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God's Country Devotion on Psalm 33

Black Holes Mind of a Materialist Steven Hawking vs. God

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Creation / Evolution: a Confessional Lutheran view

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Mark Bergemann

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God's Country

Paul Hoffman For upper grade students to adults

By the word of the Lord the heavens were made. By the breath of his mouth he made the whole army of stars. He gathers the water of the sea into a heap. He puts the depths into storehouses. Let all the earth fear the Lord. Let all the inhabitants of the world revere him. For he said, "Let it be," and it was! He gave a command, and there it stood. Psalm 33:6-9 (EHV)

On several occasions, my family and I had the chance to travel round-trip via car from the Midwest to the Southwest regions of the US. On these journeys, we were blessed to see up close the many varied landscapes and marvel how each one is unique and beautiful in its own way—whether it be the rich farmland of the Midwest, the desert valleys of the southwest, or the majestic mountain peaks of the west. All of these and much more are part of the beautiful world God has created. When we take in the beauty of God's creation, we stand in awe and remark about what we see as "God's Country"—a phrase often used when words cannot describe the breathtaking view, but simply state this may be a small taste of the beauty of heaven.

As we consider how God has blessed us with His creation, we remember that all glory and honor belong to Him, but at other times our sinful nature may lead us to rob God of that glory. We too often fall into the trap of taking glory from God when we fail to see Him as the provider of all good things. Some Christians go as far as rejecting what God says about creation, when they falsely think that God used millions of years of death and suffering to create. Such Christians place their faith in great jeopardy. Atheists completely remove God from creation. Some of them see the beauty of this world and eventually come to realize that there is a creator, but then many still fail to see that their Creator is also their Savior. For the times we rob God of His glory, we look to our Savior and confess that we have sinned. Forgiven by the grace of our Creator, we can live our lives in appreciation, spreading the wonderful news that the Creator of the world is also the Savior of the world. We can live our lives giving God the glory; faithfully using the blessings He has provided.

The next time you have the opportunity to stand back and ponder God's amazing creation, if you take in a beautiful scenic view or sunset, take time to thank God for the blessings and beauty He gave us through His work of creation. Take the time to witness some of "God's Country" and thank God for it. Tell others about the wonderful and amazing work of our Creator so they too may know the truth and give glory to God.

Prayer:

Dear Heavenly Father, you alone are the sole provider and creator of all that we have and see in this world. Forgive us for the times we take your blessings for granted or take glory away from you. Help us to be faithful stewards and to appreciate the beauty of your creation. In our Savior's name we pray, Amen.

Paul Hoffman teaches math and science for grades 5-8 at St. Paul Evangelical Lutheran School in Appleton, Wisconsin. He also serves on the LSI Board of Directors.

Feedback

Send your comments to Lutheran Science Institute, 13390 W. Edgewood Ave., New Berlin WI 53151 (or office@LutheranScience.org). Comments should be under 250 words. Longer submissions may be used as a guest editorial. Not all comments received can be used.

Fossils

Fossils in the Geologic Column -Problems for Evolution (spring 2018) was one of the best articles I've read on the subject, and in simple enough language that it does not take a scientist to understand it.

Rev. Mark Porinsky

article series Glossary for the Creationist Dark Matter / Dark Energy

Our current understanding of gravity does not explain why the universe is expanding at an accelerating rate, nor why galaxies orbit as they do. Dark energy and dark matter are simply names given to these mysteries. Most cosmologists think that less than 5% of the universe is normal matter, while the rest is dark matter and dark energy.¹ Whether dark matter and dark energy actually exist or not, either is in keeping with the Scriptural account of creation.

The universe seems to be expanding, and at an accelerating rate. Scientists have proposed ideas why, but as NASA reports, "Theorists still don't know what the correct explanation is, but they have given the solution a name. It is called dark energy."² An article in the current *Scientific American* explains dark matter. This quote mentions the "prejudices" of scientists against some conclusions, in this case, against changing Einstein's General Theory of Relativity. Science changes. Its theories and laws are tentative, not final.

