Abstract

The research presented in this paper is meant to present several differing schools of thought about the origin of the universe and what that origin might suggest about God’s existence. Not only will this research paper discuss implications related to the Big Bang and God’s existence, but it will also link naturalist responses to theistic viewpoints of the Big Bang and other possible origins of the universe including some philosophical rather than strictly scientific theories. The end of this paper will consider some philosophical perspective and lead to my own findings on the matter. Covering multiple viewpoints allows for fairly presented material and allows the reader to come to a well-informed conclusion about the possibility of the existence of God based on the evidence. Notable scientists from both sides will be cited. The most important expression of this paper is to smooth the apparent jagged-edge between scientific and theistic viewpoints while also highlighting my own thoughts on the matter. George Smoot, an astronomer for the University of California at Berkeley and project leader of the COBE satellite is an example of a scientist who sees congruence between these viewpoints. Professor Smoot said of recent cosmological discoveries, “What we have found is evidence for the birth of the universe. It’s like looking at God.”
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Introduction

Throughout history, a debate over the origin of the universe has occurred between theists and naturalists. This has taken the form of religious arguments, philosophical hypotheses, and even scientific abstracts. Since the middle of the 19th century, however, it appeared the naturalist side was “winning the debate” on God’s existence. Popular media sources covered the “God is Dead” story from Friedrich Nietzsche, misquoted though it was, and have not since stopped publishing stories that appear to prove such assertions as “God does not exist” or “Nobody knows if God exists.” To suggest the media sources are biased is an understatement, but to claim some conspiracy would be equally unfounded. The truth of the matter is quite simple: evidence consistent with God’s existence is extensive, reliable, predictable, and growing. To define some “battle” between religion and science, where theologians take one side and scientists take the other, is simply not true. Werner Heisenberg, famous for his uncertainty principle, once stated, “In the course of my life I have repeatedly been compelled to ponder on the relationship of these two regions of thought [science and religion], for I have never been able to doubt the reality of that to which they point.”

Whatever the case may be, one hypothesis is certain: God’s existence cannot be empirically proven or disproven. On the other hand, empirical evidence can support some models that have a theistic worldview better or more completely than models with a naturalist worldview. As Charles Townes, Nobel prize winner for physics in 1964 said, “In my view, the question of origin seems to be left unanswered if we explore it from a scientific point of view. Thus, I believe there is a
need for some religious or metaphysical explanation. I believe in the concept of God and in his existence.²

The Big Bang, the most common and popular model of the origin of the universe today, seems to support a theistic origin to the universe based on creation ex nihilo. In addition, “fine-tuning” of the physical parameters of the universe and Earth which allow life to exist is consistently explained with a theistic viewpoint. Problems related to other possible explanations for the creation of the universe or the Earth will be discussed within this paper.

Big Bang Evidence

The Big Bang must first be defined and understood in order to truly speak about it. According to Hugh Ross, notable astrophysicist and founder of the “Reasons to Believe” organization, all Big Bang Theories are not alike but they all contain three fundamental characteristics: 1) The Cosmos began at a definite time in the past, 2) the universe experiences continuous expansion, 3) the cosmos is cooling down from an initial near-infinitely hot state. The first parameter means that time itself and the rest of the universe had a definite beginning sometime in the finite past, the second parameter means that the universe has expanded throughout its history and continues to expand even today, and the third parameter means that the universe is transitioning from a very, very hot beginning to a much colder state, as observed now. In other words, the entropy of the universe is continuously increasing. Our current universe is cooling down as the distance between stars, galaxies, and galaxy clusters increases. Entropy, governed by the second law of
thermodynamics, is simply a measure of disorder, which for the universe, always increases. As the universe expands, heat from the Big Bang is being distributed over an ever-increasing volume.

These three characteristics are all well and good, but they fall on deaf ears if not for the evidence. As far as evidence is concerned, the Big Bang is the most “proven” origin theory known to science and mankind; namely, it has the most convincing evidence. To begin the long history of evidence, scientists discovered microwave background radiation in the cosmos in 1965. Arno Penzias and Robert Wilson, with the help of Bell Labs, built a large antenna in New Jersey in 1960. The antenna was originally designed for communications by collecting and amplifying weak radio signals and sending them across very long distances. Penzias and Wilson saw the antenna differently, though. They used it as a telescope and discovered “noise” like static in a radio. Most people assumed the interference came from the antenna itself, which appears to make sense as the antenna would pick up “noise” from New Jersey, the birds living in the antenna, even radiation from the sun, but both scientists were not satisfied. After tests with the antenna, they concluded the interference did not come from the machine, nor the city, nor even the solar system.

At the time, Robert Dicke of Princeton University was pursuing theories of the Big Bang and suggested that, had the Big Bang happened, the residue of the explosion should take the form of low-level background radiation throughout the entire universe. Dicke, Penzias, and Wilson put their research together and concluded the background noise came from the universe. By the mid 1970s, the Big
Bang model became known as "the standard model" and Penzias and Wilson received the Nobel Prize in physics in 1978. This may be the most convincing evidence for the Big Bang to date.

However, Dr. Edwin Hubble confirmed a previous derivation of General Relativity now known as the Hubble Shift in 1929. Hubble observed that distant galaxies move at a relative velocity away from Earth and the velocity is measurable via a Doppler shift in their spectral lines. This discovery suggests that galaxies which are observed to be moving away from Earth are moving due to the continuous expansion of the universe. As physicist Hugh Ross illustrates, imagine the universe as a balloon with polka-dots; as the balloon expands, the distance between polka-dots relative to other polka-dots increases. The universe (or simply space itself) is like the balloon and the galaxies are like the polka-dots. The effect is the same for galaxies as it is for polka-dots so Hubble's law illustrates that the motion of astronomical objects is likely due to the expansion of the universe itself. As far as the Big Bang is concerned (where every model supposes the continuous expansion of the universe), Hubble's Law is irrefutable proof of the expansion of the universe. Hubble even estimated a rate of expansion, now called the Hubble constant (though the first prediction of such an expansion was from Einstein's theory of General Relativity).

Further evidence was found in the 1990s with the COBE satellite (Cosmic Background Explorer). This satellite was specifically designed to investigate the cosmic microwave background radiation discovered by Penzias and Wilson and was launched in late 1989. While the mission for the satellite was only four years, the
information gleaned from the program was substantial and verified the predictions of the Big Bang model.

COBE had one primary purpose: to discover how galaxies formed from the Big Bang. If proven possible, the Big Bang model would become the most complete theory on the origin of the universe. In 1992, COBE indeed found evidence confirming the formation of galaxies. Essentially, the Big Bang event would have to begin from a near-infinitely hot, infinitesimally small point which represented the whole universe at that time, for the expansion to begin and eventually to allow protons and neutrons to form and react and fuse together to create hydrogen and helium. In fact, this would account for future star formation, an obvious necessity for life and an extremely important phenomenon that generates heavy elements through nuclear fusion within a star.

