

Multiple Universes and the Surprisingness of Life: A Response to Roger White's Conclusions on Design Arguments

In his insightful essay, "Fine-Tuning and Multiple Universes," Roger White examines the extent to which a multiple-universe hypothesis lessens the "surprisingness" that our universe should be life-sustaining.¹ White offers two main conclusions, one of which is sound. I shall argue that White's second conclusion, however, is mistaken.

Within the literature on design arguments, one frequently finds astronomical numbers given by scientists as to the extreme improbability that our universe should have met the conditions necessary for the evolution of life. Stephen Hawking, for example, has estimated that, as the universe was expanding soon after the big bang, "a reduction of the rate of expansion by one part in 10^{12} ... would have resulted in the Universe starting to recollapse."² Even this number, though, pales in comparison to the number Roger Penrose assigns the likelihood that our universe should have attained the uniform expansion rate it does, such that "thermodynamics as we know it should have arisen." He calculates that, in order to ensure a uniform and "smooth" beginning to our universe, given the physical possibilities of how our universe might have expanded, "the accuracy of the Creator's aim" would need to have been "at least of the order of ... one part in $10^{10(123)}$."³

Such figures are often used by proponents of design arguments to emphasize that the necessary conditions for life—at least, life as we know it—are exceedingly unlikely to have obtained on the hypothesis that these conditions were a result of mere chance. Thus, the hypothesis of a designer is often posited as a much more plausible explanation of life in our universe.

In response to the basic outline of this design argument, some philosophers have conceded the point that the existence of a habitable universe is indeed extremely improbable. Yet they have claimed that, on the multiple-universe hypothesis, the existence of such a universe is nonetheless not *surprising* (and thus does not 'cry out' for an explanation along the lines of a designer).

These philosophers are correct insofar as it is the surprisingness of a life-permitting universe—not simply the improbability of it—that would serve as the basis for preferring a designer hypothesis to the hypothesis that our universe is the result of chance. And so it is important to understand the distinction between an improbable event and a surprising event. That Joe Smith won the lottery is an improbable event, but unless there are certain kinds of further circumstances (for example, Joe Smith also won the lottery the two previous years), we would not find this event surprising (and would not seek an explanation outside of the mere "chance of the draw").

To take another example, we would not find it surprising that a monkey types "dkc8 7gix-w ;e4c"; but we would find it surprising that a monkey types "I like bananas!" Though each of these events would be equally improbable, Roger White rightly points out that "in the second

¹ Roger White, "Fine-Tuning and Multiple Universes," in *God and Design: The Teleological Argument and Modern Science*, ed. Neil A. Manson (New York: Routledge, 2003), 229-250.

² Stephen Hawking, "The Anisotropy of the Universe at Large Times," in *Confrontation of Cosmological Theories with Observational Data*, ed. M. S. Longair (Dordrecht: Reidel, 1974), 285. A tiny increase in speed would have been equally disastrous for life in that the effects of gravity would not have been powerful enough to allow for the formation of bound systems in which stars might arise.

³ Roger Penrose, "Time-Asymmetry and Quantum Gravity," in *Quantum Gravity 2: A Second Oxford Symposium*, ed. C. J. Isham, R. Penrose, and D. W. Sciama (Oxford: Oxford University Press, 1981), 248-9.

case there is some alternative but not wildly improbably hypothesis concerning the conditions in which the event took place, according to which the event is much more probable.”⁴ Thus, while both typed sequences are equally improbable on the hypothesis that the monkey is typing randomly, the second sequence is much more probable on the hypothesis that someone trained the monkey or rigged the typewriter. (The reason the first sequence is not similarly made more probable by this hypothesis is that a person who trained a monkey or rigged a typewriter would presumably have no reason to ensure that the sequence “dkc8 7gix-w ;e4c” is typed.)

