
The Design Argument for the Existence of God

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The design argument is the simplest, most straightforward argument for the existence of God. Unlike the cosmological argument, the design argument can be stated in a few, easy-to-understand steps. In a nutshell, the design argument claims that the fact that everything in nature seems to be put together in just the right manner suggests that an intelligent designer was responsible for its creation. Immanuel Kant (1724-1804)—a strident critic of the design argument—recognized both its simplicity and its importance. He wrote, "This proof always deserves to be mentioned with respect. It is the oldest, the clearest, and the most accordant with the common reason of mankind" (Kant 1781/1965, A 623, B 651).

In the first section of this essay I will describe the most famous version of the design argument—William Paley’s argument by analogy. Analogical arguments are perhaps the weakest sort of arguments one can offer without committing an outright fallacy. As we will see in section II, the analogical version of the design argument has come in for some heavy fire over the years. A contemporary reformulation of the argument, which I will call the ‘Inference to the Best Explanation’ (IBE) version of the design argument, claims to be able to escape the criticisms that are leveled against the analogical version. The IBE version will be explained in section III. It eschews the analogical form of the first version and uses evidence from contemporary science to back up its claims.

I. The Analogical Version of the Design Argument

William Paley (1743-1805), an Anglican priest whose textbooks were required reading at Cambridge until the twentieth-century, put forward the most famous version of the design argument in his book *Natural Theology: or Evidences of the Existence and Attributes of the Deity Collected from the Appearances of Nature*. In his autobiography, Charles Darwin (1876/1958, p. 19) cites Paley's book as one of his favorite undergraduate texts:

In order to pass the B.A. examination, it was also necessary to get up Paley's *Evidences of Christianity*, and his *Moral Philosophy*. This was done in a thorough manner, and I am convinced that I could have written out the whole of the *Evidences* with perfect correctness, but not of course in the clear language of Paley. The logic of this book and, as I may add, of his *Natural Theology*, gave me as much delight as did Euclid. The careful study of these works, without attempting to learn any part by rote, was the only part of the academical course which, as I then felt, and as I still believe, was of the least use to me in the education of my mind. I did not at that time trouble myself about Paley's premises; and taking these on trust, I was charmed and convinced by the long line of argumentation.

The only discussion of the design argument that might be more famous than Paley's is David Hume's (1711-1776) in his *Dialogues Concerning Natural Religion*. In this work Hume subjects the argument to severe criticism.

Paley famously begins his version of the argument by comparing the universe to a watch. Suppose, he says, that we come upon a watch while walking through the forest.

[W]hen we come to inspect the watch, we perceive... that its several parts are framed and put together for a purpose, e.g. that they are so formed and adjusted as to produce motion, and that motion so regulated as to point out the hour of the day; that, if the different parts had been differently shaped from what they are, if a different size from what they are, or placed after any other manner, or in any other order than that in which they are placed, either no motion at all would have been

carried on in the machine, or none which would have answered the use that is now served by it.... This mechanism being observed,... the inference, we think, is inevitable, that the watch must have had a maker; that there must have existed, at some time, and at some place or other, an artificer or artificers who formed it for the purpose which we find it actually to answer; who comprehended its construction, and designed its use. (cited in Hick 1964, pp. 99-100)

Paley claims that the same can be said for the universe as a whole. It seems to show evidence of an intelligent designer as well. The parts of the universe have an order, complexity and simplicity that resemble the parts of a finely crafted, well-oiled machine. It seems, then, that the universe was fashioned by some kind of Divine Watchmaker.

To support the analogy between a finely crafted watch and the universe, defenders of the design argument typically put forward the following kinds of considerations. Consider the fact that the universe is constructed in a way that is conducive to life. There is just enough oxygen to support life on earth. If there were even a little less, the Earth's atmosphere would not be able to support life as we know it. But if there were just a little bit more oxygen in the atmosphere, combustion would occur too easily and often and it would once again be difficult to sustain life in such conditions. Moreover, the Earth is just the right distance from the sun. If we were a little bit closer, the atmosphere would be too hot to sustain life; but if we were a little further away, plants would not receive enough energy from the sun to carry on photosynthesis—the primary process by which the sun's energy is converted into life on Earth. These and other “fine-tuning” aspects of the universe suggest that there was an intelligent mind that intentionally brought these features into being. As Sir Isaac Newton put it, the “most beautiful system of the sun, planets and comets could only proceed from the counsel and dominion of an intelligent and powerful Being” (from the General Scholium of *Principia Mathematica*; cited in Leslie 1989, p. 25).

