Are We Significant in This Vast Universe? – The Evidence Supports Belief in God

Steve Cable considers the question of why we could possibly be important in such a vast universe. Current research shows that there are reasons why God needed such a vast universe to house life on this planet. Understanding this idea can make it an apologetic for our faith rather than a fact which detracts from our faith. Science is the study of God's creation and the more we delve into it the clearer the hand of God becomes.

Why Is the Universe So Vast? Are We Truly Insignificant?

What do you feel when you look at the night sky? Awe? Insignificance? Adoration? Recently, my wife and I took three Ph.D. students from China for an overnight outing at a lake in West Texas. One of the things that impressed them most was the opportunity to view the night sky on a moonless night. Due to "light pollution," people in most cities can only make out a few hundred stars with the naked eye. These young women had never seen the night sky as King David did when he declared, "The heavens declare the glory of God!" (Psalm 19:1, NASU). They were so taken by the stars and the Milky Way that they spent several hours lying on the dock, looking up at the night sky.



These students were not Christians, and I was glad to have an opportunity to use what we know about the stars to talk to them about the overwhelming evidence for a Creator who is intensely interested in humans. However, another host may have used the same night sky to argue that if there is a God, we must not be

very significant to God. Which view is correct? In this article, we will look into the Bible *and* into current scientific theories to better equip us to answer this important question.

According to the Bible, the transcendent Creator of this universe made humans in His own image as the focal point of His creation. Skeptics of a biblical worldview often point to the vastness of the universe as evidence that humans cannot be the focal point of a theistic creation. The famous astronomer, author, and television personality Carl Sagan put it this way:

> Our posturings, our imagined self-importance, the delusion that we have some privileged position in the Universe, are challenged by this point of pale light. Our planet is a lonely speck in the great enveloping cosmic dark. In our obscurity, in all this vastness, there is no hint that help will come from elsewhere to save us from ourselves.{1}

Famous physicist Stephen Hawking wrote, "Our Solar System is certainly a prerequisite for our existence . . . . but there does not seem to be a need for all these other galaxies."{2}

In other words, why would God create this huge universe, if He was primarily interested in His relationship with one species occupying a tiny planet?

I think this is a reasonable question. After all, based on observations from the Hubble Telescope, the current best estimate for the number of stars in the observable universe is

5 times 10 to the 22nd power; that is a 5 with 22 zeros after it. How many stars is that? Well, if you were to count one star every second, it would take you only fifteen hundred trillion years to count them. These stars are spread over billions of light years. Amazingly, all of these stars account for only about 1% of the total mass of the universe. Why did God create such a vast universe, placing us on a single small planet with no reasonable hope of ever traveling beyond our

solar system? Does the size of our universe run counter to a biblical worldview?

A Biblical Perspective of Humankind and the Vast Heavens

If God is the Creator of the universe, and the Bible is revelation directly from God, then accurate observation of the universe will ultimately prove to be consistent with His revelation. By combining the general revelation of science with the special revelation of the Bible, we should be rewarded with a greater understanding of the nature of our Creator and His intentions for mankind. Let's see if this is true in addressing the vastness of the universe.

First let's consider what God's special revelation for us, the Bible, has to say about the vastness of the universe. The Bible often refers to God's creative work in "stretching out the heavens" and filling it with stars (e.g. Job 9:8, Zechariah 12:1). A review of Bible passages on the stars and the heavens reveals a number of reasons why a vast universe is consistent with humans being the most significant part of creation.

We need to realize that creating a vast universe is not harder for God than creating a smaller universe. God brought the universe into existence out of nothing. He had no limits on the amount of matter and energy created. Consequently, it is meaningless to say that it would be a tremendous waste for God to create so many lifeless galaxies. The concept of waste only applies when there is a limited supply. When there is an unlimited supply, you can use all you desire; there is plenty more where that came from.

Within this vast universe, God placed earth in potentially the only place in the universe capable of supporting advanced life. There are many aspects of the universe that are hidden

from the casual observer, but the vastness of the heavens is not one of them. God created the earth and positioned it in an ideal place so that humans could observe the vastness of the heavens and the enormous number of stars. The Bible points out at least five purposes for humans observing this vast universe:

1. *To reveal His majesty and power.* Job refers to this understanding as he reflected on his sufferings stating,

> Who commands the sun not to shine,
> And sets a seal upon the stars;
> Who alone stretches out the heavens
> And tramples down the waves of the sea;
> Who makes the Bear, Orion and the Pleiades,
> And the chambers of the south;
> Who does great things, unfathomable,
> And wondrous works without number.
> Were He to pass by me, I would not see Him;
> Were He to move past me, I would not perceive Him.
> Were He to snatch away, who could restrain Him?
> Who could say to Him, "What are You doing?" (Job 9:7-12).

Later, God confronts Job with His lack of understanding the full power and majesty of His Creator:

> Where were you when I laid the foundation of the earth?
> Tell Me, if you have understanding, ...
> Can you bind the chains of the Pleiades,
> Or loose the cords of Orion?
> Can you lead forth a constellation in its season,
> And guide the Bear with her satellites?
> Do you know the ordinances of the heavens,
> Or fix their rule over the earth? (Job 38:4, 31-33).

As we see in this passage, God intentionally did creative, wondrous works without number so that we could glimpse His greatness.

2. *To emphasize our insignificance without God.* The vastness of the heavens highlights how insignificant humans are apart from God's concern for us. The primary lesson that Job learned through his experience was that we are in no position to critique God's actions over His creation. God's creation is so vast that any significance we have comes solely from God's choice to be concerned with us. Job stated it this way: "Behold, I am insignificant; what can I reply to You?" (Job 40:4)

King David was the most significant person in Israel during his reign, but when he considered the vastness of God's creation he acknowledged our insignificance:

> When I consider Your heavens, the work of Your fingers,
> The moon and the stars, which You have ordained;
> What is man that You take thought of him,
> And the son of man that You care for him (Psalm 8:3-4)?

3. *As a measure of His loving kindness toward us.* God uses the vastness of the heavens to help us understand the magnitude of His love for us, stating, "For as high as the heavens are above the earth, So great is His loving kindness toward those who fear Him" (Psalm 103:11).

God's love for us is greater than the billions of light years which separate us from the most distant galaxies.

4. *As a picture of His faithfulness and forgiveness.* In a similar way, God uses our inability to completely grasp the breadth and depth of the universe to emphasize spiritual truths. Through Jeremiah, God promised a new covenant where He will remember our sins no more. God used the vastness of the heavens to convey His promise to never cast those in the new covenant away from Him with these words,

> Thus says the LORD, "If the heavens above can be measured
> And the foundations of the earth searched out below,
> Then I will also cast off all the offspring of Israel

> For all that they have done," declares the LORD (Jeremiah 31:37).

