THE EXISTENCE OF GOD

Four Philosophical Arguments

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CONTENTS

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Preface: A Golden Age of Christian Apologetics

> "The religious skepticism of the 19th Century has been collapsing under the weight of 20th-Century science."

I should have put two and two together – I have for many years been aware of the theistic implications of the breakthrough scientific discoveries of the 20th and 21st Centuries[1], and I have also been reading biblical historiography for almost as long. But until I read William Lane Craig's Reasonable Faith: Christian Truth and Apologetics (Crossway, 3d ed. 2008) I did not appreciate that we are living in a golden age of Christian apologetics.[2]

Some may be surprised to hear this, in view of the current general decline in traditional religious belief in the developed world; but the renewal of the intellectual credibility of the faith is broadly recognized, albeit reluctantly sometimes, in the scientific and philosophical communities.

I was of course aware that the works I was reading on the historicity of the Resurrection of Jesus were almost all written in the last sixty years. I was also aware that the religious skepticism of the 19th Century has been collapsing under the weight of 20th-Century science.

What I did not know is that prior to the 1950s, historical apologetics had been practiced by the church only briefly. (By "historical apologetics" I mean the defense of the faith on the basis of evidence that the events described in the Gospel accounts actually occurred.) The leading theologians of the early and medieval churches – Augustine of Hippo (354-430) and Thomas Aquinas (1225-1274) – appealed to miracles and prophecy as proofs of the truth of the Gospel, not to historiography. Modern historiography wasn't even invented until the 15th Century, and the first detailed historical argument for Christianity, by Hugo Grotius, best known as the father of international law, was not published until *1627*! After the publication in 1794 of William Paley's *View of the Evidences* ("the high-water mark of the historical apologetic for the resurrection," according to Craig), it would have been "difficult to find a significant and influential thinker defending the Christian faith on the basis of the evidence for the resurrection" until 1950.[3] This was because of "the nineteenth century's conviction that miracles had no place in a historical narrative."[4] Thus the church's historiographical project lasted only 167 years.

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[1] I refer to General Relativity, Big Bang cosmology and the Fine-Tuning of the Universe.

[2] Apologetic: "a defense . . . a reasoned justification of faith in revealed truths." Oxford Dictionary of Philosophy.

[3] William Lane Craig, Reasonable Faith: Christian Truth and Apologetics (Crossway, 3d ed. 2008), 342.

[4] Craig, 217.

But a remarkable change came about during the second half of the twentieth century. Theologians such as Wolfhart Pannenberg, Hans Freiherr von Campenhausen, and others began taking seriously the historical evidence for the Resurrection. By 1968, says Craig,

> . . . the old skepticism was a spent force and began dramatically to recede. So complete has been the turnabout during the second half of the century concerning the resurrection of Jesus that I think that it is no exaggeration to speak of a reversal of scholarship on this issue, such that those who deny the historicity of Jesus' resurrection now seem to be the ones on the defensive. . . . [O]nce more historical apologetics is beginning to reassert itself. Not even the challenge posed by postmodernist relativism has been able to slow its advance. . . . We have truly entered a new era of resurrection scholarship.[5]

I think there is reason to believe that the best is yet to come. The implications of General Relativity, Big Bang cosmology, and the Fine-Tuning of the Universe were, at best, only dimly understood in 1950, and naturalism – the prejudice that reality consists of matter and energy only – was the ruling paradigm. If Pannenberg, *et al*. gained a hearing then, their successors – Craig among them, as well as such writers as N. T. Wright, Lee Strobel, Greg Koukl, Ravi Zacharias, Hugh Ross, John Lennox, Frank Turek, Tim Keller, Gary Habermas, and Michael Licona – are also finding an audience in the Twenty-first Century, when naturalism is under siege.

This series focuses on the question of God's existence. We examine four classical arguments for God in the light of modern science. Some time later, God willing, we will also examine the evidence for the Resurrection of Jesus. If God exists, one major reason for doubting the Resurrection is removed. And if Jesus was raised, then the Kingdom of God is at the door.

[5] Craig, 349.

THE EXISTENCE OF GOD

Introduction

Where did the universe come from? Why is there something rather than nothing? Where do the laws of physics come from? Where do standards of rationality come from? Why is the universe intelligible? How is it that the physical world can be described in mathematical terms? These are all questions which 21st-Century science is asking.

One reason science is asking such questions is that for the last 50 years or so, Christian philosophers have been insisting on their importance and on the inadequacy of nontheistic answers. The universe had a beginning. How did it begin? It couldn't have created itself. Why do the laws of physics appear to be so unimaginably specified for life?

I realize that intellectual proofs for the existence of God are not for everyone; but when life goes sideways, it helps me fight off discouragement to know that there are excellent reasons to believe that my future is in the hands of an omnipotent God who loves me, and I don't think I'm the only one.

I also realize not everyone is actually interested in the evidence for God. Some – those who feel betrayed by God, or by his followers – may have all the evidence they want, and it's not favorable. Then there are those who, I think, are more interested in preserving their autonomy, because they do not believe God will make them happy. Those are not my topics here. This is for those who are interested in the evidence, whether because of existential concerns or simply out of intellectual curiosity, believers and nonbelievers alike. If God exists, we want to know it, and we can work out the consequences later.

I've studied the evidence for God since I became a Christian in 1971, and have grown ever more confident that He is with us. It is the purpose of this series of posts to set forth some of the reasons for that confidence so that others may also be encouraged.

But before you set this aside, let me say one thing: This is real, and I don't know a better way to give you assurance of that in advance than to provide just a few quotes from some of the most eminent scientists of our times. They are convinced, and if you read on, you may discover why.

> Albert Einstein (1879–1955): In response to the evidence for the Big Bang, he acknowledged "the necessity for a beginning"[6] and "the presence of a superior reasoning power."[7]
>
> Stephen Hawking (1942-2018): Commenting on the Fine-Tuning of the Universe, he stated that "It would be very difficult to explain why the universe should have begun in

[6] A. Vibert Douglas, "Forty Minutes with Einstein," Journal of the Royal Astronomical Society of Canada 50 (1956): 100.

[7] Lincoln Barnett, The Universe and Dr. Einstein (New York: William Sloane Associates, 1948), 106.

just this way, except as the act of a God who intended to create beings like us."[8]

Cambridge astronomer and atheist Fred Hoyle (1915-2001) (who never accepted the Big Bang): A "superintellect has monkeyed with physics, as well as with chemistry and biology. . . ."[9]

Physicist Paul Davies (1946-): He once promoted atheism[10] and is still opposed to Intelligent Design theory,[11] but has conceded that "the laws [of physics] . . . seem themselves to be the product of exceedingly ingenious design."[12] He further states: "[There] is for me powerful evidence that there is 'something going on' behind it all. The impression of design is overwhelming.[13]

I merely propose to show that it is highly likely that a personal Creator exists, and that he probably possesses the attributes of timelessness, immateriality, moral perfection, great intelligence, and great power. If that much can be shown, then it will be sufficiently obvious that other riddles – such as the Problem of Evil or whether Jesus' claim to deity can be defended – must also be taken seriously.

In Reasonable Faith: Christian Truth and Apologetics,[14] William Lane Craig discusses four classic arguments for the existence of God. In this post I'll introduce and summarize all four, and will devote separate future posts to each of them.[15]

The four arguments, in the order in which Craig presents them, are as follows.

The Moral Argument for God

It is very difficult to deny the existence of objective moral values and duties, for doing so defies some very powerful human intuitions. Nearly everyone will acknowledge that such things as genocide, racism, and child sex abuse are wrong, whether anyone else thinks so or not. If we cannot deny the existence of objective moral values and duties, then we need to explain their existence. It is very difficult to do so without appealing to the existence of God.

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[8] Stephen Hawking, A Brief History of Time (New York: Bantam Books, 1998, 1996), 129-131. Hawking subsequently changed his opinion about this. *See* The Cosmological Argument for God, pages 14-17..

[9] Hoyle, "The Universe," 16.

[10] Paul Davies, God and the New Physics (New York: Simon & Schuster, 1983), viii, 3–42, 142–143.

[11] https://www.theguardian.com/commentisfree/2007/jun/26/spaceexploration.comment.

[12] Paul Davies, Superforce (New York: Simon & Schuster, 1984), 243.

[13] Paul Davies, The Cosmic Blueprint (New York: Simon & Schuster, 1988), 203; Paul Davies, "The Anthropic Principle," Science Digest 191, no. 10 (October 1983), 24.

[14] Crossway, 3d ed. 2008).

[15] I hope also to discuss later a fifth argument or set of arguments which were not originally within the scope of this paper, namely, the arguments from reason, information, language, and mathematics, which are also best accounted for by theism.

We will also consider the major objection to the moral argument, which is the neo-Darwinian claim that morality developed not because it was true but because it had survival value.

The Teleological Argument for God

"Teleology" just means "design" or "purpose." The teleological argument for God rests on the premise that natural systems bear the signs of having been designed for a purpose. *Purpose* and *design* are mental activities; they imply the existence of a mind.

This argument fell into disfavor in the 19th Century, but has been restored to full vigor by the discovery in the late 20th and early 21st Centuries that the laws of physics appear to be "fine-tuned" in order to make the universe hospitable to complex life.