Defenders of the design argument need not rest content with pointing to large-scale features of the universe that suggest design. They can also point to the apparent design of many kinds of objects in the world. Take, for example, mammalian organs,

such as the heart, kidney, brain or eye. Each of these has been given a certain function to perform and each has an amazing capacity to carry out that function.

We can summarize the analogical version of the design argument as follows:

- 1) Human artifacts are the products of intelligent design.
- 2) The universe resembles human artifacts.
- 3) Therefore, the universe is probably a product of intelligent design.
- 4) Therefore, the author of the universe is probably an intelligent being. (adapted from Plantinga 1990, p. 97)

We know that (1) is true on the basis of personal experience and testimony from reliable sources. We know that machines are always put together to serve certain purposes and that it takes careful planning and construction to make sure that each of the parts of a complicated machine work properly. So, when we see that mammalian organs—e.g., hearts, lungs, eyes, brains, etc.—have certain very specific functions that they perform by carrying rather complicated series of interactions, it is plausible to think that they, too, are the products of intelligent design.

II. Criticisms of the Analogical Version

The most famous criticisms of the analogical version of the design argument appear in David Hume's *Dialogues Concerning Natural Religion*. According to Norman Kemp Smith ("Introduction" to Hume's *Dialogues*, p. 3), "Hume's destructive criticism of the argument was final and complete." Smith's sentiments are shared by many. As we will see, however, defenders of the IBE version of the design argument claim that Hume's criticisms apply only to the analogical version of the argument and not to their own version.

Most of Hume's criticisms center on the analogical aspect of the traditional design argument. The problem, according to Hume, is that the analogy in question is not as strong as it needs to be in order to succeed. The more the universe resembles an artifact, the stronger the argument will be; but the less the universe is like an artifact, the weaker it will be.

A. No Experience of Cosmic Beginnings: A Disanalogy

Hume points out there are many dissimilarities or disanalogies that harm the theist's case. One of the first things he notes is that there is a disanalogy between the kind of experience we have with respect to artifacts and the kind of experience we have with respect to the universe. We have a lot of experience with a wide range of artifacts, which includes a general idea about what kinds of artisans or craftspeople make artifacts. We know that artifacts are made by intelligent designers because we have observed designers making a variety of things on many occasions. However, we don't know what usually makes universes. We simply have no experience with this kind of thing. As a result, Hume claims, we can't be too confident that whatever was responsible for making the universe is going to be much like the designers we are familiar with.

B. Evil: A Harmful Analogy

Hume also argues that there are analogies that are detrimental to belief in a designer. He thinks the analogical design argument correctly notes that we generally infer properties about an artisan or manufacturer from properties we observe in their products. But he claims the argument ignores important facts about our world. For example, from the solid 24 karat gold, diamonds and precision timing of a Rolex watch, one can infer that the manufacturer has the highest commitment to quality. When one is faced with a defective product, one draws analogous but opposite conclusions. For example, I own a Soviet-era military watch with the KGB insignia on its face. At noon

and midnight, the two hands of the watch should both be pointing straight up, but there are five degrees of separation between them. Moreover, it gains about eight minutes every day. I have been led to form rather negative conclusions about Soviet-era craftsmanship from the properties of this watch.

Hume notes that there seem to be imperfections in nature: cancer, AIDS, heart disease, famines, plagues, floods, and countless other tragedies. If God is a Divine Watchmaker, as Paley claimed, the world looks to be more like a Soviet watch than a Rolex. In other words, if we are going to infer by analogy characteristics of the Creator from characteristics of the creation, it doesn't seem we can conclude that the Creator had to be perfect because the world is anything but perfect. In jest, Hume suggests that maybe the universe was created by a junior deity who is just learning the ropes of universe creation and didn't get things quite right this time.