When COBE found this discovery on galaxy formations, the driving force behind it was thermodynamics. An expanding system like the universe must be cooling off simultaneously. To understand this, Hugh Ross uses an oven as an analogy. Imagine a hot oven in a kitchen. When the door is open, the heat from inside the oven expands out into the kitchen. As it does the oven itself will begin to cool down to the temperature of the kitchen and the kitchen becomes only a slight bit warmer than before. However, given the peak temperature of the oven, the volume of the oven, and the volume of the kitchen, the rise in temperature can be calculated.5

This matters because of the activities of neutrons and protons. If the universe had expanded too slowly or without enough heat, the particles would fuse
together to form heavy elements and too few would remain as the lighter elements such as hydrogen and helium, both of which are fuel for stars. Without these two elements, stable, long-living stars would never form and life anywhere in the universe would certainly never exist. If the universe expanded too rapidly, matter would spread apart too quickly for gravitational clumping to form any galaxies or stars.

With COBE, the results of January 1990 showed the universe matched a perfect "blackbody radiator" to the letter. In fact, deviations between COBE's findings and the spectrum for a perfect radiator measured less than 1%. COBE's first major discovery proved entropy, or the measure of energy degradation (cooling off). Entropy describes how energy in a closed system radiates and ceases to be available for specific work. Considering entropy, the universe has specific entropy (entropy per proton for a particular system) of about one billion. In perspective, a supernova has a specific entropy of about 100 times less. The only way to account for such a high specific entropy would be the near-ininitely hot model.

Mid April, 1992, however, led to another measurement from COBE, refined and better than before. Prior to 1992, COBE lacked the ability to detect the fluctuations of the cosmic background radiation, fluctuations that were required to produce galaxies and were thus a missing link in the Big Bang model. Of course, the radiation would not be perfectly smooth just as how a kitchen with an open oven would be slightly warmer in some places and slightly cooler in others. By 1992, however, COBE's measurements were precise enough to detect irregularities in the
background radiation of about one part in 100,000 which is exactly what astronomers thought they would find in order for galaxies to have formed.

Besides Penzias and Wilson, Hubble, and COBE, the Big Bang model also produces stable orbits and stable stars, both of which are required for life. It may seem like common sense, but gravity is the key here. In fact, only gravity acting according to the inverse square law would bring about stable orbits and stable stars. The inverse square law requires three large and rapidly expanding dimensions of space...the Big Bang Universe. With only two dimensions or four dimensions, gravity would work differently and planets would either be ejected by stars (two dimensions) or destroyed by stars (four dimensions). A three-dimensional universe is required for orbits to take shape at all and the Big Bang Model is the only cosmological model available that guarantees three dimensions (For other cosmological models, see below).

Additional evidence was found by the Cosmological constant. None other than Albert Einstein first proposed this theory. At the time of his proposal of general relativity, he made a prediction as to the rate of expansion for the universe. It contradicted the cosmological model at the time (infinitely old universe held in static state throughout all of time) and he made several adjustments to his theory to preserve that model. When astronomers discovered the expansion of the universe, however, Einstein rejected his proposed cosmological constant and called it “the greatest blunder of his scientific career.” However, it turns out Einstein was correct in his assertion of a cosmological constant. This constant essentially is a self-stretching principle absent from the forces of heat, light, or any kind of matter,
which stretches or expands space on its own (also known as "dark energy"). This is only possible if a Big Bang event of some kind had happened, as the event would indicate an expansion that would not stop until it ran out of energy.

This constant makes masses such as galaxies appear to repel each other. Gravity, on the other hand, would pull them together. This push and pull is not equal, of course. In a young universe, where most of the mass is in one place, gravity would have a much stronger effect and the cosmological constant a weaker effect and likewise, with an older universe where mass is spread out, gravity would have a weaker effect while the cosmological constant would have a much stronger effect.¹¹

As proven by several research and scientist teams in the late 1990s and early 2000s using supernova to measure distance and time, the rate of expansion was found to be relatively weak in the early stages of the Big Bang and much stronger in the current stages.¹² Because of these measurements, scientists have also been able to uncover the age of the universe (around 13.7 billion years).

The final evidence for the Big Bang is measured by how the model fits predictions. Some predictions were made based on the "Boomerang" project. NASA scientists using high-altitude balloons made very precise measurements related to the cosmic microwave background radiation. This experiment nearly proved a "flat" geometry for the universe while also measuring temperature differences in the radiation. On a graph, the measurements fit with the "best fitting cosmological model" (a hot Big Bang spreading flat) with very little error.¹³

With this model very nearly proven, some predictions of this model would also have to be fulfilled. The major predictions are about helium abundance,
deuterium and lithium abundances, proton and neutron density, the cosmic expansion velocity, and star populations regarding age, which all fit within the flat universe from Big Bang model extremely well.¹⁴

More evidence has piled up over the past several decades, but the evidence presented above is sufficient for now to say that the Big Bang model is without a doubt the best-fitting model of the beginning of the universe. Some major assumptions of this model are the expanding universe made by Einstein in 1916, a near-infinitely hot beginning (Gamow in 1946), and a non-infinite time, all of which were already explained as fundamental characteristics of all Big Bang Models. What matters with all of this evidence and these assumptions is that, if the Big Bang is true, does the event tell us anything about the existence of God? Exploring this topic will take up the bulk of the rest of this paper.

However, the Big Bang does have problems, as any model will. Philosopher Immanuel Kant, for example, believed in an "Infinite Being." Kant believed that only an infinite universe would "fit" an Infinite Being such as God. However, not only was his reasoning faulty, but the science behind it was simply unfounded. Another example would be Stephen Hawking, arguably the most prominent astrophysicist of the 20th century, who makes several very detailed points in his book The Grand Design about the complete absence of God while also explaining how the Big Bang took shape.

On the other hand, Hawking makes many sweeping claims in the book, using philosophy to prove that "philosophy is dead" on the very first page.¹⁵ Mathematician John Lennox rebutted this idea in his answer to The Grand Design.
called *God and Stephen Hawking: Whose Design is it Anyway?* by simply asking if history was dead too since all of history is based on philosophical perspective and thought.\(^{16}\) Hawking really does not have any references in *The Grand Design* and gives no substantial evidence to disprove God. This is not to say that research condemning God or disproving His existence has not been attempted, it merely suggests that Hawking relies on his own experience and very little in the way of technical, conventional scientific study to prove his points. Hawking discusses how God cannot exist because “free-will” apparently does not exist or because science would be pointless in a God-given universe; both these claims, along with others, are refuted by Lennox in his book.\(^{17}\)