There is one important challenge to the fine-tuning argument, namely, the multiverse – the idea that there are an infinite number of universes with every possible set of physical laws assigned among them at random, and that it was therefore inevitable that at least one would have physical laws conducive to life. We will carefully consider this challenge.

The Cosmological Argument for God

This argument is at least 1,000 years old, but has gained renewed vitality from the 20th-Century discovery that the universe had a beginning. It rests simply on the laws of cause and effect, and it goes like this:

> Whatever begins to exist has a cause.
>
> The universe began to exist.
>
> Therefore, the universe has a cause.

And the cause must be sufficient to bring about the effect in question. It must therefore be immaterial, timeless, powerful, and intelligent.

We are all familiar with Big Bang cosmology, which shows as a matter of empirical fact that the universe came into being out of nothing in the finite past.[16] But in classical philosophy, the premise that the universe began to exist was based on philosophical grounds: if the universe did not begin to exist, then the past is infinite. But it is impossible to cross an actual infinite time to get to the present; yet here we are! Hence, the past cannot be infinite and the universe must have

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[16] The uncertainty concerning the origin of the universe which stems from our inability to directly apprehend events prior to the Planck time (10^{-43} seconds after the Big Bang) was recently resolved. In 2002 Alexander Valenkin declared that "the door to an infinite past has been closed completely." Alexander Vilenkin, "Quantum Cosmology and Eternal Inflation," http://arXiv:gr-qc/0204061v1 (April 18, 2002): 10.) Elsewhere he states, "There is no escape, [cosmologists] have to face the problem of a cosmic beginning." Vilenkin, Many Worlds in One: the Search for Other Universes (Hill and Wang 2006), 176. And Alan Guth, the originator of inflation theory, states, "In my own opinion, it looks like eternally inflating models necessarily have a beginning." http://www.counterbalance.org/cq-guth/didth-frame.html.

had a beginning. Since nothing can cause itself to begin to exist, the universe must have had a cause outside itself.

The classical form of the argument may seem less interesting in light of Big Bang cosmology; but it remains a good argument in its own right. Still, our inquiry will be addressed to the scientific basis for an absolute beginning.

The Ontological Argument for God

This argument seeks to establish God's existence from the mere possibility that he exists. It's controversial, and I have my own doubts about it. The reader will decide.

I've chosen to change the sequence a bit: I'll begin with the Cosmological Argument and will follow that with the Teleological Argument. The reason for this is that these arguments have been dramatically strengthened by recent scientific discoveries – "recent" meaning in the last 100+ years. Given the prestige which science enjoys in western society, I believe these have become the most compelling arguments to be made – not that I intend to concede anything in regard to the moral argument for God.

Summary

The origin of the universe, its human habitability, and the centrality of moral values to the meaning of human life, all imply the existence of a personal creator. Objections to these arguments are weak; therefore, it is highly probable that God exists.

THE EXISTENCE OF GOD

I

The Cosmological Argument for God

One of the implications of Albert Einstein's General Theory of Relativity (GTR, 1915) is that the universe is expanding. The prevailing view at that time, however, was that the universe is static and eternal – a view to which Einstein also subscribed. In order to conform his theory to that view, Einstein arbitrarily introduced a "fudge factor" into his equations – his "biggest blunder," he later said.

It was left to Georges Lemaitre and Alexander Friedman to show that GTR implied a beginning to the universe in the finite past. Then in 1929 Edwin Hubble discovered that distant galaxies are receding from us, and the more distant they are, the faster their rate of recession. This knocked the science community on its ear. Einstein himself grudgingly acknowledged "the necessity for a beginning"[17] and "the presence of a superior reasoning power."[18]

It was not until 1964, however, with the discovery of the Cosmic Microwave Background Radiation[19], that Big Bang theory – in which the universe, along with space and time themselves, began with an infinitely hot, infinitely dense, infinitesimal "singularity" – became widely accepted. (I was a high school freshman, oblivious to all of this, as I was to many things that eventually would profoundly affect my life.) It is now accepted among scientists almost universally.

When we mention this to our friends and acquaintances, we are invoking an argument, known as the Cosmological Argument for God, which has been around for a thousand years.

Al-Ghazali, Aquinas, and Leibniz

The classical Cosmological Argument for God comes in three flavors. The earliest statement of the argument was proposed by Islamic philosopher Al-Ghazali (1058-1111), and it rests on two propositions – first, that it is impossible to cross an actual infinite, and second, that nothing can cause itself to exist. Based on those propositions, Al-Ghazali reasoned that the universe cannot

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[17] A. Vibert Douglas, "Forty Minutes with Einstein," Journal of the Royal Astronomical Society of Canada 50 (1956): 100.

[18] Lincoln Barnett, The Universe and Dr. Einstein (New York: William Sloane Associates, 1948), 106.

[19] For the first 380,000 years after the Big Bang, the universe consisted of a plasma, made of photons, free electrons, and free protons. The plasma absorbed the photons, causing the universe to be opaque. When the universe cooled sufficiently, the protons and electrons combined to form hydrogen atoms, which are transparent to light, allowing the photons to travel freely through space. Known as the Cosmic Microwave Background Radiation, or CMBR, this is the oldest light in the universe, and it is certainly one of the most important sources of information about the early universe.

be eternal, since if it were eternal, the past would be infinite, and we could never arrive at the present moment, since doing so would entail crossing an actual infinite, which is impossible. But here we are. The past must therefore be finite, which means that the universe must have had a beginning. Since nothing can cause itself to exist, the universe must have had a cause outside itself.

Medieval philosopher Thomas Aquinas (1225-1274) offered two additional lines of reasoning. First, he observed that things are in motion; and since nothing can impart motion to itself, there must have been a Prime Mover. Second, the universe consists of contingent things – that is, they do not exist by necessity, and we know this from the fact that we continually observe such things coming into existence and passing out of existence. If everything were contingent and the past were infinite, then by now everything would have passed out of existence; yet not everything has done so. Therefore, there must be a necessary (*i.e.*, a non-contingent) being.[20]

Finally, George W. F. Leibniz (1646-1716) proposed a separate argument from contingency. The universe consists of things which are contingent – that is, they do not contain within themselves the reason for their own existence. Therefore, the reason for their existence must reside in some non-contingent, self-explanatory being.

The Modern Argument

We have a great advantage over Al Ghazali, Aquinas, and Leibniz: we have the benefit of modern science, which shows that the universe did indeed have a beginning, as did time and space themselves. William Lane Craig restates the Cosmological Argument for God in light of these scientific findings, as follows:

1) Whatever begins to exist has a cause for its existence.

2) The universe began to exist.

3) Therefore, the universe has a cause for its existence.[21]

Some readers may have difficulty with the first premise, the idea that "whatever begins to exist must have a cause for its existence." The reason we take this proposition to be true is not that it is logically necessary. Instead, we take it to be true on the basis of our uniform experience. This is merely the distinction between deductive reasoning (logic) and inductive reasoning (making generalizations based on prior experience). Lions and bears and breadboxes do not materialize out of nothing in our living rooms. They do not refrain from doing so, however, in order to avoid committing a logical fallacy: they refrain because they lack the ability to materialize out of nothing, and we know this only because they have never done so (apart from a miracle, of course[22]).

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[20] There is a fascinating parallel to the argument from entropy. See discussion, pages 12-13.

[21] Craig, 111.

[22] Future topic.

If there is a collision between automobiles, we are sure it had a cause. If we hear a strange sound, we look for what is producing it. When we say that because the universe began to exist, it must have had a cause for its existence, all we are doing is generalizing our past experience of reality and extending it to the universe as a whole.

Of course we make this kind of inference constantly. We could not get out of bed in the morning if we did not do so. We consider it reasonably safe to go out in the rain only because we have some understanding of the process which produces rain, and because in the past we have always gone into the rain without serious harm. But do we know that this time the rain will not be toxic? Not as a matter of logical necessity; but we still make that assumption.

It would be unreasonable – one might almost say it would be irrational – *not* to make such generalizations. In particular, it would be unreasonable to dismiss the need for causation in the case of the universe, while insisting upon it for everything else, unless one has an intelligible and weighty reason for doing so. Thus:

1) Whatever begins to exist must have a cause for its existence.

Premise 1) may then be seen as an assumption we make provisionally, unless and until we discover some specific reason to question it.

Most pertinently, we should note that science itself rests upon the acceptance of this universal feature of human experience, that every effect has a cause: that's what science *is*: science is the search for the causes of natural phenomena. To dismiss the need for causes is to dismiss science. As noted above, one would need an intelligible, important reason for dismissing the need for a cause for the universe, while insisting upon causation for everything else. As Craig notes, the non-theist must offer a better reason for making an exception in this one instance than his desire to avoid theism!

We gain additional perspective on this idea when we consider things which exist *without* beginning. Such things, if they exist at all, are past infinite; that is, they are eternal. They just exist, uncaused. This is *not* an exception to premise 1), because such things do not "begin to exist," and for that reason, if they exist at all, they do not require a cause.

Is there anything which exists without beginning? Yes, for otherwise, either we would face an infinite regression of finite causes, or there would be nothing at all. The universe began to exist, and since nothing can cause itself to begin to exist, there must have been another entity which caused it to exist. If that entity was past-finite, then it, too, began to exist and would itself require a cause. There is only one way to avoid an infinite regression of finite causes, and that would be to end the chain of causation with an ultimate cause which did not begin to exist.