C. Full-Blown Anthropomorphism

Hume also asks, "While we're in the business of arguing by analogy, what is to keep us from pursuing the analogy all the way to a full-blown anthropomorphism?" The theist wants to argue that, since every highly ordered, complex contrivance we encounter has an intelligent designer behind it, we can conclude that the world also has a designer behind it. Well, says Hume, every artifact we encounter also has a designer with toenails, a bellybutton, 46 chromosomes, teeth made out of calcium composites, a spleen, and bad breath in the morning. What's stopping us from concluding that the creator of the universe has all of these features as well? Hume's point is that the analogy upon which the traditional design argument is based supports other conclusions than the one the theist is seeking to support.

D. Begging the Question

Kelly James Clark (1990, p. 30) echoes some of Hume's worries when he claims,

The connection between the first premise, that the world appears designed, and belief in God is so tight that some contend that the argument from design simply assumes what it is trying to prove: to countenance apparent cosmic *design* is already to be committed to a *design-er*.

Clark thinks that one must already believe in God before one can accept the first premise of the traditional design argument—viz., that the world appears to be designed. If you don't think there is a cosmic designer, then you're probably not going to look at the world and think "This world appears to be designed." An argument that assumes from the start the very thing that is up for debate is said to 'beg the question.' Since Clark thinks the analogical design argument begs the question, he concludes that the argument fails to have any persuasive force.

While I think Hume's criticisms for the most part succeed in hitting their mark, I think that Clark's does not. Most (if not all) evolutionary theorists admit that biological organs appear to be designed, but they remain committed to the project of explaining apparent design without appealing to a designer. In other words, they do not deny the first premise that Clark finds so worrisome; they merely deny the inferences theists wish to draw from it.

In any case, the objections put forward in this section have convinced many people that the design argument fails miserably. However, in recent years there has been a renewal of interest in the design argument—from both philosophers and scientists—and this has led to an updated formulation of the argument.

III. The Inference to the Best Explanation Version of the Design Argument

A. Inference to the Best Explanation

The design argument can be reformulated so that it is not an analogical argument. Instead, it can be understood as an inference to the best explanation. This form of inference is common to both science and ordinary life. We start with a set of data that is initially surprising or unexplained, and we wonder what could explain it. As possible explanations pop into our minds, we evaluate the initial plausibility and simplicity of each explanation and see how well the explanations make sense of the data. J. P. Moreland (1994, p. 26) offers the following example of an ordinary inference to the best explanation.

Suppose I get a terrible stomachache. Then it dawns on me that I just ate a gallon and a half of ice cream, two bags of popcorn and a lot of candy on an empty stomach. A hypothesis suggests itself as the best explanation of the stomachache—it arose because of what I had just eaten. Other hypotheses may also suggest themselves, but I should adopt the explanation that best solves the problems for which it was postulated.

In what follows I will present an array of scientific data that, according to defenders of the IBE design argument, cries out for explanation. The facts described are extraordinarily improbable and unlikely to be the result of chance. After presenting the data, we will examine the suggestion that the best explanation for these unlikely occurrences is that a personal, transcendent Being of tremendous power and intelligence is directly responsible for purposefully bringing them about.

B. The Data

1. We can begin by considering the fact that the energy the Earth receives from the Sun is precisely the amount required to nurture life. According to Richard Brennan (1997, pp. 244-245),

The term used in science for this energy is the *solar constant*, which is defined as 1.99 calories of energy per minute per square centimeter. If Earth received much

more or less than 2 calories per minute per square centimeter, the water of the oceans would be vapor or ice, leaving the planet with no liquid water or reasonable substitute in which life could evolve. It is only because Earth is 93 million miles away from a Sun that produces 5,600 million, million, million, million calories per minute that life is possible.

2. Brennan (1997, p. 245) continues,

For another example, it has been calculated that if Earth were just 5 million miles closer to the Sun, the intensity of the Sun's rays would have broken apart water molecules in the atmosphere and eventually turned the planet into a dry and dusty wasteland. If Earth were only 1 million miles farther from the Sun, the cold would have frozen the ocean solid.

3. For there to be enough carbon around to support life, the strong nuclear force (the force that holds quarks together to form protons and neutrons and holds protons and neutrons together to form the nuclei of atoms) can be no more than 1% stronger or weaker than it is. Increasing its strength by 2% would block the formation of protons, so that there would either be no atoms at all or else stars would burn a billion billion times faster than our sun, thereby making it difficult to have an environment friendly to living organisms (Leslie 1989, p. 4). Increasing its strength by only 1% would result in all carbon being burned into oxygen (Leslie 1989, p. 35).