**Fine-Tuning of the Universe**

So the evidence about the Big Bang is difficult to disprove and even if prominent, celebrity scientists suggest otherwise, the Big Bang does point out several “finely-tuned” elements of the Universe, as if “someone [had] monkeyed with physics” in the words of Fred Hoyle. The “fine-tuning” in the universe is indicative of God or at least some Creator, as the probability for the “fine-tuning” astronomers and physicists see in the universe is statistically improbable from a naturalistic point of view. The existence of fine-tuning is a fact that even the staunchest naturalist or theist would agree. Multiverse cosmologist Martin Rees expressed,
Any Universe hospitable to life—what we might call a
biophilic universe—has to be "adjusted" in a particular
way. The prerequisites for any life of the kind we know
about—long-lived stable stars, stable atoms such as
carbon, oxygen and silicon, able to combine into
complex molecules, etc.—are sensitive to the physical
laws and to the size, expansion rate and contents of the
universe. 18

The first element regards the cosmological constant again. Lawrence Krauss,
by no means a theist, is a theoretical physicist and cosmologist who said the
cosmological constant is "The most extreme fine-tuning problem known in
physics." 19 This "extreme design" is due to two factors of the constant, or rather the
two forces that govern expansion: mass density and space-energy density
(discovered along with BOOMERANG). Mass-density requires a degree of fine-
tuning of about one part in $10^{60}$ and space-energy density on the other hand
requires fine-tuning of about one part in $10^{120}$. For physical bodies to exist at any
point of time since the beginning of time until now, both of these elements must be
fine-tuned precisely at a level far beyond human ability. The most precisely fine-
tuned engineering piece known to man, in perspective, is a gravity wave telescope
and it has been fine-tuned to make measurements as accurate as one part in $10^{23}$.20

Even Hawking must admit the extreme design here:
"What can we make of these coincidences? Luck in the precise form and nature of fundamental physical law is a different kind of luck from the luck we find in environmental factors. It cannot be so easily explained and has far deeper physical and philosophical implications. Our universe and its laws appear to have a design that both is tailor-made to support us and, if we are to exist, leaves little room for alteration."21

However, the cosmological constant is only the tip of the proverbial iceberg. Beneath it rests other elements of the finely tuned universe. Scientists have observed the so-called "building blocks" problem which is described by Hugh Ross. He says:

"Imagine the possibility of a Boeing 747 aircraft being completely assembled as a result of a tornado hitting a junkyard. Now imagine how much more unlikely that possibility would be if bauxite (aluminum ore) is substituted for junkyard parts. Finally, imagine the possibility if instead of bauxite, river silt is substituted. So, too, as one examines the building blocks necessary
for life to come into existence, the possibility of that happening without someone or something designing them stretches the imagination beyond the breaking point."22

Ross is absolutely correct, in my opinion. The improbability of life spontaneously emerging from the universe is astonishingly large, far larger than the human brain can truly comprehend. In order for a "just right" universe to come about, four major characteristics or "building blocks" are required and seem to be specifically designed. The first is getting the right molecules. For life to ever begin, some forty different elements must be able to bond together to form specific molecules and bonding itself is determined by electromagnetism and the ratio of the mass of the electron to the mass of the proton.23 If electromagnetic forces were too strong, atoms would not "share" electrons and complex molecules would never form at all. If, on the other hand, the forces were too weak, atoms would not hold any electrons, also leading to a failure in bonding. Furthermore, electrons must exist in stable orbits for bonds to hold. The size and stability of these orbits is dependant on the ratio of the electron mass to the proton mass. As Ross says, "Unless the ratio is delicately balanced, the chemical bondings essential for life chemistry could never take place."24

On a smaller scale, life is dependent on the right atoms. These atoms are categorized by their properties in the Periodic table of Elements and many of these elements are necessary for life. Electromagnetic and nuclear forces govern atoms
and the balance here must be extremely precise. A nuclear force which was 2% weaker of just 0.3% stronger would render life impossible at any time throughout the entire history of the universe. Why this matters is about variety. Variety might be the spice of life but it is also a necessary ingredient in forming virtually everything in the known universe. The weak nuclear forces found in atoms govern radioactive decay and the strong nuclear force governs bonding. When nucleons collide in the cores of stars, their masses are combined, creating heavier elements in the process. This is nuclear fusion, the same process found within stars such as our sun where four hydrogen nuclei combine and form helium. This type of reaction generates extremely vast amounts of energy. The "new" elements will then continue to collide with others, forming other elements as the star ages. Eventually, when a star runs out of hydrogen, helium, and other fusible elements, the star begins to die as the core collapses. Large stars in particular may become extremely unstable and create a supernova explosion where the star jettisons the elements it has created and have gone unused into space. These elements will eventually form planets, other stars, and the building blocks of life.

If nuclear forces were too strong or too weak, atoms would only form heavy elements or only light elements respectively. In fact, unless nuclear forces within atoms are very precise, supernova explosions become impossible, meaning no planets and no life. In addition, if gravity were too weak, the core of stars would never burn hot enough to ignite nuclear fusion and if gravity were too strong, the stars would burn much too fast and unstably, snuffing out any chance of life.
Further along these lines, Fred Hoyle discovered in the late 1900s a fine-tuning of the nuclear "ground state" energies for helium, beryllium, carbon, and oxygen, elements essential to stars and for life. The "ground state energy" is simply the lowest-energy state where the atomic nucleus is most stable. The nuclear energies of these elements cannot be higher or lower with respect to each other by more than about 4%. Otherwise, the universe would not have enough oxygen or carbon for life (and we will see later that carbon is extremely important to life).28 Hoyle, who has written against theism, commented himself that it seems "a superintellect has monkeyed with physics, as well as with chemistry and biology."29

On an even smaller scale, however, the right nucleons also matter. Nucleons are just protons and neutrons and the early universe had somewhere around 10 billion and 1 nucleons for every 10 billion anti-nucleons. The 10 billion and 1 nucleons annihilated the 10 billion anti-nucleons, leaving one nucleon. All the galaxies, stars, planets, and people are formed from the left over nucleons of this process happening at the very beginning of the Big Bang. If the initial excess of nucleons over anti-nucleons were any smaller, obviously there would not be enough matter in the universe for galaxies, stars, heavy elements, etc. If it were any greater, galaxies would form but efficiently condense radiation, preventing the creation of stars and planets.30

Neutrons are roughly 0.138% more massive than protons so when the universe cooled off from the Big Bang, nearly 7 times as many protons were created as neutrons. If the neutron mass were greater by even 0.1%, so few neutrons would
have been formed that the formation of heavier elements necessary for life would not have occurred.\textsuperscript{31}

Finally, the universe must be fine-tuned to get enough electrons, a very precise number actually. Electrons must be equivalent to the number of protons to a number of one part in $10^{37}$ or better, or the electromagnetic forces in the universe would overcome gravitational forces, and galaxies, stars, planets, and people would never have formed.\textsuperscript{32} To visualize $10^{37}$, imagine the entire North American continent covered with dimes all the way to the moon, roughly 239,000 miles above the Earth (the debt of the current United States government would cover an area two-feet thick with dimes of less than a square mile). Pile dimes from a million more North American continents from the ground to the moon, paint one dime red, blindfold a friend and ask him or her to find the red dime on the first try. That probability is one in $10^{37}$.\textsuperscript{33} The balance between electrons and protons here, as illustrated, must be extremely precise.