But why do we need to stop the infinite regression? In mathematics, actual infinites are possible. Numbers are abstractions, however. Actual infinites of physical objects produce logical absurdities, and philosophers are generally agreed that an actual infinite of physical objects is not possible. Certainly no one has ever identified one.

Even apart from the impossibility of an infinite regress, which is more difficult to conceive: an infinite regression of finite causes, or one uncaused, eternal, final cause? Both are difficult, since both entail infinity. But an infinite regress also faces the additional objection that it leaves unanswerable the question how the series ever gets started.

Additionally, a single ultimate cause is more plausible in light of other available information, including the Second Law of Thermodynamics (see "Entropy," below), the Fine-Tuning of the Universe (Chapter II), and the existence of objective moral values and duties (Chapter III).

At one time, the universe itself was thought to be a candidate for eternality (in spite of Al-Ghazali). The Big Bang, however, has put that notion to rest: the universe is not eternal. Something else must be eternal. Now, the only remaining plausible candidate for eternality that I can think of, is God. Everything else, being temporal, would have had to have a beginning, and therefore must have a cause.

We may also now venture an answer to the question, Why is there something rather than nothing? The reason there is something is that there is something eternal, which contains within itself the reason for its own being. (As the Lord told Moses, "I am that I am. Tell them 'I am' sent you." Exodus 3:14.)

Whatever begins to exist, has a cause. The universe began to exist. Therefore, the universe has a cause. Q.E.D.

Entropy

Besides the Big Bang, there is a separate, decisive scientific reason why the second premise (the universe began to exist) is true. The second law of thermodynamics says that in a closed system, entropy (disorganization) increases with time. If the universe has always existed, then it should have run down by now, as Stephen Hawking noted:

> [T]he theory that the universe has existed forever is in serious difficulty with the Second Law of Thermodynamics, [which] states that disorder always increases with time. . . . [T]here must have been a beginning. Otherwise, the universe would be in a state of complete disorder by now, and everything would be at the same temperature."[23]

Says Craig:

> In a certain respect, the evidence of thermodynamics is even more impressive than the evidence afforded by the expansion of the universe. For while an accurate physical description of the universe prior to the Planck time remains and perhaps always will remain unknown, thereby affording room for speculations aimed at averting the origin of time and space implied by the expanding cosmos, no such uncertainty attends the laws of

[23] Stephen Hawking, lecture, "The Beginning of Time" (1996), http://www.hawking.org.uk/the-beginning-of-time.html.

thermodynamics and their application. Indeed, thermodynamics is so well established that this field is virtually a closed science.[24]

Vacuum fluctuation models

There have been many efforts to offer naturalistic (*i.e.*, impersonal, mechanistic) explanations for the beginning of the universe. One attempt was based on quantum theory, which allows particle-antiparticle pairs to arise spontaneously in a vacuum, and then to immediately recombine and disappear. This was offered as an exception to the premise that whatever begins to exist must have a cause. These pairs come into being out of nothing and are uncaused, it is argued. In 1973 Edward Tryon suggested that the universe itself may have arisen in just such a way – that is, that the universe is a long-lived virtual particle which arose out of a primordial vacuum, uncaused.

The belief that such particle-antiparticle pairs are uncaused rests on a certain interpretation of quantum physics, namely, the Copenhagen Interpretation championed by Niels Bohr, which, although it is the majority view, is not embraced by all physicists.

More importantly, such particle-antiparticle pairs do not arise out of nothing: they arise out of a vacuum in an energy field, neither of which is nothing. A vacuum is an empty space, and as Einstein's General Theory of Relativity tells us, space itself came into being with the Big Bang. No space, no vacuum; no vacuum, no virtual particle-antiparticle pairs.

Such theories have fallen out of favor. Today, even the uncertainty resulting from our inability to directly apprehend what was happening in the universe between the instant of creation and the so-called Planck time (the first 10^{-43} second) no longer prevents us from saying categorically that the universe had a beginning. In 1994, Borde and Vilenkin declared that "future-eternal inflationary spacetimes . . . must necessarily possess initial singularities. . . ."[25] Other leading cosmologists reluctantly concurred.[26] In 2006, Vilenkin said, "There is no escape, [cosmologists] have to face the problem of a cosmic beginning."[27] And Alan Guth, the originator of inflation theory, states, "In my own opinion, it looks like eternally inflating models necessarily have a beginning."[28]

Other Models

Other models proposed for dispensing with a beginning to the universe include quantum gravity models (imaginary time) and string scenarios. Using imaginary numbers has the effect of

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[24] Craig, Kindle Locations 3040-3044.

[25] Arvind Borde and Alexander Vienkin, "Eternal Inflation and the Initial Singularity," Physical Review Letters 72 (1994): 3304, 3307.

[26] Andrei Linde, Dmitri Linde, and Arthur Mezhlumian, "From the Big Bang Theory to the Theory of a Stationary Universe," Physical Review D 49 (1994): 1783–1826.

[27] Alexander Vilenkin, Many Worlds in One – the Search for Other Universes (Hill and Wang, 2006), 176.

[28] http://www.counterbalance.org/cq-guth/didth-frame.html (undated). *See also* A. Borde and A. Vilenkin, "Eternal Inflation and the Initial Singularity," Physical Review Letters 72 (1994): 3305, 3307; Andrei Linde, Dmitri Linde, and Arthur Mezhlumian, "From the Big Bang Theory to the Theory of a Stationary Universe," Physical Review D 49 (1994): 1783–1826.

converting time to a fourth spatial dimension so that the universe does not come to be but just exists timelessly. But quantum gravity theorists acknowledge that there is no plausible physical interpretation of imaginary time, and that when the time variable is reconverted to real time, the singularity reappears.

String scenarios are completely speculative. Not only does string theory lack observational status, the theory itself is incomplete. Therefore, I do not propose to discuss these ideas. For those wishing to know something about them, I recommend Craig, Reasonable Faith, pages 134-136.

Stephen Hawking

> "An object is abstract (if and) only if it is causally inefficacious."[29]

In my Introduction, I quoted Stephen Hawking as an authority for the proposition that the fine-tuning of the universe implies an intelligent creator. Now I have relied on him also for the proposition that based upon the second law of thermodynamics, the universe must have had a beginning ("Entropy," above, pages 12-13). As I have argued, that also implies a creator. It would be misleading, then, not to mention also that Hawking subsequently moved decisively away from that view. In 2010 Hawking and Leonard Mlodinow argued that a creator is unnecessary. They stated, "Because there is a law of gravity, the universe can and will create itself out of nothing."[30] Asked where the law of gravity comes from, Hawking told Larry King, "M-theory."[31] (M-theory is the most widely held string theory.)

The book did not meet with rave reviews. John Lennox is Emeritus Professor of Mathematics at the University of Oxford and a Fellow in Mathematics and Philosophy of Science at Green Templeton College, Oxford University, and a leading Christian apologist. Very shortly after the publication of The Grand Design, he wrote what may be seen as an extended review of that book, entitled, God and Stephen Hawking: Whose Design is it, Anyway?[32] Lennox reports the unenthusiastic reactions to the book of several leading scientists. He tells of the 2010 radio interview of Roger Penrose after the appearance of Hawking's book in which Penrose was asked whether the universe "could create itself from nothing." Lennox records:

> Penrose responded with a strong condemnation of the string theory that Hawking espouses: "It's certainly not doing it yet. I think the book suffers rather more strongly than many. It's not an uncommon thing in popular descriptions of science to latch onto an idea, particularly things to do with string theory, which have absolutely no support from observation. They are just nice ideas." He stated that M-theory was "very far from any testability. . . . It's a collection of ideas, hopes, aspirations." In Penrose's estimation, M-theory is "hardly science". Referring directly to The Grand Design, he then said: "The

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[29] Stanford Encyclopedia of Philosophy, https://plato.stanford.edu/entries/abstract-objects/#CausInefCrit.

[30] Stephen Hawking and Leonard Mlodinow, The Grand Design (Random House, 2010), 180.

[31] John Lennox, God and Stephen Hawking: Whose Design is it, Anyway? (Lion Hudson 2011), 39.

[32] See footnote 31.

> book is a bit misleading. It gives you this impression of a theory that is going to explain everything; it's nothing of the sort. It's not even a theory."[33]

Don Page is a theoretical physicist from the University of Alberta, a former student of Hawking, and the co-author with Hawking of eight papers. Page said, "I certainly would agree that even if M-theory were a fully formulated theory (which it isn't yet) and were correct (which of course we don't know), that would not imply that God did not create the universe."[34]

Lennox's own critique is, I think, more penetrating. He finds three separate contradictions in Hawking/Mlodinow's conclusion that "Because there is a law of gravity, the universe can and will create itself out of nothing." First,

> [G]ravity or a law of gravity is not "nothing", if [Hawking] is using that word in its usual philosophically correct sense of "non-being". If he is not, he should have told us. On the face of it, Hawking appears, therefore, to be simultaneously asserting that the universe is created from nothing and from something – not a very promising start.[35]

Second, to say that the universe can and will create itself from nothing, is itself contradictory. Nothing cannot create something.

