# THE FINE-TUNING ARGUMENT REVISITED

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**Abstract:** A version of the Fine-tuning Argument (FTA) considered in a previous essay is replaced by an improved version, which is then refuted. Advocates of FTA must proclaim that there is no world ensemble, that a great many alternatives to the physical constants of our universe are physically possible and roughly equal in probability to them, and that alternate hypothetical worlds are all, or almost all, uninteresting in comparison to our universe. But no reason has been produced to believe *any* of these claims, and so FTA, even in its improved version, can still be dismissed as unsupported, doubtful, and weak.

In my Internet essay on the Fine-tuning Argument (FTA for short),[1] the argument is formulated as follows, with premises indicated by "P" and conclusions indicated by "C":

(P1) The combination of physical constants that we observe in our universe is the only one capable of sustaining life as we know it.

(P2) Other combinations of physical constants are conceivable.

(C3) Therefore, some explanation is needed why our actual combination of physical constants exists rather than a different one.

(P4) The very best explanation of the given fact is that our universe, with the particular combination of physical constants that it has, was created out of nothing by a single being who is omnipotent, omniscient, all-loving, eternal, and interested in sentient organic systems, and that he "fine-tuned" those constants in a way which would lead to the evolution of such systems.

(P5) But such a being as described in (P4) is what people mean by "God."

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(C6) Hence [from (P4) & (P5)], there is good evidence that God exists.

It has occurred to me that this formulation of FTA could be improved upon. I see three significant defects in it. First, step (C3) does not follow from premises (P1) and (P2). Second, the argument should contain the proposition that there is something remarkable or surprising about the physical constants of our universe. And third, the argument should be aimed at merely proving the existence of intelligent design, rather than God, since some of its advocates take it in that way. Here is a reformulation of FTA which avoids those defects:

(P1) The particular group of values that exists for the fundamental physical constants of our universe (call it "GPC") is just one of a huge number of different groups of values, all of which are physically possible (i.e., not ruled out by more basic laws).

(P2) For all, or at least a large number, of the various groups of values mentioned above, the probability of the existence of any particular group is not considerably less than the probability of the existence of GPC itself.

(P3) It is not the case that there exist a great many worlds (or regions of spacetime), separated from our observable universe, each with its own group of values for fundamental physical constants.

(C4) Therefore [from P1, P2, & P3], the existence of GPC is exceedingly improbable.

(P5) GPC is the only group of values for the fundamental physical constants of a world (or region of spacetime) that would permit the origin, development, and continuation of life as we know it within that world.

(P6) The capability of permitting life as we know it is a very special feature within the set of hypothetical physically possible worlds.

(C7) Hence [from C4, P5, & P6], the existence of GPC is remarkable, surprising, and in need of explanation.

(P8) Given the truth of (C7), the hypothesis that GPC was a product of intelligent design (call it "IDH") is the very best explanation there is for the existence of GPC.

(C9) It follows that there is good evidence that IDH is true.

In my previous essay, mentioned above, I considered two objections to the original premise (P4), referred to as the "Inadequacy Objection" and the "Alternate-explanations Objection." The first aimed to show that, for various reasons, the "God Hypothesis" advocated in the original FTA does not adequately explain why our universe has the values for the physical constants that it has, and the second attacked the old premise (P4) by presenting alternate explanations for the given fact that are at least as good as the God Hypothesis. Neither of these objections applies in quite the same way to the reformulated version of FTA. Let us take a look, then, at how the new version may be critically assessed.