4. Decreasing the strong nuclear force by 5% would make it impossible for stars to burn (Leslie 1989, p.4).

5. If the force of electromagnetism were somewhat stronger, the amount of light given off by stars would be significantly lower. Main sequence stars (i.e., stars like our sun in the stable phase during which they spend most of their lifetimes and have their interior heat and radiation provided by nuclear fusion reactions near their centers) would be too cold to support life and would not contain any elements heavier than iron. It would also make protons repel one another strongly enough to prevent the existence of atoms (Leslie 1989, p. 4).

6. If the force of electromagnetism were slightly weaker, all main sequence stars would be very hot and short-lived blue stars. According to the physicist, P. C. W. Davies, changes in either electromagnetism or gravity by only one part in 10^{40} would spell catastrophe for stars like the sun (Leslie 1989, p. 37).

7. Some of the basic forces of the universe also need to be finely-tuned to each other. Gravity is roughly 10^{39} times weaker than electromagnetism. If it had been only 10^{33} times weaker, stars would be a billion times less massive and would burn a million times faster (Leslie 1989, p. 5). If gravity were ten times less strong, stars and planets could probably not form at all (Leslie 1989, p. 39).

8. The opposite charges of electrons and protons perfectly balance each other. They are identical magnitudes. If there had been a difference between their charges even as small as one part in ten billion, scientists have calculated that no solid bodies could weigh more than one gram (Leslie 1989, p. 45).

9. The difference in mass between protons and neutrons is twice the mass of the electron, which is itself a very small quantity. If this were not so, then

all neutrons would have decayed into protons or else all protons would have changed irreversibly into neutrons. Either way, there would not be the couple of hundred stable types of atom on which chemistry and biology are based. (Leslie 1989, p. 5)

If all protons were changed irreversibly into neutrons, the universe would consist of nothing but neutron stars and black holes. (A neutron star is a kind of collapsed star that is immensely dense and is made mostly of neutrons. It is not the sort of star that could support life as we know it.)

10. According to William Lane Craig (Strobel 2000, p. 77), P. C. W. Davies concluded that the odds against the initial conditions being suitable for the formation of stars is a one followed by at least a thousand billion billion zeroes.

11. Davies also estimated that if the strength of gravity or of the weak force were changed by only one part in a ten followed by a hundred zeroes, life could never have developed (ibid.).

12. Craig (1990, p. 143) writes,

[Astronomer Fred] Hoyle and his colleague Wickramasinghe calculated the odds of the random formation of a single enzyme from amino acids anywhere on the earth's surface as one in 10^{20} . But that is only the beginning: "The trouble is that there are about two thousand enzymes, and the chance of obtaining them all in a random trial is only one part in $(10^{20})^{20,000} = 10^{40,000}$, an outrageously small probability that could not be faced even if the whole universe consisted of organic soup." And of course, the formation of enzymes is but one step in the formation of life. "Nothing has been said of the origin of DNA itself, nothing of DNA transcription to RNA, nothing of the origin of the program whereby cells organize themselves, nothing of mitosis and meiosis. These issues are too complex to set numbers to." In the end, they conclude that the chances of life originating by random ordering of organic molecules is not sensibly different from zero.

13. J. P. Moreland (1987, p. 53) claims, "If the mass of a proton were increased by 0.2 percent, hydrogen would be unstable and life would not have formed."

14. Brennan (1997, p. 246) writes,

If something called the *fine structure constant* (the square of the charge of the electron divided by the speed of light multiplied by Planck's constant) were slightly different, atoms would not exist.

15. The fact that all of this fine tuning is distributed across enormous ranges makes it even more amazing that they should be found in just the right proportions. The strong nuclear force is roughly 100 times stronger than electromagnetism. Electromagnetism is itself some 10,000 billion billion billion times stronger than gravity (Leslie 1989, p. 6).

None of the foregoing evidence of the “fine-tuning” of the universe depends upon acceptance of the Big Bang theory of the origin of (the present state of) the universe and the cosmic timeline (spanning 15 billion years) that goes with it. Theists who think that the Big Bang is identical to the event of divine creation, however, can avail themselves of further evidence of the fine-tuning of the universe, some of which is described below. According to defenders of the IBE design argument, this evidence shows that even the theory of cosmic origin most widely accepted by atheist scientists strongly suggests that there was and is an Intelligent Designer behind the controls of the universe.