Scientists have long assumed that some invisible "dark matter" particles must accompany the normal matter in the universe to explain how stars orbit in galaxies and how galaxies orbit in clusters. An alternative idea that there is no extra matter and that our equations of gravity need updating has received much less attention. But numerous experiments have failed to find evidence for dark matter particles, and the possibility remains that gravity must be modified. Lately, in fact, some astrophysical evidence, such as recent observations of gravitation in galaxies, favors modified gravity theories over dark matter. It is time that physicists let go of their prejudices and reexamined this underdog idea.³

MSB

¹ NASA, "Dark Energy, Dark Matter." (accessed August 3, 2018) <u>https://science.nasa.gov/astrophysics/focus-areas/what-is-dark-energy</u> 2 NASA.

³ Sabine Hossenfelder and Stacy S. McGaugh, "Is Dark Matter Real?," *Scientific American*, August 2018, 38.

Mind of a Materialist –inside the godless philosophy of Francis Crick

Jeffrey Stueber

Francis Crick won a 1962 Nobel prize (along with James Watson and Maurice Wilkins) for the 1953 discovery of the 3-dimensional double helix structure of DNA. Crick later wrote, *The Astonishing Hypothesis – The Scientific Search for the Soul*. This book begins with these remarkable words,

The astonishing hypothesis is that "You," your joys and your sorrows, your memories and your ambitions, your sense of personal identity and free will¹, are in fact no more than behavior of a vast assembly of nerve cells and their associated molecules. As Lewis Carroll's Alice might have phrased it: "You're nothing but a pack of neurons." This hypothesis is so alien to the ideas of most people alive today that it can truly be called astonishing."²

The reason he says this hypothesis is astonishing is because most people cannot fathom that their thoughts are entirely dependent on nothing more than neurons.³ I claim all people – even Crick, though he says otherwise – accept that each of us has some type of conscious awareness of self and decision-making ability that is not entirely dependent on brain chemistry. Crick's reason for embracing his "astonishing hypothesis" is his anti-religious bias, and this bias leads him to adopt poor arguments.

¹ Editor's Note: Here, and elsewhere in this article, the concept of "free will" is used in this sense: that fallen man is a rational being and therefore has freedom of choice in external matters (e.g. freedom of choice in government, sociology, science, art, etc.). That being said, Lutheran theologians, echoing the truths of Scripture, correctly teach that fallen mankind has no free will whatsoever with respect to spiritual matters (e.g., the natural human will is in opposition to God's will; natural human will is completely unable to seek or cooperate with God's grace in conversion; being a slave to sin, fallen mankind delights in sin and is free to choose which sins he/she will commit).

² Francis Crick, *The Astonishing Hypothesis: The Scientific Search for The Soul*, (New York: Simon & Schuster, 1994), 3.

³ Neurons are nerve cells such as those in your brain.

Before proceeding, I should explain that Crick is not the originator of this idea nor the sole spokesman for it. Richard Dawkins, for instance, ascribes human intention to genes.

> The argument of this book is that we, and all other animals, are machines created by our genes. Like successful Chicago gangsters, our genes have survived, in some cases for millions of years, in a highly competitive world. This entitles us to expect certain qualities in our genes. I shall argue that a predominant quality to be expected in a successful gene is ruthless selfishness. This gene selfishness will usually give rise to selfishness in individual behavior.⁴

Susan Blackmore ascribes intention to memes (ideas in our head), and those thoughts that emerge in conscious awareness are the ones that survive in competition with other thoughts.

> If the brain really is a Darwin machine then the thoughts, perceptions, ideas, memories, and so on, that go on inside it must all be competing for the brain's limited processing resources. Natural selection will have ensured that the brain's attention mechanisms generally devote most resources to the processing that helps the genes that made it. Within those constraints, all the thoughts and ideas will compete for attention and the chance to get copied. However, they are limited to one brain and subject to the pressures of natural selection.⁵

She also gives her explanation why she thinks religious beliefs continue to dominate our minds despite secular humanist suggestions that they should be dying out.⁶ Blackmore postulates,

⁴ Richard Dawkins, *The Selfish Gene*, 2nd ed. (New York: Oxford, 1989), 2.

