NATURAL PROVIDENCE (OR DESIGN TROUBLE)

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Recent work in Intelligent Design Theory (IDT) reopens a number of questions concerning God's providence over nature. Friends of IDT claim that their "explanatory filter" allows us to detect design empirically and that this provides a way to make appeal to supernatural design in properly scientific explanations while at the same time undercutting methodological naturalism. I argue here that the explanatory filter is fatally flawed, and that detection of detection of design would not undercut methodological naturalism in any case. Friends of IDT fail to see this because they adopt a Newtonian conception of natural providence, while failing even to consider a preferable Leibnizian conception.

I. Introduction

The history of discussions concerning divine providence contains two distinct strands. The first strand concerns God's providence over those features of his creation that directly concern human beings. Discussions concerning foreknowledge and freedom, freedom and predestination, soteriological election, etc. fall under this strand. In the sixteenth century, and for the latter portion of the twentieth century, this is the strand that has been most pronounced in Christian philosophical discussions of providence. However, while traditional theistic religions hold that God exercises providential control over human affairs, they also hold that God's providential activity has a wider scope, extending to the workings of all of nature. The Christian faith specifically holds that God's intentions and handiwork are not merely evident in those features of creation that centrally concern human beings, but throughout the whole of creation. This second strand held sway in discussions of providence in the late seventeenth and early eighteenth centuries, most notably in the disputes between Leibniz and the Newtonians. Recently, interest in questions regarding natural providence has resurfaced, and this resurgence is due in large part to work in Intelligent Design Theory.

Intelligent Design theorists contend that the deliverances of natural science show us that much of the natural world can only be explained by appeal to intelligent design, and that this means that natural science must be willing to accommodate appeals to design. This position is distinctively Newtonian and, I think, mistaken. In this paper I want to show how one can happily admit evidence of design in nature, while rejecting the claim that this has any implications for the practice of natural science at all. Rather, friends of Intelligent Design should favor a Leibnizian model in which design is perfectly compatible with thoroughgoing nomic regularity in nature, and thus with a form of methodological naturalism in scientific practice.

II. Intelligent Design Theory

In the last five years or so, advocates of Intelligent Design Theory, or IDT, have argued that Christians need to take their beliefs about natural providence more seriously, and that when they do, this will impact how they think about the workings of nature itself. Christians believe, they argue, that God is not one to create and then leave the world to its own devices. Christian commitments concerning miracles and prayer are sufficient to demonstrate that. Since God is intimately connected with his creation, Christians are thus committed to thinking that certain states of the natural world are brought about directly by the divine hand. Any such events, of course, are going to be ones which cannot be truthfully accounted for by appeal merely to natural entities and their native powers. All attempts to explain such immediately divinely caused states of affairs by appeal only to natural entities and their native powers will thereby either end up in frustration or error.

Friends of IDT are, however, quick to point out that contemporary natural science is firmly committed to a policy of methodological naturalism in science. Thus, in cases where God's activity has in fact played a role in causing states of nature, the contemporary scientist will, they claim, necessarily land in frustration and error. Christian scientists who are willing to countenance the hand of design in natural explanations will not be at such a disadvantage. For these scientists' awareness of divine activity in the world leaves them open to the possibility that states of nature might not be explicable by reference to natural entities and their native powers. And if there are

reliable empirical means for discerning when states of nature cannot be naturally explained, the Christian scientist will have a distinct advantage here. She will be able to defend an empirically grounded, scientific explanation for the phenomenon in question that does not end in frustration or error.

IDT theorists thus commend such a program to the scientific community generally, and to the Christian scientific community specifically. To that end, they have offered intriguing arguments for the claim that design can be discerned by empirical means and that in some cases, scientific explanations that invoke design are vastly preferable to the best explanations available under methodological naturalism.

However, and perhaps not surprisingly, IDT is not a monolith. A closer look at the work of IDT advocates reveals that they do not all understand IDT or its implications in the same way. The somewhat more than causal observer comes away with the impression that some claim a greater reach for IDT than others. In particular, defenders of the view claim that IDT demonstrates one of the following increasingly bold claims:

1) Intelligent design in the natural world, if it exists, is empirically detectable.
2) The natural world exhibits empirically detectable intelligent design.
3) The natural world exhibits empirically detectable intelligent design that can only be accounted for by direct intervention of a designing agent.
4) The natural world exhibits empirically detectable intelligent design that can only be accounted for by direct intervention of a designing agent and this requires that science reject methodological naturalism.

Christian philosophers should and do exhibit a good deal of sympathy with the motivation and substance of IDT. Christian natural scientists, however, seem to exhibit a great deal of reticence about IDT and its purported relevance for scientific practice.

In what follows I will examine the three of the four claims above and consider whether or not IDT advocates have given us good reason to adopt them. Although I will ignore (2) here, I will

argue that their work has given us good reason to adopt (1), but not (3) and (4). Instead, I will argue that even though IDT advocates have given us reason to think that design is detectable in nature, there are no possible empirical grounds that could lead us to endorse (3). Since, by their lights, endorsing (3) provides us with the only reason for seeking to dump methodological naturalism, we thus also have reason for rejecting both conjuncts of (4).

III. The "explanatory filter"

William Dembski has undoubtedly done more than any other friend of IDT to make the case for the empirical detectability of intelligent design. It will be important to lay out Dembski's view here in brief. According to Dembski, there are only three general explanatory paradigms available when we aim to explain the existence of an object, event, or state of affairs: law, chance, or design.[1] Dembski characterizes the three explanatory paradigms as follows:

> To attribute an event to law is to say that the event will almost always happen given certain antecedent circumstances. To attribute an event to chance is to say that its occurrence is characterized by some (perhaps not fully specified) probability distribution according to which the event might equally well not have happened. To attribute an event to design is to say that it cannot plausibly be referred to either law or chance.[2]

In some cases, Dembski says that the we attribute an event to law when we regard the event as necessary or, more cautiously, as the "almost inevitable outcome of prior circumstances in conjunction with the laws of nature." The point here is straightforward enough. If one were to stumble across an ornate naturally occurring scolecite crystal, one might think that they had stumbled upon a masterful work of art. Consultation with a local geochemist, however, would reveal that scolecite is the crystalline form of hydrated calcium aluminum silicate, and that such crystals form due to the fact that the lattice structure in the crystal represents the minimal energy state for hydrated calcium aluminum silicate in solid form. While it might look like such a

remarkable structure requires intelligent intervention, its occurrence is almost inevitable given certain conditions and the laws governing crystal formation.