I shall not here challenge any of the conclusions (labeled "C"). Nor shall I challenge premise (P5), though people with a background in physics might do so. It claims that (within certain limits) GPC is the only possible group of values for the constants that is capable of permitting life as we know it. This is a very broad generalization about something that has never been observed. It is saying, in effect, that each significant change in value for any of a large number of specific physical constants of our universe, even if exceedingly small, would prevent the existence of life as we know it. But these changes have *never* been observed. So what we have here is speculation about states of the universe, or alternate worlds if you will, that not only may never have existed, but which, for all we know, cannot possibly exist. Such speculation, which takes the form of a series of counterfactual conditionals, is in need of support. Here are some examples of those counterfactuals:

> (1) If gravity had been stronger by one part in $10^{40}$, then the universe would have collapsed in upon itself long ago, rendering life impossible.
> (2) If the strength of the initial "big bang" explosion had varied from its actual value by one part in $10^{60}$, then the universe would be so different as to make life impossible.
> (3) If the electromagnetic force or the strong nuclear force had been just slightly different from what it actually is, then the formation of carbon, which is necessary for life as we know it, would have been impossible.

Advocates of FTA sometimes trot out about forty or fifty of these counterfactual conditional propositions. Although I have my doubts about several of them, I am willing to grant that *some*, at least, receive good support from science. Such support obviously needs to be indirect, since there can be no direct support for a counterfactual conditional. It is up to physicists to hash out the truth of (P5).[2] I myself am inclined to just bypass that premise and attack the argument elsewhere. In the end, it will be seen that FTA has many weaknesses. I turn now to a critique of its five other premises.

## OBJECTION 1: OTHER VALUES FOR PHYSICAL CONSTANTS MAY NOT BE PHYSICALLY POSSIBLE

This attacks FTA's premise (P1). In my previous essay, I suggested the possibility of some *physical* theory that would explain why our universe *had to* have GPC, the particular values for the physical constants that it has. It may be that scientists of the future will come up with a "theory of everything" (TOE for short) that will show why values for physical constants other than GPC (though conceivable) are not physically possible. No one has ever proven that such a theory will never be developed.

Advocates of FTA sometimes dismiss TOEs as "pipedreams," never to be realized. However, such dismissals are premature. First of all, it should be noted that the God Hypothesis and IDH are each themselves a kind of TOE, for they are appealed to by their advocates to explain just about anything that anyone might bring up as a phenomenon to be explained. As such, they are inadequate, to be sure. But their structure and the intention

behind them is nevertheless that of a TOE. For that reason, it would be inconsistent for advocates of FTA to simply dismiss all TOEs out of hand. Another consideration is that the burden of proof is upon the one who is putting FTA forward as an argument. Such a person needs to provide some good reason to think that values for physical constants *other than* GPC are indeed physically possible, i.e., not ruled out by some more basic law. And, so far, no such reason has been given.

One reply that advocates of FTA might make here is that even if a purely naturalistic TOE were to be developed, it would be making appeal to some fundamental law from which all of our present laws of nature, which contain GPC, can be derived. And the question could then be raised why that fundamental law obtains and is the way it is. For example, suppose the TOE were to show that, given the initial conditions of the big bang, no other values for physical constants other than GPC could possibly have emerged. The advocates of IDH would then still press for an explanation why the initial conditions of the big bang were the way they were and not some other way. So, the pressure for an explanation would still be there.

Despite this pressure for an explanation, the burden of proof is still on the advocates of FTA to show that the alternate hypothetical worlds to which they are appealing are indeed physically possible, as claimed in premise (P1). Whether those alternate worlds involve values for physical constants other than GPC or whether they involve initial conditions for the big bang other than the ones which actually obtained, there is still some need for support here. Why should we believe that the given worlds, whatever they may be, are not ruled out by some more basic law? Advocates of FTA have not adequately addressed this challenge, and so that is a place at which their reasoning is weak.

## Objection 2: Other Values for Physical Constants May be Highly Improbable

Premise (P2) claims that for at least a large number of the various hypothetical groups of values for the fundamental physical constants of our universe mentioned in (P1), the probability of their existence is not considerably less than that for GPC. What this means is that even if a correct naturalistic TOE is ever worked out, it will not only retain the alternate groups of values as physically possible, as claimed in (P1), but also, it will not render their existence considerably less probable than the existence of GPC itself. Such a claim is needed in FTA, for if all the groups other than GPC were, though physically possible, nevertheless shown by some TOE to be much more unlikely than GPC, then step (C4) of the argument could not be derived.