> If . . . we say "x creates x", we imply that we are presupposing the existence of x in order to account for the existence of x. This is obviously self-contradictory and thus logically incoherent.[36]

A third contradiction:

> His notion that a law of nature (gravity) explains the existence of the universe is also self-contradictory, since a law of nature, by definition, surely depends for its own existence on the prior existence of the nature it purports to describe.
>
> What this all goes to show is that nonsense remains nonsense, even when talked by world-famous scientists.[37]

Physical laws do not create anything. Newton's laws of motion and gravitation, for example, merely enable us to predict the motions of physical objects; they do not cause them to move, and they certainly do not create them. And theories do not create physical laws. In philosophy, theories are abstract objects, which are without causal powers, as the Stanford Encyclopedia of Philosophy notes.

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[33] Lennox, 56.
[34] Lennox, 51. (Private communication, reproduced with permission; date not provided.)
[35] Lennox, 29.
[36] Lennox, 30.
[37] Lennox, 31, 32.

This illustrates well the importance of the distinction between science and the philosophy of science.[38] Hawking and Mlodinow begin their book with a list of big questions that people have always asked: "How can we understand the world in which we find ourselves? How does the universe behave? What is the nature of reality? Where did all this come from? Did the universe need a Creator?" and they say:

> Traditionally these are questions for philosophy, but philosophy is dead. It has not kept up with modern developments in science, particularly in physics. As a result, scientists have become the bearers of the torch of discovery in our quest for knowledge.

These are not scientific statements, but philosophical statements. The claim that philosophy is dead and that science is the only, or even the best, method for establishing truth, are not scientific statements but philosophical ones: they are not statements *of* science, but statements *about* science. Therefore, the language just quoted is another self-contradiction: by making philosophical statements about science, Hawking implicitly acknowledges the continuing importance of philosophy, but then he says, philosophy is dead.

Lord Rees, the President of the Royal Society, the oldest scientific association in the world, was also critical of The Grand Design. According to Lennox, Lord Rees stated that Hawking has read very little philosophy and even less theology.[39] If it were otherwise, Hawking would have known that science depends on the validity of many philosophical truths which cannot be proved scientifically, such as the reality of numbers, the validity of the rules of logic, and the objectivity of the external world. That is why philosophy will never die.

It serves no purpose to speculate as to the causes of Hawking's and Mlodinow's logical blunders. What matters is that we recognize them as such. Einstein committed errors, as he freely admitted; no one is immune. But scientists who undertake to interpret their work to a general audience have some obligation not to ask their readers to accept contradictory propositions on faith. At the same time, readers will eventually realize that the seeming unintelligibility of contradictory ideas may be due to the fact that they are unintelligible, and not to anything lacking in themselves.

Where does that leave Hawking's earlier statements about the fine-tuning of the universe and about the universe necessarily having a beginning? It means we have to make our own assessment of his opinions based not on his many other accomplishments or on which opinion is more recent, but on our own evaluation of the reasons he gave for his earlier and for his later opinions. Which set of reasons makes greater sense in light of all the information we have?

There does not seem to be a contest. Gravity is the attractive force which material objects have for each other. How can gravity exist if nothing else exists? If gravity somehow exists apart from material objects, how does its existence empower a universe which does not exist to come

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[38] This is a topic I have addressed previously. *See* March 14, 2015 blog post.

[39] Ben Halbrooks 3.15.18 interview with John Lennox, https://www.youtube.com/watch?v=If4XisIJNA4&feature=youtu.be

into existence? How is gravity not something, as opposed to nothing? Even if gravity were nothing, how can a universe which, lacking causal power because it doesn't already exist, cause itself to begin to exist? Note, too, that the argument of The Grand Design does nothing to diminish the strength of the inference to design from the fine-tuning of the universe. Even if gravity enables the universe to create itself, how does it fine-tune itself for life, without a personal creator? And don't forget the second law of thermodynamics.

Conclusion

Thus, the universe began to exist. Things which begin to exist have a cause for their existence. Therefore, the universe has a cause for its existence. It is really a simple, straightforward argument.

The nature of the universe affords us a basis for certain inferences about the nature of its cause. If time, space, and matter had a beginning, then the cause must have been timeless and immaterial; it must have been enormously powerful; and it must have been conscious, purposeful, and extremely intelligent.

Next we will consider the Teleological Argument for God, which will afford us a basis for additional inferences about the nature of the cause of the universe.

THE EXISTENCE OF GOD

II

The Teleological Argument for God

> "The scientific community understands that the fine-tuning [of the universe] is real and must be explained."

Introduction.

The Teleological Argument for God is the argument from design. When we observe natural systems which are exquisitely suited to an exact purpose – such as the pistil of a flower or the human eye – we marvel.

Before the Nineteenth Century, the common response to such experiences was to infer design, the activity of a Person whose love, wisdom, and power were evident in the abundance, beauty, and destructiveness of nature. But as we know, Darwin offered an alternative explanation – chance plus natural selection – which for most life scientists seems to have laid the teleological argument to rest; and of course Darwinism is very influential at the popular level as well. It alters the experience of nature profoundly: instead of marveling at what God has done, we marvel at what blind, dumb nature can do by accident, guided only by the competition for survival – given ample time in which to do it. But there is a strange sadness with the loss of the personal in nature. The colors seem less vivid. The magic is gone.

The argument from design is back stronger than ever, however, with the discovery, only in recent years, that the laws of nature are "fine-tuned" for complex life to a mind-boggling degree.[40]

It is important to note that these are discoveries in astronomy and physics – that is, they are *not* discoveries in the life sciences, where the prior commitment to naturalism has seemed, at least until recently, almost impenetrable. Hence, unlike many biologists, astronomers and physicists have been transparent about their astonishment at the appearance of design in the universe, as we saw in the Introduction.

Thus, the scientific community understands that the fine-tuning is real and must be explained. So far, the only naturalistic explanation is "the multiverse" – the idea that our universe is only one among an infinitude of universes, and given a sufficient number of universes, every possible combination of physical laws might be realized, including at least one in which those laws are

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[40] William Lane Craig has produced an excellent short animation providing an elegant explanation of the fine-tuning of the universe. https://twitter.com/RFupdates/status/963163412036505600?t=1&cn=ZmxleGlibGVfcmVjc18y&refsrc=email&iid=f275b7f6d9e04d67899dc12e2c3cb6cb&uid=818128241294614529&nid=244+272699392.

conducive to life. In this chapter we will consider the staggering degree of fine-tuning evident in nature, and see why the multiverse is not a good explanation.

William Paley.

The argument from design in nature has had its proponents going back to the ancient Greeks. But William Paley's *Natural Theology* (1804) was the greatest exposition until our own time. He famously argued that if one were to find a watch in a meadow, one would never mistake it for an accident of nature. He notes the intricacies of the watch, the many parts put together in a particular way, all functioning as a device for tracking the passing of time. We conclude, quite naturally and rightly, that the watch had a maker.

Paley observes that natural systems exhibit the same features – many parts, working together intricately to accomplish specific useful purposes - except only that in nature we find much greater intricacy and ingenuity than in any human device. He claims that we are likewise entitled to conclude that these natural systems were also designed.

The Modern Argument from Design in Nature

As noted earlier, Paley's argument fell into disfavor during the Nineteenth Century and the first half of the Twentieth. But as Craig says, "The teleological argument for God's existence has come roaring back into prominence in recent years."[41] Once scientists had developed techniques for measuring the characteristics of the universe, they were stunned by the degree to which the laws of nature have been "fine-tuned" for life. The fine-tuning is indeed staggering and has convinced many scientists and non-scientists alike that the universe must have been brought into being by a super-intellect. (See, for instance, Introduction, pages 5-6 for quotes from leading scientists.)

There are many physical constants – examples include the speed of light, gravity, and the forces holding atoms together - whose values must be within very narrow ranges of their actual values in order for life as we know it to be possible. Stephen Hawking explains:

> The laws of science . . . contain many fundamental numbers, like the size of the electric charge of the electron and the ratio of the masses of the proton and the electron. . . . The remarkable fact is that the values of these numbers seem to have been very finely adjusted to make possible the development of life. For example, if the electric charge of the electron had been only slightly different, stars either would have been unable to burn hydrogen and helium, or else they would not have exploded. . . . [Stellar burning of hydrogen and helium was necessary to produce the heavier elements of which rocky planets such as the Earth are composed, and the explosion of the stars was necessary for it to be possible for those heavy elements to be incorporated into the next generation of stars.] [I]t seems clear that there are relatively few ranges of values for the numbers that would allow the development of any form of intelligent life. . . .

[41] Craig, Reasonable Faith, 157.

. . . .

> . . . It would be very difficult to explain why the universe should have begun in just this way, except as the act of a God who intended to create beings like us.[42]

Similarly, if gravity were only slightly stronger or weaker, the galaxies would never have formed. Hawking asks, rhetorically, whether the gravitational force constant *has* to be exactly 6.67×10^{-11} (.0000000000667), and he answers, Yes, it does. Any increase in the gravitational constant would have slowed the rate of expansion of the universe in the seconds after the Big Bang. And, says Hawking, "If the rate of expansion one second after the Big Bang had been smaller by even one part in a hundred thousand million million, the universe would have recollapsed before it ever reached its present state." Conversely, if *g* were smaller, the explosion would never have condensed into the galaxies, stars, and planets.[43]

There are hundreds of such physical constants which scientists have discovered must be fine-tuned for life. Hugh Ross is an astronomer who 30 years ago founded Reasons to Believe (RTB), the mission of which is to demonstrate the compatibility of science and the Bible. Reasons to Believe maintains a catalog of cosmic design evidences, together with the peer-reviewed, published scientific research which documents those findings.[44] The catalog describes 816 physical attributes of the Earth, the Moon, the Sun, the solar system, the Milky Way Galaxy, and our galaxy cluster which must be very close to what they are in order for the Earth to be habitable by any form of life, from short-lived bacterial life, to persistent bacterial life, to advanced life.

