheses regarding the manner in which new biotic structures came to be actualized might fall short of full causal specificity—even though they may be highly plausible applications of mechanisms that are at least partially understood. Only those mechanisms that are now *fully understood*, it seems, can be placed on the menu of relevant natural processes contributing to the Darwinian mechanism. That might be strategically attractive, but it closes the door to an abundance of creative and potentially fruitful exploration—the sort of disciplined speculation that characterizes modern science.

What does it mean to be “intelligently designed”?

Stated as succinctly as I am able, the core scientific claim of the ID movement is, in effect, this: “We have firm empirical evidence that some biotic system X could not possibly have been assembled (at least not for the very first time) by purely natural processes; therefore X must have been *intelligently designed*.” I have long said that to evaluate this claim, two questions must be asked: (1) On what evidence and reasoning do ID advocates base their claim that X could not

have been actualized by natural processes alone? (2) What does it mean to say that X was intelligently designed? For the moment, let's focus our attention on question (2).

What do ID advocates actually mean when they say "X was intelligently designed"? Presuming that intelligent design is some form of action, what kind of *action*? And, action by what sort of *agent*?

We speak often today of things that have been designed. Cars are designed; clothing is designed; buildings are designed. Suppose, then, we were to walk into the headquarters of a major automobile manufacturer and ask to observe the process of cars being designed. What kind of activity would we be shown? Would we be taken to the assembly line to see cars being put together by human hands and mechanical robots? No, we would be taken to the "design center" where we would see people working with their minds to conceptualize new cars of various styles to achieve the manufacturer's intentions in the marketplace. In other words, to say that a car was designed is to say that a car was purposefully conceptualized. In contemporary parlance, *the action of design is performed by a mind, intentionally conceptualizing something for the accomplishment of a purpose.*

This *mind-like* action of *designing* is clearly distinguishable from the *hand-like* action of *actualizing* (assembling, forming, arranging, constructing) what had first been designed. On a tour of an automobile manufacturing facility, for instance, we would have no difficulty in distinguishing the mental work done at the design center from the manual work done on the assembly line.

But in the history of thought about how living things got to be the way they now are, the word "design" as the name of an action has often had a different meaning. William Paley, for example, spoke eloquently of things like the eye as having been designed, much like he would say that a pocket-watch was designed. Clearly the several parts of a watch work efficiently and harmoniously to accomplish the task of keeping and displaying the time of day. Looking at a watch, we would say without hesitation that such a timepiece had been designed by a

watchmaker. Without doubt, the watchmaker had used his mind to conceptualize the workings of the watch.

But mind-action alone does not produce a working watch. The watch must also be *actualized* by hand-action. As an artisan, the watchmaker must not only conceptualize the configuration of gears and dials that comprise a watch; he must also *form* the various parts and *assemble* them into an actual working mechanism. In the context of eighteenth century natural theology, to say that something had been designed was to say that it had been *both* purposefully *conceptualized* (by mind-like action) *and* skillfully *crafted* (formed and/or assembled by hand-like action). This traditional meaning of design action was based on the artisan metaphor. One person, the artisan, performed two actions—mindfully *conceptualizing* some artifact and manually *crafting* what had first been planned.

What does it *now* mean to be “intelligently designed”? Given the ID movement’s almost exclusive emphasis on the question of how things came to be structured as they now are, and given ID’s repeated emphasis on the presumed inadequacy of natural processes to assemble these structures, it appears that the primary meaning of “X was intelligently designed” is that “X was constructed in a way that required the form-conferring action of some non-natural agent called an *intelligent designer*.” As an action, intelligent design entails both the mind-action of conceptualization and the hand-like action of constructing or assembling some functional structure, *with a very strong emphasis on design as the means of actualization*.

What sort of agents are capable of performing the proposed action of intelligent design? First, of course, they must be *intelligent*, which in this context means *capable of making intentional choices*. However, as noted above, the intelligent agents of which ID speaks must also be able to *effect* what was first chosen, or to *actualize* what was first conceptualized.