However, what reason is there to proclaim this proposition regarding probabilities? Physicists do not have any data on the basis of which such probability computations could be made, whether it is the existence of GPC itself that is being considered or the existence of some group of values other than GPC. The burden of proof is on the advocate of FTA to show that

claims about the probabilities of values for the fundamental physical constants of our universe have some sort of basis. So far as I know, there is nothing in physics at present that would allow such computations to be made. It may be that, in the future, a TOE will be developed that would allow them, but we have no basis now for speculating about what form such a theory will take. To suggest that it will *not* show alternate groups of values to be considerably less probable than GPC is mere assumption, totally unsupported. Thus, (P2) is another premise that lacks support and can be doubted.

## Objection 3: There May be an Ensemble of Other Worlds

We now come to premise (P3). It was suggested in my previous essay that, once we assume that values for physical constants different from GPC are physically possible, there may in that case actually exist other worlds (or regions of spacetime) which are completely outside our observational field and which contain just such values for physical constants (i.e., ones different from GPC). It is therefore illegitimate to assume that the only values for physical constants that exist at all are the ones that we have observed. If there were to exist a great many such other worlds, totally separated from us, then there would be nothing improbable in the fact that GPC exists somewhere or other. But why does it exist in *our universe*? It could simply be chalked up to coincidence. It would be just a brute fact that our universe has the particular features that it has, and there would be nothing surprising about that if indeed there were many other actual worlds with other features. First, there is nothing at all surprising about the fact that we live in a world that permits our existence, and second, that there should somewhere exist such a world at all would not be surprising if there did actually exist the many different worlds as described.

Consider the firing-squad analogy that some writers use. Suppose you are a prisoner to be shot by a firing squad composed of fifty expert marksmen. There is a finite though infinitesimal chance that all fifty would miss their target. The guns are fired, and lo and behold, you find yourself still alive. That would indeed be unexpected and surprising. The hypothesis that you just happened to be lucky would be a poor explanation of the fact of your survival. But suppose you later find out that at the same time that your execution was scheduled to occur there were a great many other executions occurring, each by a firing squad of fifty expert marksmen. In practically all of them, the prisoners died and the number of prisoners actually surviving was just an infinitesimal proportion of the total. Given that new information, the fact that you were one of the very few survivors should no longer seem surprising and inexplicable. You should feel exceedingly lucky (as the winner of a lottery feels), but there would in that case be nothing in the situation that could not be explained, quite plausibly and reasonably, simply by an appeal to chance. In a similar way, if there really are a great many other worlds, each with its own set of physical constants different from GPC, then the fact that we happen to exist in one of the very few

worlds capable of sustaining life as we know it would not be unexpected or surprising or incapable of being reasonably explained simply by an appeal to chance.

Another way to put the matter is to point out that step (C4) of FTA does not follow from premises (P1) and (P2) alone. Premise (P3) is needed because [assuming the truth of (P1) and (P2)], if there were a very large number of actual worlds (or separated regions of spacetime) with different groups of values for physical constants, then, just by the law of averages, GPC should occur in at least one of them. One standard way of attacking FTA has been to call its premise (P3) into question. The denial of (P3) is sometimes called the "World-ensemble Theory."

Advocates of FTA, such as William Lane Craig, often criticize world-ensemble theories as totally unsupported by any evidence. However, as the saying goes: "absence of evidence is not evidence of absence." Just because we do not have evidence for the existence of other worlds (or separated regions of spacetime), that does not entail that they do not exist. As mentioned above, the burden of proof is always upon the one who is putting forward a proof, and in this context that person is the advocate of FTA. He has not provided any good reason to accept premise (P3), and so, that is still another basis for doubting the soundness of FTA.