16. The rate of expansion of the universe immediately after the Big Bang had to be finely tuned. According to William Lane Craig (Strobel 2000, p. 77), Stephen Hawking, the world’s most famous living physicist, has calculated that if the rate of the universe’s expansion one second after the Big Bang had been smaller by even one part in a hundred thousand million million, the universe would have collapsed into a fireball.

17. If the rate of expansion were decreased by only one part in a million when the Big Bang was a second old, the universe would have recollapsed before temperatures fell below 10,000 degrees (i.e., before it could cool off enough for life to be able to form) (Leslie 1989, p. 29).

18. An increase of only one part in a million in the rate of the early universe’s expansion would have meant that the kinetic energy of expansion would have so dominated gravity that stars could not form (Leslie 1989, p. 29).

19. Had the weak nuclear force been slightly stronger, the Big Bang would have burned all hydrogen to helium. There would then be neither water nor long-lived stable stars, which are hydrogen-burning (Leslie 1989, p. 4).

20. The weakness of the weak force results in our sun burning its hydrogen slowly and gently for billions of years instead of blowing up like a bomb (Leslie 1989, p. 34).

21. Making the weak nuclear force slightly weaker would have destroyed all of the hydrogen, and the neutrons formed during the earliest stages of the universe would not have decayed into protons (Leslie 1989, p. 4). Without this neutron-decay, the universe would be made up of nothing but helium (Leslie 1989, p. 34).

22. P. C. W. Davies (*Other Worlds*, London, 1980, pp. 168-169; cited in Leslie 1989, p. 28) claims that, because of all the parameters that had to be perfectly set before the Big Bang, the odds against a universe filled with stars is “one followed by a thousand billion billion zeros, at least.”

C. Explaining the Data

What should we make of all these facts? John Leslie (1989, p. 25) responds, “Our universe does seem remarkably tuned to Life’s needs.” Craig (1990, p. 143) writes,

The point is that within the wide range of universes permitted by the actual laws of physics, scarcely any are life-permitting, and those that are require incredible fine-tuning of the physical constants and quantities. In fact, Donald Page of Princeton’s Institute for Advanced Study has calculated the odds against the formation of our universe as one out of 10,000,000,000¹²⁴, a number that exceeds all imagination.

To get a handle on how large this number is, consider the fact that there are estimated to be only 10⁸⁰ elementary particles in the universe (Craig 1990, p. 159). A universe that is inhospitable to life is extraordinarily more likely to have arisen than the one that we, in fact, find ourselves in. Craig (1990, p. 143) claims that the fine-tuning of the universe “cries out for explanation.” And an explanation immediately suggests itself: maybe this improbable “cosmic accident” wasn’t an accident after all. Keith Parsons (1990, p. 181),

who is quite skeptical of the design argument, summarizes the conclusion of the argument nicely as follows.

[A] “finely tuned” universe is much more likely if there is a God than if there is not. In other words, it is implied that the cosmic “coincidences” that make possible a universe such as ours are extremely improbable unless they are the product of conscious design. Presumably, the conclusion is that since a “finely tuned” universe does in fact exist, its existence strongly confirms the existence of a conscious Designer—that is, God.

In other words, scientific discoveries of the infinitesimally small margin of error allowed in creating a universe capable of sustaining life support the central claim of theism: the universe was purposefully constructed by a personal, transcendent Being of tremendous power and intelligence.

D. Conditional Probability

Let me introduce some ideas from probability theory that can make clearer how the IBE version of the design argument is supposed to work.

1. Let ‘ $P(A | B)$ ’ mean “the probability of A, given B.”
2. Let A = “You will die of cancer in the next ten years.”
3. Let B = “You are 20 years old, do not smoke, have no family history of cancer, and are very healthy.”

The value of ‘ $P(A | B)$ ’ is called a ‘conditional probability’ value because we are asking what the probability is that A is true, *on the condition that* B is true. We are not simply asking what the probability of A is. We are asking about A’s likelihood in light of certain background assumptions.

According to the stipulations above, $P(A | B)$ is the probability that you will die of cancer in the next ten years, given that you are 20 years old, do not smoke, have no family history of cancer, and are very healthy. The probability of that happening should be very low. Let's replace B with the following conditions and see how the resulting probability values differ.