When considering *embodied* intelligent agents, such as humans, we have no difficulty envisioning how the dual action of conceptualizing and actualizing might be carried out. Paley’s artisan-watchmaker could both conceive of a fitting mechanical clockwork and then proceed to form the various parts and to assemble them into a functional watch. However, when ID

advocates speak of biotic systems in nature as the products of intelligent design action they are proposing action by an agent of an entirely different sort—an *unembodied* intelligent agent who can both purposefully conceptualize something and then actualize that concept in some material/physical structure.

But how exactly does an unembodied agent act in such a way as to effect or modify some physical/material structure? How, for instance, might an unembodied intelligent agent act on a bacterium with no flagellum to actualize a flagellum where none had been before? Dembski and other advocates of ID generally choose, for strategic reasons, to leave this question unanswered. Any reference to this action as *miraculous*, for instance, would seriously reduce the chances of getting ID into the public school classroom. Nonetheless, I see no way to avoid the conclusion that *ID (Intelligent Design) is equivalent to DI (Divine Intervention)*.

Much remains to be said concerning the place of divine intervention in the universe's formational history. For now, however, let us return to the question of appealing to empirical evidence to support the contention that such form-conferring action is necessary.

What Makes Design Empirically Detectable?

How would we come to know that something, say the bacterial flagellum, had to be *intelligently designed* (that is, assembled in a manner that requires some non-natural, form-conferring action by an unembodied, choice-making agent)? It's very straightforward, says Dembski.

There does in fact exist a rigorous criterion for discriminating intelligently caused from unintelligently caused objects. ... I call it the *complexity-specification criterion*. When intelligent agents act, they leave behind a characteristic trademark or signature—what I define as specified complexity. The complexity-specification criterion detects design by identifying this trademark of designed objects.^{viii}

And what factors are included in this trademark called “specified complexity”? There are three: 1) *contingency*, 2) *complexity*, and 3) *specification*.

An object/event is said to be *contingent* if, while it is fully consistent with natural laws, it is not wholly determined by them. The class of contingent objects is large and I see no need to examine it further here.

A contingent object is said to be *specified* if it exhibits a distinctive pattern that is *detachable* from the particular event/object itself. A detachable pattern might, for instance, correspond to some independently derivable sequence of numbers or letters that has no necessary connection to the object/event being subjected to the complexity-specification criterion. However, when Dembski considers whether or not some biotic structure is specified, he seems content to assert that if the structure maintains any biological function, it is thereby specified. Much could be said about Dembski's use of this criterion, but in the limited time we have I shall focus on the remaining trademark, *complexity*. In particular, we shall examine Dembski's case for the conclusion that the bacterial flagellum bears this trademark.

Is the Bacterial Flagellum Complex?

Following his presentation of what he takes to be the general theoretical warrant for asserting the need for non-natural, form-conferring action by an unembodied agent, Dembski holds up the assembling of the bacterial flagellum as the premier example of a particular biotic structure for which this action was essential. Granting the *contingency* of this biotic system and setting aside the question of its *specification*, let us focus on Dembski's argument that it bears the trademark called *complexity*.

According to Dembski, to say that any biotic system X is *complex* is to say that the probability of its actualization (its coming to be assembled or constructed as a distinct biotic structure) must be less than the "universal probability bound," $\alpha = 10^{-150}$; or, to say it more concisely, *X is complex if $P(X) < \alpha$* .^{ix} Note that this makes the "complexity" of X a property, not of X itself, but of the means by which it came to be actualized. This unorthodox employment of the word *complexity* is an essential element in Dembski's case for intelligent design.

Dembski's criterion for complexity is quite easy to state, but is not easily applied. The principal difficulty arises when we examine precisely what must be taken into account when $P(X)$, the probability that X will be actualized, is computed.