Besides these four characteristics, however, star masses and star formations must be precise as well. Stellar properties are very sensitive to the star's mass. If the ratio of the electromagnetic force constant to the gravitational force constant (gravity verses electromagnetism, the essence of a star) varied higher by one part in $10^{40}$, only small stars would form. If smaller by the same amount, only large stars would form. Life, however, depends on both types of stars forming. Large stars must exist due to the thermonuclear furnaces pumping out life-essential heavy elements, while small stars (like the sun) must exist to burn long time and be stable for billions of years, enough time to support diverse forms of life on a planet. When
we consider the dimes again, one part in $10^{40}$ is increasing the number of piles from a million piles to a billion piles.\textsuperscript{34}

English physicist Paul Davies, by no means a theist, has also expressed some very astute "finely-tuned" elements in his book \textit{The Mind of God}. He begins by writing about "statistical negligence," which essentially says the numbers are so small as to be statistically negligible. In the case of the design elements written above, the numbers are indeed beyond our comprehension of tiny, and are so small, in fact, that calling the numbers "zero" would not be a very significant leap. In other words, a number such as 1 part in $10^{40}$ is so small that statisticians might as well call it impossible.\textsuperscript{35} With that in mind, Davies also notes a cosmic uniformity that seems, at least to Davies, curious. The laws of nature are remarkably uniform. Davies says, "Laws of physics discovered in the laboratory apply equally well to the atoms of distant galaxies."\textsuperscript{36} In other words, the atoms of Earth are identical with the atoms of the rest of the Milky Way, our sister galaxy Andromeda, and out to as far as light allows us to see. Davies also notes the uniformity of other natural particles, such as electrons. The "magnetic moment" of an electron can be measured within 10 figures, an extremely accurate measurement. And yet, "no variation in this property has been found."\textsuperscript{37}

Over the age of the universe, some 14 billion years, the lack of variation is indeed rather curious. Even in reference to the spatial organization of the universe, matter and energy are extremely even in distribution. An alien, for example, in another galaxy would see much the same of what we on Earth would see when looking out at our galaxy. This is likely due to the inflationary-universe scenario.
where the universe experienced a sudden and exponential "jump" in size, thus smoothing out matter. However, Davies also mentions, "explaining the uniformity in terms of a physical mechanism does nothing to lessen its specialness." Human beings are still fascinated by how a mechanical beast weighing several hundred tons can still lift off the ground and fly above 30,000 feet into the atmosphere. Scientists can explain how it works all day, but in the end, there is something about that 747 lifting off that we think is impossible until we actually see it.

Davies does, however, give more manageable, or rather numerical, evidence for "fine-tuning." He mentions astronomer Fred Hoyle who noted that carbon, a crucial life element, is manufactured inside large stars from helium. The process is not exactly simple, especially compared to how helium forms in stars. Carbon nuclei are made with the simultaneous encounter of three high-speed helium nuclei, which stick together. In fact, this rare event only occurs at certain energies called "resonances." The reaction rate is amplified at these resonances and large stars are at a near-perfect resonance for this. Not only is carbon produced in large stars, but much of the element is also miraculously preserved as carbon. When Hoyle discovered this he claimed his famous, "someone has monkeyed with physics."38

With the above evidence, and other evidence I forbear for the sake of brevity, these important elements speak toward something. Simply recognizing these "fine-tuning" elements exist solely for the universe is not enough. Davies finishes a section of his book with the statement "[Life] still requires the same basic structure of laws in all these universes in order to make sense of the theory. That this basic structure also permits the formation of life remains a remarkable fact."39 His point
is well-founded. Life's existence in the universe is quite a remarkable fact, especially if God does not exist. Thus far, this paper has discussed viewpoints from both theistic and naturalistic authors and scientists, but they all seem to say essentially the same thing: everything seen seems to require a massive amount of intellectual activity and information input so it works the way it does. If a superintellect has not created the universe or does not exist, then the question remains unanswered: how can a random event be so precise? How can a random event bring about a stable, living universe that obeys the same laws it has since the beginning of time and has at least one planet with intelligent, thriving life?

To be fair, however, naturalist considerations must be made. Despite Hawking's genius, many of his and his contemporaries hold arguments with very little traction. The arguments are circular or already weakly built. Hawking himself assumes a premise he created in The Grand Design. If this were not invalid already, Hawking bases gravity as the reason for M-Theory (a theory of "everything") and M-Theory as the reason for gravity. Lennox points this out several times in God and Stephen Hawking and, in fact, much of the book is about the weaknesses found in Hawking's apparently foolproof argument for M-Theory. Hawking makes a completely unfounded claim that serves to disprove his earlier points while simultaneously proving them: "Bodies such as stars or black holes cannot just appear out of nothing. But a whole universe can." Hawking gives no proof for such a claim and even M-Theory cannot just appear: someone or something had to write M-Theory. And yet Hawking and his contemporaries still echo Hawking's
words, "It is not necessary to invoke God to light the blue touch paper and set the universe going."42

Suppose that Hawking is correct, that we can explain away all these fine-tuning elements without the need to invoke a creator. Hawking makes a rather convincing analogy with a "Game" titled "The Game of Life." This is a computer program written by mathematician John Conway of Cambridge in 1970. It is not a game so much as it is a simulation. A set of laws governs a 2-dimensional universe. Never mind that our universe is 3-dimensional and that this game had a creator, this game can bring about "life" via a deterministic universe where initial laws will determine what happens later in the simulation. This game also has three rules that govern how life spreads: a "square" which represents a cell, survives if two or three neighboring squares are alive, a dead square with exactly three neighbors will become a live cell (birth), and all other cells will die of either loneliness or overcrowding (less than 2 or more than three respectively). Again, these rules are very simple and in no way pertain to life in the so-called "real world." It does suggest that simple rules can bring about complex "programs" similar to life that self-replicate, a very important discovery.43

However, it does not mean that a simple set of rules can create life. This is the impression we see from Hawking's book, but this impression is ill founded. In fact, Conway's work might disprove that theory entirely. As the game suggests, laws cannot "create" anything. They can only act on matter or energy already present. Conway's game is determined by the initial set-up of squares, or rather, present life. However, the most crucial part of this program, seemingly avoided by Hawking, is
that Conway and his students *wrote the program*. The game analogy really proves nothing of what Hawking said it would.\(^{44}\)

At the end of the day, all scientists really cannot deny the evidence. Even a "coincidence" of some sort, as if the universe really did just come from a series of extremely fortunate and extremely unlikely circumstances, does not hold very much water. In his book *The Mind of God*, Paul Davies writes "So how are we to judge just how 'fishy' the setup is? The problem is that there is no natural way to quantify the intrinsic improbability of the known 'coincidences'."\(^{45}\) Davies makes an excellent point here in saying that there needs to be some "metatheory" that explains all the other theories, which in turn explain the laws and precise fine-tuning of the universe. No such theory has even been proposed, with the exception of M-Theory, which cannot even be tested let alone proven.

