The Eclipse Declares the Glory of God, v. 2024

Photo Credit: NASA's Scientific Visualization Studio

Sue Bohlin is very excited to be the path of the upcoming total solar eclipse, where God shows off once again.

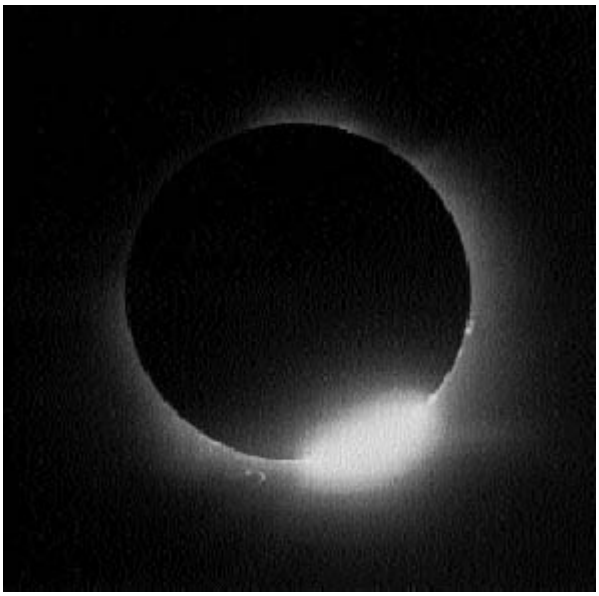
"The heavens declare the glory of God," Psalm 19 tells us. On April 8, 2024, millions of Americans will have an incredible opportunity to see His heavenly glory in a way most of us never have: through a total solar eclipse. On a path running from Texas to South Maine, observers on the ground will see the moon slip in front of the sun, blocking out all its light and dropping the temperature drastically (about 10 to 15 degrees Fahrenheit) and suddenly.

I am thrilled beyond words that by the grace of God, our home in Dallas, Texas is in the path of totality. All I have to do is go out in our back yard to experience this once-in-a-lifetime event! :::doing the happy dance:::

The glory of God isn't just seen, it's *felt* as well. Eclipse-

chasers, and even those who have only experienced one total eclipse, report that at the moment of totality (when the moon completely covers the sun, plunging the land into an eerie darkness), people break out with yells and shouts and applause. Many report the hair on the back of their necks standing up. And both locals and visiting astronomers are equally in awe—and often in tears. Like one's first in-person look at the Grand Canyon, it is deeply emotional to be thrilled by something much, much bigger than oneself.

Illustra Media's wonderful DVD *The Privileged Planet*, based on the book by the same name by Guillermo Gonzalez and Jay Richards {1}, exposed me to the magnificence of a total solar eclipse. I will never forget the goosebumps at learning that the sun is 400 times farther away than our moon, but it's also 400 times larger. This means that both of these heavenly bodies appear to be the same size to us on Earth. This phenomenal "coincidence" also makes a total eclipse possible.



During an eclipse, ***the heavens declare the glory of God*** by allowing us to see things about the sun we wouldn't be able to observe any other way, beautiful and gloriously resplendent. Just before totality we can see "Baily's Beads." Only seen during an eclipse, bright "beads" appear at the edge of the moon where the sun is shining through lunar valleys, a feature of the moon's rugged landscape. This is followed by the "diamond ring" effect, where the brightness of the sun radiates as a thin band around the circumference of the moon, and the last moments of the sun's visibility explode like a diamond made of pure light. After the minutes of totality, the diamond ring effect appears again on the opposite side of the moon as the

first rays of the sun flare brilliantly. These sky-jewelry phenomena are so outside of mankind's control that witnessing them stirs our spirits (even on YouTube!) with the truth of Romans 1:20—"God's invisible qualities—his eternal power and divine nature—have been clearly seen, being understood from what has been made, so that people are without excuse."

A total solar eclipse offers so much more, though, than Baily's Beads and the Diamond Ring. At the moment of totality, the pinkish arc of the sun's chromosphere (the part of the sun's atmosphere just above the surface) suddenly "turns on" as if an unseen hand flips a switch. I knew God is very fond of pink because of how He paints glorious sunrises and sunsets in Earth's skies, but those fortunate enough to see a total eclipse can see how He radiates pinkness from the sun itself! ***The heavens declare the glory of God!***

But wait! That's not all! Along with the flare of the sun's pink chromosphere, a rainbow-like band called the "flash spectrum" appears when the sun is viewed through a prism! (You can google this to see pictures. The best ones are copyrighted so I can't show them to you here.) ***The heavens declare the colorful glory of God!***