Dembski gives explicit consideration of this crucial matter and leads us to the following position: To determine if X is *complex* (Dembski's meaning) we need to compute the value of $P(X|N)$, the probability that X could be actualized by the joint action of *all relevant natural processes*—all *pure chance* opportunities, all *regularities* described by *deterministic* laws, all *contingent* histories influenced by *evolutionary algorithms*, and the like. Given that clarification, Dembski's criterion becomes, *X is complex if $P(X|N) < \alpha$.*

But there is, of course, an obvious epistemic difficulty here. In no case do we know with certainty *all* relevant natural ways in which some biotic system may have historically come to be actualized. If “N” represents *all* relevant natural causes, both known and unknown, and if we use a lower case “n” to designate only those natural causes that are *known* to be relevant, then it is clear that the best we can do is calculate $P(X|n)$.

In some cases this limitation of knowledge might be inconsequential. If we know enough to make the calculated value of $P(X|n) > \alpha$, then the question of complexity can be settled (X is not complex) without an exhaustive knowledge of all relevant natural processes. But what if our knowledge is inadequate to do the probability calculations? What if, for instance, we were able to propose one or more plausibility arguments regarding the kinds of natural processes that are likely to contribute to $P(X|N)$, but were not yet able to translate these arguments into numerical values for probability?

Dembski does seem to recognize this as a problem when he remarks, “Now it can happen that we may not know enough to determine all the relevant chance hypotheses [which here, as in most instances, means *all relevant natural processes* (hvt)]. Alternatively, we might think we know the relevant chance hypotheses, but later discover that we missed a crucial one. In the one case a design inference could not even get going; in the other, it would be mistaken.”^x In principle, this epistemic problem should introduce a considerable degree of modesty in all assessments of

probability values related to the question of the complexity of any particular biotic system. Complexity—in Dembski’s unorthodox sense—is an elusive quality. Our ability to determine the presence or absence of it is severely hampered by our limited state of knowledge regarding the specific way in which natural causes have contributed to the formation of biotic structures.

However, the more we learn about the self-organizational and transformational feats that can be accomplished by biotic systems, the less likely it will be that the conditions for *complexity*—as Dembski employs this term in relation to *specified complexity*—will be satisfied by any biotic system. For example, in reference to the power of evolutionary algorithms—natural processes that effectively search for increasingly better performance at some task—Dembski acknowledges that “An evolutionary algorithm acts as a *probability amplifier*. . . . But a probability amplifier is also a *complexity diminisher*.”^{xi} That being the case, and given our incomplete knowledge of these probability amplifiers, Dembski’s approach is highly likely to produce numerous false positive claims for the presence of what he calls “complexity.”

On numerous occasions Dembski asserts, in effect, that “natural causes cannot generate specified complexity.” Given the definition of specified complexity, however, such statements are, at best, only trivially true or tautological. The principal requirement for exhibiting specified complexity is the requirement that some structure/system cannot be (or is highly unlikely to be) actualized by natural causes. The question is, however, Are there any actual objects that demonstrate this quality? If there exist no biotic systems that actually have this Dembski-defined quality of *specified complexity*, then there would be no need to “generate” it in the first place.

But what about the bacterial flagellum in particular? Dembski is quite confident that he has demonstrated that it is more than sufficiently complex (difficult to assemble naturally) to satisfy the complexity portion of the complexity-specification criterion. How did he do the computation, and what is the standing of his conclusion?

Is the flagellum complex? Computing the crucial probability.

Following Behe, Dembski describes the bacterial flagellum as an “irreducibly complex system that is unattainable by the Darwinian mechanism.”^{xii} He then seeks “to show how irreducible complexity is a special case of specified complexity, and ... to sketch how one calculates the relevant probabilities to eliminate chance and infer design for such systems. Determining whether an irreducibly complex system exhibits specified complexity involves two things: showing that the system is specified and computing its probability.... Specification is never a problem.”^{xiii} That glib remark about specification deserves attention, but our immediate concern is with Dembski’s attempt to compute $P(\text{flag}|N)$, the probability that *E. coli*’s flagellum was actualized by the joint action of all relevant natural processes.