What about an event which is not explained as the almost inevitable outcome of prior circumstances in conjunction with natural laws? Such might be the case for a) events which result from probabilistic laws (where the occurrence of the event in question is improbable), or b) events for which there is no underlying law-like regularity which governs the occurrence of such events. In these cases, Dembski claims we must first ask whether or not the event is complex. If not, then it is reasonable to conclude that the event is the result of chance.

To illustrate, Dembski asks us to consider a scene from the film Contact in which researchers searching for extraterrestrial life receive a signal consisting of pulses and pauses. Interpreting pulses as 1's and pauses as 0's, the fictional researchers find that an extra-galactic signal they received represents the prime numbers from 2 to 101 in base 2. In the film, this gives the researchers a strong motive for believing that intelligent design was responsible for the signal. Yet, as Dembski points out, if the researchers had received a series of pulses and pauses yielding the sequence11011101111 no one would have thought this result worthy of an inference to design, even though this constitutes the first 5 prime numbers in base 2. The reason this shorter sequence is more reasonably attributed to chance than design is the lack of sufficient complexity. The string is too short to conclude with any confidence that it results from anything other than chance.

In cases where events are a) complex and b) not explicable as the inevitable outcome of conditions and laws, the appropriate explanatory inference depends on the sort of complexity involved. If I, in a moment of bad gamesmanship, throw a Scrabble game out of the window, the resulting arrangement of tiles on the ground outside will be complex and not explicable as the inevitable outcome of natural laws. However, no one could reasonably conclude that that arrangement of tiles was the result of intelligent design. Though an intelligent agent threw the game pieces, the arrangement might have just as easily resulted from the game box being blown off the windowsill as from being thrown.

However, if you were to pass by my window and find the very same Scrabble pieces arranged in such a way as to spell out the sentence "WELCOME TO PENNSYLVANIA" you would be quite confident that this arrangement was the result of design. Though the arrangement of thrown pieces and carefully placed pieces both exhibit a high degree of complexity, the latter instances an outcome that we would regard as favored in some sense, whereas the former would not. Dembski labels such favored outcomes "specified complexity." Thus, in cases of complex, non-nomically inevitable events, unspecified complexity is best explained by chance, whereas specified complexity is explained by design.

Dembski claims that his "explanatory filter" is nothing but an explicit and carefully formulated explanation of the sorts of ordinary reasoning processes we employ when explaining events generally. If we stumble across a large, perfectly pyramidal shaped structure in the Central American jungle (i.e., a pyramid), we are able to infer reasonably that the structure was intelligently designed since we can reasonably infer that such structures do not arise from inevitable nomic processes, and they exhibit a high degree of "specified complexity."

In what follows I will raise two difficulties for the explanatory filter. The first concerns the detection of the specification of complexity which licenses the design inference. The second concerns the claim that events explained as the result of inevitable nomic regularities should not be regarded as designed. I will address the former in section IV briefly, and the latter in sections V through VIII in some detail.

IV. Specified Complexity?

When we are trying to determine if a complex event exhibits specification, it is the pattern exhibited by the event that is the focus of attention. Dembski claims that a complex event exhibits specified complexity when the pattern the event displays is detachable. For the sake of clarity, note that it is the pattern the event exemplifies rather than the event itself which is detachable. Roughly, a pattern is detachable if we can construct the pattern independent of our knowledge of the event

which instances the pattern. In other words, if the pattern instanced in the event is one we can derive only after becoming acquainted with the outcomes, the pattern is not detachable.

Dembski illustrates this with a case in which an election official was convicted of tampering when it was discovered that in 40 out of 41 cases, he gave Democrats the privileged top spot on the ballot. Given our knowledge of how elections work and the aims of a corrupt Democratic official, we can, without knowing any actual outcomes, know what a "cheating pattern" looks like. It looks like Democrats getting top billing every time (or nearly every time). If that pattern is a pattern we can "come up with" without consulting any actual ballots we would have a detachable pattern.

More specifically, a pattern is detachable if we can "come up with it" via side information which exhibits conditional independence and tractability. In the election case, our side information consists of information about what a pattern of cheating by a corrupt election official would look like. Such side information is conditionally independent when we have access to it in a way that is independent of our knowledge of the actual election outcomes. The side information is tractable when we are able, using that independent information to construct the pattern which the event displays. As we saw, the side information in the election case is tractable as well since we can construct "election ballot cheating patterns" from our knowledge of how cheating would be accomplished.

Thus we have a recipe for discerning specified complexity. If the pattern displayed by the complex event in question is detachable (i.e., can be derived from side information that is both conditionally independent and tractable), then the event exhibits specified complexity and is designed (unless explained by "law").

The trouble with Dembski's account however is that too many, perhaps all, patterns end up exhibiting specified complexity. The reason is that if we help ourselves to the right side information, we can generate a host of detachable patterns that should be regarded as the results of chance. In the election case, we can specify all patterns of outcomes (Democrats on top 41 times, 40 times, 39 times, in all of their permutations) by simply using an algorithm which delivers every possible outcome of ballot placement. That is, if my side information is an algorithm which will

spit out a list of all possible placements of Democrats and Republicans on the ballot, then we will be able to specify any pattern by using side information (the algorithm) that is truly conditionally independent and tractable.[3]

What we need here, no doubt, is a restriction on side information so that we can correspondingly restrict the range of patterns that will count as "specified." But how should we do that? The only way, it appears, is to have in mind in advance what sorts of outcomes are privileged, and then consider cases in which side information would yield these privileged outcomes. Thus, in the case of the Scrabble tiles above, if the pattern of tiles is one that spells out a coherent sentence in the English language, it counts as specified. So, side information concerning the formation of coherent English sentences should be permitted.