For the few minutes of totality, the naked eye can see the sun's lovely corona (Latin for crown) streaming out from the sun. We can't see the corona except during an eclipse because looking straight at the sun for even a few seconds causes eye damage, and because the sun's ball of fire overwhelms the (visually) fragile corona. This is another way that an eclipse allows us to see how **the heavens declare the glory of God.**

Astronomer Guillermo Gonzalez noticed details about eclipses that got him excited:

- During a total solar eclipse, the moon is just large enough to block the large photosphere (the big ball of fiery gas), but not so large that it obscures the colorful chromosphere.
- The moon and the sun are two of the roundest measured bodies in the solar system. (Some moons are potato-shaped!) So when the round disk of the moon passes in front of the equally round disk of the sun, the shapes match perfectly.
- He studied all 65 of the moons in our solar system and discovered that ours are the best planet and best moon for studying the sun during an eclipse. Because the moon fits so perfectly over the sun, its blinding light is shielded, providing astronomers with a view of the sun's atmosphere. We can discern finer details in its chromosphere and corona than from any other planet.
- Being able to study the flash spectrum during a total eclipse enables astro-scientists to determine the

> chemical makeup of other, distant stars without leaving Earth.

These facts of ***the heavens declare the glory of God!***

Michael Bakich wrote of the 2017 eclipse in *Astronomy* Magazine blog,

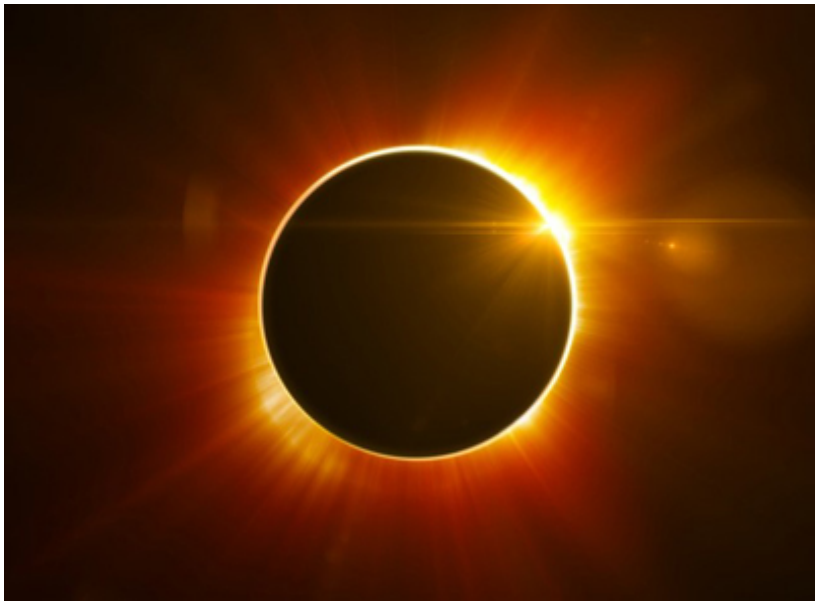
> This eclipse will be the most-viewed ever. I base this proclamation on four factors: 1) the attention it will get from the media; 2) the superb coverage of the highway system in our country; 3) the typical weather on that date; and 4) the vast number of people who will have access to it from nearby large cities.{2}

I think this is true of the 2024 eclipse as well. Whether you are fortunate enough to be in the path of the total eclipse like me, or will only get to see 75% of the sun's surface covered by the moon (with eclipse glasses, of course!), this extremely important sky event will be proclaiming to everyone that ***the heavens declare the glory of God***. May it make a lasting impression on us all that teaches us more about God's glory!

1. Guillermo Gonzalez and Jay W. Richards, *The Privileged Planet* (Washington, D.C.: Regnery Publishing, 2004)
2. http://cs.astronomy.com/asy/b/astronomy/archive/2014/08/05/25-facts-you-should-know-about-the-august-21-2017-total-solar-eclipse.aspx

This post originally appeared at blogs.bible.org/the-eclipse-declares-the-glory-of-god-v-2024/ on Feb. 20, 2024.

The Eclipse Declares the Glory of God



"The heavens declare the glory of God," Psalm 19 tells us. On August 21, 2017, millions of Americans will have an incredible opportunity to see His heavenly glory in a way most of us never have: through a total solar eclipse. On a path running from Oregon to South Carolina, observers on the ground will see the moon slip in front of the sun, blocking out all its light and dropping the temperature drastically (about 10 to 15 degrees Fahrenheit) and suddenly.