Even today astronomers recognize that the universe we can observe is much smaller than the state of the universe as it exists today. Due to the finite speed of light, it is impossible to directly observe the current size of the universe or count the exact number of stars. Just as the heavens can never be measured, God will never cast us off from His presence.

5. *As a reminder that our understanding is limited.* Our Creator understands the universe from one end to the other and from the beginning of time to its end. As humans, we are just beginning to probe its mysteries. So, God reminds us, "For as the heavens are higher than the earth, So are My ways higher than your ways And My thoughts than your thoughts" (Isaiah 55:9).

It is clear that God intended us to observe and study the stars and the heavens. As a part of God's general revelation, the magnitude of the universe speaks to His greatness. Through God's special revelation, we see God using the vastness of His creation to teach us lessons about who we are and how we relate to Him. For a Creator who was willing to sacrifice His only Son on the cross for our redemption, it would be child's play to create a vast universe solely for our instruction. With this understanding, the vastness of the universe becomes a testament to our importance to God rather than evidence of our insignificance.

A Scientific Perspective of Humankind and the Vast Universe

If God is the Creator of the universe and the author of the Bible, accurate observation of the universe will ultimately prove to be consistent with His revelation. By combining the

general revelation of science with the special revelation of the Bible, we should be rewarded with a greater understanding of the nature of our Creator and His intentions for mankind.

In his book *Why the Universe is the Way It Is*{3}, Hugh Ross points out a number of areas where combining the latest observations of astronomy and physics with biblical theology provides us with fuller answers for some of the tough questions of life. One area he focuses on is the question we have been examining: "Does the vastness of this universe mean that we are insignificant and/or accidental?"

If we assume, as most skeptics and seekers would, that the physical laws of this universe have remained constant from the beginning of the universe until now, then the current state of scientific knowledge points to three reasons why the universe must occupy the mass and volume that it does in order for advanced carbon based life to exist on this planet.

1. *The exact mass of the universe was necessary for life supporting elements to exist*. Life requires heavier elements such as oxygen, carbon, and nitrogen. These elements are produced in the nuclear furnaces of stars. If there were less mass in the universe, only lighter elements such as helium would be produced. If there were more mass, only heavier elements, such as iron, would be produced. In fact, the amount of mass and dark energy in the universe must be fine tuned to less than one part in 10 to the 60^{th} power, or one part in one trillion trillion trillion trillion trillion, to have a universe that can create a life supporting solar system and planet.

2. *The exact mass of the universe was required to regulate the expansion of the universe to allow the formation of the sun and the solar system.* Amazingly, it turns out that the same total mass that results in the right mix of life supporting elements also results in the right amount of gravity to dampen the expansion of matter across the surface of the space-time

continuum to allow the formation of stars like the sun which are capable of supporting a planet like earth. If the universe were expanding faster, stars and solar systems would not form. If the universe were expanding slower, giant stars and black holes would dominate the universe. Once again the total matter in the universe is fine tuned to support life. And what an amazing coincidence: the number that creates the right mix of elements also creates the right expansion rate. This dual fine tuning is much less likely than achieving the financial returns guaranteed by Bernie Madoff!

3. *The vast volume of the universe is required to give the earth just the right amount of light and other electromagnetic radiation to support life and not destroy it.* Life not only requires a planet with the right mix of elements orbiting the right kind of sun in just the right solar system; it also requires a "just right" galactic environment. Astronomers has discovered what they call "the galactic habitable zone" for our Milky Way galaxy at a distance of about 26,000 light years from the center of the galaxy. Any planet closer to the center will experience deadly radiation levels. Any planet further away from the center would lack the mix of heavy elements necessary for advanced life. But the vast majority of this habitable zone is inside one of the uninhabitable spiral arms of the galaxy. Since stars revolve around the galactic center at a rate different than the spiral arm structure based on their distance from the center of the galaxy, most solar systems pass through deadly spiral arms over the course of time. Our solar system occupies a very special place as Hugh Ross points out: "The solar system holds a special position in the Milky Way . . . the one distance from the core where stars orbit the galaxy at the same rate as its spiral arm structure does."{4}

Once again we are faced with a divine "coincidence": the same fine-tuned distance required to safely place a habitable planet is also the exact distance required to keep that planet

out of the deadly spiral arms.

Not only must the earth be located far from the center of the Milky Way, the Milky Way must be located far enough away from other galaxies to maintain the stability of its spiral structure. Many aspects of the Milky Way appear to be very rare or unique in the universe.

As you can see, a logical application of current scientific orthodoxy based on the Big Bang and constant natural laws overwhelmingly supports the view that the vastness of the universe does not imply that human life is unremarkable and insignificant. On the contrary, the most reasonable conclusion from the evidence is that life on this planet is the primary purpose behind the vastness of our universe. Both the Bible and the results of scientific observation agree: our vast universe is the work of a Creator who considers life on earth as very significant.

Consequently, we don't have to convince a seeker that the world is much younger than it appears in order to answer the question, "Are we significant to our Creator?" We can say, "Whether you look to the teaching of the Bible or you look at the current prevailing models from the scientific community, the answer is definitely yes!" The important question is, "Is it possible to know more about my Creator and have a relationship with Him?" Beginning with the death and resurrection of Jesus, we can explain how to have an eternal relationship with God and why we believe the Bible is the reliable source of information about our Creator and our universe.

• Check out our article "The Answer is the Resurrection" at Probe.org for more information on using the resurrection to respond to key questions from seekers.
• For more information on topics related to the origins of our universe and other science topics, check out our Faith and Science section.

• For further discussion on the age of the universe see "Christian Views of Science and Earth History" in our Faith and Science section.
• For further discussion of how the age of the universe debate relates to this discussion see Appendix A: Theology vs. Science or Theology plus Science? and Appendix B: Apologetics and the Age of the Universe.

Notes

1. Carl Sagan, *Pale Blue Dot: A Vision of the Human Future in Space* (New York: Random House, 1994).
2. Stephen Hawking, *A Brief History of Time: From the Big Bang to Black Holes* (New York: Bantam, 1988).
3. Hugh Ross, *Why The Universe Is The Way It Is* (Grand Rapids, MI: Baker Books, 2008).
4. Ross, *Why The Universe Is The Way It Is*, 66.

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Are We Alone in the Universe? A Biblical View of Aliens

Dr. Ray Bohlin provides a Christian view on the probability and meaning of life on other planets. From a biblical perspective, what would it mean to find evidence of life beyond this earth?

 *This article is also available in Spanish.*

Life on Mars?

There was great excitement in the media when a group of

scientists from NASA announced they had found evidence of life on Mars. Their evidence, an alleged Martian meteorite, was vaulted to center stage, and everyone from CNN to *Nightline* ran special programs with interviews and video footage of the scientists and their prized specimen. President Clinton was so excited by the announcement that he praised the U.S. space program and took the opportunity to establish a bipartisan space summit headed up by Vice President Al Gore to study the future of U.S. space research. Aren't we already doing that?