RTB's catalog further states estimates of the probability that each attribute will fall within the range of values necessary for life, and it calculates the probability that all 816 factors will *all* fall within their required ranges – which, of course, they must all do in order for complex life to survive on the Earth. The bottom line: there is less than one chance in 10^{1032} (that is, one chance in 1 followed by 1,032 zeroes) that even one habitable planet would occur anywhere in the universe by accident – that is, apart from the intention of a conscious mind. Bear in mind that there are "only" a hundred billion trillion (10^{23}) stars in the observable universe. One chance in 10^{1032} is a ridiculously small number. Even if one multiplies that number by the number of stars in the universe, it is still practically zero: $10^{-1032} \times 10^{23} = 10^{-1009}$.

A few more examples will be helpful in understanding why these physical constants are so profoundly important. As noted earlier, the expansion rate of the universe is highly fine-tuned. Hawking's phrase, "one part in a hundred thousand million million," is one divided by one followed by seventeen zeroes (that is, 1/100,000,000,000,000,000, or one in a quintillion, or $1/10^{17}$, which can also be expressed as 10^{-17}). Gravity (which, he says, must be exactly 6.67 x

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[42] Stephen Hawking, A Brief History of Time (New York: Bantam Books, 1998, 1996), 129-131. (Dr. Hawking later distanced himself from theism of any kind, writing in The Grand Design (2011) that "It is not necessary to invoke God to light the blue touch paper," referring to the British term for a firecracker fuse, "and set the universe going." *See* further discussion *supra* at pages 14-17.)

[43] Hawking, 126.

[44] http://reasons.org/explore/publications/tnrtb/read/tnrtb/2010/11/16/rtb-design-compendium-2009.

10^{-11}) is only one of the factors which determines the expansion rate of the universe. It is also affected by the amount of mass in the universe and by the strength of dark energy, both of which must also be fine-tuned in order for the expansion rate to be just right. Cosmic mass must be exactly what it is to one part in 10^{60},[45] and dark energy to one part in 10^{120}![46] For comparison, consider that there are "only" about 10^{90} subatomic particles in the entire observable universe.[47, 48]

Another amazing example is that the ratio of the electromagnetic force constant to the gravitational force constant must also be fine-tuned. (Electromagnetism governs the interactions of charged subatomic particles such as protons and electrons.) If the electromagnetic force relative to gravity were increased by just one part in 10^{40}, only large stars would form. And, if it were decreased by just one part in 10^{40}, only small stars would form. But for life to be possible in the universe, both large and small stars must exist. The large stars must exist because only in their thermonuclear furnaces are most of the life-essential elements produced. And small stars like the sun must exist because only small stars burn long enough and stably enough to sustain a planet with life.[49]

One last example. People who wonder about extra-terrestrial life often think that with a hundred billion trillion stars in the observable universe, there must be civilizations on other planets. They would be surprised, I think, if they understood that all those stars were necessary in order for life to exist *anywhere* in the universe. Ross puts it this way:

> [T]he baryon density [the density of neutrons and protons] in the universe, as huge as it is, focuses on the needs of humans. How? The baryon density determines how efficiently nuclear fusion operates in the cosmos. . . . [I]f the baryon density is too great, too much deuterium (an isotope of hydrogen with one proton and one neutron in the nucleus) is made in the first few minutes of the universe's existence. This extra deuterium will cause the stars to burn much too quickly and erratically for any of them to support a planet with life. On the other hand, if the baryon density is too small, so little deuterium and helium are made in the first few minutes that the heavier elements necessary for life will never form into stars. What this means is that the approximately hundred-billion-trillion stars we observe in the universe – no more and no less – are needed for life to be possible in the universe. God . . . constructed all these stars and

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[45] See Peter Coles and George F. R. Ellis, Is the Universe Open or Closed? The Density of Matter in the Universe (Cambridge: Cambridge University Press, 1997); Peter Coles, ed., The Routledge Critical Dictionary of the New Cosmology (New York: Routledge, 1998), 180–83; Lawrence M. Krauss, "The End of the Age Problem and the Case for a Cosmological Constant Revisited," Astrophysical Journal 501 (July 10, 1998): 461, 465.

[46] Lawrence M. Krauss, Quintessence: The Mystery of the Missing Mass (New York: Basic, 2000), 103–5; Krauss, "End of the Age Problem," 461, 465.

[47] Alan Guth, http://www.counterbalance.org/cq-guth/evide-frame.html.

[48] Light emitted by objects which were some 13.8 billion light years from earth at the time of emission has had time to reach us; but those objects have moved farther away since then, to a distance of about 47 billion light years. This is the "observable" universe. No one knows how large the entire universe is – some say the universe is as much as 7 trillion light-years in diameter! https://www.space.com/24073-how-big-is-the-universe.html.

[49] John P. Cox and R. Thomas Giuli, Principles of Stellar Structure, Volume II: Applications to Stars (New York: Gordon and Breach, 1968), 944–1028.

> carefully crafted them throughout the age of the universe so that at this brief moment in the history of the cosmos humans could exist and have a pleasant place to live.[50]

And let's be clear: this does not mean that if the physical constants were slightly different, some other form of life would have emerged. In the absence of fine-tuning, not even atomic matter or chemistry would exist.

What we see, then, is that our assumption that there are only a few conditions which are necessary for life, and that it was almost inevitable that the cosmic creation event would produce those conditions many times over, have been demolished. The creation of a life-permitting universe required more than infinite power: it also required infinite intelligence and wisdom.

We haven't discussed the fine-tuning of the sun-earth-moon system. A few quick examples. The earth's atmosphere is fine-tuned. Any less oxygen, and large animals would not be able to breathe; any more, and the forests would burn uncontrollably. The earth's gravitation must be exactly what it is: any less gravity, and all the water (with a molecular weight of 18) would escape; any more, and methane, with a molecular weight of 16, would not escape, and we would face a runaway greenhouse effect. The moon must be exactly the size and location it is, or the earth's tilt would oscillate wildly, producing chronically catastrophic weather. The earth must have a molten iron core to produce a magnetic field around the earth to deflect the solar wind, or the solar wind would strip the earth of its atmosphere. These are a small fraction of the ways in which the sun-earth-moon system must be fine-tuned for life to exist. Readers will gain a better appreciation if they peruse the web page linked in footnote 44. [July 14, 2018 update: For a fascinating discussion of several fine-tuned Earth characteristics, see "One Strange Rock: 13 Things that Make Life on Earth Possible," March 2018 issue of National Geographic.]

Biological Systems are Also Designed.

We haven't even mentioned the design unmistakably present in living systems. I am trying to keep this essay reasonably concise, so I am reserving this topic for a future series and will stick to physics for now. But put it this way: no one has proposed any explanation as to how the information present in living systems (particularly the information in DNA) could have gotten there by any naturalistic – that is, by any mechanistic, impersonal – process. I did not say that the naturalistic theories are weak or that they are controversial: I said *there are no naturalistic theories at all*. No one has the faintest idea how DNA could have arisen naturalistically. There is a reason for this: DNA is an amazingly sophisticated information system – it is literally a language – and only one source of information has ever been identified, and that is a conscious mind.

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[50] Ross, The Creator and the Cosmos, (Reasons to Believe, 2001), Kindle Locations 2709-2718.

Inflation and the Multiverse.[51]

Like the Big Bang, the Fine-Tuning of the Universe has obvious theistic implications, as the scientists quoted in the Introduction acknowledge. It is commonly believed that multiverse theory was concocted without rational basis in an effort to evade those implications. Multiverse theories posit the existence of many universes, perhaps an infinite number of universes. Some scientists suppose that if many universes exist, they may be governed by different sets of physical laws. If that were so, then given an infinite number of universes, it is conceivable that every possible combination of physical laws would arise; and indeed, the set of laws necessary for advanced life would then arise an infinite number of times. In that case, the appearance of the fine-tuning of the laws of physics for advanced life in our own universe could be seen as the inevitable consequence of the operation of mechanistic, impersonal forces, and not as the doing of an intelligent Creator.

That was not, however, the original concern of multiverse theory. There is no doubt that the desire to avoid theism does much to explain the attraction which multiverse theory continues to have for some scientists and lay people alike; but the multiverse originally arose as one of the possible implications of another theory known as "cosmic inflation." Inflation theory was proposed in 1979 by MIT physics professor Alan Guth as a possible solution to certain problems with standard Big Bang theory – namely, why the universe is so "flat," why it is so uniform, and why we don't find any magnetic monopoles.

"Flatness" is a term which physicists use to describe the expansion of the universe. At large scales, space is curved by gravity. If the curvature is "open" – if (given the expansion rate of the universe) there is insufficient mass in the universe for gravity to halt its expansion – the universe will expand without limit; if the curvature is "closed" – if the universe does have sufficient mass for gravity to halt its expansion – then it will stop expanding and eventually recollapse; and if the curvature of the universe is "flat," it will expand forever, but at an ever-decreasing rate, approaching but never reaching its theoretical limit. In order for the stars and galaxies to form, the universe had to be flat. This is because an open universe expands too quickly for the galaxies to coalesce, while a closed universe would have recollapsed before the galaxies could form. That's why the expansion rate of the universe, gravity, and the total mass of the universe, all had to be fine-tuned to such an astonishing degree.