Unfortunately, this sort of exercise is futile. We were looking for a way of objectively determining which events exhibit patterns of specified complexity. But on the "restricted side information" strategy, this is silly. To restrict side information we must already know how to pick out specified complexity in the first place. Thus, rather than the explanatory filter helping us to figure out when there is specified complexity and thus design, the filters success requires that we already be able to pick out design independently.

How then should we (or rather, how do we) detect design among the occurrences of improbable outcomes? I am not sure. But I, like friends of IDT, am confident we can do it. Perhaps we should take a cue from the old fashioned design arguments which said that "specified outcomes" are ones that exhibit patterns that intelligent beings often purpose to bring about in the world. So, when events exemplify patterns which are useful or aesthetically pleasing, we can regard them as likely to have resulted from design rather than chance.

Peter van Inwagen has offered a principle in another context which we might be able to employ here as well. In considering patterns of fine-tuning in the cosmos, van Inwagen proposes that we might be able to distinguish improbable but unspecified outcomes from equally improbable but specified outcomes by using the following principle, slightly modified here:

> Suppose that there is a certain non-nomically determined fact that has no known explanation; suppose that one can think of a possible explanation of that fact, an explanation that (if only it were true) is a very good explanation; then it is wrong to say that that event stands in no more need of an explanation than an otherwise similar event for which no such explanation is available.[4]

On this principle, we look at events which exhibit patterns not explained by law and see if a plausible alternative (read "design") explanation can be given. If so, we should regard the event as likely designed. If not, we should regard it as a result of chance. Thus, if we see Democrats receiving top billing in 40 out of 41 elections, and we notice that the election official is biased towards Democratic candidates, we have a pattern that admits of an explanation which, if true, is a very good one (cheating). But when the pattern is Democrats on top 21 times, Republicans 20 times, no such corresponding good explanation can be found, and the pattern can, and should, be taken as random.

The upshot of this first criticism of Dembski is that the explanatory filter as described is flawed, but not fatally so. We can still see a way of distinguishing chance and design, though the method of doing so is far less rule governed and objective than perhaps the friends of IDT would wish for.

V. Nomic regularity and the Defeat of Design

I turn now to a second problem for Dembski's explanatory filter. The above criticism focuses on the way in which Dembski distinguishes explanations via chance and design. This criticism concerns the distinction of explanations via law and design. In describing Dembski's explanatory filter we have seen that the first node in the decision tree requires us to determine if the event is the (nearly) inevitable outcome of nomic regularities. If so, the explanation is law, not chance or design. If we can discern some law-like way that an event, even a complex specified event, comes about, this defeats the design explanation. Michael Behe, in his book Darwin's Black Box, makes this claim repeatedly in referring to the "irreducibly complex" biochemical processes and structures he treats. He writes:

> How do we confidently detect design? For discrete physical systems–if there is not a separate route to their production, design is evident when a number of separate, interacting components are ordered in such a way as to accomplish a function beyond the individual components.[5]

And later,

> We must also consider the laws of nature. The laws of nature can organize matter . . .. The most relevant laws are those of biological reproduction, mutation, and natural selection. If a biological structure can be explained in terms of natural laws, then we cannot conclude that it was designed.[6]

Thus, for Behe, success at explaining an event via nomic regularities trumps design explanations.

However, this seems to entail a claim that many IDT advocates deny, sometimes strenuously, namely, that appeal to intelligent design requires appeal to supernatural intervention in the course of nature. One cannot have it both ways. If my success at explaining an event's occurrence through law-like processes undercuts a design explanation, then the presence of design requires that some events be caused in a non-nomically regular way, i.e., miraculously. This is simple modus tollens.[7]

Behe is not alone in such claims. Here, for example, is Phillip Johnson:

> If God had created a lifeless world, even with oceans rich in amino acids and other organic molecules, and thereafter had left matter alone, life would not have come into existence. If God had done nothing but create a world of bacteria and protozoa, it would still be a world of bacteria and protozoa. Whatever may have been the case in the remote past, the chemicals we see today have no observable tendency or ability to form complex plants and animals. Persons who believe that chemicals unassisted by intelligence can combine to create life, or that bacteria can evolve by natural processes into complex animals, are making an a priori assumption that nature has the resources to do its own creating. I call such persons metaphysical naturalists.[8]

Although Johnson is not as explicit here, the point is the same. Natural entities, operating via their natural powers, are incapable of explaining the existence of the complex biological entities we find. Thus, explanation of such entities must require reference to supernatural intervention into the course of nature.

Above I noted, however, that many friends of IDT deny that design has any such implications. Dembski, to cite one example, insists that even though we might be able to assert confidently that a designer is required to explain an event, this has no direct implications for the <u>way</u>

in which the designer brought the event about. Dembski claims the question of whether an intelligent cause was involved, the detectability question, is independent of the question of how such a designer acted, the modality question.

> The point I want to stress, however, is that the detectability and modality questions are largely independent, with the . . . answer to one question not necessarily affecting the correct answer to the other.[9]

And yet, in the same work, Dembski indicates that a sine qua non of IDT is that it appeals to divine interventions. In the following passage, Dembski is explaining the difference between IDT and naturalistic evolution, claiming, it appears, that the course of nature will have gaps in the former but not the latter:

> The first thing to notice is that naturalistic evolution and intelligent design both make definite assertions of fact. To see this, consider your own personal genealogy. Here you are. You had parents. They in turn had parents. They too had parents. And so on. If we run the video camera back in time, generation upon generation, what do we see? Do we see a continuous chain of natural causes which go from apes to small furry mammals to reptiles to slugs and slime molds to blue-green algae and finally all the way back to prebiotic soup, with no event in the chain ever signaling the activity of an intelligent cause? Or as we trace back the genealogy, do we find events that clearly signal the activity of an intelligent cause? There exist reliable criteria for inferring the activity of intelligent causes. Does the natural history display clear marks of intelligence and thereby warrant a design inference, or does it not? To answer this question one way is to embrace intelligent design; to answer it the other way is to embrace naturalistic evolution.[10]

Perhaps one might think that these remarks don't force Dembski to hold that IDT requires divine intervention in the processes of nature. After all, he merely says that if IDT is correct, some event in the chain will "signal" the activity of a designer. Perhaps this just means that such activity is detectable, leaving the modality question still wide open. Yet a few pages earlier Dembski is clear that the earmarks of design in question cannot be seen if the natural causal nexus is uninterrupted. As a result, he claims, so-called theistic evolution and atheistic evolution are identical in scientific content.