Anyway, clearly this announcement took the country by storm. Some of the scientists were embarrassingly gushing about how significant these findings were. The media frenzy was prompted by the early release of an article from the journal *Science*, the premier scientific journal in the U.S. The article was due out the following week, but *Science* decided to release it early because it had leaked out.

Here's what the excitement was about. A group of scientists had studied a meteorite that had been found in the ice of Antarctica. Previously, it had been determined that this meteorite had originated on Mars by studying the gaseous content of glass-like components of the meteor. The gas composition matched very well the atmosphere of Mars. This conclusion seems reasonable.

So, they presumed they had a meteor from Mars. Next they looked for evidence of life on and in the crevices of the meteor. They found two types of molecules that can form as a result of life processes, carbonates and complex molecules called polyaromatic hydrocarbons or PAHs. They also found shapes in the rock that resembled those of known microfossils on Earth. Microfossils are fossils of one-celled organisms which are rather tricky to interpret.

Well, what does this mean? Obviously, the NASA scientists felt the things just mentioned provided ample evidence to conclude that life once existed on Mars. However, the chemical signs

could all be due to processes that have nothing to do with life, and the supposed microfossils are 100 times smaller than any such fossil found on Earth. Other groups that studied this same meteorite concluded that either the temperature of formation of the chemicals was far too high to allow life (over 700 degrees C) or that other chemical signals for life were absent. John Kerridge, a planetary scientist from the University of California at San Diego, said, "The conclusion is at best premature and more probably wrong." But listen to the concluding statement in the paper in *Science:*

> *Although there are alternative explanations for each of these phenomena taken individually, when they are considered collectively, particularly in view of their spatial association, we conclude that they are evidence for primitive life on Mars.{1}*

In plain English, there are reasonable non-life explanations for each of the evidences presented, but we just think that they mean there is life on Mars. The evidence ***is*** very equivocal and was challenged by many other scientists, but the media did not report that as fully. But maybe they are right! In fact, there is one simple explanation that is consistently ignored by media and scientists alike. If there really is, or has been, life on Mars, what could that possibly mean for evolution, and more importantly, does it somehow refute creation? We'll look at that next.

What Would Life on Mars Mean?

Because of the recent announcement of signs of life on Mars, many people were encouraged in their belief that we are not alone in the universe. These signs are far from certain and probably wrong, but if it's true, what would these results mean to evolutionists? Moreover, is there any reason for Christians to fear confirmation of life on Mars?

Let us assume, then, for the moment that the evidence from this Martian meteorite is legitimate evidence for life on Mars—life that at some point in the past actually existed on Mars. What would it mean?

For evolutionists the evidence is perceived as confirmation that life actually arises from non-life by purely chemical processes. In addition, evolutionists draw the conclusion that life must be able to evolve very easily since it did so on two adjacent planets in the same solar system. Therefore, even though origin of life research is actually at a standstill, such a discovery seemingly confirms the notion that *some* chemical evolution scenario *must work*. I will address this assumption later.

On the other hand, some have stated that if there is life on Mars, creationism has been dealt a death blow. They rationalize that since (1) we now know that life can evolve just about anywhere, and (2) the Bible never speaks of life anywhere but on Earth, the Bible is, therefore, unreliable. Besides, they reason, why would God create life on a planet with no humans? However, since the Bible is absolutely silent on the subject of extra-terrestrial life, we can make no predictions about its possibility. God is certainly free to create life on planets other than Earth if He chooses.

Getting back to the evolutionists' glee at the possibility of life evolving on other planets, the real question is whether this is the proper conclusion if life is indeed found on Mars? The simple answer, inexplicably avoided by the media, is NO! The simplest answer to the possible discovery of life on Mars is that the so-called "Martian life" actually came from Earth!

Think about it this way. The meteorite that was found is supposed to have existed on Mars previously. How did it get to Earth? Well, it is hypothesized that a large meteorite crashed into Mars throwing up lots of debris into space, some of which finds its way to Earth and at least a few of which are found

by Earthlings. If you are thinking with me, you now realize that the same scenario could have been played out on Earth.

Evolutionists suggest that the Earth was under heavy meteor bombardment until at least 3.8 billion years ago—about the time they say life appeared on Earth. Christian astronomer Hugh Ross states it this way:

> *Meteorites large enough to make a crater greater than 60 miles across will cause Earth rocks to escape Earth's gravity. Out of 1,000 such rocks ejected, 291 strike Venus, 20 go to Mercury, 17 hit Mars, 14 make it to Jupiter, and 1 goes all the way to Saturn. Traveling the distance with these rocks will be many varieties of Earth life.{2}*

Ross also documents that many forms of microscopic life are quite capable of surviving such a journey. All this is quite well known in the scientific community, but I have not seen it mentioned once in any public discussion. I believe the reason is that the possibility of life having evolved on Mars is too juicy to pass up.

The Improbability of Life Elsewhere in the Universe

I would like to address the amazing optimism of so many that the universe is teeming with life. No doubt this is fueled by the tremendous success of such science fiction works as *Star Wars* and *Star Trek* which eloquently present the reasonableness of a universe pregnant with intelligent life forms.

Inherent within this optimism is the evolutionary assumption that if life evolved here, certainly we should not arrogantly suppose that life could not have evolved elsewhere in the universe. And if life in general exists in the universe, then, of course, there must be intelligent life out there as well.

This is the basic assumption of the SETI program, the Search

for Extra-Terrestrial Intelligence. This is the program, now privately funded instead of federally funded, that searches space for radio waves emanating from another planet that would indicate the presence of intelligent life. But is such a hope realistic? Is there a justifiable reason for suspecting that planets suitable to life exist elsewhere in the universe?

Over the last two decades scientists have begun tabulating many characteristics of our universe, galaxy, solar system, and planet that appear to have been finely-tuned for life to exist. Christian astronomer and apologist, Dr. Hugh Ross documents all these characteristics in his book *Creator and the Cosmos,*{3} and is constantly updating them. In the book's third edition (2001), Ross documents 35 characteristics of the universe and 66 characteristics of our galaxy, solar system, and planet that are finely-tuned for life to exist.

Some examples include the size, temperature, and brightness of our sun, the size, chemical composition, and stable orbit of Earth. The fact that we have one moon and not none or two or three. The distance of the Earth from the sun, the tilt of the earth's axis, the speed of the earth's rotation, the time it takes Earth to orbit the sun. If any of these factors were different by even a few percent, the ability of Earth to sustain life would be severely compromised. Recently it has been noted that even the presence of Jupiter and Saturn serve to stabilize the orbit of Earth. Without these two large planets present exactly where they are, the Earth would be knocked out of its present near circular orbit into an elliptical one, causing higher temperature differences between seasons and subjecting Earth to greater meteor interference. Neither condition is hospitable to the continuing presence of life.