## Objection 4: Our Universe May Not be Special, Overall

This attacks FTA's premise (P6). I have read William Lane Craig's essays on the topic and looked at transcripts and videos of his debates. Nowhere in his presentation of FTA does he put forward anything like (P6). Instead, he attempts to derive step (C7) directly from (C4) and (P5). But (C7) does not follow from (C4) and (P5) alone! Even if the existence of GPC were highly improbable and GPC were the only group of values for constants that permit life, that would not make it necessarily remarkable or surprising. It could be merely one of a huge batch of groups all of which are both highly improbable and unique in some way.

Consider the example of rolling a die. Suppose a die were rolled ten times and the sequence of numbers that comes up is the following: 3,5,6,3,1,4,4,2,3,6. This particular combination is highly improbable (less than 1/60,000,000) and also unique: no other combination places the six possible numbers in exactly those positions. Yet, there is nothing remarkable or surprising about it. This proves that a step like (C7), the claim of surprisingness, does not logically follow from steps like (C4) and (P5) alone. What is needed for the combination to be surprising is that it be somehow very special. Suppose, for example, that the die had come up all sixes, which has the very same probability as the sequence above. It would be reasonable to view such a sequence as "very special." When compared to most other possible sequences of rolls, it stands out as being of particular interest.

This shows the need for premise (P6). Without it, the inference to (C7) would be invalid. However, what support is there for (P6)? Assuming that

hypothetical alternate worlds are physically possible, why believe that in very few of those worlds, if any, is there anything happening that is as special or interesting as life as we know it? Why believe that they are all, or almost all, boring or humdrum sorts of world, akin to the die-sequence 3,5,6,3,1,4,4,2,3,6? Again, the burden of proof is upon the advocate of FTA to support the assumption at issue. And no support has ever been given for premise (P6).

Assuming that groups of values for constants other than GPC are physically possible, there is no reason to believe that all of them, or even most of them, would result in a world with less variety and complexity than our universe. There may not be life as we know it, but there may be other forms of life or other things going on in them that would be at least as interesting to us if we could somehow peek in without being destroyed and comprehend what was happening. The problem is that no one has any idea what sorts of things might emerge over time in worlds that start out having values for physical constants different from ours. There is no way for our science, at its present stage, to extrapolate that sort of information from what we know.

The example I used in my previous essay to bring out the point about special kinds of world was similar to the one above about rolling a die ten times. Suppose we count the sum of the ten rolls. It will be a number from 10 through 60. Whatever number that sum turns out to be, it will not only be unlikely to have come up but it will probably have at least one unique and interesting property, not possessed by any of the other fifty numbers. For example, suppose the sum turns out to be, say, 27. Someone like Craig could say: "Aha, there must have been design at work, for, 27 was very unlikely to come up and, out of all the possible numbers, 27 is the only perfect cube (being the cube of 3)." Obviously, such an inference would be weak for the simple reason that, no matter what number the sum had turned out to be, it would have been an unlikely number with *some* unique and interesting property. For example, if it is, say, 25, then that number would be the only perfect square which is itself the sum of two squares (9 & 16) and is also the only odd number that is the square of its last digit. And the number 28 is the only one that is the sum of all its divisors smaller than itself (1, 2, 4, 7, 14). And so on. In the essay I gave several examples of such interesting properties. In light of this fact, no matter what number might come up as the sum of the ten rolls of the die, we could say, "How amazing: that is the only number such that . . ." and proceed to specify the interesting property or properties uniquely possessed by *that* number. Then if one were to ask, "Why did *that* number came up rather than some other number?" the correct answer would be that it is just a coincidence (or brute fact). Whatever number had come up, it would have been an unlikely one having some interesting property or properties possessed only by that number. It may be that way with our universe. It is simply a brute fact that it has the values for physical constants that it has. And even if it were true that no other possible world, with different values, would have permitted life as we know it, nevertheless, whatever world had come about, it would probably have had *some*

*other* unique feature(s) at least as interesting as the property of permitting life as we know it. From this perspective, there would be *nothing special* about our universe, and that makes FTA's premise (P6) totally unsupported and thus doubtful.