Thus, it seems that IDT advocates might consistently hold that the answer to the detectability question leaves the modality question open. But the Explanatory Filter contradicts this, by holding that if the modality question yields a nomically regular answer, the detectability question

must be answered in the negative. And this implies that if design is detectable, there must have been intervention. We now turn to see why this claim is deeply problematic.

VI. Intervention and Deck-Stacking

Imagine that I invite you and two other friends to my home for a friendly game of high stakes poker. In order to insure the integrity of the game, I propose that we play each hand with a freshly opened deck of preshuffled cards. After five hands of five-card stud you grow suspicious. The reason: I have won every pot with a hand of four aces.

Convinced that I am cheating, you set out to figure out how I have done it. You look up my sleeve, my pant leg, under my hat, all to no avail. It becomes clear to you that I did not break the rules by unfairly adding cards to, or removing cards from, my hand during the game. All attempts to discover signs of intervention during the course of the game come up empty. What should you conclude? Perhaps one might conclude that no rules of poker playing were violated during the course of the game and thus that there was no cheating after all. No contravention of the rules during the game, no cheating.

One of the other losers is, however, not convinced by such reasoning. While it might be true that there was no cheating by intervention, there are other ways to manipulate the game to get the favored outcome. How? The answer is, of course, easily discovered in the neatly stacked pile of "new pre-shuffled" decks at the edge of the table. Upon examining the first, we notice that among at the top of the deck, every fourth one is an ace. The jig is up! All I had to do is control certain initial conditions, i.e., who dealt the hands, and I would be a guaranteed winner.

Here we have a case in which the earmarks of intelligent intervention are clear. It is reasonable for us to expect that no one would, just by chance, win five rounds of poker with hands of four aces. But there are two very different ways in which intelligent agency might have secured the result, by intervention and by deck-stacking.

Notice two important implications of the distinction that I will return to later. First, the inference that we make that cheating occurred here (call it "the cheating inference") was made in

way that was indifferent to our knowledge of how it was pulled off. It might be the case that someone looking at the game that we played would plainly see that no rules of poker playing were violated. The game was utterly "nomically regular." Nonetheless, the cheating inference would not be undercut.

The relevance of this observation should be obvious. As we saw earlier, IDT advocates, most notably Behe and Johnson, argue that design inferences are defeated if the processes that lead to the designed outcome are nomically regular. This is a mistake. Even if the designed outcomes can be explained by appeal to the regular operations of the laws of nature, inferences to design can still be warranted.

The second implication, the flip-side of the first perhaps, is that if all we had access to was the outcomes of the poker games, there would be no way in principle to discern whether or not the cheating occurred via deck-staking or intervention. So, if we imagine that after each hand, the players laid out their sets of five cards on a separate table, and one had access only to those final results, we could tell that the one player had cheated, but would have nothing to offer about whether deck-stacking or intervention explained it.

This second implication is important because it helps us think through the relevance of design for the philosophy of science generally. As we have seen, friends of IDT offer arguments along the lines of the following:

1) If design inferences concerning natural phenomena are warranted, then intelligent agency has played a role in bringing about some natural phenomena
2) If intelligent agency has played a role in bringing about some natural phenomena, then purely naturalistic science will fail to explain truly such phenomena.
3) If purely naturalistic science will fail to explain truly such phenomena, then any methodologically naturalistic science will necessarily ultimately lead to errant explanations.
4) Any methodology that necessarily ultimately leads to errant explanations should be abandoned.

5) Thus, if design inferences are warranted, methodological naturalism should be abandoned.

Although the argument might look plausible on first glance, there is something deeply mistaken about it. And the cheating analogy makes clear that the trouble is premise 2. To see this we must consider first what the analogue for methodological naturalism would be in the cheating case. The answer can only be that it is an attempt to explain the outcomes of poker games by appeal to the rules of poker play. Call this "methodological rule-following." Can we explain the outcomes of the game described earlier by adopting methodological rule-following? In one sense we can. That is, if the role of the explainer here is simply to explain what rules brought us from the starting point of the game (cracking open the deck) to the (apparently designed) outcome, the answer is yes. Knowing the rules of poker would be sufficient to explain the outcomes in that sense. In another sense, of course, the explanation will be incomplete, since we have not explained every feature of the outcome about which we are curious, specifically, those features that tipped us off to the presence of cheating.

This leads us directly to the question of what it is exactly that scientific inquiry is supposed to be doing. We will turn to this question below. For the moment I want us to take note of this point, namely, that the success of "law" explanations has nothing to do with cheating inferences or design inferences. This means, of course, that Dembski's explanatory filter requires further adjusting. As we will see however, the required adjustment will force friends of IDT to abandon intelligent design as a paradigm of natural science inconsistent with methodological naturalism.

VII. Design and Natural Science

Critics of IDT have frequently replied that methodological naturalism either cannot or should not be abandoned in science. But why should there be such insistence on maintaining methodological naturalism? Assume, for a moment, that God did miraculously intervene in the course of nature to bring about the origin of life, or the origin of the first instances of distinct

biological kinds, or the origin of (some or all) human beings. If the scientist were by fiat to be blocked from countenancing such causes, then scientific attempts to understand these phenomena would be doomed to frustration or falsity. How absurd for the Christian, if he or she is convinced, perhaps by the contents of revelation, that God did act in just such a fashion, to reject the true explanation. How, on the naturalistic view, should the Christian scientist proceed when trying to explain scientifically the origins of natural kinds? Should she offer the best naturalistic explanation available, knowing all along that while the explanation is the best scientific one, it is nonetheless ultimately false? Why not rather drop such artificial, partisan barriers, and attempt to give the right explanation rather than the best "merely scientific" explanation or the best "merely theological" explanation?