Analogously, defenders of design arguments sometimes insist that it is surprising that the universe is fine-tuned for life. For, on the assumption that the big bang is an accident, it is extremely improbable that the universe would be life permitting; yet this occurrence is far more likely on the hypothesis that there exists an intelligent designer who might prefer to bring about a universe that is inhabitable by other intelligent creatures. The conclusion, then, is that an intelligent designer hypothesis is to be preferred on the grounds that it makes the life-permitting qualities of our universe less surprising.

Against this line of argument, John Leslie has contended that a multiple-universe hypothesis makes our own life-permitting universe less surprising. He provides the following story to illustrate why this is so.

You are alone in the forest when a gun is fired from far away and you are hit. If at first you assume that there is no one out to get you, this would be surprising. But now suppose you were not in fact alone but instead part of a large crowd. Now it seems there is less reason for surprise at being shot. After all, someone in the crowd was bound to be shot, and it might as well have been you.⁵

In response to Leslie, White admits that it may at first glance seem intuitive to the reader that the “existence of many people surrounding you” should lessen the “surprisingness of your being shot.” Yet White goes on to show that, upon further analysis, “there is no adequate account of why this is so.”⁶

White begins his analysis by making the following designations.

E = you are shot.

D = the gunman was malicious and not shooting accidentally (the design hypothesis)

M = you are part of a large crowd (the multiple-people hypothesis)

White and Leslie share as a starting point the premise that, if the bullet is fired randomly within the wide range of the woods, and if you are alone, then the probability of you being shot is very low. That is, $P(E/\sim D \& \sim M)$ is very low. The probability of E is, of course, greatly increased if we assume that the gunman was malicious and that there are no other interesting targets at which the malicious gunman might aim. Thus,

$$P(E/D \& \sim M) > P(E/\sim D \& \sim M),$$

which works to confirm the malicious-gunman hypothesis. For the alternative hypothesis of a malicious gunman provides a much less improbable explanation of your being shot than does the original hypothesis that your being shot was a result of sheer chance. Thus, as White notes, this alternate hypothesis of a malicious gunman “challenges you to reconsider whether the shooting really was accidental.”⁷

⁴ White, “Fine-Tuning and Multiple Universes,” 240.

⁵ Ibid, 240.

⁶ Ibid.

⁷ Ibid, 241.

White then turns to the question of how the surprisingness of your being shot changes if we assume that you are part of a large crowd in the woods. He correctly points out—against Leslie—that, on the assumption that you are part of a crowd, “ $P(E/\sim D \& M)$ is still very low, for the same reason that $P(E/\sim D \& \sim M)$ is.”⁸ The reason is that, even on the large-crowd hypothesis, it is still very unlikely, given the many different directions the bullet might travel, that you will be shot. Yes, the large-crowd hypothesis greatly raises the probability that *someone* will be shot; but it does not raise the probability that *you* are shot.

Applied to the subject of multiple universes and our own universe’s life-permitting qualities, the conclusion then is that the hypothesis that there exist a great many universes makes it more probable that *a* universe (somewhere) should have life-permitting qualities. But such a hypothesis does not raise the probability that *our* universe should be life-permitting. This conclusion by White is entirely correct.

However, White goes on to draw a second conclusion. He claims that, once the existence of multiple universes is assumed,⁹ the existence of an intelligent designer does not raise the probability that our universe should be life-permitting. White’s reasoning is that, while the designer hypothesis perhaps greatly raises the probability that a universe should be life sustaining,¹⁰ it does not raise the probability that our universe should be life-sustaining.