Ross has further calculated the probabilities of all these factors coming together by natural processes alone to be 1×10^{-166}; that's a decimal point followed by 165 zeroes and then a

one. A very liberal estimate of how many planets there may be, though we have only documented less than 100, is 10^{22} or 10 billion trillion planets, one for every star in the universe. Combining these two probabilities tells us that there are 10^{-144} planets in the entire universe that could support life. Obviously this is far less than one; therefore, by natural processes alone, we shouldn't even be here—let alone some kind of alien life form.

So unless God created life elsewhere, we are alone, and for the materialistic evolutionist, this is a frightening thought.

Problems with Chemical Evolution on Earth

The statistics given above mean that we are really alone in the universe and that there is no hope of finding intelligent civilizations as in the television program *Star Trek.* While it means there is no one out there to threaten our survival, there is also no one out there to save us from our own mistakes.

This observation highlights why I believe the scientific community and the media became so excited about the possibilities of life on Mars. Efforts to determine how life could have evolved from non-living matter have been so fraught with problems that it makes the possibility of life elsewhere extremely remote. But if it could be proved that life evolved elsewhere, then it would demonstrate that life springs up rather easily, and we just haven't found the right trick here on Earth to prove it. But this just leapfrogs the problem.

But is the evolution of life from non-living chemicals really that impossible? The difficulties fall into three categories, the Chemical Problem, the Thermodynamic Problem, and the Informational Problem. These issues are presented comprehensively in a book by Thaxton, Bradley, and Olsen titled *The Mystery of Life's Origin*{4} and in a chapter in the

edited volume by J. P. Moreland, *The Creation Hypothesis*.{5}

Chemical Problems are illustrated by the difficulty in synthesizing even the simplest building block molecules necessary for life from inorganic precursors. Amino acids, sugars, and the bases for the important nucleotide molecules that make up DNA and RNA were all thought to be easily synthesized in an early Earth atmosphere of ammonia, methane, water vapor, and hydrogen. But further experiments showed this scenario to be unrealistic. Ammonia and methane would have been short-lived in this atmosphere; the multiple energy sources available would have destroyed the necessary molecules and water would have broken apart into hydrogen and oxygen. The oxygen was scrupulously avoided in all prebiotic scenarios because it would have poisoned all the necessary reactions.

Thermodynamic Problems arise from the difficulty in assembling all these complex molecules that would have been floating around in some prebiotic soup into a highly organized and complex cell. To accomplish the task of achieving specified complexity in life's molecules such as DNA and proteins, the availability of raw energy for millions of years is not enough. All systems where specified complexity is produced from simple components requires an energy conversion mechanism to channel the energy in the right direction to accomplish the necessary work. Without photosynthesis, there is no such mechanism in the prebiotic Earth.

The Informational Problem shows that there is no way to account for the origin of the genetic code, which is a language, without intelligent input. Informational codes require intelligent preprogramming. No evolutionary mechanism can accomplish this. Life requires intelligence.

So you can see why evolutionists would get excited about the possibility of finding evolved life elsewhere. It's because life is seemingly impossible to evolve here. So, if it did happen elsewhere, maybe our experiments are just missing

something.

Independence Day, The Movie

In the movie *Independence Day,* an alien battle force swoops down on Earth with the intention of destroying the human race, sucking the planet dry of all available resources and then moving on to some other unlucky civilization in the galaxy. But, those indomitable humans aided by good old American ingenuity outsmart those dull-witted aliens and Earth is saved. The story has been told many times, but perhaps never as well or never with such great special effects. The movie was a huge success.

But why are we continually fascinated by the possibility of alien cultures? The movie gave the clear impression that there must be great numbers of intelligent civilizations out there in the universe. This notion has become widely accepted in our culture.

Few recognize that the supposed existence of alien civilizations is based on evolutionary assumptions. The science fiction of *Star Trek* and the *Star Wars* begins with evolution. As I've stated earlier, evolutionists simply rationalize that since life evolved here with no outside interference, the universe must be pregnant with life. Astronomer Carl Sagan put it this way after he had reviewed the so-called success of early Earth chemical evolution experiments:

> *Nothing in such experiments is unique to the earth. The initial gases, and the energy sources, are common throughout the Cosmos. Chemical reactions like those in our laboratory vessels may be responsible for the organic matter in interstellar space and the amino acids found in meteorites. Some similar chemistry must have occurred on a billion other worlds in the Milky Way Galaxy. The molecules of life fill the Cosmos.{6}*

Sagan strongly suggests that the probabilities and chemistry of the universe dictate that life is ubiquitous in the galaxy. But as I stated earlier, the odds overwhelmingly dictate that our planet is the only one suitable for life in the universe. And the chemistry on Earth also indicates that life is extremely hard to come by. The probability of life simply based on chance occurrences is admitted by many evolutionists to be remote indeed. Many are now suggesting that life is inevitable because there are yet undiscovered laws of nature that automatically lead to complex life forms. In other words, the deck of cards is fixed. Listen to Nobel Laureate and biochemist, Christian de Duve:

> *We are being dealt thirteen spades not once but thousands of times in succession! This is utterly impossible, unless the deck is doctored. What this doctoring implies with respect to the assembly of the first cell is that most of the steps involved must have had a very high likelihood of taking place under the prevailing conditions. Make them even moderately improbable and the process must abort, however many times it is initiated, because of the very number of successive steps involved. In other words, contrary to Monod's affirmation, the universe was—and presumably still is—pregnant with life.{7}*

The only problem with de Duve's suggestion is that we know of no natural processes that will lead automatically to the complexity of life. Everything we know of life leads to the opposite conclusion. Life is not a product of chance or necessity. Life is a product of intelligence.

Without Divine interference we are alone in the universe and without Christ we are—and should be—terrified. The gospel is as relevant as ever.

Notes

1. *Science,* 16 August 1996, 273:924-30.

2. *Creator and the Cosmos,* NavPress, 2001, p. 210.
3. Ibid., pp. 145-199.
4. Lewis and Stanley, 1984.
5. InterVarsity Press, 1994, pp. 173-210.
6. *Cosmos,* Random House, 1980, p. 40.
7. *Vital Dust*, Basic Books, 1995, p. 9.

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A Fine-Tuned Universe

Heather Zeiger makes an argument for why the earth and the universe are so fine-tuned for life.