Curiously, Dembski not only rejects any proposal consistent with the gradualism that ID presumes to be an essential feature of the Darwinian mechanism, he also effectively ignores the fundamental role that genes play in providing the instructions for the development of cellular structures. Instead, Dembski simply asserts that the probability in question must be computed by treating the bacterial flagellum as a chance-assembled *discrete combinatorial object*. A discrete combinatorial object is an object that is composed of particular kinds of building blocks that must first be gathered into one location and then configured in a particular arrangement to form the complete object.

Dembski then offers a way of calculating (or estimating) the probability that any discrete combinatorial object would, by pure chance, self-assemble from the appropriate sort of building blocks. Specifically, we are asked to imagine a bacterial flagellum arising from the pure chance gathering of approximately 50 of the right kinds of proteins (and in the correct proportions) at some spot in the vicinity of the cell wall and plasma membrane of *E. coli* and then, again by chance, happening to configure themselves into a functioning rotary propulsion system for this bacterial cell.

Not surprisingly, Dembski’s computations of the three probability factors lead him firmly to the expected conclusion: Considered as a *discrete combinatorial object* that must self-assemble from the chance localization of the requisite, chance-assembled molecular components, the probability

of a flagellum assembling itself and attaching itself to the cell membrane of *E. coli* is exceedingly small in comparison to the universal probability bound.

Note carefully, however, what Dembski has actually done with his probability computation. By his own definition of complexity, the probability value he needs is $P(\text{flag}|N)$, the probability that the flagellum could form by the joint action of *all relevant* natural means. However, given the epistemic limitation we noted earlier, the best he could possibly do would be to compute $P(\text{flag}|n)$, the probability that the flagellum could form by the joint action of *known* natural means. But this is *not* what he actually computed. What Dembski computed instead is $P(\text{flag}|dco)$, the probability that the flagellum could form by *pure chance alone* as a *discrete combinatorial object*.

But, of course, *no biologist has ever taken the bacterial flagellum to be a discrete combinatorial object that self-assembled in the manner described by Dembski*. Dembski has not defeated any actual biological proposition. He has, I believe, slain nothing more than an imaginary dragon.

E. coli bacteria possess flagella, not because flagella self-assemble and self-attach to the cell membrane, but because the genome of *E. coli* came to include in its genetic library the coded instructions for growing the flagellar propulsion system. That being the case, the question relevant to the issue of intelligent design is not, Could the flagellum self-assemble as a discrete combinatorial object? but rather, Could that portion of the *E. coli* genome that codes for the production of a flagellum have come about by natural means?

This is not an easy question to answer definitively. How did the rest of *E. coli*'s genome come about? If by purely natural means, then would it not seem odd that the small flagellar portion of the genome required supplemental designer action that rest of the genome did not?

As a matter of fact, the *E. coli* genome contains genes for the formation of structures remarkably similar to portions of the flagellum system. Bacteria like *E. coli* possess systems for the secretion of select proteins from the cytoplasm in the cell interior to the extracellular space beyond, often directly into host cells. Of special relevance here is the type III secretion apparatus, composed of

about 20 proteins, most of which are homologous to the components of the flagellar biosynthesis apparatus.^{xiv} To put it as simply as possible, the type III secretion apparatus and the “motor apparatus” of the bacterial flagellum employ similar building blocks and share numerous structural features. Thus, the genetic coding for one of these structures is going to be closely related to the coding for the other.

How does Dembski deal with these similarities and relationships in his book, *No Free Lunch*? In essence, he ignores them and proceeds to deal with the flagellum in complete isolation from closely related structures in the same *E. coli* cell. Without explanation, and without even acknowledging the existence of the secretion apparatus or its relationship to the flagellum, Dembski simply asserts that since the flagellar apparatus could not self-assemble by pure chance, it must have required the supplemental action of an “intelligent designer.” Meanwhile, the fully natural actualization of the closely related secretion apparatus—part of the bacterium-sans-flagellum—is effectively granted without comment.