Another problem naturalists will often suggest is the "Anthropic Principle." This principle states that since we are alive, we ought to find the laws of the universe consistent with life. For some, this goes without saying. For others, it is a weak argument at best and a joke for science at worst. Davies says, "In the trivial form just stated, the Anthropic Principle does not assert that our existence somehow *compels* the laws of physics to have the form they do, nor need one conclude that the laws have been deliberately designed with people in mind."

Davies makes another excellent point here that mere anthropomorphism does nothing at all to support naturalist or theistic arguments for the universe. All it could ever possibly suggest is a fascination for the laws of physics and their quite remarkable sensitivity to change.\(^{46}\)
Another very curious point is made by philosopher John Leslie. He looked at the evidence of fine-tuning and said about using the Anthropic Principle against design,

Sounds like arguing that if you facing a firing squad with fifty guns trained on you, you should not be surprised to find that you were alive after they had fired. After all, that is the only outcome you could possibly have observed—if one bullet had hit you, you would be dead. However, you might still feel there is something which very much needs explanation; namely why did they all miss? Was it by deliberate design? For there is no inconsistency in not being surprised that you do not observe that you are dead, and being surprised to observe that you are still alive.47

Some other rebuttals from naturalists include appeals to science, where some naturalists will attempt to write off any type of creation argument as unscientific. This paper, as well as the numerous books, articles, journals, and other sources cited, already disproves this notion. This is much more a scientific argument than a philosophical one. Two other arguments that are worth a mention are the “chaos from order” argument and the “evolution into designer” argument.

The former argument was first put forth by philosopher David Hume and resurrected by chemist and Nobel laureate Ilya Perigogine. This idea is essentially
saying that order can be derived from a chaotic reaction, similar to ones found in chemistry. While this is true, thermodynamic equilibrium is also true. In fact, deviations from this equilibrium are quite common; snowflakes, for example, are deviations from the thermodynamic equilibrium. However, snowflakes are about the limit of the self-ordering scientists observe in the universe. Snowflakes also exhibit a high-degree of order but a very low degree of "information" or design. If the universe could order itself, then technically the need for God in nature is eliminated. However, Hugh Ross looks at the difference described above and applies it with an excellent analogy, "The distinction is roughly like the difference between the New Testament and a book containing the sentence 'God is Good' repeated 90,000 times. The latter shows considerable order but not much information. The former contains both a high degree of order and a high degree of information (or design.)"

The latter argument ("evolution into designer") was first proposed by astrophysicists John Barrow and Frank Tipler. The "evolution into designer" theory is similar in some respects to the science-fiction television show Stargate. In the show, a race similar to human beings called "Ancients" were extremely technologically advanced, so much so that they "seeded" the Milky Way galaxy for the human race. However, the ancients discovered how to evolve or "ascend" beyond the physical realms and could then interact with the physical realm outside of space and time. Barrow and Tipler reach a similar conclusion; eventually human beings will become the omniscient, omnipotent, omnipresent Creator-God. However, even Tipler looked at the evidence and eventually concluded, "I never in
my wildest dreams imagined that one day I would be writing a book purporting to show that the central claims of Judeo-Christian theology are in fact true, that these claims are straightforward deductions of the laws of physics as we now understand them.\textsuperscript{51}

Finally, we reach a last consideration. Some scientists might go so far as to propose that aliens seeded the galaxy and sci-fi fans would enjoy that for a time, but appealing to aliens does not solve anything (how did the aliens get there?). Other scientists, however, reach a conclusion known as String Theory. String Theory is a complicated theory that suggests two-dimensional "strings" or something like it exist in space-time and make up all particles and interactions. These strings resonate or move at differing frequencies like the strings on a guitar. The tension of these strings could be tighter or looser, but the point is that many different "excitation modes" could exist all at once (think of the wide range of sound a guitar can make). This theory successfully stands up to most rebuttals, has passed all six designed tests to help prove it, and incorporates gravity, among other things. Like M-Theory, String Theory is said to be a theory of everything and may one day become the same theory as M-Theory.\textsuperscript{52}

However, as appealing as String Theory may be, it violates some fundamental "rules of thumb" which scientists have used for years, such as Occam’s Razor, which asks for the simplest explanation. It also proves nothing about the origin of the universe. If these strings do exist, then they really could not have just come from nothing. We reach the same problems we have already reached with other theories.
of infinite age and may have even compounded the problem as a whole by
introducing even more variables to the equation of everything.

Fine-Tuning the Earth

While the universe exhibits some remarkable fine-tuning elements, the Earth
itself as a place for life is even more astonishing in terms of fine-tuning. We will
only mention a few, but to put it into perspective, the possibilities of an Earth-like
planet existing is 1 in $10^{144}$, dwarfing the chances of a "just right universe." The
Earth holds some 66 major characteristics that life, as we know it, requires. Ross
halfway jokes about the chances of finding a planet such as Earth at any point in
time and says, "the odds actually are higher that the reader will be killed by a
sudden reversal in the second law of thermodynamics."^53

To begin, Frank Drake, Carl Sagan, and Iosef Shklovskii developed a
mathematical theory that proposed about .001% of all stars contain a life-planet (a
planet capable of sustaining life). This is based on distance from the star and the
type of star. However, this is about the minimum required for life to just barely
survive and even then only the hardiest of bacteria might exist. However, Drake,
Sagan, and Shklovskii over-predicted the amount of planets by quite a bit.
Nevertheless, the number persists and is still a workable frame.^54

With this in mind, the Milky Way Galaxy is in a unique cluster of galaxies
known as the "Local Group." It is on the outer edge of the Virgo Supercluster and
actually makes our location exceptional. Our galaxy is not likely to collide with
other galaxies for at least another few billion years. The Local Group is also a rather
tame group of galaxies that allow the Milky Way to pull gas and dust off smaller
galaxies to maintain the spiral-arm structure of our galaxy. Besides the cluster,
the Milky Way itself is a rather privileged galaxy. It is part of the 5% of galaxies that
are spiral-arm, meaning stable stars can be born while planets form around them.
Other galaxy types, such as elliptical galaxies, do not have stable stars and actually
most star-formation ceases by the time heavy elements exists in enough quantity to
form planets with heavy elements (rocky planets). Surprisingly, this also means
that supernova must have happened frequently in the early stages of our galaxy
when we consider that our solar system is itself quite unique. However, supernovas
cannot happen with great regularity now as a supernova of some of the closer stars
would wipe all life from the solar system. The Earth’s real estate is prime for long-
term support of life in the galaxy.