Answering the Big Questions of Life

Let’s pretend that you go outside to find your front yard full of trash and debris. The first question that probably comes to mind is, “Did someone do this on purpose, or was this an accident?” In hopes of determining a cause, you begin by looking at clues. Does the neighbor’s yard have debris in it? If so, then it’s possible the wind blew the trash and debris into both your yards. If not, then you become suspicious. Why are you suspicious? The probability that the wind would blow trash in your yard, but not your next door neighbor’s yard is low. But it is possible, so you look for more clues. Upon further examination you find that the debris stops right at the property line between your yard and your neighbor’s yard. This makes you even more suspicious because the probability of this happening by chance is now lower than it was before. Although you were not there to see the trash thrown in your yard, you are fairly certain someone did this on purpose. Although you may intuit the cause, the reason why you assume foul play is because with each clue comes a probability of its

occurrence. With multiple clues, the probabilities multiply, so finding two clues that are improbable makes the entire event even more improbable.

Taking our scope beyond your backyard to the earth and to the universe, the question becomes, “Why are the universe and earth here after all? Why is it the way it is?” When it comes down to it, just like with your front yard, we are left with two causal options: either life, the universe, and everything in between were put here on purpose, or it was an accident.

Every effect has a cause, but if we take cause and effects back far enough, eventually we will find something that is eternal or the ultimate cause. Therefore, we have two options: either that eternal thing is natural or it is supernatural. Or put another way, either the universe itself (or at least the matter and energy that makes up the universe) is eternal, or something outside of the universe and nature is eternal.

This article will look at the clues within our universe that will help us answer whether the universe arose by accident or was put here on purpose. We will be looking at some very improbable fine-tuned parameters that not only allow for stars and galaxies to be here, but also parameters that allow for life. Finally we will look at parameters that seem to be in place not just for any life, but for us in particular.

Not to give away the ending, but the Bible tells us that “the heavens declare the glory of God,”{1} and it turns out there are some clues that seem to indicate intentionality or purpose in design. However, the Bible also says that man will suppress the truth. So even though the clues seem to point towards design, we will see examples of how some scientists explain these clues without invoking any kind of designer or supernatural agent. Basically, we will see how they can still have an eternal universe instead of something eternal that is outside of the universe.

The Fine-Tuned Parameters for Life{2}

Physicists have concluded that certain features of the universe have to be almost exactly as they are, otherwise the universe wouldn't be here. For example, the universe is expanding outward. If it expanded any faster, it would overcome gravity, and galaxies, stars, and planets would fly apart. If it expanded any slower, gravity would take over and everything would come crashing back together.

On a much smaller scale, the same idea applies to the atom. When asked what he was thankful for, a friend of mine replied, "That my atoms don't just explode."{3} If you think about it, why don't our atoms just fly apart? Just like the expanding universe, the properties of protons, neutrons, and electrons are just right so that the electrons don't come crashing into the atom or the atom doesn't fly apart. Without atoms, nothing would be here, and yet the forces that hold the atom together are apparently so balanced that they seem to be resting on a knife's edge.

Not only is our universe fine-tuned for existence, but the earth is fine-tuned for life. You may not realize this, but water is a unique substance with very uncommon properties. Most substances are denser when they are a solid than when they are a liquid, but water is not. It is denser as a liquid, so we observe ice floating instead of sinking. What's the big deal? The big deal is that we need this property to survive. The ocean has an entire ecosystem including plants and bacteria. The oceanic plants and bacteria account for a large amount of oxygen in our atmosphere. Thanks to water freezing from the top down, these organisms can continue to live underwater, even if the top of the water is frozen.

Interestingly, Earth is in just the right temperature range for water to be a liquid. This is a very narrow temperature range compared to the ranges for steam or ice. Given all of the possible temperatures and pressures in the universe, you

will most likely find water as a solid or a gas. But Earth just happens to be in that narrow range for water to occur as a liquid. Considering that we need water to survive, I find this rather convenient.

Physicists have come to the conclusion that the universe is remarkably fine-tuned. There are constants, such as the gravitational constant or the gas constant, that are just the right values for life. Gravity and the atomic forces seem to be perfectly balanced for life. So the question is, what does this remarkable fine tuning mean? Is there someone who has set the dials of the universe to make it just right for us? Or is this the result of random chance?

Goldilocks Explains Fine-Tuning

The fine-tuned parameters of the universe that allow for its existence and allow for life are highly improbable. Many people try to explain away these very improbable factors by appealing to chance or natural laws. But the fine-tuned factors are so improbable that they would seem to be impossible.

One way to try to explain this is to assume that maybe the universe is infinite; after all, given an infinite amount of time, even the improbable can become possible, right? It turns out the universe is not infinite. Physicists have concluded, using evidence from Erwin Hubble's studies and Einstein's theories, that the universe had a beginning that they call the Big Bang.

If scientists want to appeal to chance, they are confined to a given amount of time. However, the fine-tuned parameters are so improbable that even fifteen billion years is not enough time. Some scientists try to find a way to have an infinite universe anyway because they wish to circumvent the God question.{4} The only way to do this, given fine-tuning, is to

increase your probabilistic occurrences. The most popular theory is the *multiverse* or many universes theory. This idea is that there are many universes, and the one we're in happens to be well-suited for life. Our fine-tuned parameters are not fine-tuned at all; they are just one set among many sets of parameters, each within its own universe.

Remember Goldilocks and the three bears? "This porridge is too hot . . . this porridge is too cold . . . this porridge is just right!" Given three options, Goldie found one that was just right. According to multiverse theory, there are an infinite number of universes: some too hot, some too cold. But if there are an infinite number to choose from, certainly one must be just right.

However, there is no evidence for there being any universes other than our own. Physicists readily admit that we do not have access to the other universes, but we must assume they are there. Essentially, they have constructed a theory that postulates something infinite and beyond ourselves, something wholly other than our universe and not necessarily measurable from our finite perspective. It seems that in order to get away from a creator, physicists have posed a theory which appeals to something that we can never know to be true and must take on faith. But unlike the Christian faith, this is faith in something that has no evidence of its existence.

String Theory Explains Everything . . . or Nothing{5}

Many scientists want to find a mathematical theory of everything in hopes that maybe *this* will answer the question as to why the universe is here.

Scientists have several theories to explain how the major forces interact with each other. There are theories for electricity and magnetism and for the forces that hold an atom

together. But the one thing that still has physicists baffled is gravity. How do we explain gravity in relation to these other forces? Some scientists believe that if we can find a way to relate gravity to all of the other forces, then maybe we will understand how the universe came into existence.

In the last twenty years, physicists have developed a theory called string theory that tries to combine gravity and quantum mechanics. String theory began by describing the parts that make up protons (known as hadrons) as particles that behave as if they are on the ends of strings. The mathematics for this looks a lot like that of harmonic oscillators (springs). However, these strings are not particles, they are strings of energy. Okay, reasonable enough. We know that electrons and photons act like both particles and waves, and one can think of these strings as standing waves. But because of issues with the mathematics, either everything has to be fundamentally made up of strings of energy or nothing.