Another mystery entailed by the Standard Big Bang model is what has become known as the "horizon" problem or the "homogeneity" problem. The observable universe is 93 billion light years across, farther than light could travel since the Big Bang some 13.8 billion years ago; yet it's all very close to the same temperature. How would the observable universe come into thermal equilibrium when its reaches are so far apart that there never could have been any communication between them?

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[51] I am deeply indebted to many members of the Reasons to Believe Apologetics Community for helping me understand what is for me an elaborately esoteric topic.

A magnetic monopole is a hypothetical subatomic particle having either a north magnetic pole or a south magnetic pole, but not both. The standard Big Bang model predicts an enormous number of magnetic monopoles; but we find none.

Guth offered cosmic inflation theory as a possible solution to these problems. The notion is that in the early universe (by "early" in this context we usually mean the first fraction of a second) there was a very brief period of time (a tiny, tiny fraction of a second) during which the universe grew at an enormous rate, much faster, indeed, than the speed of light.

As I understand it, it is not understood how inflation commences or how it ends. Einstein's General Theory of Relativity predicts that at very high energies, gravity can become a repulsive force. Perhaps such a repulsive gravitation produces inflation, and perhaps after the inflationary expansion the energy density declines so that gravity becomes attractive rather than repulsive.

Most cosmologists believe that the theory, if true, would solve all three of the described problems, and that is the most important reason most cosmologists believe that inflation theory is probably true.

Since 1979 many versions of inflation have been proposed, all of which lead to multiverses. The Level I multiverse, which probably does not deserve to be called a "multiverse," is not controversial. Some very distant objects are so far away from us that there has been insufficient time since the Big Bang for their light to reach us; hence we know nothing about them. This is merely the distinction between the observable universe and the rest of our universe.[52]

Most cosmologists accept inflation theory and the Level I multiverse. Level I multiverse theories do not do anything to explain away the fine-tuning of the laws of physics, because there is no reason to suppose that the observable and the unobservable regions of the universe are governed by differing sets of physical laws.

Level III and IV multiverses are entirely speculative and do not really concern us here. Level III multiverses are a consequence of one interpretation of quantum physics, and Level IV multiverses are an application of string theory. Both types are without empirical support at this time.

The Level II multiverse is of greater interest. After Guth offered inflation theory, other scientists proposed that there would be quantum variations in the cessation of inflation in various parts of the initial universe. That would mean that some regions would continue inflating after most regions had stopped. Rarely, the delay would be significant, and those regions would continue expanding at a tremendous rate. These "rogue" regions would then produce more rogue regions, and the process would continue eternally, creating an infinite number of isolated "baby universes."[53] This is the Level II multiverse.

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[52] See footnote 48.

[53] Steinhardt, Paul J. (April 2011). "Inflation Debate: Is the theory at the heart of modern cosmology deeply flawed?" *Scientific American*. **304** (4): 36–43; http://physics.princeton.edu/~steinh/0411036.pdf.

Experimental Evidence for Cosmic Inflation

For the first 380,000 years after the Big Bang, the universe consisted of a plasma, made of photons, free electrons, and free protons. The plasma absorbed the photons, causing the universe to be opaque. When the universe cooled sufficiently, the protons and electrons combined to form hydrogen atoms, which are transparent to light, allowing the photons to travel freely through space. Known as the Cosmic Microwave Background Radiation, or CMBR, this is the oldest light in the universe.

The CMBR is certainly one of the most important sources of information about the early universe. Such information is reflected in variations in the energy and the polarization of the CMBR. Inflation theorists believe that if inflation occurred, it would have produced gravity waves which would have polarized the CMBR in a particular way, known as "the B-mode polarization." Another type of polarized light in the CMBR, known as "the E-mode polarization," would reflect the density variations in the early universe. In 2014, researchers at the South Pole reported they had detected a gravity wave signal in the CMBR, but later were forced to retract their claim. Further efforts are being made with improved technology. In 2015, a separate research effort at the South pole reported measurements of the E-Mode polarization that tend to confirm the prediction of inflation theory,[54] but most inflation theorists do not consider those results to be definitive and prefer to await further B-mode results, which will not be available for several years.

Reservations about Inflation and the Multiverse

There are many reasons why inflation theory and the multiverse do not constitute (at least not presently) a serious challenge to the teleological argument for the existence of God.

First, of course, inflation may not have occurred. Presently the weight of opinion is that it probably did occur, but that assessment could change with future measurements. No inflation, no Level II Multiverse.

Also, inflation could be a solution in search of a problem. It is possible that the universe was flat and homogenous from the beginning without inflation, and that the reason we do not see magnetic monopoles is that they simply do not exist – we cannot know, since the very first fraction of a second is beyond our powers of observation.[55] As Guth himself notes, the universe

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[54] T. Crites et al., "Measurements of E-Mode Polarization and Temperature-E-Mode Correlation in the Cosmic Microwave Background from 100 Square Degrees of SPTpol Data," *Astrophysical Journal* 805 (May 2015), doi: 10.1088/0004-637X/805/1/36.

[55] Sabine Hossenfelder, Is The Inflationary Universe A Scientific Theory? Not Anymore, Forbes, September 28, 2017 (https://www.forbes.com/sites/startswithabang/2017/09/28/is-the-inflationary-universe-a-scientific-theory-not-anymore/#4daf1bffb45e).

may have been smooth and flat to start – but with inflation, we don't need to know, since inflation would make it smooth and flat even if it were not already so.[56]

And indeed, leading theorists such as Roger Penrose and Paul J. Steinhardt believe that inflation itself would require much more fine-tuning than flatness and smoothness themselves, unaided by inflation, would require.[57]

Second, even if inflation occurred, it may not have produced a multiverse. Current inflationary models predict a multiverse, but the South Pole Telescope measurements do not support a multiverse, but only inflation itself. The models predict that inflation leads to a multiverse, but without observational evidence it is possible that the models are wrong. Some theorists insist that the existence of a Level II multiverse is an "open question."[58] Furthermore, even if there is a Level II multiverse, it is not apparent how we would ever detect it, since other universes are, by definition, beyond our perception.

Third, only an initial universe (the "universe-as-a-whole") which was infinite in mass could produce a sufficient number of baby universes to provide a mechanistic account for the fine-tuning, and multiverse theory does not entail an infinite universe-as-a-whole in terms of its mass, but only an infinitely proliferating succession of baby universes.

Cosmologists have not ruled out the possibility of an infinite universe, but neither have they found evidence for it. Most philosophers consider actual infinites of physical objects to be impossible – and indeed, no such thing has ever been identified. It also seems likely that if the universe began to expand at a time in the finite past, it would have a boundary – unless one were to posit an infinite rate of expansion – another arguably incoherent idea.

The amount of matter and energy in our universe is therefore presumably finite, and the total mass and energy in the universe-as-a-whole would be finite in a multiverse as well. No matter to what extent universes were to proliferate in the multiverse, they would collectively comprise no more than the total initial mass of the universe-as-a-whole prior to inflation, and the amount of mass in the universes in each successive generation of "baby" universes would be progressively smaller.

Now, please recall that in order for our universe to be hospitable to life, it must have exactly the total amount of mass that it has, no more and no less.[59] In any given chain of universes, only a limited number of universes (arguably, one at the most) could have the right amount of mass to be hospitable to life, because universes any earlier in the chain would have too much mass and universes any later in the chain would have too little. Until the universes in any given chain were to drop to the mass required for life, any universe in that chain would have too much mass

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[56] Alan Guth, Did the Universe Have a Beginning? (http://www.counterbalance.org/cq-guth/index-frame.html); Paul J. Steinhardt, *ibid*.

[57] Steinhardt, ibid.; Paul J. Steinhardt; Neil Turok, *Endless Universe: Beyond the Big Bang* (Broadway Books, 2007).

[58] Ikjyot Singh Kohli and Michael C. Haslam, *Mathematical Issues in Eternal Inflation*, December 25, 2016, https://arxiv.org/pdf/1408.2249.pdf.

[59] See pages 21-22.

for life, and once a universe's mass had dropped below that value, no successive universe would ever have sufficient mass for life.

Finally, and perhaps most importantly, multiverse theories do not answer the question they've been recruited to answer: is there a mechanism whereby physical laws – *any* set of physical laws – are imposed on a universe, and if so, what mechanism? Why should there be physical laws at all? Where do they come from? Why shouldn't a universe remain an undifferentiated sea of energy? Why should protons form when the universe cools to a certain temperature, and why should protons join with electrons to form hydrogen? Merely posing many universes and physical laws set at random does not answer such questions. Even if the process is random, a mechanism is still required, unless one wishes to posit a personal creator. And even if there were such a mechanism, we must assume that it would be capable of mechanistically forming not only a fine-tuned universe, but every other kind of universe as well. The mechanism would therefore itself have to be more fine-tuned than the fine-tuned universe that we have, since an effect cannot be greater than its cause.