The Bottom Line

In conclusion, ID advocates have every right to argue their case. I would, however, suggest some modifications in their strategy. Specifically, I would invite them: 1) to be more candid in stating their theological and philosophical presuppositions; 2) to be more open and candid about their religious agenda; 3) to get out of the habit of giving key terms (intelligent design, chance hypothesis, Darwinism, Darwinian mechanism, complexity, specification, etc.) unorthodox definitions that tend to confuse the discussion; and 4) to display the same modesty for their own claims that they demand of normal science.

As it has so far been presented, the case for ID appears to me to be little more than this: In the absence of a complete, detailed, causally-specific scientific account for the actualization of some biotic structure, X, it is logically permissible to posit that X was formed in a way that required one or more acts of divine form-conferring intervention. That’s true, of course, but I knew that long before the advocates of ID told me so in the language of irreducible complexity, specified

complexity, or the complexity-specification criterion. Contrary to the beliefs and hopes of many, I do not see the ID movement as an advance in the science-religion interaction.

ⁱ A large portion of this paper is based on my review essay, “E. COLI AT THE *NO FREE LUNCHROOM*: Bacterial Flagella and Dembski’s Case for Intelligent Design,” available at the AAAS web site, Dialogue on Science, Ethics and Religion section, www.aaas.org/spp/dser/evolution/perspectives/vantillecoli.pdf. Additional documentation and references will be found there.

ⁱⁱ Phillip E. Johnson, *Darwin On Trial* (Downers Grove, Ill: InterVarsity Press, 1991).

ⁱⁱⁱ Michael J. Behe, *Darwin’s Black Box: The Biochemical Challenge to Evolution* (New York: The Free Press, 1996).

^{iv} William A. Dembski, *No Free Lunch: Why Specified Complexity Cannot Be Purchased Without Intelligence* (Lanham, MD: Rowman & Littlefield Publishers, Inc., 2002). Future references to this work will be designated simply as *NFL*, p. xyz. See also Dembski’s earlier work, *The Design Inference: Eliminating Chance Through Small Probabilities* (Cambridge: Cambridge University press, 1998).

^v In anti-evolutionist literature it is often implied that the presence of randomness in natural processes such as *random* variation or natural (*unguided*) selection completely displaces the idea of goals, purposes or intentions. But that is simply not the case. Although the idea that each individual event in evolutionary history is purposefully intended or in conformity to some predetermined plan may have to be set aside, that does not at all eliminate the possibility that the evolutionary process as a whole might well be serving some comprehensive purpose. As an illustration, suppose there were a completely honest gambling casino in which pure randomness characterized every roll of the dice, every spin of the wheel, every turn of the card, etc. Nonetheless, the casino accomplishes its purpose of bringing a handsome profit to the bank at the end of each day. In fact, the owners of the casino depend on authentic randomness in their computation of payout rates in order to accomplish their goal of making a profit. Randomness at one level does not exclude purpose at another. Randomness can be purposefully employed.

^{vi} *NFL*, p. 314.

^{vii} *NFL*, pp. 314-315.

^{viii} *NFL*, p. 6.

^{ix} See *NFL*, pp. 18-22, for a discussion on the universal probability bound and Dembski’s employment of it.

^x *NFL*, p. 123n80.

^{xi} *NFL*, pp. 182-183.

^{xii} *NFL*, p. 288.

^{xiii} *NFL*, p. 289.

^{xiv} See the review article by Christoph J. Heuck, “Type III Protein Secretion Systems in Bacterial Pathogens of Animals and Plants,” in *Microbiology and Molecular Biology Reviews*, June 1998, Vol. 62, No. 2, pp. 379-433