4. Let C = "You are a chain-smoking, 55-year old male."

5. Let D = "You are a chain-smoking, 55-year old male who has been working in an asbestos factory for 35 years."

Consider the value of $P(A | C)$. It will obviously be a lot higher than $P(A | B)$. And it's a good bet that $P(A | D)$ will be even higher.

In each of these cases, A remained the same. The only thing that changed was the set of background assumptions we used to determine the conditional probability value in question. We are now in a position to use the idea of conditional probability to achieve a better understanding of the IBE version of the design argument.

6. Let F = "There exists a finely-tuned, life-permitting universe."

7. Let T = "There exists an all-powerful, all-knowing, perfectly good God who created the universe."

8. Let Not-T = "There does not exist an all-powerful, all-knowing, perfectly good God who created the universe."

Now consider the following probabilities.

9. $P(F | T)$

10. $P(F | \text{Not-T})$

According to the scientists cited above, a conservative estimate of $P(F|Not-T)$ is $1/10,000,000,000$ ¹²⁴. In other words, it is extraordinarily unlikely that the fine-tuning of the universe could have been brought about without the conscious planning of an intelligent designer.

Now think about the value of $P(F|T)$. You can make an estimate of this probability, regardless of whether you are a theist or an atheist (or neither). I am simply asking what you think the probability of there being a finely-tuned, life-permitting universe would be IF there were an all-powerful, all-knowing, perfectly good God who created the universe. Although I can't give a precise number, it seems that the probability of $P(F|T)$ would be extremely high. If there were a supremely powerful and intelligent God, that being could easily create a finely-tuned universe if he so desired. So, the difference between $P(F|T)$ and $P(F|Not-T)$ is enormous.

Why is this fact significant? Parsons (1990, pp. 193-194) writes,

It is the consequence of Bayes' theorem [a theorem of probability theory that undergirds the currently accepted view about the confirmation of scientific theories]... that a given piece of evidence *e* confirms a hypothesis *h* if and only if *e* is more probable on *h* than on not-*h*. Hence, where *h* is theism and not-*h* is atheism and *e* comprises all of the "finely tuned" features of the universe, the "finely tuned" features of the universe confirm theism if and only if those features are more likely if God exists than if God does not exist.

In other words, since $P(F|T)$ is tremendously higher than $P(F|Not-T)$, facts about the fine-tuning the universe provide confirmation of the existence of God. The defender of the IBE version of the design argument concludes that it is more reasonable to believe that the universe was created by an Intelligent Designer than to believe that it spontaneously arose through chance.

IV. Objections and Replies

A. The Anthropic Principle

The Inference to the Best Explanation version of the design argument sometimes encounters the following objection.

We should not be surprised that the universe is life-permitting. If it weren't life-permitting, we wouldn't be here to contemplate it. The fact that we are indeed here to contemplate it shows that it obviously must be life-permitting. Consequently, expressions of surprise at the fact that our universe is well suited for living things are inappropriate.

Part of this objection is obviously true, but another part of it is mistaken. The trivially true part is the claim that if our universe were not life-permitting, we living human beings would not be around to contemplate it. But it is a mistake to think that this fact neutralizes the need to explain *why* the universe is life-permitting.

Let me use the following example to make the point. Suppose I were brought before a firing squad made up of one hundred professional marksmen and that each of them was instructed to shoot one dozen rounds of ammunition at me. Now suppose that, after the smoke clears, it becomes evident that all 1200 bullets fired at me have missed their intended target. After a brief moment of elation, I will begin to wonder why I am still alive. Suppose I said to myself, "If they hadn't all missed me then I shouldn't be contemplating the matter so I mustn't be surprised that they missed" (Leslie 1989, p. 108). Would that thought thoroughly satisfy my curiosity? Not by a long shot [sic]. I would begin to wonder whether they really intended to harm me. Were they instructed to miss me on purpose? Did someone load all of their rifles with blanks? Was this just a cruel birthday joke perpetrated by my wife? I might start looking around for the cameras from Spy TV or Candid Camera.

Similarly, merely pointing out that if the universe were not life-permitting, we would not be around to contemplate it does not satisfy our curiosity about the fine-tuning of the universe. We can still ask for an explanation of why these amazing and unlikely facts came to be.