Both galaxy clusters and galaxies are meaningless, however, without the
super abundance of one element in particular and it is found excessively within our
solar system. This element is none other than carbon. Carbon is one of three
elements that can form complex molecules. The other two, boron and silicon, have
several significant problems related to life. Boron is rare and, when in large
quantities, is poisonous to life, and silicon cannot string together more than about
100 amino acids. Silicon-based life would not even survive long enough to go
through one evolutionary phase. We have already spoken in length about Carbon,
but to find so much of it on a planet such as Earth truly is astonishing.

Additionally, the Sun is located at a precarious position in between two spiral
arms of the Milky Way. This “corotation distance” is quite unique as nearly all other
stars are within the spiral arms, in the central bulge of the galaxy, or stuck in large clusters of stars. The sun is rather alone and allows planets to orbit the sun without interruption while also keeping the Earth outside the range of black holes, supernova, supergiant stars, and the extremely hot remnants of supernova that would destroy the Earth’s atmosphere. Even more curious is that a star between the arms of a galaxy typically does not stay there. Before long it will be swept into one of the arms because the rotation of the arms around the center of the galaxy is different than the rotation of the star around the center of the galaxy. Our sun, on the other hand, is situated at just the right distance from the center of the galaxy so that our orbit matches the rotation of the spiral arms.58

The sun is special for several other reasons besides. As it orbits the center of the galaxy, the sun does not move very much within its orbital plane. Most stars will move back-and-forth, up-and-down, or side-to-side as they orbit the galaxy, a process detrimental to life. The sun is also the right size in terms of mass, is a single-star system (not a binary system), extremely stable, in the beginning of middle-age, and has allowed life to flourish in such a way that the atmosphere of Earth has exactly cancelled out the effects of the 30% increase in luminosity of the sun, more than enough to exterminate all life. This “cancelling out” has actually occurred due to the introduction of the right kind of life at the right time in the history of Earth. Not humans creating pollution, but rather single-celled life creating that “pollution,” limiting the heat-absorption efficiency of the atmosphere and allowing less light through and preventing a catastrophic freeze up or melt down.59
Finally, we have the right planet. The Earth is not the only “Earth-like planet” in the galaxy let alone the universe, but it is quite unique in other ways. First of all, a change in distance from the sun by 2% would rid the planet of life. Besides the distance from the sun, the Earth also has a rather special orbit in that it is very nearly circular, preventing the Earth from heating up well above normal temperature and cooling off well below normal temperature as we see with planets with very elliptical orbits.\textsuperscript{60} Even the rotation period of the Earth is finely-tuned to be ideal for life. If the Earth rotated slower by just a few percent, temperature differences would be too great. If it were too fast, wind velocities would be catastrophic.\textsuperscript{61}

Another, often overlooked, factor of the Earth is the moon. The Earth’s moon is considerably special when compared to the moons of other planets. The moon is relatively large, compared to the size of the planet and it exerts significant gravitational pull. This, of course, causes the tides but it also slowed the rotation of the Earth significantly so life could grow in variety. Its formation (hypothesized to be due to a massive collision with another planetoid early on in the history of the Earth) also allowed water to begin to condense and accumulate by “replacing” the Earth’s early atmosphere during the collision. The moon even stabilizes the Earth’s tilt, protecting the planet from climate extremes (humans can live anywhere between the poles rather than just near the equator).\textsuperscript{62} According to Edward Harrison, we see a miracle in the Moon because it has provided a planet with the ideal surface gravity, atmospheric composition, atmospheric pressure, crustal iron
abundance, tectonics, volcanism, rotation rate, rate of decline in rotation rate, and stable rotation axis tilt for life to begin and flourish.  

While these are only some of the factors, as mentioned above, some major factors contribute to the Earth's ideal qualities for life and a total of about 128. And indeed, Paul Davies says, "The world seems to be structured in such a way that its mathematical description is not at all trivial yet is still within the capabilities of human reasoning."  

Other Possible Origins of the Universe  

Before I get into my own conclusions and some philosophical analysis, it is appropriate to look at several other possible origins of the universe. The most common origin (besides the Big Bang) is the multiverse. This idea is essentially about an infinite number of hypothetical universes, so that at least one universe should have a planet just like Earth. And in fact, some multiverse proponents suggest that every decision ever made creates two universes, one where the choice was made and one where it was not (the "many-worlds" conjecture of quantum mechanics). However, the multiverse becomes pretty complex. Prominent physicist John Polkinghorne rejects the multiverse concept entirely, saying,

Let us recognize these speculations for what they are. They are not physics, but in the strictest sense, metaphysics. There is no purely scientific reason to believe in an ensemble of universes. By construction
these other worlds are unknowable by us. A possible explanation of equal intellectual respectability—and to my mind greater economy and elegance—would be that this one world is the way it is, because it is the creation of the will of a Creator who purposes that it should be so.65

Lennox makes a good point, too and says, “I am tempted to add that belief in God seems to be a much more rational option, if the alternative is to believe that every other universe that can possibly exist does exist.”66 The major objection with the multiverse is that it is far too improbable and has no scientific evidence for it at all as the theory cannot possibly be tested. The multiverse also fails in regard to the laws of nature, as Lennox points out and as Antony Flew says, “So multiverse or not, we still have to come to terms with the origin of the laws of nature. And the only viable explanation here is the divine Mind.”67 Richard Dawkins, a spirited naturalist, has some defense, stating, “you can’t get much more complex than an Almighty God.”68 Dawkins has a significant point here that believing in an Almighty God beyond space and time who is infinite is mind-boggling. However, as Paul Davies points out, along with many others, “The same criticism can be leveled at an infinite multiverse.”69 If the multiverse where true, it may indeed provide an explanation for the fine-tuning we see in our universe, but the multiverse itself, as a natural phenomenon, requires its own explanation or origin. On the other hand, a divine Creator (as in God) is not natural and requires no causal explanation for its origin.
However, the multiverse is not the only theory out there. As mentioned above, String Theory is also a fairly strong proponent and is really the basis of Hawking's M-Theory. On this point, Lennox is extremely persistent, stating some of Hawking's mistakes. Lennox first asserts that laws cannot "create" anything. Additionally, M-Theory fails the "solid model test" based on Hawking's own idea of a solid model. Hawking's solid model fits four basic characteristics: 1) it's elegant, 2) it contains few arbitrary or adjustable elements, 3) it agrees with and explains all existing observations, and 4) it makes detailed predictions about future observations that can disprove or falsify the model if they are not borne out.