White’s more formal argument for this conclusion is again found in his discussion of Leslie’s shooting analogy. As previously discussed, White’s initial conclusion was that, on the assumption that you are alone and the gun was fired randomly,

$$P(E/D \& \sim M) > P(E/\sim D \& \sim M)$$

After defending this initial conclusion, White then asks the reader to consider a case where she knows that she is part of a crowd in the woods. On this assumption, White contends,

$P(E/D \& M)$ is not much higher than $P(E/\sim D \& \sim M)$, if higher at all. The reason is that while a malicious shooter may be expected to shoot a person, there is little reason to suppose that he would intend to shoot you in particular (unless perhaps you are the President).¹¹

We saw earlier White’s acknowledgement that, if we assume that you are alone in the woods (or, analogously, that there is one universe), then a madman (or designer) hypothesis *does* increase the probability of you being shot (or our universe having life-permitting qualities). White’s contention here, however, is that, if we assume the multiple-people (or universe) hypothesis M , then M “*screens off* the probabilistic support that D lends to E , and hence also screens off the support that E lends to D . That is, relative to M , E and D are probabilistically independent.”¹²

To see White’s line of argument more clearly, we can think back to the case where a monkey might type “dkc8 7gix-w ;e4c” or type “I like bananas!” If we assume that the typing is random, then, while both sequences are equally improbable, the second sequence is very suspicious. For, as stated earlier, there is an alternative hypothesis—namely, that an intelligent being trained the

⁸ Ibid.

⁹ White rightly insists that “being shot gives you no reason at all to suppose that you are part of a crowd” (241). Thus, the fact that our universe contains life is not itself evidence that there exist other universes. Our discussion, however, is on what actually follows from the hypothesis that there is in fact a multiplicity of universes.

¹⁰ Again, this is because an intelligent designer would presumably have an interest in creating other intelligent beings.

¹¹ White, “Fine-Tuning and Multiple Universes,” 241.

¹² Ibid., 242.

monkey or rigged the typewriter—that would make the event in question much less improbable. And it is this recognition of how a designer hypothesis makes the original event much less improbable that makes us reconsider our initial hypothesis that the event was a random one.

White's second conclusion is that, if we assume the existence of multiple persons (universes), then the hypothesis of a madman (designer) does *not* make it more probable that you should be shot (that this universe should be life-permitting) than does the hypothesis that your being shot (the universe having life-permitting condition) is the result of chance. For, again, such a hypothesis only raises the probability that *some* person (universe) should be shot (life-permitting). It does not raise the probability that *you* (*this* universe) should be shot (life-permitting). Thus, because the additional hypothesis of a madman (designer) does not raise the probability of you being shot (this universe being life-permitting), we have no reason to reconsider the assumption that the shooting (life-permitting conditions of this universe) was the result of an accidental or random process. For the event of *you* being shot (*this* universe being life-permitting) is just as improbable—supposing that there are many people in the woods (many universes)—if there exists a madman (designer) as if there exists no madman (designer).

This line of argument, however, contains a flaw. And as a result White's second conclusion is improperly reached. White's claim is that, if we assume a multiple-universe hypothesis, the designer hypothesis does not raise the probability that *this* universe should be life-permitting. But is this really so? Admittedly, if on the multiple-universe hypothesis we assume that the ratio of life-permitting to life-prohibiting universes corresponds to the ratio that would occur *through random or accidental universe production*, then the designer hypothesis does not add to the probability that this universe is life-permitting. But why would we assume that the life-permitting to life-prohibiting ratios would remain the same if a designer is creating these universes? If there is reason to think that a designer might wish to create intelligent beings in one universe—a point, we saw earlier, White acknowledges—do we not also have reason to think that a designer might wish to do the same in any other universe he might create?

We noted early on that scientists often claim that the chance of our universe meeting the necessary conditions for the evolution of life—assuming that our universe is a result of random processes—is exceedingly remote. And for the sake of discussion we might grant that there are an exceedingly large number of universes in existence—which would make it not improbable that *a* universe (somewhere) should be life-permitting. White's contention is that, under such conditions, a designer hypothesis does not add to the probability that *this* universe should be life-permitting. My contention is that a designer hypothesis greatly adds to the probability that *any* universe—including, obviously, our universe—should be life-permitting. For, if a designer might have reason to bring about a universe (that is, our universe) inhabitable by other intelligent creatures, then it seems entirely plausible to think that, if there exist multiple universes, a designer might have reason to ensure that life-permitting qualities obtain in many, or most, or (as far as we know) all of them.