We have not identified a mechanism which specified the physical laws governing our own universe, and positing a multiverse does nothing to help us to do so. Hence, the multiverse does nothing to answer the fine-tuning. To answer the fine tuning, it is insufficient merely to suggest there may be lots and lots of universes with their physical laws set at random. It's not that easy.

Conclusion

The phrase, "Fine-tuning" implies intention. The "fine-tuning" of the laws of physics implies the activity of a mind in the governance of nature, a deliberate adjustment of the constants of nature for the purpose of effecting a particular desired result. The argument certainly appears to succeed, considering the absence of any viable nontheistic solution. And taking the teleological argument together with the cosmological argument, the case for God is beginning to look very, very plausible. Is there anything to add? Next: The Moral Argument for God.

THE EXISTENCE OF GOD

III

The Moral Argument for God

In order to deny that the Nazis were wrong to attempt to exterminate the Jewish people, we must suppress some very powerful intuitions. A very few people are willing to do that; but they are not able to live that way consistently. If someone rapes a child, they may say she was unfortunate; but if it is their own daughter who is raped, they will have an immediate experience of objective morality.

The Moral Argument for God is based upon the premises that objective moral values and duties exist and that the existence of God is the best way to account for them. Craig states the Moral Argument for God in the following form:

1) If God does not exist, objective moral values and duties do not exist.

2) Objective moral values and duties do exist.

3) Therefore, God exists.[60]

The argument essentially claims that since objective moral values and duties exist (premise 2)), some account must be given for their existence, and that theism is the only plausible account for their existence (premise 1)).

Let it be said that "morality" is certainly not limited to sexual morality. The full broad sweep of human virtues – love, wisdom, truthfulness, patience, prudence, temperance – are at stake here.

Premise 2)

It deserves emphasis that the second premise is based on our general willingness to concede that objective morality exists, and not upon any other evidence. If the opponent of an argument concedes the validity of one of the premises, then that premise may be taken as true without further proof. We concede premise 2) for two reasons. First, it reflects our actual experience of moral reality: we feel indignation toward malicious behavior on the part of others, we feel shame when we become conscious of it in ourselves, and we regard these feeling of indignation and shame as arising out of the moral qualities of the behaviors in question. Craig claims that we are entitled to these experiences – that is, in the absence of a compelling reason to deny the validity of these experiences, it is rational for us to trust them.

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[60] Craig, Reasonable Faith, 172.

The other reason we are willing to concede premise 2) is that we realize that we cannot fail to honor what is honorable or condemn what is shameful without forfeiting something essential about our humanity. We all have an innate sense of a dignity both in ourselves and in others which entails treating others well. We acknowledge that there are values and duties, whether many or few, which are indeed objective in the sense that they are valid and binding, whether or not anyone is willing to acknowledge them. In other words, anyone who declines to acknowledge their binding effect is simply mistaken. As Michael Ruse, atheist, evolutionist, and philosopher of science, puts it: "The man who says that it is morally acceptable to rape little children is just as mistaken as the man who says, 2+2=5."[61]

Human dignity, justice, and racial equality are examples of moral values to which most nontheists would assent, and most would also assent to the existence of moral duties such as the duty not to commit murder, not to torture children for fun, not to commit rape, and no doubt many others.

Certainly there are philosophers of science who pride themselves on their willingness to rigorously follow their naturalistic dogma to its logical conclusion, and to deny that there is any atrocity which is objectively immoral. What I am saying is that most of us realize that they are mistaken. Those of us who do realize it will find it necessary to concede premise 2). For the rest, I hope to show that these philosophers are not rigorous enough.

The Darwinist Objection to Premise 2)

The most popular strategy for opposing the moral argument for God is to appeal to neo-Darwinism. There are two distinct ways in which Darwinism might place premise 2) into question. It could be claimed that Darwinism means that premise 2) is false, *or* it could be claimed that whether premise 2) is true or not, on Darwinism we have no warrant for believing it to be true. Neither of these strategies succeeds.

First, the Darwinist claims that since our moral beliefs are the result of the competition to survive, they are therefore false. Craig observes that this is a "textbook example of the genetic fallacy":

> [T]he genetic fallacy . . . is the attempt to falsify a belief by explaining how that belief originated. Such reasoning is fallacious, since a belief could be true regardless of how it came to be held. In particular, if God exists, then objective moral values and duties exist regardless of how conditioned we may be by the evolutionary process. So the objection at best proves only that our subjective perception of moral values and duties has evolved. But if moral values are gradually discovered, not invented, then our gradual and fallible apprehension of the moral realm no more undermines the objective reality of that realm than our gradual, fallible apprehension of the physical world undermines the objectivity of that realm.[62]

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[61] Michael Ruse, Darwinism Defended (London: Addison-Wesley, 1982), 275.

[62] Craig, Reasonable Faith, 179-180.

Another way to put it would be to say that if our intuitions about morality are false, it is not because they evolved. Evolution does not produce false beliefs by any logical necessity.

Or Darwinism could be construed not as undermining the truth of premise 2) but the warrant or justification for believing premise 2). If our beliefs arose because they were selected, not for their truth, but for their survival value (so the argument goes), then we would have no basis for believing them to be true. This claim could undermine our willingness to concede premise 2). We might say, "Well, I feel indignation but given Darwinism that feeling could be unreliable, so you have to prove to me that objective morality exists. Since you can't, the moral argument fails." But Craig observes that not only does this claim beg the question, it is self-contradictory.

The argument begs the question because it presupposes that Darwinism entails naturalism and that naturalism is true – that is, it presupposes either that God does not exist, or that if he does exist, he did not superintend evolution so as to produce creatures with a reliable moral compass. Naturalism is the idea that nature – the physical universe of space, time, matter, and energy – is all that there is. But that is the very question we are considering, so it begs the question. One cannot prove that God does not exist by presupposing that he does not exist. If naturalism is true, then our moral experience could be illusory; but why believe naturalism is true? Darwinism does not entail naturalism: God could have created mankind through an evolutionary process – indeed, there are many prominent biologists who believe he did so. Moreover, there are other excellent reasons for disbelieving in naturalism, the Big Bang and the Fine-Tuning of the universe being among them.

Even worse, the objection is self-defeating because if our belief in objective morality is unreliable because it resulted from natural selection, then *all* of our beliefs are unreliable, because they, too, resulted from natural selection. Thus we would have no warrant for our belief in naturalism or our belief in the Darwinist account of the origin of moral values through natural selection!

Thus, Darwinism does not provide a reason for denying our experience of moral reality, which therefore remains undefeated. Thus, *given* that objective moral values and duties exist, how can this be accounted for? Is God the *only* coherent explanation for our moral experience?

Premise 1): Other Objections.

Premise 1) states:

> 1) If God does not exist, objective moral values and duties do not exist.

If objective moral values do exist, then it becomes necessary to explain them. Premise 1) assumes that God is a sufficient explanation for the truth of premise 2) *and* that no other sufficient explanation exists. Premise 1) is equivalent to:

> 1') There is no satisfactory nontheistic explanation for objective moral values and duties.

Thus premise 1') requires proving a negative, namely, that there is no basis for objective morality without God. Premise 1') entails that if God does not exist, then the objective morality previously identified is inscrutable – objective moral values exist, but they are just left floating in the air without any foundation or explanation. But that is not the case, even if God does not exist, if there is any plausible nontheistic explanation for objective morality.

Since premise 1') constitutes a negative claim, the only possible proof lies in the inability of anyone to propose a plausible nontheistic basis for objective morality. Clearly, this entails discussion of each and every nontheistic proposal for objective morality, one by one. Fortunately, there are very few such proposals to consider. Craig mentions only four in addition to Darwinism:

1. We can live moral lives without God.

2. We can formulate ethical systems without God.

3. We have moral intuition. We can recognize the inherent value and dignity of others without God.

4. Moral values just exist (Atheistic Moral Platonism).

I cannot add much to this list – social compact theory does present itself; but it is easily dismissed, as is Emmanuel Kant's Categorical Imperative. In fact, it may be argued that neither social compact theory or the Categorical Imperative belongs on this list at all because each *presupposes* that objective morality does not exist: solving that problem was the purpose for which they were invented.

Under social compact theory, I give up some of my prerogatives in exchange for your doing likewise so that we can coexist; but it cannot be said that I am objectively immoral if I do not give up my prerogatives (even if we call such people criminals and put them in jail). Kant taught that we are obligated to act according to principles which we would wish to be universally observed. That is surely good advice, and may seem appealing to other philosophers; but it fails to explain why we are morally wrong if we reject it, and it provides no motive to good behavior on the part of those who are unimpressed by philosophical arguments.

Proposals 1., 2., and 3. may also be summarily dismissed. Nontheists can and do live exemplary lives, but that is not the issue: the issue is whether they are wrong if they do not do so. We also can formulate elaborate ethical systems without God, but not without first conceding the value of human life; but that begs the question of premise 2), do objective moral values exist? One may not simply answer, "Yes," declare victory and go home: one must instead provide an *explanation* as to how it is that objective moral values exist, apart from God, unless one is prepared to concede that God does exist.

As to proposal 3., that we can and perhaps usually do intuitively recognize value and dignity in each other, Craig observes that this confuses ontology (having to do with the existence of objective morality) with epistemology (having to do with how we know about them). The

question is not, Do we believe in objective morality, but, Do binding moral values and duties exist even if we do *not* believe in them? As Craig puts it, "theism is necessary that there might *be* moral goods and duties, not that we might discern the moral goods and duties that there are."[63] Once it is granted that we have the *experience* of objective morality, the question becomes whether that experience corresponds to anything real or whether, as naturalism would have it, that experience is an illusion.