One common reply to this question is simply that such explanations transcend the bounds of science properly construed. I think many Christian philosophers bristle at the suggestion that appeals to divine intervention rule out an explanation as "genuinely scientific." That strikes too close to the little tolerated view that bringing God into, for example, philosophy makes one's work not "genuinely philosophical." Why not rather say, as we do in philosophy, and as friends of IDT do concerning science, that we should lift such ad hoc restrictions, and let the chips fall where they may? If the best explanation for a philosophical problem requires appeal to the supernatural, so be it; and likewise in the case of science. This is just what IDT advocates are stumping for.

So perhaps disciplinary territorialism should not rule out Intelligent Design as a genuinely scientific explanation. But we are not out of the woods yet. For even though countenancing design as an explanation might in principle count as genuine science, it cannot if the design hypothesis is not empirically distinguishable from explanations which appeal only to the natural powers of natural substances. If such empirical distinguishability is not possible, then there is no scientifically respectable way, by IDT's own lights, to defend intelligent design as an explanation distinct from law and chance.

But why think that IDT advocates are stuck with this problem, a problem we might call the empirical vacuity problem? The answer, once again, can be found in the poker case above. If

a) one acknowledges that designed outcomes might in principle be explained either via deck-stacking or intervention and,

b) we have no access to the actual sequence of events that led to the obtaining of the apparently designed outcome,[11] then,

c) there are no empirical grounds for favoring explanations via law over explanation via design.

The point becomes clear when we consider cases in which friends of IDT think design is empirically detectable. The two most commonly discussed cases are those concerning so-called cosmological fine-tuning and concerning irreducible biological complexity. For reasons that will become clear shortly, I will focus on just the latter here. The details of the argument concerning irreducible complexity are widely known and I won't repeat them here. Irreducible biological complexity is a notion introduced by Michael Behe in his widely cited work Darwin's Black Box. In the book, Behe gives numerous examples of microbiological structures and of biochemical processes which are a) complex, b) such that the function they perform for the organism is essential for the organism's survival, and c) such that were the structure or process to lack some of the parts it has, it would be unable to perform its essential function, rendering it, from the organism's standpoint, totally non-functional perhaps even maladaptive.

Since structures or processes which contain only proper subsets of the parts of the fully functional structure or process are non-functional, standard Darwinian models cannot explain these complex structures of processes. Standard Darwinism requires that such complex structures arise by gradual accretion of parts, accompanied by gradual improvement in organismic function. Thus, these irreducibly complex structures must have come into existence some other way. Given the complexity of the structures and processes in question, and the fact that the whole organism in which the structure or process is instantiated requires that structure or process to exist, it is incredible, claims Behe, that the process comes into existence by any other means than design.

Behe's argument has generated a good deal of controversy. Most of that controversy has been with advocates of some variant of Darwinism arguing that purely natural processes can account for such structures after all (either because such complex structures can arise all at once, or because precursors to the complex structure are not as non-functional as Behe contends). Consider, however, a different worry about Behe's argument. Earlier I noted that Behe asserts that if some nomically regular process were discovered which explains the origins of the irreducibly complex structures, this would provide a defeater for design. The cheating example made clear that this was a mistake. Since we do not have access to the actual sequence of events which generated the irreducibly complex outcome, we cannot tell whether or not the process came about via intervention or deck stacking. Undoubtedly it would take a good deal of up front design work to insure that nomically regular processes would generate the irreducibly complex outcomes Behe points to. But God is smart, omniscient in fact, and would no doubt be able to figure out how to secure such results through deck-stacking. [12]

And so we are compelled to admit that events which display the earmarks of design leave us in the dark about whether or not the chain of events leading up to designed event came about by intervention or purely nomically regular processes. The friend of IDT is, at this juncture, likely to reply that far from a surprise, this result is just what IDT has claimed all along. After all, Dembski himself distinguishes between detectability and modality? No doubt he does. But this reply misses the thrust of the argument. The claim here is that designed events can be caused by either intervention or deck-staking-plus-nomic-regularity (or something more complex if indeterminacy is relevant; see note 12 for more on this). If all we have access to is apparently designed outcomes, we cannot distinguish between those that result via "law" (deck-stacking) and those that result from "design" (intervention). Thus, we cannot engage in the project suggested by IDT advocates after all, namely, setting aside methodological naturalism and letting the explanatory chips fall where they may. The explanatory chips can't discriminate between these competitors.

VIII. Objection and Reply

Before proceeding further, let me pause to respond to a worry that may arise at this point in the dialectic. The friend of IDT may, at this point, object as follows: "Let's say that one does accept (a) and (b) above. You have claimed that in such a case one cannot empirically distinguish between cases in which an apparently designed event results from intervention and from nomically regular processes. Surely this is false. For if that were so, it would mean that we could not decide whether or not the pyramids in the jungle are caused by law or intervention. But this is surely wrong. We are quite confident that pyramids result from design and not mere nomic regularity. And this shows that we have the ability to distinguish law from design after all."

The imaginary critic is correct, except concerning what he takes the objection to imply. Of course we can see that the pyramids are designed. What I have claimed here is that we must admit that the design either arose via intervention or deck-staking. That is, either intelligent beings intervened in the course of nature to secure the designed outcome, or someone set up the universe from the beginning so that this otherwise unexpected arrangement of matter would arise through nomically regular processes. We favor intervention in <u>this</u> case (i.e., the pyramid case) because we see that the outcomes (pyramids) serve the sorts of aims that intelligent <u>human creatures</u> typically have. Thus we have good reason to suspect that human creatures, and not mere nomically regular processes, caused them. But if someone could show us a time lapse video of universal history in which pyramids come to be via a nomically regular process, we should still conclude that this is a case of design, but of the deck-staking sort.

So, a good reason (but not the commonly professed reason) why such explanations should not be favored in science is because there are no empirical grounds for favoring them over their methodologically natural competitors. Of course, if God were to privilege us with a communication which filled us in on all of the occasions in which he directly intervened in natural affairs to bring about events that could not have occurred given the natural powers of natural entities alone, then the theist would be required to say that any explanation of the event (or its causal consequences) is incomplete without reference to divine causal activity. But absent this, IDT in its boldest form (the form described as (4) in section II) stalls.