M-Theory fits none of the four. In fact, humanist Roger Penrose says, referring to The Grand Design, "The 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." Other scientists have said similar things and point to Hawking's failure to see the model as untestable. In fact, Tim Radford writes in his review of The Grand Design,

In this very brief history of modern cosmological physics, the laws of quantum and relativistic physics represent things to be wondered at but widely accepted: just like biblical miracles. M-Theory invokes something different: a prime mover, a begetter, a creative force that is everywhere and nowhere. This force cannot be identified by instruments or examined...
by comprehensible mathematical prediction, and yet it contains all possibilities. It incorporates omnipresence, omniscience, and omnipotence, and it’s a big mystery. Remind you of Anybody?72

Aside from M-Theory and String Theory, other philosophers and scientists have their own champion theories. Some suggest the steady state model, where matter is continually and spontaneously created. This fails in virtually every respect as we do not see matter being spontaneously created today and the evidence we do have seems to suggest the very opposite. The Quasi-Steady state model replaced the Steady state model where new matter is created inside large galaxies and then spewed out from there. This idea also fails to predict anything of substance and the predictions it does make have appeared false.73

One final theory may be termed Infinite Oscillation, or “the bouncing universe.” This model suggests that the Big Bang happens over and over and over again. In other words, gravity will eventually slow, stop, and reverse the expansion of the universe back down to a near-singularity and then another explosion or ”big bang” occurs. This would repeat and, eventually a universe where life could exist appears. This has many of the same problems as the multiverse in that it appeals to infinity, it is overly complicated, and the universe would be missing a great deal of mass to halt and reverse the expansion of the universe.74 The model also fails to account for thermodynamic dissipation (a rubber band on a new paddle-ball is significantly more elastic and pulls the ball back with much greater force than a
rubber band on an old paddle-ball). Physically speaking, this means the universe could bounce no more than about 12 times. Considering the known geometry of the universe (flat) and other evidence that denies the collapsing of the universe leads most to assert that the Infinite Oscillation universe is unfounded. Newer observations have thus confirmed that the universe has an accelerating expansion rate and will probably never re-collapse.

All of these other models have a few major assumptions but the biggest one is time. They all appear to make time irrelevant. However, time is not irrelevant as evidenced by the proof of the beginning time. They lack a concrete “beginning” which presents the exact same problems proposed hundreds of years before us with the static universe; a universe that had no beginning, no end, and would never change. This medieval concept has been continually challenged since its inception so why should we accept it now?

Philosophical Points

While perhaps just a bit beyond the scope of this paper, some philosophical thought ought to be shared for a complete picture. Some scientists have considered the Earth as a place for adventure. In other words, they see the Earth as a way to learn about God and, in actuality, everything. Guillermo Gonzalez and Jay Richards put forth a book with several philosophical positions regarding intelligent design. The book, *The Privileged Planet*, is all about how the Earth is situated at a particularly special place in the universe that allows human beings to observe the cosmos. This does raise some questions, especially considering that the Earth is the
only planet known to man where life exists. Why, indeed, is the Earth so unique? This position leads to more philosophical underpinnings, leading ultimately to the question of “who is man?” I feel very much like Erwin Schrödinger who once said, “The scientific picture of the world around me is very deficient. It gives me a lot of factual information, puts all our experience in a magnificently consistent order, but is ghastly silent about all that is really near to our heart, that really matters to us.”76

Paul Davies sums up this entire position nicely and says:

What is Man that we might be party to such privilege? I cannot believe our existence in this universe is a mere quirk of fate, an accident of history, an incidental blip in the great cosmic drama. Our involvement is too intimate. The physical species Homo may count for nothing, but the existence of mind in some organism on some planet in a universe is surly a fact of fundamental significance. Through conscious beings the universe has generated self-awareness. This can be no trivial detail, no minor byproduct of mindless, purposeless forces. We are truly meant to be here.77

Perhaps this idea is unfounded. On the other hand, even Stephen Hawking believes in a “unified field” as M-Theory would logically construct. And even more, science
does have its limits. Some die-hard “scientism” professors (those who have faith in science akin to faith in God) may suggest this idea is merely nonsense and that mankind really is here as a mere accident. Many will jump to emotional appeals, saying things like, “If God existed he would not allow a 10-year old to die of cancer.” At the heart of this matter, however, is the same emotional appeal. There is no science there and, technically, their appeal is within a branch of theology, a science about knowing God. However, sifting through the “billions of reasons” those scientism converts invoke is difficult.

William Paley’s Divine Watchmaker, which has been recently resurrected from the ashes of “science,” may indeed have some reliability on this point. Really since the inception of the Big Bang as a consistent, reasonable, and provable cosmology, Paley’s Watchmaker is beginning to make even more sense and the universe is astronomically more complicated than a pocket watch. Darwin looked at the irreducibly complex eyeball and wondered very much the same: the order, the precision, the necessary moving parts are all too complicated for a series of random events that fit in just the right order to achieve a level of design no natural force in the universe has ever been able to accomplish. The Earth did not just come pre-equipped with pocket watches, coffee shops, and universities. Someone, or several someones, designed, constructed, and continue to operate pocket watches, coffee shops, and universities. I do not really think anyone would deny that, after looking at any of the above three examples, they just simply constructed themselves. We must apply this logic to the universe, though, and grasp the fact of the matter: the laws of nature are more precise than the blueprint of a school.
Christian apologist Chris Stefanick in a talk given at Focus National Conference in 2011 puts this analogy into practice: A print shop explodes and the firefighters sift through the wreckage to find a dictionary that was not there before. As if the print shop explosion somehow created the dictionary. This is identical to Paley’s argument in all respects but Stefanick continues and says, “On a molecular level, your fingernail is more complex than a library full of dictionaries.” His point is well made but it directs to a different symbol really. For one, the amount of time that life has existed on the planet up to this very moment is far too short a time for amino acids to combine in just the right way to create even the simplest organism let alone to evolve into humans with more complexity than anything this universe has to offer. Gerald Schroeder makes a pretty curious analogy to the spontaneous generation of life. He suggests that many people believe that by placing computers and monkeys in a room and having them slam the keyboard enough times they can eventually make a Shakespearean sonnet. He says,

All the sonnets are the same length. They’re by definition 14 lines long. I picked the one I knew the opening line for, “Shall I compare thee to a summer’s day?” I counted the number of letters; there are 488 letters in that sonnet. What’s the likelihood of hammering away and getting 488 letters in the exact sequence as in “Shall I Compare Thee to a Summer’s Day?”? What you end up with is 26 multiplied by itself
488 times—or 26 to the 488th power. Or, in other words, in base 10, 10 to the 690th power.

The number of particles in the universe—not grains of sand, I'm talking about protons, electrons, and neutrons—is 10 to the 80th. Ten to the 80th is 1 with 80 zeros after it. Ten to the 690th is 1 with 690 zeros after it. There are not enough particles in the universe to write down the trials; you'd be off by a factor of more than 10 to the 600th.