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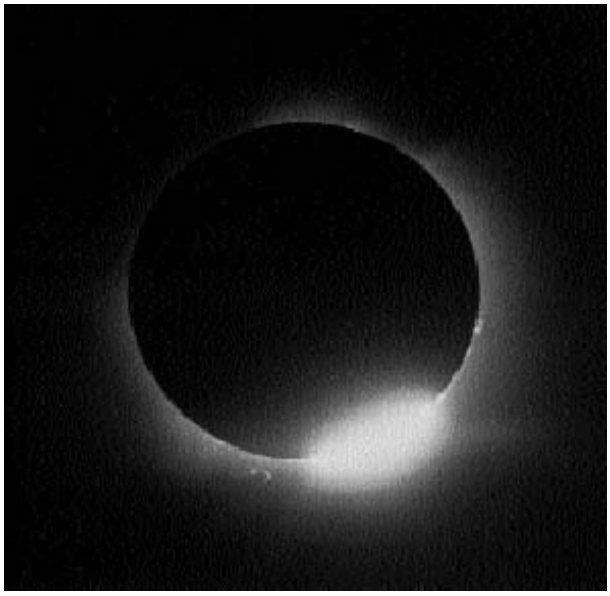

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This blog post originally appeared at blogs.bible.org/engage/sue_bohlin/the_eclipse_declares_the_glory_of_god on August 9, 2017.

"Culture in Conflict" Conference MP3s

Conference Recordings
Kerby Anderson:
Being Christian in a Post-Christian Society Truth Decay Basic Christian Evidences
Dr. Ray Bohlin:
The Privileged Planet and Intelligent Design Evidence for the Existence of God The Reliability of the Bible
Sue Bohlin:
Thinking Clearly About Sexual Confusion Helping Teens Understand Homosexuality Raising Gender-Secure Children
Ray and Sue:
Guys are From Mars, Girls Are From Venus

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/

The Privileged Planet

An Unwanted Premiere!

In June 2005 I was in Washington D.C. for a most unusual premiere. A film based on the 2004 book called *The Privileged Planet*{1} was being introduced to an invitation only group of about 200 at the Smithsonian Institution’s National Museum of Natural History.

The Smithsonian was approached several months earlier about allowing their Baird Auditorium to be used for this special showing. They asked to see the film. Several people on the museum payroll viewed the film and said great, let’s show it. The inquiring organization was The Discovery Institute, the leading organization promoting Intelligent Design in the U.S. and abroad. Discovery was given instructions on how to use the Smithsonian logo on the invitation, was asked for a donation of $16,000, and told the premiere was a go.

However, when the invitations went out in late May, the Smithsonian was instantly barraged by calls and emails from disgruntled Darwinians demanding that the premiere be canceled. How dare the prestigious Smithsonian give aid and support to the Intelligent Design Movement by allowing this film on its premises? Never mind that the film has nothing to do with biological evolution and natural selection. People (even some who likely hadn’t seen the film or read the book)

were on a rampage.

It didn't take long for the Smithsonian to withdraw its co-sponsorship of the event although they said they would honor their commitment to allow the film to be shown. In a letter to Discovery they said, "Upon further review, the Museum has determined that the content of the film is not consistent with the mission of the Smithsonian Institution's scientific research."{2} Initially, the Smithsonian said Discovery would not be required to make the "donation," but eventually kept $5,000 for expenses incurred.

As a Fellow of the Discovery Institute's Center for Science and Culture I was issued an invitation, and as the storm of controversy raged in *The Washington Post* and *New York Times*, I decided to get myself to Washington for this controversial and special event.

The premiere itself was a bit of an anticlimax after all the fuss. Several local scientists, national TV and newspaper media, a Congressman from Texas, and other local dignitaries were treated to a special showing and question and answer period with the authors, Gonzalez and Richards. The reception was held two floors up in the Hall of Geology, Gems, and Minerals.

Most in attendance were quite impressed . . . and mystified! They were impressed with the quality and premise of the film and mystified how a purely scientific film could be so misrepresented. In what follows, we'll explore the thesis of the book and film and see what all the fuss is about. For now, just remember science is pursued by *people*, and everyone has a worldview that can alter dramatically how science is perceived and what counts as science.

Is the Moon Just for Signs and Seasons?