## Objection 5: IDH May Not be the Best Explanation for GPC, Even Given (C7)

(P8) is the premise that corresponds to the old (P4) in the earlier version of FTA. There are two sorts of objection that can be mounted against it: the Inadequacy Objection and the Alternate-explanations Objection. I shall take these up separately.

*The Inadequacy Objection*

For various reasons, IDH is an inadequate explanation. First, it does not tell us anything about the alleged intelligent designers of the universe except that they were intelligent and presumably had great power. That is certainly insufficient and there is apparently no way to gather more information about the matter, which makes IDH hopelessly incomplete. Second, no description whatever is supplied for *how* the designers did any creating or designing. The "modus operandi problem" is left completely unsolved. Third, nothing is provided regarding the motives of the designers. Sometimes it is suggested that they wanted there to be intelligent life. But, in that case, why should they wait billions of years for life to emerge, and billions more years for life to develop intelligence? And why should they make the universe so large in relation to the life on earth? None of that appears rational, at least from a human perspective, which is the only one we have. Finally, no explanation is given for the origin of the designers. What good is it to introduce the concept of design if nothing at all is said about how the design came to be? It would be, at best, simply replacing one mystery by an even greater mystery. Our object here is explanation, not the introduction of new mysteries. Some say that there was just one designer and that it (or "he") was a "Necessary Being," which in some sense *had to* exist. But all that is exceedingly obscure. Many philosophers, myself included, have found the notion of "Necessary Being" incomprehensible. With all the defects, IDH is clearly inadequate as an *explanation* for anything, and that in itself is reason to reject FTA's premise (P8).

In putting IDH in place of the God Hypothesis, advocates of FTA may appear to have removed FTA from the debate between theism and atheism. Of course, that is not their intention. Usually they say that proof of God is a matter of "stages," where the first stage involves arguing for the existence of "intelligent design" and a second stage involves showing that the given design is the work of God as traditionally understood. Thus, although they would grant that the new FTA is strictly a first-stage argument, they would insist that it does have a bearing on the theism-atheism issue. In reply, I would certainly challenge the claim that the alleged "intelligent design" could ever be shown to be the work of the God of traditional theism. But

aside from that, FTA can be refuted, even as a first-stage argument, and that has been my aim here.

*The Alternate-Explanations Objection*

In my previous essay, I suggested three "alternate explanations" for the existence of GPC: (1) that it is required by some correct TOE which is yet to be formulated by physicists, (2) that it is just a "brute fact" which has no explanation, and (3) that it is the work of beings other than God. The first of these was covered above under Objection #1. The last of them does not apply to the new version of FTA, which makes no reference to God, and so I shall omit it here. But I would like to discuss the second alternative, which is the Brute-fact Hypothesis (BFH for short).

In his debates over the existence of God, William Lane Craig characterizes BFH, which he calls "the atheistic view of the universe," as follows:

> When the universe popped into being uncaused, out of nothing, it just happened to be, by chance, fine-tuned with an incomprehensible complexity and detail for the existence of intelligent life.[3]

This formulation is certainly inaccurate for various reasons. First, to say that the universe began without cause does not imply that there was some prior state, called "nothingness," out of which it emerged (or "popped"). The universe and time may have *just begun*, simultaneously, without there being any prior state whatever. So, Craig's implication of a prior state is erroneous. It should be noted here that an advocate of BFH need not believe that the universe had a beginning in time at all, but could, instead, maintain that the universe is infinitely old and the ultimate facts about its properties just have no explanation. Or, alternatively, he might uphold Stephen Hawking's model, according to which space and time, though finite, form a closed surface without any boundary, and thus with no beginning point. BFH is perfectly compatible with these other views, so that too makes Craig's characterization of it too narrow. Another inaccuracy lies in the term "fine-tuned." It is usually theists who talk of "fine-tuning," not atheists. So for Craig to employ the term in formulating the atheists' view is somewhat misleading. Finally, still another error lies in the reference to intelligent life. Assuming that our universe had a beginning, it would be true that, in its early stages, it contained features which made the eventual origin of life and the evolution of intelligence physically possible. However, there may have been nothing in those features which would make such future events at all likely. Craig's expression "fine-tuned for intelligent life" implies that intelligent life would be a likely outcome of the initial conditions of the universe, but there is no reason to think that that is so. For these reasons, Craig's characterization of BFH should be rejected.