String theory mathematics, though, led to some interesting features, including the fact that there has to be ten dimensional space, not our normal three dimensions plus time. So those other dimensions either have to be hiding somewhere or the math fails. Scientists have proposed theories that describe the other dimensions as being “compacted.”

String theory math is complex and perhaps inelegant, but it is compelling because it does a better job than any other theory of relating gravity to quantum mechanics. I think there is some promise to the ideas of string theory, but scientists seemed too eager to make it a theory of everything in hopes that the purpose of the universe can be explained through mathematics and physical laws. We can never really be sure of the validity of string theory because it is impossible to test it experimentally.{6} However, we should note that scientists don’t escape the fine tuning issue. String theory math works in ten dimensions and ten dimensions only. So string theory is itself finely tuned. Fine tuning doesn’t arise from it. In

fact, any equation or theory of everything would still be fine tuned. It seems to point towards a designer (or Mathematician, if you would prefer).

Ultimately, natural laws or equations cannot explain fine tuning because it still boils down to this question: Are the laws put here on purpose or did they arise by chance? If you refuse purpose, then you are left with chance.

Fine-Tuned for Life and for Discovery

What if the fine tuning of the universe is the result of some kind of design or something supernatural beyond our universe? Does this hypothesis help explain some other inexplicable coincidences? It seems that if the universe and earth were designed for life, maybe it was also designed, not just for organic life, but with us intellectual beings in mind.

The fine-tuned parameters of the universe beg to be explained. However, as William Lane Craig says, explaining these observations puts the physicist in the realm of philosophy because he is trying to explain the purpose for the observation of fine-tuning. "The theistic philosopher can therefore without apology or embarrassment introduce his metaphysical commitment to theism as an at least equally plausible, if not superior, alternative explanation to metaphysical, naturalistic accounts of the complex order of the universe."{7}

The fine-tuning of life seems to point to some of the attributes of God. Psalm 19 says, "The heavens declare the glory of God, and the sky above proclaims his handiwork."

This perspective has explanatory power.{8} We are able to explain things that naturalists have passed off as a coincidence. For example, the earth's moon is important for life because it affects the tides which circulate nutrients in the ocean. But the moon also happens to be the perfect size

such that from the Earth's viewpoint, it can completely block out the sun [during an eclipse]. The sun is 400 times farther away from the earth than the moon, but it is also 400 times larger. In other words, the moon's size is exactly proportional to the Earth's distance from the sun. This isn't needed for life, but it *is* needed for discovery. Thanks to total solar eclipses, relativity theory was confirmed. We have also learned about the composition of the sun, the activity of the sun, and many other features of our sun.

And if that isn't suspicious enough, it turns out the Earth is in a perfect position in our galaxy to study astronomy. If we were anywhere other than in between two of the spiral arms of the Milky Way, the sky would be too bright to use telescopes.

And what about our atmosphere? Yes, the Earth's atmosphere has the perfect balance of nitrogen, oxygen, hydrogen, and carbon dioxide to allow for life, but it also happens to be clear enough to allow us to look out into the heavens. All of this might be attributed to chance coincidences, but if we allow that the universe was designed for life, then perhaps it was designed with us in mind. And why not? Psalm 8 says, "When I look at Your heavens, the work of Your fingers, the moon and the stars, which You have set in place, what is man that You are mindful of him?"{9} But the Psalm continues by describing man as very valuable to God; he is only a little lower than the heavenly beings, and God has crowned him with glory and honor.

The scientific observations tell us that the universe and the Earth seem remarkably fine-tuned for life and for discovery. Investigation of these clues seems to point towards some kind of purpose and design. If we take what we observe in nature with what is revealed in Scripture, there is compelling reasons to believe that God created the heavens and the earth, and He created them with us in mind.

Notes

1. Psalm 19:1 (ESV)
2. This section is a survey of common fine-tuned parameters taken from *The Privileged Planet* by Guillermo Gonzales and Jay W. Richardson. For a list of the fine-tuned parameters, see Reasons to Believe: www.reasons.org.
3. Quote from Todd Kappelman, Research Associate, Probe Ministries.
4. See Leonard Susskind, "Introduction," in *The Cosmic Landscape* (Back Bay Books, 2006).
5. The information from this section comes from Susskind, *The Cosmic Landscape*; Brian Greene, *The Elegant Universe* (Vintage Books, 2000); and articles by William Lane Craig.
6. We can never "see" a string because we do not have the technological capacity to study something that is that small (known as a Plank length), so there is no experimental way to confirm string theory by finding strings. Brian Greene identifies certain experimental possibilities if we had just a little more knowledge. These experiments could be evidence for string theory since they are based on presupposing strings. See his *The Elegant Universe*, chapter 9).
7. "The Teleological Argument and the Anthropic Principle" by William Lane Craig
www.reasonablefaith.org/site/News2?page=NewsArticle&id=5179
8. Examples of how the universe is fine-tuned for discovery are taken from *The Privileged Planet* by Jay W. Richards and Guillermo Gonzales.
9. Psalm 8:4 (ESV)

Additional References for String Theory:

String Theory is a complex theory. This article only touches the surface. Two sources that do a good job of explaining string theory without delving into the mathematics are:
- *The Cosmic Landscape* by Leonard Susskind
- *The Elegant Universe* by Brian Greene

Both of these books are from a naturalistic worldview. While they are both good descriptions of string theory, Greene and

Susskind take their theory beyond the realm of science and into the realm of philosophy and, I believe, make the implications of string theory into something more than it is. They also are forthright in their hope that string theory will solve the "problem" of an apparently fine-tuned universe.

Christian perspectives on string theory and multiverse theory:
• "Does God Exist?" by William Lane Craig
www.reasonablefaith.org/site/News2?page=NewsArticle&id=5507
• "Subject: Multiverse and the Design Argument" Q/A with William Lane Craig
www.reasonablefaith.org/site/News2?page=NewsArticle&id=5741
• Reasons to Believe's series on string theory:
www.reasons.org/astronomy/string-theory

Related Probe articles:

• Answer to Email: "What Do You Think of the Many Universes Theory?":
www.probe.org/what-do-you-think-of-the-many-universes-theory/
• "Are We Significant in This Vast Universe?" [Steve Cable]
www.probe.org/are-we-significant-in-this-vast-universe/
• "There is a God" [Michael Gleghorn]:
www.probe.org/there-is-a-god/
• Big Bang and a Just Right Universe ("The Origin of the Universe") [Rich Milne]:
www.probe.org/the-origin-of-the-universe/
• "The Case for a Creator" [Gene Herr]:
www.probe.org/the-case-for-a-creator/

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The Origin of the Universe

What is the newest evidence for the Big Bang? The cosmic background radiation is exactly what was expected if the universe began as an immensely hot event 10-20 billion years ago. But the universe that was created is "just right" for life. Richard Milne explains that dozens of factors are exquisitely fine-tuned for life to be able to exist, at least on our planet.