When I was in the seventh grade, I remember standing in my

best friend’s backyard with a box over my head in broad daylight. On one end of the box was a small pinhole. On the inside of the box, against the opposite side of the box from the pinhole, was a small piece of aluminum foil. The pinhole, when facing the sun, made a small circle, maybe one-half inch in diameter, on the aluminum foil wall. As the partial solar eclipse progressed, I could watch the progress of the moon shadowing the sun inside the box. I was fascinated that I could safely watch the partial solar eclipse with such a simple device.

You could watch partial solar eclipses on every planet in our solar system with a moon. But earth is the only planet where a full or total solar eclipse can be seen. It turns out that our moon is $1/400^{th}$ the size of the sun. But the sun is 400 times farther away from earth than the moon. So when the moon comes between the sun and the earth a small portion of earth experiences a total solar eclipse, meaning the sun is fully blocked out by the moon.

When a total solar eclipse occurs, the sun is fully blocked out by the moon darkening the earth and providing a unique glimpse of the sun’s atmosphere or corona. Normally the sun’s corona is overwhelmed by the sun’s brightness, but in an eclipse the moon so completely shuts out the sun that the corona shines brightly for a few minutes. It is then that scientists can measure the light spectrum of the corona which reveals what is burning inside the sun. Otherwise we would not be able to measure the elemental makeup of the sun. So the fact that earth experiences a total eclipse of the sun makes our planet unique in the solar system with respect to what we can learn about what goes on in the sun’s interior.

If that was all that was unique about our moon, we could write it off as a curious coincidence. But the size, shape, and orbit of our moon do more for human life than just give us a glimpse of the sun’s atmosphere every so often. Without the

moon, life as we know it on earth would be impossible.

It turns out that our moon is just the right size and distance from the earth that, in conjunction with the gravity of the sun, it causes substantial diurnal [daily] tides which mix the waters of the oceans, evening out their temperature and stirring their nutrients. With no moon, or a few smaller moons, the tides would lessen greatly in intensity, therefore reducing this mixing effect. Life would be limited to the upper few feet of the oceans, and complex life would be hard pressed to survive.

Is Earth's Atmosphere Just for Breathing?

The book and film, *The Privileged Planet*, reveal many other earth systems as well that combine to make earth unique for life and scientific discovery.

Take a deep breath. Now exhale! No, this is not the latest Probe Ministries exercise routine. If you did what I just recommended on any other planet in the solar system, you'd be dead right now.

Our atmosphere of mostly nitrogen, oxygen, and just the right amount of water and carbon dioxide provides so much more than breathable air. We so easily take it for granted every time we breathe. Earth's closest planetary cousins, Venus and Mars, have atmospheres dominated by carbon dioxide. Venus's atmosphere is so thick you can't see through it, and it creates surface temperatures as high as 900 degrees Fahrenheit. Mars' thin carbon dioxide atmosphere contributes to such cold temperatures that carbon dioxide freezes at the poles.

Guillermo Gonzalez and Jay Richards, in their book *The Privileged Planet*, tell you more than you thought possible about the unique parameters of our atmosphere in allowing life and scientific discovery. Nitrogen, for example, is necessary

for life as a critical component of the building blocks of DNA and proteins. Our atmosphere of seventy percent nitrogen also allows for a transparent atmosphere that allows light as we face the sun and dark nights that allow us to see the stars.

Oxygen, of course, is necessary for animal life, and our atmosphere contains just enough to support life and not so much as to poison life. Oxygen is also a transparent gas, keeping our atmosphere transparent for observation of our dark night skies.

Water as well is necessary for life, but water in our atmosphere, along with nitrogen, oxygen, and carbon dioxide, creates an atmosphere that is breathable but also is the best atmosphere to transmit light in the visible spectrum. Water also creates clouds over about two thirds of the earth at any one time. Clouds help control our temperature by reflecting some of the sun's energy back out into space.

Without water in our atmosphere, we never would see a rainbow. Rainbows prompted scientists of the seventeenth century to search for an explanation of the rainbow's beauty and mystery. This search eventually resulted in understanding the solar spectrum and the effect of prisms in bending light of different wavelengths.

Carbon dioxide is life's major source of carbon, that versatile and stable element absolutely necessary for life of any kind. If earth were just five percent closer to the sun, however, we would end up much like Venus: nothing but carbon dioxide resulting in a runaway greenhouse effect and totally uninhabitable planet.

Once again, earth is shown to be just right—just right for life and just right for scientific observers. What an amazing coincidence!

More and more, scientists are coming to realize that the earth is not just some insignificant pale blue dot orbiting around

an insignificant star. Our planet seems designed not just for life, but for scientific discovery as well.