When properly formulated, BFH says no more than that the fact that the universe possesses the values for physical constants which it possesses is simply a "brute fact," that is, a fact for which there is no explanation. It has been pointed out that there is an implicit appeal to BFH in Objections 3 and

4, above. In Objection 3, which is an attack on FTA's premise (P3), it is assumed that if our universe is just one of a very large number of actual worlds, each with a different group of values for physical constants, then the fact that GPC exists in our universe is just coincidence, which is the same as a brute fact. And in Objection 4, which is an attack on FTA's premise (P6), it is assumed that if our universe is just one of a very large number of hypothetical worlds, each being at least as interesting as ours, then the fact that our universe happens to have an interesting feature (being life-permitting) is, again, sheer coincidence, which is the same as a brute fact. Thus, it has already been shown in previous objections how BFH constitutes a kind of "alternate explanation" to IDH. However, we are now considering using BFH to attack premise (P8) as it is presently worded. There are problems in doing that, for (P8) presupposes the truth of step (C7), the claim of surprisingness. If indeed the existence of GPC is remarkable and surprising, then it is not clear how it could be merely a brute fact.

One objection that might be raised is that BFH is not an explanation at all, but an appeal to a lack of explanation. So the title "Alternate-explanations Objection" would be misleading if BFH is the only alternative to IDH that is being put forward. There is some merit to this. First of all, I do want to focus on BFH as the main, if not only, alternative to IDH. There could not be any other naturalistic explanation, such as a TOE, assuming that the existence of GPC is exceedingly improbable, for a TOE would show GPC to be either physically required or very highly probable, just the opposite of improbable. And second, it is indeed a little peculiar to call an appeal to a lack of explanation an "explanation." There is some ambiguity there. Either we need to understand the term "explanation" in a rather broad sense (broad enough to include appeals to a lack of explanation) or else some different title for the objection should be employed, perhaps "Alternate-world-view Objection." For even if BFH is not to be called an alternate explanation, it is at least an alternate way of describing ultimate origins.

Some philosophers and theologians appeal to the so-called Principle of Sufficient Reason according to which there is a reason or an explanation for everything. The only exception is supposed to be God, who is said to be "self-existing" and in no need of explanation. Whether or not that makes any sense, we can see that BFH is directly opposed to that principle, since, according to BFH, there is at least one fact about our universe for which there is no reason or explanation. The advocates of the Principle of Sufficient Reason might claim that it is a self-evident, or at least intuitively satisfying, principle. I deny that it is self-evident, but would agree that we all seek explanations for phenomena and are satisfied when we get them. Nevertheless, that in itself does not make the principle *true*. Maybe reality is not the way we would like it to be, and in fact, maybe there simply is no explanation for why the physical constants of our universe have the particular values that they happen to have. Those who advocate the Principle of Sufficient Reason have never given any good argument for its truth.