B. “Sometimes the Improbable Happens”

A second objection that is often raised against the Inference to the Best Explanation version of the design argument goes like this:

Sometimes the improbable happens. For example, the fact that it is extraordinarily unlikely that any single person will win the Powerball lottery does not mean that no one will ever win. In fact, people whose odds of winning are vanishingly small win the Powerball lottery on a regular basis. Our reaction to the existence of an improbable, “finely-tuned,” life-permitting universe should be the same as our reaction to the news that somebody won the latest Powerball lottery: an uninterested yawn.

The defender of the IBE design argument will claim: a) that there is a confusion lurking behind these remarks; and b) once we clear up the confusion we will see that there are important disanalogies between the Powerball case and the case of a fine-tuned universe.

Suppose that in a certain lottery there are 100 million tickets sold and that one of these tickets will be chosen at random. If it is a fair lottery, then every ticket has an equal chance of winning. So, the probability that any particular ticket will bring riches to its bearer is $1/100,000,000$. Now consider the probability that at least one of the 100 million lottery tickets that were sold will win. That probability is 1 (probabilities come in ranges of continuous values between zero and one). In other words, there is a 100% chance that one of the 100 million tickets sold will win.

According to the defender of the IBE design argument, we need to distinguish between the following two kinds of probability judgments:

- 1) The probability that a particular ticket will win.
- 2) The probability that some (i.e., at least one) ticket will win.

The value of (1) is 1/100,000,000. The value of (2) is 1. The reason we are unsurprised that somebody (or other) won the latest Powerball lottery is that the probability of somebody (or other) winning is 1. It's a sure bet. But that doesn't mean that we would not not be surprised if we held the winning ticket. We be very surprised because of the enormous odds against our winning.

Our winning, however, would not be completely mysterious to us. It's not as if we would have no idea about how to explain how we won. Our knowledge of how lotteries work includes the knowledge that somebody has to win. We also know that winners in a fair lottery are selected through some kind of random process that gives everybody a fair shot. Knowledge of this process—even if it is vague and unspecific—keeps the fact of our winning from being an utterly mysterious, unexplainable fact.

The defender of the IBE design argument will maintain that the central problem with the current objection is that we do not know that the following is true:

- 4) The initial conditions of the present universe—e.g., the strengths of the four fundamental forces (the strong and weak nuclear forces, electromagnetism, and gravity), the masses of the fundamental particles, etc.—were the result of some kind of cosmic lottery. Out of the indefinitely large number of possible universes that could have been brought into being, ours was the one that just so happened—by pure chance—to be selected. If other universes had been selected, they would have collapsed into fireballs just a few seconds after being formed, while others would have been composed of only neutron stars and black holes. Still others would have consisted of nothing but electromagnetic radiation. Fortunately for us, none of these cosmic options were selected.

If we knew: a) that each possible universe had an equal probability of being actualized; b) that the probability that any particular universe would be selected was extremely small; and c) that at least one of them had to be selected; then it seems that we should show the same lack of surprise at the existence of our improbable but life-permitting universe that

we do at the news of the latest lottery winner. The problem, however, is that we don't know that our universe was the winner of a perfectly fair cosmic lottery. Lack of surprise is appropriate only when we have this knowledge. The fact that a life-permitting universe is extraordinarily improbable raises the suspicion that our universe wasn't randomly selected after all.

Consider the following unlikely events and the "explanations" offered of these events.

- i) The stones in one garden are randomly strewn about. In another garden the stones spell "Welcome to Wales by British Railways." Regarding this example William Dembski (1998, p. xi) writes, "In both instances the precise arrangement of stones is vastly improbable. Indeed, any given arrangement of stones is but one of an almost infinite number of possible arrangements." When asked for the best explanation of why one set of stones spells out an English sentence, someone replies, "Sometimes the improbable happens."
- ii) On several occasions during the last week, large pieces of scrap metal have fallen from above and nearly killed me. After each "accident" I turn around and see hurrying away from the scene one of my colleagues who has only a temporary contract with LSU but whose chances of being permanently hired by LSU would be greatly increased if I were out of the way. When detained and questioned by the police about why he always seemed to be present when pieces of scrap metal were falling near my head, my colleague simply replies "Sometimes the improbable happens."
- iii) I am brought before a firing squad made up of one hundred professional marksmen, each of whom is instructed to shoot one dozen rounds of ammunition at me. All 1200 bullets fired at me miss their intended target. When I ask someone for an explanation of this unlikely phenomenon, someone replies "Sometimes the improbable happens."