⁵ Susan Blackmore, *The Meme Machine* (New York: Oxford University Press, 1999), 40.

⁶ For instance, see Paul Kurtz, ed., *Humanist Manifestos I and II* (New York: Prometheus, 1973). *Paul Kurtz and Edwin Wilson, in their preface to the sec-*

When we look at religions from a meme's eye view we can understand why they have been so successful. These religious memes did not set out with an intention to succeed. They were just behaviors, ideas, and stories that were copied from one person to another in the long history of human attempts to understand the world. They were successful because they happened to come together into mutually supportive gangs that included all the right tricks to keep them safely stored in millions of brains, books, and buildings, and repeatedly passed on to more. They evoked strong emotions and strange experiences. They provided myths to answer real questions and the myths were protected by untestability, threats and promises. They created and then reduced fear to create compliance, and they used the beauty, truth, and altruism tricks to help their spread. That is why they are still with us, and why millions of people's behavior is routinely controlled by ideas that are either false or completely untestable. No one designed these great faiths with all their clever tricks. Rather, they evolved gradually by memetic selection.⁷

To these materialists, we are robots controlled by neurons, memes, or selfish genes

Crick's theory is that the neuron is the basis for human thoughts and decisions, not memes or selfish genes. Regardless of what causes human thought, to materialists like Crick, Dawkins, and Blackmore, free will and human consciousness are myths because, in their minds, we are robots controlled by either neurons, memes, or selfish genes.

ond manifesto, say that "humanists still believe that traditional theism, especially faith in the prayer-hearing God... is an unproved and outmoded faith. Salvationism, based on mere affirmation, still appears harmful, diverting people with false hopes of heaven hereafter. Reasonable minds look to other means for survival." 7 Blackmore, 192-193. The reason for Crick's anti-religious philosophy is, first of all, because he thinks religious claims have proven false in the past. Since the idea of a soul is a religious idea, therefore it too must be false. Crick explains:

> Why, then, should this basic concept of the soul be doubted? Surely if almost everyone believed it, this is, in itself, prima facie evidence for it. But then some four thousand years ago almost everyone believed the earth was flat. The main reason for this radical change of opinion is the spectacular advance of modern science.

Crick is brutally honest in his view of the historical use of religious claims,

Not only do the beliefs of most popular religions contradict each other but, by scientific standards, they are based on evidence so flimsy that only an act of blind faith can make them acceptable. ...If revealed religions have revealed anything it is that they are usually wrong.⁸

The first problem with this argument is that in at least one instance, that of Christianity (the largest religion), we can say the Bible does not claim the Earth is flat.⁹ In that case, one cannot claim that religions, in general, teach this.

A second point about Crick's assertion that religions "are usually wrong," is that Christianity is unique. While other religions are false religions, Christianity is the one and only true religion. Since Christianity is true, it is not surprising that many of its claims can be investigated using secular history, archeology, paleoethology,¹⁰ and other extra-Biblical

<u>https://www.trueorigin.org/flatearth01.php</u>. Danny Faulkner, "Does the Bible Teach That the Earth is Flat," <u>https://answersingenesis.org/astronomy/earth/doesbible-teach-earth-flat/</u> (accessed August 3, 2018)

⁸ Crick, 258.

⁹ See, for example J. P. Holding, "Does the Bible Say the Earth Is Flat," Creation Ex Nihilo Technical Journal, (14)3, 2000, 51-54, (accessed August 3, 2018)

^{10 &}quot;1) The study of the behaviour of extinct species of humans. 2) The study of behavior of organisms in the fossil record." From the online dictionary at:

means. While we believe articles of faith like creation, the Flood, and the resurrection of Jesus through faith alone, Biblical people and events are often corroborated by extra-Biblical sources.^{11, 12}

While we believe articles of faith like creation, the Flood, and the resurrection through faith alone, Biblical people and events are often corroborated by extra-Biblical sources

Unbelievers like Crick behave exactly as you would expect them to behave if Christianity is true; they usually act in ways that keep the truth of Christianity out of their sight, so they don't have to seriously consider that it might be true. They usually refuse to listen the gospel message, the very means by which God brings unbelievers to faith.