IX. Less Bold Versions of IDT

In the remainder of this paper I want to consider two fall-back positions that friends of IDT might defend. Each provides a way of maintaining the integrity of design in science without falling into the greedier version with its errant methodological implications. What if, in light of the above, friends of IDT contend that we should scrap the explanatory filter, recognizing that law does not defeat design in explanation after all, but still admit that, whether the designed event comes to be by deck-staking or intervention, a complete explanation will need to make reference to the activity of designer. And if scientists are honest seekers of complete explanations of natural phenomena, they are still going to be obliged to take Intelligent Design seriously in their final rendering.

There is a sense in which this fall back is clearly on target. Regardless of how the cheating occurred, intelligent agency is required in the complete explanation. Still, we can fairly ask at this juncture whether or not scientists are or should be concerned with complete explanations as they are understood here. The answer is no. The reason for this is that when a deck-stacking explanation is sufficient (and one always would be in these cases)[13] scientists, theists or not, will be able to explain how the events came to be simply by appeal to the existence and activity of some set of theoretically postulated natural substances and their powers. To use Dembski's analogy, if we were to watch the time lapse video of universal history, nomic regularity would be preserved at each instant. As a result, it would be best for us to see the deliverances of IDT as helpful natural theology, but useless science. Irreducible complexity or fine tuning might provide us with evidence of intelligent design, and thus with arguments for the existence of God. But it does not provide us with scientific explanations that compete with methodologically natural ones. As a result, the first fall back position will not take us where the friends of IDT want to go (though it might still be able to deliver some important and interesting results in natural theology nonetheless).

Perhaps the friends of IDT might avail themselves of one last ditch. Dembski and others have argued that the value of IDT lies not merely in the fact that it is better able than methodological naturalism to explain, say, irreducible biological complexity, but that the IDT hypothesis is, in the

sense employed by Kuhn, fertile or fecund. Thus, even if we were to drop the explanatory filter and the claim that complete scientific explanations must make appeal to design, we might still hold that belief in design might provide a useful background assumption when we are theorizing. Far from being a science-stopper, as God-of-the-gaps science is often claimed to be, IDT promotes fertile scientific theorizing. Thus, our belief that nature is designed might lead us to see the world in ways we otherwise would not.

It is hard to know what to make of this suggestion apriori. Leibniz, no friend of divine intervention in proper science, argued that scientific speculation that proceeds on the assumption of design was likely to be fertile in this way, though ultimate scientific explanations should not make reference to facts about design. His favorite example concerned Snell's Law, the law which sets out the behavior of refracting light (and electromagnetic radiation generally). Leibniz claims that Snell was led to his formulation of the law because it represents light as travelling by the path of least resistance. This makes sense from the design perspective and so provided a good place to start experimenting concerning the behavior of refracting light.[14]

Friends of IDT have suggested some concrete ways in which the fertility of IDT might be manifest in contemporary science. Two recurring examples are: a) it might lead us to think that "junk" DNA has some important function after all and b) it might similarly lead us to look for the function of so called vestigial organs.[15]

While it might be the case that approaching natural science in this way will sometimes yield fruit, the likelihood of red herrings runs equally strong. The reason is that IDT will provide a fertile theoretical backdrop in a certain domain only if (a) we can be fairly confident of what the designer's intentions are in that domain, and (b) we are sure that the specific matter under investigation is relevant to those intentions. With respect to the first, we can imagine how far astray we might be led in the search for the function of vestigial organs if one of God's chief aims in constructing organ systems was aesthetic. Attempts to look for the functional utility provided by such organs would lead either to frustration or falsity. With respect to the second, consider the handle end of a plastic fork. Often, such forks will have a sharp burr at the end which is a result of

the manufacturing process. The fork could have been produced in a way so that this was absent. But all things considered, the manufacturer found it better suited to its aims to bring it about through a process that left this burr. These burrs have no purpose and serve no function. They are byproducts of a contingent process of manufacture. And there is no reason to think that similar byproducts would be absent even from intelligently designed nature. Perhaps hairy armpits are an example. The point however is straightforward. Even Christians who claim to have a good bit of special revelation concerning God's purposes for the natural world have precious little of value when it comes to help with fertile scientific theorizing.[16]

X. Natural Providence

Some have argued that there is something suspect about framing a view of providence in the way that the deck-stacker does, and that this should lead the Christian to favor interventionism. A deck-staking God is the God of deism. Christians, on the other hand, see a God whose direct handiwork is evidenced repeatedly in the pages of Scripture and in the metaphysical speculations of philosophers. Plantinga claims:

> First and most important, according to serious theism, God is constantly, immediately, intimately and directly active in his creation: he constantly upholds it in existence and providentially governs it. He is immediately and directly active in everything from the Big Bang to the sparrow's fall. Literally nothing happens without his upholding hand. Second, natural laws are not in any way independent of God, and are perhaps best thought of as regularities in the ways in which he treats the stuff he has made, or perhaps as counterfactuals of divine freedom. (Hence there is nothing in the least untoward in the thought that on some occasions God might do something in a way different from his usual way--e.g., raise someone from the dead or change water into wine.) . . . .God is already and always intimately acting in nature, which depends from moment to moment for its existence upon immediate divine activity. . . .[17]

Likewise, Paul Helm argues in <u>The Providence of God</u> that deistic views of God as deck-stacker are inconsistent with Christian commitments to divine miraculous intervention and to the power of petitionary prayer. Helm describes the view as one according to which:

> [God], in creating the universe, creates it in such a way that he does not <u>need</u> to exercise a superintending care of it. This is the deistic view.[18]

Concerning petitionary prayer, Helm contends:

> According to the Christian faith, God answers petitionary prayer. That is, certain things happen in the universe because people ask God that they happen, and God is pleased to do what they ask. Had they not asked, the event in question would not have occurred; or at least, had they not asked, there is no reason to think that the event would have occurred. A deist, however, (at least if he is consistent) will find no place for petitionary prayer.[19]

Other Christian have argued, on the contrary, that there is something unworthy of a theism which countenances a God who once creates the natural order and yet leaves it without the resources to bring about the desired results. The most vocal advocate of this line in the contemporary arena is Howard Van Till who argues:

> I believe that the universe in its present form is to be seen as a potentiality of the creation that has been actualized by the exercise of its God-given creaturely capabilities. For this to be possible, however, the creation's formational economy must be astoundingly robust and gapless—lacking none of the resources or capabilities necessary to make possible the sort of continuous actualization of new structures and life forms as now envisioned by the natural sciences. The optimally-equipped character of the universe's formational economy is, I believe, a vivid manifestation of the fact that it is the product, not of mere accident or happenstance, as the worldview of naturalism would have it, but of <u>intention</u>. In other words, the universe bears the marks of being the <u>product of thoughtful conceptualization for the accomplishment of some purpose</u>.[20]

Similar sentiments were staked out and defended with perhaps even more gusto in the past. Leibniz was aware of the fact that in the 1706 version of Query 31 of the <u>Optiks</u> Newton endorsed the claim that God on occasion directly intervenes to maintain nature's integrity. In particular, Newton claims that this was necessary to prevent the planets from falling in on each other. Leibniz, near the end of his life, seeks to provoke one prominent Newtonian spokesperson, Samuel Clarke, on the matter. In the third paragraph of his opening letter to Clarke, Leibniz acerbically remarks:

> Sir Isaac Newton, and his followers, also have a very odd opinion concerning the work of God. Acceding to their doctrine, God Almighty wants to wind up his watch from time to time: otherwise it would cease to move. He had not, it seems, sufficient foresight to make it a perpetual motion, Nay, the machine of God's making, is so imperfect, according to these gentlemen; that he is obliged to clean it now and then by an extraordinary concourse and even to mend it, as a clockmaker mends his work; who must consequently be so much the more unskillful a workman, as he is more often obliged to mend his work and set it right. According to my opinion, the same force and vigor remains always in the world, and only passes from one part of matter to another, agreeably to the laws of nature, and the beautiful pre-established order. And I hold, that when God works miracles, he does not do it in order to supply the wants of nature, but those of grace. Whoever thinks otherwise must needs have a very mean notion of the wisdom and power of God.[21]

If one favors the sentiments expressed by Plantinga and Helm above, one might be inclined to break the empirical deadlock between deck-stacking and intervention in favor of intervention. If one were to favor van Till and Leibniz, one would likely be inclined in the opposite direction. In the end, however, the philosophical grounds for deciding this dispute may turn out to be no more useful than the empirical evidence (i.e., not at all).

I am not sure how to defend the claim that the considerations appealed to by Plantinga should hold be more persuasive than those appealed to be Leibniz. Nonetheless, I am inclined toward the deck-stacking model, and it is a model which according to Helm, faces a pair of serious objections from miracles and petitionary prayer. Can the deck-stacker successfully respond to these?

One might think that the challenge concerning miracles is rather easily met. In order to meet it one would first have to conceive of miracles in a way different than perhaps most Christians have, i.e., as violations of laws of nature. I think there are decisive independent reasons for jettisoning this conception of miracles, making any proposed reconception easier to swallow.[22] On this alternative view, miracles would have to consist of arrangements of matter that were intentionally brought about by God via deck-stacking and nomic regularity, which arrangements would have been exceedingly improbable without God having stacked the deck in precisely the way that he did. Thus, though we all know it would be exceedingly improbable, it could be the case that all of the water molecules in the Red Sea at the time of the Israelite crossing were such that their velocity and direction caused the parting of the Sea for just the amount of time needed for the Israelites to cross. Similar accounts can be given for miracles ranging from Elisha's floating axe head to Christ's resurrection. Still, it is an open question whether or not all miracles could be accounted for via deck-stacking.[23]

Initially, it is hard to see how petitionary prayer raises any more trouble for the deck-stacker than it does for the advocate of complete foreknowledge or robust providence over human affairs generally. In any of these cases, if God has middle knowledge, and thus knows what will in fact be

prayed for in advance, God can determine that an event, X, will occur in a world at least in part because someone prayed for X to occur.

It should be noted as well that Plantinga's arguments do not to pack any punch against the sort of deck-stacking view of natural providence I am defending here. Deck-stackers can heartily support divine conservation and the possibility for divine intervention into the order or nature if needed.

But do the arguments of Van Till and Leibniz have any force for friends of deck-stacking? I think they do. For those who are not advocates of divine openness, it is hard to see what motives God might have for electing to create the world and then later supplement his work, a lá Newton and Clarke, to bring about all of the aims he has for it. No doubt, universe creation and providential superintending of universes are tricky businesses, and perhaps no set of natural entities and powers could, through deck-stacking, bring off everything God intended for his creation to accomplish. But we cannot with any confidence at all proclaim that God couldn't bring about, say, all the arrangements of created things we now see about us through deck-stacking. Opponents of deck-stacking will be happy to point out that we can't proclaim with any confidence that He could do it either.

And this brings us back to one of the central questions of the paper: Does any of this have any practical implications for the practice of science? At best I think the implication is this. If we cannot establish a preference for intervention over deck-stacking by empirical means (and we can't) or philosophical arguments (perhaps we can't) we should simply appeal to induction. God usually works by law-like means, so we should infer that probably he does the same here and that if he did not, our ability to know such would be outstripped. Perhaps this just adds up to sound intellectual humility. To me, it sounds like methodological naturalism. [24]

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NOTES

[1] See William A. Dembski, Mere Creation (Downers Grove, IL: InterVarsity Press, 1998): 98-104. Also see William A. Dembski, The Design Inference (New York: Cambridge University Press,

1998): 36-47, and William A. Dembski, Intelligent Design (Downers Grove, IL: InterVarsity Press, 1999): 133-134. For simplicity's sake I will refer only to "events" in what follows though the explanatory filter is meant to apply to objects, events, and states of affairs.

[2] See Dembski, Mere Creation, 98.

[33] I should note here that Robin Collins has independently hit upon a similar criticism of Dembski. However, he proposes a resolution that is distinct form the one I propose here. See Robin Collins, "An Evaluation of William A. Dembski's The Design Inference," in Christian Scholar's Review, vol. XXX., no. 3 (Spring 2001).

[4] See Peter van Inwagen, Metaphysics (Boulder, CO: Westview Press, 1993): 135.

[5] See Michael J. Behe, Darwin's Black Box: the Biochemical Challenge to Evolution (New York: Free Press, 1996): 194.

[6] Ibid., 203.