If you took the entire universe and converted it to computer chips—forget the monkeys—each one weighing a millionth of a gram and had each computer chip able to spin out 488 trials at, say, a million times a second; if you turn the entire universe into these microcomputer chips and these chips were spinning a million times a second [producing] random letters, the number of trials you would get since the beginning of time would be 10 to the 90th trials. It would be off again by a factor of 10 to the 600th. You will never get a sonnet by chance. The universe would have to be 10 to the 600th times larger. Yet the world just thinks the monkeys can do it every time.⁸⁰
To me, this is pretty convincing for life. Schroeder is quite correct to assert that many people, for some reason, think the monkeys can write a Shakespearean sonnet the first try and thus so can the Earth in creating life. In the same way, life is dependant on amino acids forming proteins and those proteins forming cells. Some 500 amino acids must combine to form some of those proteins. So far though, laboratory experiments (such as Miller-Urey experiments) with the perfect conditions for life have still failed to create even one protein, let alone an entire cell.

Saint Augustine makes yet another curious and philosophical implication all college students (and perhaps some professors) ought to consider. He says, "men go abroad to wonder at the heights of the mountains, the huge waves of the sea, the long courses of rivers, the vast compass of the ocean, and the circular motion of the stars, and they pass by themselves without wondering." 81 The human person, in its incredible complexity and dramatic uniqueness, is often overlooked by typical science. Men and women are far more than just biology. We are an entire range of emotions, feelings, thoughts, ideas, and, most importantly, choices. Despite what Hawking may say, free will is remarkably simple to test. I can decide to jump into a nearly frozen lake for the "Polar Plunge" or something else counter intuitive to my survival. Indeed, humans exhibit their most unnatural characteristics when they sacrifice their own lives for those they love or wish to protect even when those they wish to protect will never offer the same sacrifice either directly or indirectly. This is not just some game of survival but instead a truly unnatural, unexplainable phenomenon. For when asked why a mother or a father would risk their own life to
save someone else's child, they often respond with a moral answer: "A parent should never suffer the loss of a child."

Combining Paley's Watchmaker and Augustine, men and women probably do need to consider the reality of science, and what it may be saying. At the very least, God must be considered as a possible cause of the universe, despite how most people claim invoking God as a Creator has no scientific basis and thus should not be taught in science class. But that idea is simply not true as evidenced above; it is not a statement of science, but simply a personal opinion of some scientists. The multiverse is heralded as a scientific marvel and yet no substantial evidence to prove it has come about or is even theoretically possible simply because it is an untestable hypothesis. The point is that at some point science and religion are going to mix. At some point, they will have to mix. Science will serve one purpose and religion another.

Christoph Cardinal Schönborn says, "All the work of science lies in discovering order, laws, and connections. Let us express this with the metaphor of a book: it is discovering the alphabet, the grammar and syntax, and finally the text that God has written in this book of creation."82 Cardinal Schönborn might be a Catholic and predisposed to believing in God, but that does not mean he is to be written off as unintelligent or prehistoric. What the Cardinal sees is very much a combination of science and religion where they create a synergy of sorts that enriches both beyond what they could do on their own.

Looking at all the fine-tuning evidence also implies only two conclusions: Either "God is real and/or there are many and varied universes."83 Polkinghorne is
absolutely right in this respect. The evidence of fine-tuning leaves only two possibilities: infinite universes or one infinite being. I find myself tending much more toward the infinite being, also known as God. Above all, the evidence, many of the scientists quoted here, and especially recent connections between theology and cosmology illustrate that theist scientists are not walking contradictions. How could any self-respecting scientist support the antithesis of his field of study?

I think, as I end my reflections, that recognizing where science stops and where faith steps in is important. I find it ironic that many naturalists will immediately appeal to faulty reason and suggest, “I could also say the flying spaghetti monster is real. We do not see him or hear him or touch him, but I know he’s real.” This appeal is an attempt to show the absurdity of a God outside of space-time, outside of the 3-dimensional world. Yet the evidence for God besides that in the scientific, empirical realm is significant. To my knowledge, the Church of the Flying Spaghetti Monster has not been founded. He, or more accurately, it...does not exist. It is simply a figment of imagination. It openly mocks faith for no real purpose except to poke fun at theists. Perhaps it is not so juvenile but is in fact an attempt to make a philosophical point. Still, it scientifically does not make any sense: there is no corpus of scientific evidence which is tightly consistent with well-established attributes of a putative Invisible Spaghetti Monster who floats around in the sky. Therefore, appealing to an unscientific, “straw-man” style argument to attempt to prove God does not exist is contradictory and fails to make any impact.

Beyond just science, though, which was illustrated at length already, nonscientific evidence abounds for God. The Bible, for one, has a great deal to say
about God. The Koran would also apply, I think. These are not just opinion books. They are the cultural history of an entire group of people. Just because some of the facts are disputed does not mean the books, or rather the collections, are entirely wrong. In fact, The Big Bang fits the mold outlined in Genesis remarkably well.

As for me, I am a proponent of a philosophical ideal that begins and ends with God called Personalism, a particularly Christian theory developed most notably by the late Karol Wojtyla. This theory combines anthropology, cosmology, and the Bible to one fundamental claim: "So God created mankind in his own image, in the image of God he created them; male and female he created them."84 The idea that the human being has been infinitely dignified from the beginning as a creation of God and who is destined to subdue the Earth, to be worthy of love, and most importantly, worthy of eternal life, is a powerful pull to the divine. When taken with the fine-tuning elements emphasized above, the very essence of being Christian is somehow highlighted and viewed in the light of hope: Life is a precious gift to be preserved and protected and worth the love that all Christians are called to exhibit.
Notes

5 Ibid, page 33.
6 Ibid, 35.
8 Ross, *The Creator and the Cosmos*, page 43.
20 Ross, *The Creator and the Cosmos*, page 54.
23 Ibid, page 146.
24 Ibid.
27 Ross, The Creator and the Cosmos, page 146-147.
30 Ross, The Creator and the Cosmos, pages 148-149.
31 Ibid.
32 Ibid, page 150.
33 Ibid.
36 Ibid, page 197.
37 Ibid.
38 Ibid, page 199.
39 Ibid, page 222.
40 Lennox, God and Stephen Hawking: Whose Design is it Anyway?, page 72.
42 Ibid.
44 Lennox, God and Stephen Hawking: Whose Design is it Anyway?, page 71-72.
45 Davies, The Mind of God, page 204.
48 Ross, The Creator and the Cosmos, page 164.
49 Ibid, page 164-165.
50 Ibid, page 165.
54 Ibid, page 175.
56 Ibid.
Place in the Cosmos is Designed for Discovery (Washington, DC: Regnery Publishing, Inc., 2004), page 16.


Lennox, God and Stephen Hawking, page 50.


Lennox, God and Stephen Hawking, pages 38, 51-52.


Ross, The Creator and the Cosmos, page 78-82.


Ibid, page 90.


Polkinghorne, Belief in God in an Age of Science (Connecticut: Yale University 1998), page 5.


Augustine, Confessions, C. 397, Book 10.

Cristoph Cardinal Schönborn, Chance or Purpose? (San Francisco: Ignatius Press, 2007).

Polkinghorne, Belief in God in an Age of Science, page 7.

Genesis 1:27