If we return to Leslie's shooting analogy, we should now be in a position to see a hidden (and problematic) assumption within White's analysis of it. White reasons that, if we assume that there are many people in the woods—and thus a good chance that *someone* will be shot—an additional madman hypothesis does not raise the probability that *you* will be shot. This reasoning is entirely correct if we assume that the madman decides to fire only one bullet at one of the many possible human targets in the woods. But if there is reason to think that a madman might have an interest in shooting one person, it seems only plausible to think that the madman might have a similar interest in shooting others. Now, we might simply assume that a madman

fires only one bullet. But if we make such an assumption in our discussion of multiple universes, we simply beg the question as to whether a designer hypothesis increases the probability that this universe should be life-permitting. For we simply assume that a designer has no reason to ensure that the ratio of life-permitting to life-prohibiting universes is greater than that ratio generated through random processes.

Admittedly, it seems possible to construct reasons as to why a designer might wish to create multiple universes and have only a tiny percentage of them contain life. For instance, one might for theological reasons think that God would choose to create a single token of every possible type of universe. With the entire range of possible universes exhausted, and on the further assumption that life-permitting conditions obtain only in a tiny percentage of the types of universes that could possibly be created, one might plausibly argue that our universe being life-permitting is no more probable on the designer hypothesis than on the hypothesis that our universe came about through chance. However, outside of a further line of argument such as this, White's second conclusion simply begs the question as to whether a designer hypothesis increases the probability that this universe should be life-permitting.

As a rejoinder to my response to White, one might offer a certain interpretation of White's point that, assuming the existence of multiple universes, a designer hypothesis does not increase the probability that *this* universe should contain life. Perhaps one might take this to mean that, even if—as I earlier argued—a designer might well have reason to create intelligent life in many, or most, or (as far as we know) all of the universes he creates, it remains exceedingly improbable that our universe should contain the particular life it does. For if there are any number of possible combinations of life forms, and if a designer has equal reason to create any particular combination of these life forms, then, one might argue, the designer hypothesis only raises the probability that the universes he creates will contain a form of intelligent life. It does not raise the probability that our universe should contain the form of intelligent life it does.

This rejoinder, however, misses the point of the discussion. We started with the premise that it is exceedingly improbable that this universe should meet the necessary conditions for the evolution of life. What was taken to be improbable was not the conditions necessary for the evolution of the *specific* life forms that happen to obtain in our universe, including the lives of Kevin Kinghorn, Roger White, John Leslie, and so on. Rather, what was taken to be improbable was simply the obtaining through chance of the conditions necessary for the evolution of life, period. Now, one might attempt to dispute the idea that the general, life-permitting qualities in our universe are in fact very improbable. For example, one might argue that, if we had a better physical theory to explain how the universe came to have the life-permitting constants that allow for life, life in our universe might not seem so improbable after all. But such a line of argument would simply constitute a challenge to the interpretation of scientific data that the probability on sheer chance that our universe should contain life is exceedingly small when compared to the probability that our universe should not contain life. In our discussion we have assumed this much as a starting point. Our concern has been with the subsequent question: Given that the existence of our life-permitting universe is improbable, is it also surprising?

Though White offers some important insights on this matter, I have argued against his conclusion that, on the multiple-universe hypothesis, the design hypothesis D and the event E of this universe being life-permitting are “probabilistically independent.” Contrary to what White concludes, D does raise the probability of E—even if we assume the existence of multiple universes. We conclude, then, that even on the assumption that our universe is merely one of many, the life-permitting nature of our universe *is* suspicious in that there is an available

hypothesis—the designer hypothesis—that raises the probability of E and thus makes us reconsider the hypothesis that this universe is a result of accidental processes.

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