[7] With one modification. The modus tollens only tells us that designed events are ones that are not explicable in terms of nomic regularities. No doubt, this is a necessary condition of the miraculous as normally understood, but not a sufficient condition. For sufficiency, one would have to include the claim that the event had a divine cause. But one would think that this is had for free on IDT.

[8] See Howard J. Van Till, and Phillip E. Johnson, "God and Evolution: An Exchange," First Things (June/July 1993): 38.

[9] See Dembski's Intelligent Design, 240.

[10] Ibid., 116.

[11] It must be added "and we cannot with reasonable certainty re-create the very sequence of events that led to the designed outcome."

[12] One might think that in a Newtonian world such deck-staking might be a possibility, but that in a physical world shot through with quantum indeterminacy, deck-stacking cannot be guaranteed to yield any old physically possible arrangement without intervention along the way. This may be right, and whether or not it is depends on whether or not God has middle knowledge with respect to subjunctive conditionals concerning causally indeterministic natural events. Perhaps those who

balk at middle knowledge generally might find little comfort here. Even if we reject middle knowledge, however, it is still possible, perhaps even likely, that God could stack the universal deck in a way that would bring about the instances of design we see without any intervention. For example, if God could not know the outcomes of indeterministic physical processes, God might still set in motion a number of chains of events which are such that each carries some (perhaps high) probability of yielding the outcome he desires (organic life perhaps). In this way, God might be able to bring about the outcome by deck-stacking without middle knowledge, though such outcomes could not be guaranteed.

What if it were to happen that God could not, given indeterminacy, secure even a high likelihood of the desired outcome? Even if such were the case, God could form an intention to intervene only if the all chains of events set in motion seem to be turning into dead ends. Thus, he might do everything possible via deck-stacking to set in motion chains of events that will lead to organic life, and only intervene if necessary. If that is how things are (or were) in the actual world, it might be the case that God actually intervened to bring about irreducibly complex results, but it might not as well. Available evidence would not settle the matter. The same sort of modal ignorance that leaves us in the dark concerning the actualizability of a world with free creatures who never sin, leaves us in the dark about the actualizability of a world where deck-stacking yields irreducible complexity.

[13] That may strike the reader is puzzling. But given what has gone before it should not be. Perhaps one might think that in some cases, no explanation in terms of the natural powers of natural substances is possible. But what would make such an explanation impossible? Sometimes, critics of methodological naturalism claim that the impossibility is really just a very high improbability. For irreducibly complex structures to have arise by law would have required a chance arrangement of matter in the primordial soup/clay/what have you that strains credibility. But credibility is strained here only if we think that deck stacking was not involved. Perhaps there are some cases where the claim is not that naturalistic explanations are improbable, but that they are downright impossible. One might think such cases can be found in miraculous events. Water cannot turn to

wine given the natural powers of natural substances. That, an objector might hold, is surely impossible, not just improbable. It might be the case that some miracles do present us with cases where the explanation requires intervention. Two things should be said in response. First, none of the cases presented by IDT advocates are anything like water-to-wine miracles. They are, rather, cases of credibility-straining-improbabilities. Second, as I will discuss in the text below when treating miracles directly, the claim that miracles of the water-to-wine sort require direct intervention is not irresistible. As we will see, Christian thinkers such as Leibniz have cogently defended the possibility of a no-intervention world, even in the face of such miracles.

[14] See G. W. Leibniz, Discourse on Metaphysics ¶22 found in Philosophical Essays, eds. Roger Ariew, and Daniel Garber (Indianapolis, IN: Hackett Publishing Company, 1989): 55.

[15]See Dembski's Intelligent Design, 150.

[16] I say this with apologies to those who favor a literal 6 24 hour day reading of the Genesis 1-3. Perhaps in such a case we would have some evidence that would be fruitful for theorizing. But even in that case, it is not evidence that assists us by putting us in touch with the aims of a designer. The fruitfulness in this case is simply due to the fact that we are made aware of facts about universal origins that might otherwise not be empirically accessible.

[17] See Alvin Plantinga, "Methodological Naturalism?", in Facets of Faith and Science, ed. J. van der Meer (Lanham, MA: University Press of America, 1996).

[18] See Paul Helm, The Providence of God (Downers Grove, IL: InterVarsity Press, 1994): 75-6.

[19] Ibid., 77-8.

[20] See Howard J. Van Till, "The Creation: Intelligently Designed or Optimally Equipped?" Theology Today 55, no.3 (1998): 362.

[21] See The Leibniz-Clarke Correspondence, ed. H. G. Alexander (Manchester: Manchester University Press, 1956): 11-12, ¶ 4.

[22] The case I have in mind is made by Jan Cover in "Miracles and the Christian Faith" in Reason for the Hope Within, ed. Michael Murray (Grand Rapids: Eerdmans Publishing Company, 1999): 345-374. Though I commend the account Cover gives, I will not be adopting the same conception

he adopts in this essay for the purposes of this paper. Cover characterizes miracles as events that exceed the power of the natural substances involved in the event. Even this will be too strong for the deck-stacker.

[23] Perhaps not all miracles could be accounted for in this way. Miracles in which, say, water is turned to wine do not seem to involve anything that deck stacking could account for. Perhaps instantaneous rearrangements of quarks could transmute hydrogen and oxygen molecules into the complex aromatic hydrocarbons that would be needed in fine wine. If anyone can be a proficient alchemist, no doubt God can. I leave it to the physicists to determine the plausibility of potentially accounting for all Biblical miracles in this fashion. Note, however, that the physicist alone might not be up to the task. It could be the case, for all our feeble powers can discern, that certain natural substances have natural powers that are only actualized under extremely rare circumstances. Thus perhaps under just the right conditions (conditions that might include an incarnate man in Palestine uttering certain words), water molecules or their parts can actualize powers to transmute into wine. In principle the effects of such powers should be reproducible. Whether they are in fact depends on how finely tuned the conditions must be to actualize the power.

[24] Thanks to Glenn Ross, Bill Hasker, Timothy O'Connor, Del Ratzsch, Gary Mar, Philip Clayton, Robin Collins, and two anonymous referees for this journal for helpful comments on earlier drafts of this paper.