So the Earth Has Oceans, Crust, Mantle, and Core. So What?

The starship Enterprise from *Star Trek* used a nifty force field deployed around the ship to protect it from oncoming photon torpedoes. During an attack, those on the bridge were always concerned with how the "shield" was holding. There was great consternation if energy levels dipped low enough to make the shield ineffective.

Our planet earth has a similar protective shield. Earth possesses a magnetic field around it that shields us from the harmful solar wind. Our atmosphere would be slowly stripped away without our magnetic field. This magnetic shield is generated because the earth is just the right size to maintain a hot liquid iron core. The heat from this core convects through the mantle, creating plate tectonics and electricity. The electricity generates our magnetic field. But you have to have the right size planet with a molten metallic core and a crust that weakens somewhat due to chemical reactions with water so it will bend and not break. All this benefits life.

The size of earth is important for other reasons. A smaller planet would lose its atmosphere much too readily, and its interior would cool too quickly, eliminating the protective magnetic field. A more massive earth would retain too much of harmful gases such as methane. On a more massive planet, the thicker atmosphere would make breathing much more difficult.

Earth's voluminous quantities of water are also extremely necessary for life and even for technological life. Water helps regulate our atmosphere and, of course, provides the perfect soluble medium for life. Water is perhaps the most unique molecule in the universe with its unique solvent properties coupled with the fact that ice floats instead of

sinks like all other solid/liquid pairs. This unique feature means that when temperatures are cold enough for water to freeze, only the top layer freezes and life can go on below the ice. If ice sank, then all liquid water would eventually freeze and life would be extinguished in some environments every winter.

In order for earth to maintain its watery oceans it needs to be the right distance from the sun. As noted earlier, if the earth were just five percent closer to the sun we would end up like Venus with thick hot clouds of carbon dioxide for an atmosphere. If we were just twenty percent farther away we would end up like Mars, a frozen wasteland. The heat coming from our just right liquid core also helps maintain our watery home.

All in all earth is a remarkable place for its size, distance from the sun, elemental make-up, size and closeness of the moon, presence of water, stable liquid iron core that generates a magnetic field, and so many other features. The suspicion of design and purpose quickly arises.

Has the Earth Been Designed for Multiple Purposes?

In many circles of academia, the idea that our earth is both designed for life and for scientific discovery is both surprising and resented. For years the notion that we are just an insignificant planet circling an ordinary star, otherwise known as the Copernican Principle, has dominated the physical sciences.

But discovery after discovery has altered that view, and has brought many kicking and screaming to a design perspective. Simon Conway Morris, a paleontologist from England, is quoted on the dust jacket of *The Privileged Planet* as saying:

> In a book of magnificent sweep and daring, Guillermo

> Gonzalez and Jay Richards drive home the argument that the old cliché of no place like home is eerily true of Earth. Not only that, but if the scientific method were to emerge anywhere, Earth is about as suitable as you can get. Gonzalez and Richards have flung down the gauntlet. Let the debate begin; it is a question that involves us all.

The book and film of the same name have been wildly successful and controversial. At the Washington premiere I discussed earlier, scientists and legislators agreed that the thesis the authors propose is deserving of wide discussion.

A father brought his eight-year old son to a showing of the film we sponsored at Probe Ministries. I privately thought he would be too young. They had to leave before the film was done, but they purchased the DVD before they left and finished viewing it at home. As soon as Mom walked in the door, the eight-year old promptly began to explain the intricacies of solar eclipses, the size of the moon relative to the sun, and how these factors were not only a boon for life but also for scientific discovery.

The film does an excellent job of taking sometimes complex scientific concepts and communicating them in a way that most anybody can appreciate. This film deserves as wide a distribution as possible.

But because much of the scientific community remains locked in a purely naturalistic worldview, the perspective of purpose and design will continue to be resisted. However, parents and educators can readily use this excellent resource to simply investigate the facts and help to eventually gain Intelligent Design a much deserved place at the roundtable of scientific inquiry.

One other comment from the dust jacket says it well:

> Not only have Guillermo Gonzalez and Jay Richards written a book with a remarkable thesis, they have constructed their

argument on an abundance of evidence and with a cautiousness of statement that make their volume even more remarkable. In my opinion, *The Privileged Planet* deserves very special attention.

Notes

1. Guillermo Gonzalez and Jay Richards, *The Privileged Planet* (Washington D.C.: Regnery Publishing, Inc., 2004).
2. June 1, 2005 entry on Discovery Institute's blog at www.evolutionnews.org/2005/06/.