- iv) A silk merchant who, while trying to sell a silk gown, keeps his thumb over a hole in the silk the entire time his customer is looking at the gown. When his ruse is found out and he is asked to account for his behavior, he replies, “Every thumb must be somewhere. While it is improbable that my thumb should cover the hole the entire time, it is equally improbable that my thumb should be at any other location on the gown. Sometimes the improbable happens.”

- v) The winner of January’s state lottery was the nephew of the Lottery Commissioner. The winner of the February lottery was the niece of the Lottery Commissioner. The winner of the state lottery in March was the Lottery Commissioner’s brother. The winner in April was the Lottery Commissioner’s ex-wife who, it is well known, has been trying to sue him for everything he’s got. When asked to account for this highly improbable string of events the Lottery Commissioner replies, “Sometimes the improbable happens.”

In none of these cases is the offered explanation even remotely satisfying or convincing. When we lack the positive knowledge that an event is the outcome of a fair lottery (or its probabilistic equivalent), we find ourselves unable to accept the answer that “Sometimes the improbable happens.” Our minds immediately turn to more likely scenarios that would explain the events in question. We automatically assume that British Railways intentionally arranged the set of stones to be a greeting. We think it highly likely that my colleague wants to bump me off so he can take my position. We think the firing squad must be a sham that serves some unseen purpose. We believe beyond any reasonable doubt that the location of the silk merchant’s thumb is due to greed and dishonesty rather than chance. And no one, I take it, would believe the Lottery Commissioner’s claim to innocence.

Recall the fine-tuned features of the universe cited above. The fact that all of these life-permitting features have come together is exceedingly improbable. The defender of the IBE design argument claims that this situation is more similar to the five

cases listed above than to a fair lottery. As in the five cases above, they think we should be led to seek an explanation that does not appeal to mere chance. That explanation, they suggest, is that the universe was purposefully created by an Intelligent Designer.

C. Non-deductive Inference

A third objection to the Inference to the Best Explanation version of the design argument stems from the fact that the conclusion of the argument is not necessitated by its premises. Neal Gillespie (1979, pp. 83-84) has stated the objection as follows.

It has been generally agreed (then and since) that Darwin's doctrine of natural selection effectively demolished William Paley's classical design argument for the existence of God. By showing how blind and gradual adaptation could counterfeit the apparently purposeful design that Paley... and others had seen in the contrivances of nature, Darwin deprived their argument of the analogical inference that the evident purpose to be seen in the contrivances by which means and ends were related in nature was necessarily a function of mind.

Although Gillespie's objection is aimed at Paley's analogical version of the design argument, it can be modified to apply to the IBE version as well. Gillespie takes the design argument to task for thinking that the apparent design of the universe "was necessarily a function of [an intelligent, creative] mind." But neither version of the design argument claims that the fine-tuned features of the universe are *necessarily* the product of intelligent design.

The IBE version merely claims that the hypothesis of intelligent design provides the best explanation for those features. In other words, the design argument does not purport to be a deductive argument, in which the truth of the premises necessitates the truth of the conclusion. Instead, it claims to offer a strong non-deductive argument for the hypothesis of intelligent design. Pointing out that the premises of a non-deductive argument do not necessitate its conclusion is like pointing out that Einstein's general

theory of relativity does not explain how to make a great Cabernet. That was never its intended purpose.

When dealing with non-deductive inferences, such as inferences to the best explanation, we must ask ourselves how much likelihood or palusibility is conferred upon the conclusion by the premises. If the IBE design argument is strong, then the facts about fine-tuning make the conclusion about an Intelligent Designer highly probable. If the argument is weak, then these facts do not make the Intelligent Design conclusion very probable at all. The key point is that, when dealing with non-deductive arguments, the issue is always one of *probability* rather than *necessity*. Strong, inductive arguments purport to make their conclusions probable. They do not claim to necessitate their conclusions. So, pointing out that they do not necessitate their premises cannot count as an objection against them. The IBE design argument is an inference to the *best* explanation; not an inference to the *only possible* explanation.

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