What Was the Big Bang?

"If you're religious, this is like looking at God."{1}

A mystic, describing his vision in a trance? A poet, looking at the beauty of nature and seeing God? No, a Berkeley astrophysicist, commenting on the data he was making public in 1992 that seemed to confirm a basic expectation of the Big Bang theory.

Just what is the Big Bang theory of the origin of the universe? One scientist summed it up succinctly by saying: "The explosion from zero volume at zero time of a corpuscle of energy equivalent to the mass and radiation that now constitute the Universe."{2} What does that mean? It means that everything we now see or know about was once compacted into an unimaginably small blip that suddenly expanded in a huge explosion that created the very space and time it was expanding into. Or as Calvin of *Calvin and Hobbes* put it, "The Horrendous Space Kablooie."

The Big Bang has become as much a part of our common science knowledge as dinosaurs, something we speak about with the same sense of familiarity we talk about atoms. But, like atoms, how much do we really know about this wondrous explosion of everything?

In this essay we'll talk about what scientists mean by the Big

Bang theory, why it’s often in the news, why some scientists oppose it, what it tells us about our home the universe, and what we as Christians can learn from all of this.

Science is often seen as attacking the God of the Bible, but in this case scientific discoveries seem to be revealing God’s work. The Bible begins with the statement that God created the heavens and the earth, leaving no doubt that all we see had a beginning and had a Creator.

But by the 1700s many people accepted an earlier theory that Immanuel Kant made more popular. The theory held that the universe is an infinite expanse with no beginning and no end. This fit the philosophy of the time, as people did not want to think that they might have to face judgment by a God who had the power to both begin and end the universe.

In the roaring twenties, Edwin Hubble had begun to investigate mysterious masses of stars called nebulae. Some thought we were all part of one giant galaxy; others thought there might be a whole world of galaxies outside our own. Hubble was able to show that there are many galaxies besides our own. In 1929 he announced we were in a huge universe, so big it would take light billions of years to travel across it. Not only was it immense, but every part was moving away from every other part at incredible speeds, some receding at 100 million miles an hour!

Priests do not enter into this story very often, but in the late 20s and early 30s a Belgian priest and mathematics teacher by the name of Georges Lemaître (who was fond of saying “There is no conflict between science and religion”) first constructed and then published a theory that changed the course of cosmology in the twentieth century. Taking Hubble’s observation that the galaxies were rapidly receding from one another, he ran the theory backwards to a time when all the matter in the universe was very close together. He called this the “primordial atom” and imagined a beginning when the whole

universe exploded like “fireworks of unimaginable beauty” with a “big noise.”{3} Thus was born the Big Bang theory.

Why Is Everybody Excited?

Geffory Burbidge has been complaining recently that his colleagues in astronomy have been all too quick to join “the First Church of Christ of the Big Bang.” And what is causing this big rush? Findings from the Hubble Space telescope and the COBE (Cosmic Background Explorer) satellite that are confirming the Big Bang theory in unprecedented detail.

When the Big Bang was originally formulated about sixty years ago, not much thought was given to the conditions of the universe at the very beginning. But by the early 60s some scientists had realized that such an incredibly hot origin might have left slight traces behind. There might still be a whisper of the beginning of everything. This whisper would be a very small remnant of the heat of that first fiery instant.

In 1965 two Bell scientists announced they had indeed found such a remnant, a cosmic background radiation. This radiation, the signature of the heat of a long ago creation, was very close to what several theorists had rather off-handily predicted some years before. Their paper had gone unnoticed because there was at that time no way to measure such a small signal, but when Arno Penzias and Robert Wilson, of Bell Laboratories, published their short article, it was quickly seen as confirmation of the Big Bang, and they received the Nobel Prize in 1978.

Then, in 1989, the United States launched the COBE satellite to look for details of the cosmic background radiation. The first evidence looked promising, but showed a background radiation so smooth that it was hard to understand how any cosmic structures like stars or galaxies could have formed. Unless there were some differences in the initial temperature

of space, there would have been no reason for matter to cluster and form stars.

Then, in a dramatic press conference in 1992, George Smoot and others announced that they had found ripples of temperature differences in the radiation data. Even Stephen Hawking, the wheelchair-bound English astrophysicist, proclaimed, "It is the discovery of the century, if not of all time."{4} Every major newspaper in the world carried stories about the "echoes of creation." And many assumed that the Big Bang was proved.

But even as many scientists exulted in the new data, new questions also began to arise, but they were not questions about whether the Big Bang happened, but about how it progressed. For most scientists, the Big Bang theory is not "in trouble" as is sometimes reported. What is in question is how this sea of energy that was there in the first moments of the Big Bang was transformed into the myriad of galaxies, clusters, quasars, and other astronomical oddities.

Science, by its very nature, attempts to find the best explanation for observed phenomena. But the Big Bang has drawn an impenetrable curtain across the stage of history. For some this is a frustration: "This view of the origin of the universe is thoroughly unsatisfactory . . . . [because] the origin of the Big Bang itself is not susceptible to discussion," fumes the editor of *Nature*.{5} But for others, the very impossibility of going behind the creation points to God in a powerful way. "For since the creation of the world His invisible attributes, His eternal power and divine nature, have been clearly seen, being understood through what has been made, so that they are without excuse" (Rom. 1:20).

"Big Bang Theory Collapses"

The banner headline in *Nature* magazine read "Down with the Big Bang."{6} Sounding more like a 60s chant about the

Establishment, the editorial was, however, very serious. And *Nature* magazine is perhaps the most respected science publication in the world. Why was the editor so exercised about the leading cosmological theory? Because it was "philosophically unacceptable." "The origin of the Big Bang is not susceptible to discussion," fumed John Maddox. And besides that "Creationists . . . have ample justification in the doctrine of the Big Bang." So, for Maddox, a scientific theory that is only rivaled in acceptance by evolution is "thoroughly unsatisfactory" because 1) it says that scientists cannot know everything, and 2) the theory might encourage belief in a creator. But materialists like Maddox are not alone.

"Big Bang Theory Collapses" shouted the title of an article written in a creationist journal. It went on to make such remarks as "The Big Bang theory has received one body blow after another" and "A cruel fate has befallen the grandest theory of all." They reported the "death knell of the cold-dark-matter theory" as if this were the main theory cosmologists had developed. Remarks suggesting results from the COBE satellite "should really make them wish they had gone into some other field" came across as very unprofessional. The description of scientists as "smug in their assurance" about the cosmic background radiation seemed more descriptive of this article itself than the theory it was attempting to criticize.{7}

Young earth creationists find the Big Bang theory a failure primarily because it does not fit an interpretation of Genesis 1 that requires the universe be created less than 50,000 years ago. But what are the scientific problems with the Big Bang?