It seems that in *every* metaphysical theory there needs to be an appeal,

eventually, to some brute fact or other. In the case of theism, the ultimate brute facts are that God exists and that he is the way he is (i.e., possessing the particular group of divine attributes, including desires, that he possesses). In the case of naturalism, the ultimate brute facts are that the universe exists and that it is the way it is (i.e., possessing the particular group of basic properties, including physical constants, that it possesses). Strictly speaking, then, there cannot be such a thing as a TOE, a theory of everything, for it is impossible for a theory to explain absolutely *everything*, even its own basic assumptions. The point is sometimes made that the fact that there is something, rather than nothing, is necessarily a brute fact. It cannot be explained, for whatever is brought in to explain it would already presuppose that there is something rather than nothing. Thus, since there *has to* be at least one brute fact, there cannot be a TOE, a theory which explains (literally) everything, and, furthermore, the Principle of Sufficient Reason cannot be universally true. It follows that an appeal to that principle does not favor either metaphysical theory over the other. The principle *must* have some exceptions to it and there is no reason to think that the exceptions lie in theism rather than naturalism. Hence, the attempt to use the Principle of Sufficient Reason to show that some explanation must exist for the universe and its properties is a failure.

The term "explanation" can be taken in a narrow sense, which would exclude BFH as an explanation, or in a broad sense, which would include it. If it is taken in the narrow sense, then it is true that BFH could not be brought in as an "alternate explanation" to attack FTA's premise (P8). However, FTA would still succumb to other objections, such as Objections 1-4, above. On the other hand, if the term "explanation" were taken in the broad sense which includes BFH as an explanation, then that would leave it open for BFH to be brought in as an attack on FTA's premise (P8). Let us explore this latter option a bit further.

The main advantage of BFH over IDH, as an explanation in the broad sense, is that it does not have the defects mentioned above in the Inadequacy Objection. Another advantage is its greater simplicity, seeing that IDH brings in additional entities. The main drawback to BFH as an explanation is that in the present context it is highly implausible. Given the wording of premise (P8), we are assuming that FTA is sound up through its step (C7). Thus, we are assuming here that there is only one actual world (or region of spacetime), that GPC is exceedingly improbable, that there are many alternate hypothetical worlds, which, though physically possible and at least as probable as GPC, are nevertheless all (or almost all) uninteresting in comparison with our universe, which in turn makes the existence of GPC remarkable, surprising and in need of explanation (in the narrow sense of "explanation"). How, then, could the existence of GPC be just a brute fact? It would be like Paley's watch (or Craig's skyscraper in the desert) being just a brute fact, which would be wildly implausible. I'm sure that many philosophers, even in the naturalistic camp, would give up on BFH, given such assumptions.

In the present context, I would regard this battle between BFH and

IDH to be a standoff. Both hypotheses would be obviously inadequate. However, all that need be shown for FTA's premise (P8) to be refuted is that if BFH is an explanation at all then it is at least as good as IDH. And, that much I would be willing to say about BFH, especially considering the Inadequacy Objection to IDH, stated above. Although both explanations would be exceedingly poor, BFH would be no worse than IDH. Thus, even if FTA were sound through its step (C7), the rest of the argument would still not go through and its final conclusion regarding intelligent design could still not be established.

All of this is moot, since FTA can be strongly attacked in its early steps, as shown previously. Advocates of FTA absolutely *must* proclaim that there is no world ensemble, that a great many alternatives to GPC are physically possible and roughly equal in probability to it (which makes GPC exceedingly improbable), and that such alternate hypothetical worlds are all, or almost all, uninteresting in comparison to our universe. But no reason has been produced to believe *any* of these claims, and so FTA, even in its improved version, can still be dismissed as unsupported, doubtful, and weak.

## References

1. The essay (entitled "The Fine-tuning Argument") is at the following URL: **http://www.infidels.org/library/modern/theodore_drange/tuning.html**. It is based upon appendix F of my book *Nonbelief & Evil: Two Arguments for the Nonexistence of God* (Buffalo: Prometheus Books, 1998).

2. Occasionally physicists question one or more of the counterfactuals. An example would be the talk "A Designer Universe?" given by physicist Steven Weinberg in April 1999 at the Conference on Cosmic Design of the American Association for the Advancement of Science in Washington, D.C. It appears on the Internet at: **http://www.nybooks.com/nyrev/WWWfeatdisplay.cgi?19991021046F**.

3. This is taken from the transcript of Craig's debate with Prof. Douglas Jesseph in November 1996 at North Carolina State University.