Furthermore, not only does our intuition of morality fail to undermine premise 1), it actually lends further warrant to premise 2): if we intuitively recognize the value of ourselves and of others, it may very well be because the value which we think we see is really there. If it is really there, then where did it come from? Theism has an explanation. As Genesis Chapter 1 teaches, humans have inherent value and dignity because we were created in the image of God. The God image in us and in others, if it is real, explains our perception of ourselves and of others as having inherent dignity and value.

That leaves Atheistic Moral Platonism as the only challenger to theism still in the field, and Craig delivers a very cogent critique of this idea.

Atheistic Moral Platonism.

Plato proposed that moral values just exist on their own, without any foundation. Craig offers three critiques.

First, he asks why we should believe that moral values just exist as abstract objects, with no source or foundation? If abstract objects require a mind to think them, then who thought them before humans existed? If such abstract objects exist apart from mind, where are they, and where did they come from?

Second, even if moral values do just exist as abstractions, how do we become morally obligated to uphold them? "Who or what requires that of me?" asks Craig.[64] On the atheistic view, humans are just animals, and animals do not have ethical obligations to one another.

Finally, Craig asks why a "blind evolutionary process" would produce "a creature . . . that corresponds to the abstractly existing realm of moral values? . . . [I]t is far more plausible to regard both the natural realm and the moral realm as under the hegemony of a divine Creator and Lawgiver than to think that these two entirely independent orders of reality just happened to mesh."[65]

In order to establish the Moral Argument for God, it then remains only to show that the theistic solution for the existence of objective moral values and duties is itself plausible.

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[63] Craig, Reasonable Faith 176. (Emphasis added).

[64] Craig, Reasonable Faith, 175.

[65] Craig, Reasonable Faith, 179. Here Craig assumes that atheistic moral Platonists subscribe to neo-Darwinism in its naturalistic form, which seems fair.

Theism and Morality.

The famous Euthyphro dilemma is often offered as an argument for Atheistic Moral Platonism. In fact, it was Plato who first recorded the dilemma:

> Is something good because God wills it, or does God will it because it is good?

If something is good because God wills it, then it is arbitrary. If whatever God wills is good, then if it were His will that that we commit child abuse, then child abuse would be good. But if God wills something because it is good, then the good is independent of God, and it would be good even if God did not exist – hence, atheistic moral Platonism.

The answer, of course, is that this is a false dilemma because there is a third alternative: God is essentially goodness itself, and his commands are simply expressions of his character:

> God is essentially compassionate, fair, kind, impartial, and so forth, and his commandments are reflections of his own character. God's character is definitive of moral goodness; it serves as the paradigm of moral goodness. Thus, the morally good/bad is determined by reference to God's nature; the morally right/wrong is determined by reference to his will.[66]

Thus theism provides a coherent, plausible explanation for the existence of objective moral values and duties as rooted in "a personal, necessarily existent being who is the locus and source of moral goodness,"[67] and the argument succeeds.

[66] Craig, Reasonable Faith, 182.
[67] Craig, Reasonable Faith, 188.

THE EXISTENCE OF GOD

IV

The Ontological Argument for God

"Ontology" is an unfamiliar term to many. It simply refers to that branch of philosophy which has to do with the study of existence or being as such. Briefly, it asks whether something exists, or whether it is real.

Anselm

The ontological argument for the existence of God was first proposed by Anselm (1033-1109), Archbishop of Canterbury. Essentially, the argument is that if it is even possible that God exists, then he necessarily does exist. As stated by Anselm, it goes like this:

> 1) God is the greatest conceivable being. This is true by definition, for if we could conceive of something greater than God, then that would be God.
>
> 2) A being whose non-existence is inconceivable is greater than a being whose non-existence is conceivable.
>
> 3) Therefore, God's non-existence is inconceivable.
>
> 4) Therefore, God exists.

According to William Lane Craig, "This deceptively simple argument is still hotly debated today."[68] Craig accepts it, at least in the form proposed by philosopher Alvin Plantinga, winner of the Templeton Prize.

Plantinga

Plantinga defines God as the being which is "maximally excellent in every possible world."[69] A maximally excellent being would possess such characteristics as omnipotence, omniscience, and moral perfection. Craig summarizes Plantinga's argument:

> [T]here is a possible world in which a maximally great being exists. But then this being must exist in a maximally excellent way in every possible world, including the actual world. Therefore, God exists.[70]

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[68] Craig, Reasonable Faith, 96.

[69] "Possible world": "A conception of a total way the universe might have been." Encyclopedia Britannica, https://www.britannica.com/topic/possible-world.

[70] Craig, Reasonable Faith, 184.

Craig states that most philosophers accept the proposition that if it is even possible that God exists, then he must exist. It is the possibility of God's existence which is controversial, Craig says. But he maintains that the argument is sound unless the concept of a maximally great being is incoherent. (The concept of a married bachelor is incoherent, for example.) Since it is not incoherent, the argument is valid and God exists.

I have misgivings about this argument. First of all, we have already seen (III – The Moral Argument for God) that without God there is no standard for good, evil, right, or wrong. How do we know, without first having established God's existence, that existence is good, such that we can claim the right to attribute it to a maximally excellent being? Thus the argument may be based on circular reasoning.

Craig himself acknowledges the argument may be circular for another reason, namely, that the reason one accepts the premise that it is possible that a maximally excellent being exists could be that one already accepts on other grounds (such as the moral, cosmological, and teleological arguments) the conclusion that such a being does exist.

Second, I lean toward the school of thought that existence is not a property[71]. (Craig himself elsewhere has denied that properties even exist.) If existence is not a property, then anything which exists does not *possess* existence but *just* exists. Thus God either exists or he doesn't, and if he does exist, he may have many excellent qualities but existence itself would not be one of them! Hence whether he exists or not, he is the same in essence; and while it may be better to exist, he himself is not the better for it but merely occupies more commodious lodgings. Therefore, his being maximally excellent would not necessitate his existence.

But there is a statement of the argument, also from Plantinga but not found in Reasonable Faith, which does not suffer from these drawbacks. Plantinga calls it the *modal* ontological argument. I find it more satisfying. Here is how it goes.

Either God's existence is possible or it is impossible. But if God's existence is possible, then there is a possible world in which he exists, and in that world, his existence is necessary, for otherwise he wouldn't be God even in that possible world. If his existence is necessary in any possible world, then his existence is necessary in all possible worlds, since all possible worlds must agree on anything which is necessary. (For example, there is no possible world in which 2 + 2 does not equal 4.) Since the actual world is also a possible world, God then exists in the actual world.

Thus, God's existence is either necessary or impossible; but if his existence is possible then it is not impossible, and it must then be necessary.[72]

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[71] In philosophy, a *property* is a characteristic of an object.

[72] Alvin Plantinga, the modal ontological argument, https://www.plantingavideos.com/?utm_campaign=buffer&utm_content=buffere4b63&utm_medium=social&utm_source=twitter.com.

To avoid the argument, the atheist must claim that God's existence is impossible, and while he may make that claim, he cannot defend it. That's why one never or almost never hears that claim.

I don't see a flaw in this argument. My background in philosophy is a bit lacking, however, and I don't trust my comprehension of Plantinga's argument. Further study is indicated. In the meantime, reader comments will be more than welcome!

THE EXISTENCE OF GOD

Conclusion

What does all this mean?

It means that almost certainly, God exists.

We could easily say, on the basis of the evidence we have considered, that God's existence is more likely than not. I submit, of course, that the evidence is much stronger than that. The evidence we have considered makes it at least *highly likely* that God exists.

My personal view is that even that would be an understatement. God is the best explanation of an absolute beginning, he is the best explanation of the fine-tuning of the laws of physics, and he is the best explanation for the existence of objective moral values. Any of these alone would be sufficient basis on which any rational person might believe in a Creator. All three, taken together, are very powerful.

For comparison, consider the disparate theories which one must embrace in order to avoid the combined force of the Cosmological, the Teleological, and the Moral arguments for God. One must posit:

- Either an eternal universe (which modern science shows is not the case), a universe which popped into existence out of nothing, without a cause (which is impossible), or an infinite regress of finite causes (which is impossible or at least incoherent);
- The multiverse; and
- The absence of objective moral values – no justice, no mercy, no forgiveness, no love.

None of those propositions is likely to be true, for the reasons previously discussed. The probability that they are all true would have to be very, very small.

If a God exists who had power to create the laws of nature, then he may have power to cause events which the laws of nature (those we know of, that is) would not predict. That is, miracles would be possible; indeed, it is conceivable that under some conditions – an Incarnation, say – a few miracles might be expected. At a minimum, it would be irrational to dismiss the possibility out of hand. A fresh look at the Resurrection would be warranted. (Interested readers are encouraged to read Michael Licona's The Resurrection of Jesus: A New Historiographical Approach.[73]) And if Jesus was raised, then God is with us, and his promise is sure that we will spend eternity in a society of the just, the good, and the true. If God exists, would that be surprising?

Thomas Alderman, May 2018

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[73] Nottingham, England: IVP Academic 2010.