One continuing problem surrounding theories of the origin of the universe has been "How much matter is there in the universe?" It is generally agreed that there is indirect evidence of far more matter in the universe than we have been able to detect. But what form is this matter in? This so-called "missing mass" may, by some estimates, make up 90% of

all the matter in the universe. But where is it? Several theories attempt to answer this question, but at the moment, there are not many ways to test competing theories.

Another continuing problem is finding out what caused the clumpiness of the universe? When we look out into the sea of galaxies that surrounds our own, we find that the swirling pools of stars are not evenly distributed in space but rather segregated into “walls” separated by “voids.” It is not yet known what accounts for this foam-like structure, but any theory of galaxy formation needs to provide an answer.

So, while the Big Bang certainly has difficulties, and may be replaced some day, it has also been the basis for many correct predictions about the structure of the universe. Like any scientific theory, the Big Bang is not a static idea but a theory that is always open to new information that may change its basic form, or lead to its rejection, or merely confirm that it is indeed correct. But, especially for Christians, it’s ironic that while most scientists have been searching for a naturalistic answer for the origin of the universe, they have instead, ended up with a theory that points strongly to a Creator.

A “Just Right” Universe

Imagine piles of dimes stacked on all of North America as high as the moon. More than you could possibly ever count. Then imagine a billion other continents covered over with more dimes. Now, somewhere in those billion piles, hide one red dime. What are the chances of taking a blind-folded person out into these piles and having them pick up the one red dime on the first try. Not likely? Well, the odds of the universe just happening to have the correct number of protons and electrons is the same as the odds for getting the red dime the first time. And if the universe did not have just the right ratio of these particles, galaxies, stars, and planets could never have

formed, let alone people and all the rest of nature.{8}

In the last fifteen years, scientists who study the make up of our solar system, and the stars in our galaxy, have come to the conclusion that unless conditions had been perfectly fine-tuned for us, life could never have arisen on planet Earth even by evolution. Every time we learn something about the form of the universe, we find new reasons to glorify God, and to thank Him for His creation.

Arno Penzias, who with Robert Wilson was awarded the Nobel Prize for detecting the cosmic background radiation in 1965, much later remarked that: "Astronomy leads us to a unique event, a universe which was created out of nothing, one with the very delicate balance needed to provide exactly the conditions required to permit life, and one which has an underlying (one might say supernatural') plan."{9}

Robert Griffiths summarized it nicely when he said: "If we need an atheist for a debate, I go to the philosophy department. The physics department isn't much use."{10} Obviously those physicists know too much.

When Paul talks about what all people know about God, he points to the natural world as the foremost witness (Rom. 1:20). And, in these last years of the twentieth century, as we discover more and more about the conditions necessary for life, we find everywhere signs that we could not possibly be here by chance. Every detail of the basic structure of nature, even such things as how far away the moon is from the earth, must be fine-tuned to an unprecedented degree for us to live here on earth.

In the design of the universe, in the construction of our solar system, and in the very systems of our own earth, there is immense evidence of planning. The Big Bang theory provides strong evidence of fine tuning so clear that even a dogmatic atheist such as Sir Fred Hoyle was moved to affirm that "a

superintellect has monkeyed with physics, as well as with chemistry and biology"{11} to create a world for humans to live in.

Will we give glory to God for His great creation, or will we continue to proclaim that we are merely the chance creations of a random process of undirected evolution? The choice is ours.

What Can Christians Learn?

"The scientist's pursuit of the past ends in the moment of creation. This is an exceedingly strange development, unexpected by all but the theologians. They have always accepted the word of the Bible: In the beginning God created heaven and earth."{12} This has been a difficult lesson for scientists, and many have yet to learn it. But what lessons can Christians learn from the search for Big Bang?

One of the primary lessons is that we need to know what it is a theorist is trying to prove. Often, as one reads the literature, one sees some rather clear statements about why certain possibilities are chosen. As is often the case, Sir Fred Hoyle is a good example: "This possibility [of a steady state universe] seemed attractive, especially when taken in conjunction with the aesthetic objections to the creation of the universe in the remote past."{13} Hoyle is very clearly saying that, because he disliked the idea that the universe might have been "created" sometime in the past, perhaps by God, he would seek to develop another theory that avoids that possibility.

A second lesson is that we must be careful of the role we give to science. A scientist very astutely observed that "We live…in an age obsessed with scientific sanctification and technological authority.' If creationism is judged scientific, America will respect it."{14} His point is that Christians,

like everyone else, have fallen prey to the idea that if an idea is judged "scientific" it must be right. The phrase "scientific creationism" is an excellent example of this tendency. But is science really the final judge of truth? For the Christian, and anyone else who believes that not all of what makes humans both beautiful and unique is measurable, the answer must be "No." Science is a good companion, but not a good guide. Whenever Christians have wedded themselves to a scientific theory they have suffered through painful divorces when that theory has proved to be an unfaithful guide to the world. The church's acceptance of an Aristotelian unmoved earth is but one example of the church not recognizing that science can and will change. The Big Bang may be today's best theory, but, as one of the best scientific authors on the Big Bang has written: "[O]ne ought to take the extrapolations back to the beginning of time with a healthy dose of skepticism. The Big Bang cosmology may yet be superseded."{15}

Whether we are young earth creationists or materialistic evolutionists, this warning is equally true. The Big Bang is the best answer we have at this moment. It may change next year, and by next century it will almost surely have changed, perhaps dramatically. If science fully supports our view of Scripture now, will we be willing to change it when science changes? The Bible is beautifully clear that "The heavens are telling of the glory of God; And their expanse is declaring the work of His hands" (Psalm 19:1), but we must admit that we are not always clear exactly what the details of the message are. It is God's glory that we must be clear about.

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Notes

1. *Scientific American*, July 1992, 34.
2. *Nature*, 356:731 (30 April 1992), unsigned opinion.
3. *Los Angeles Times*, 12 January 1933. Quoted in Timothy Ferris, *Coming of Age in the Milky Way* (New York: William

Morrow, 1988), 211.
4. Hugh Ross, *The Creator and the Cosmos*, second expanded edition (Colorado Springs, Col.: NavPress, 1995), 19.
5. *Nature*, John Maddox, 340:425 (10 August 1989).
6. Ibid.
7. Duane T. Gish, “Big Bang Theory Collapses,” Impact #216, June 1991.
8. Hugh Ross, *The Creator and the Cosmos*, chapter 14.
9. Ibid., 122.
10. Ibid., 123.
11. Ibid., 121.
12. Robert Jastrow, *God and the Astronomers* (New York: W.W. Norton, 1978), 115.
13. Hugh Ross, *The Fingerprint of God* (Orange, Calif.: Promise Publishing, 1989), 76.
14. *Discover*, March 1987, 6.
15. *Nature*, Joseph Silk, 322:505 (7 August 1986).