It appears that Crick is simply blind to the ramifications of his

http://www.yourdictionary.com/paleoethology (accessed August 3, 2018)

^{11 &}quot;Archeology can do much to help us understand life in biblical times, and in doing so, it can help provide us with a better understanding of biblical stories. To a limited degree it also provides corroboration of biblical events and persons. We must, however, remember its limitations. It operates with only a part of the evidence, and that evidence must be interpreted. Biases for and against the Bible often come into play in that interpretation."

John F. Brug, Digging for Insights -Using Archeology to Study the Bible, (Milwaukee: Northwestern Publishing House, 2010), 158.

¹² John Jeske spends three pages discussing the many flood accounts from various cultures, and how these secular accounts "confirm" the historicity of the Bible's Flood account. He also provides an estimate of the number of animals aboard Noah's Ark, demonstrating how the Ark could easily contain them all. Regarding that estimate, he states, "The preceding paragraphs are not an attempt to prove in a lawyer-like way the truthfulness of the Genesis flood account or to somehow make it more believable. Our purpose is to try and help the earnest Bible student visualize more clearly this important chapter of world history, and especially of Bible history. Finally, what God says is true whether it seems reasonable or not."

Carl J. Lawrenz and John C. Jeske, *A Commentary on Genesis 1-11*, (Milwaukee: Northwestern Publishing House, 2004), 253, 279.

beliefs. At one point he is rather flippant in his ideas about it. He asks, "Could it not be that our Will only appears to be free?"¹³ Is his choice to write *The Astonishing Hypothesis* a mere artifact of a bunch of neurons? If so, what, if any, confidence can we put in his claims? I have yet to read any material from an atheist who has come to grips with this contradiction within atheist thought or who has even attempted to admit there is a contradiction. Atheists like Crick, so often ignore such problems in their beliefs.

Crick admits there may be things which science cannot explain, but "we have learned to live with such limitations in the past" and "we may have to live with them again."¹⁴ In other words, when his theory cannot account for everything, we ignore those things it can't explain in order to save the theory and keep it from being falsified or at least deemed insufficient or incomplete.

Crick's book is chocked full of useful information regarding neurochemistry. His exploration of the makeup of a neuron is breathtaking reading. However, his philosophical arguments that are motivated by anti-religious bias lead him to conclusions he can't possibly defend. His lack of knowledge of Christianity adds to the malaise of his writing, and if he could possibly shed his anti-religious bias he might be able to add a wealth of knowledge to the collective knowledge we possess.

Atheists need to explain what is commonly called the human "soul." They have proposed many explanations. Here Crick proposes our neurons, or nerve cells, as the source of our soul. Scripture reveals the true source of our soul: It is a gift from our Creator.

Jeffrey Stueber, a free-lance writer, serves as secretary of the Lutheran Science Institute. He is a member of St. John Evangelical Lutheran Church in Watertown WI.

¹³ Crick, 10.

¹⁴ Crick, 258.

Stephen Hawking vs God: His assumptions about the universe

Derek Rahhers

On March 14, 2018 the world learned that Stephen Hawking had passed away. With that news came many broadcasts and articles that highlighted the scientist's work and how he had a lasting impact on the scientific community. Hawking will be counted among the pantheon of scientific and mathematical geniuses such as Einstein and Newton. He gathered fame from his work with black holes in the 1960s and 1970s¹. He would continue to work on topics such as cosmology,² artificial intelligence, and the search for extraterrestrial life.³

While talking to a friend about what we knew of Hawking and his work, I was reminded of a Discovery Channel special that had aired during the summer of 2011. The title of that special was "Did God Create the Universe?"⁴ This particular episode borrowed a lot from Hawking's book, "The Grand Design," in which he tries to prove that God is not needed to explain the creation of the universe and the laws of the nature that govern it. Searching for an archive of that episode, I found it free on Discovery's website. While watching this video, I began to think about how I might be able to use it for my science class students.

^{1 &}quot;Stephen Hawking: Brief Biography," Stephen Hawking: The Official Website, http://www.hawking.org.uk/about-stephen.html (accessed August 3, 2018)

^{2 &}quot;Cosmology is the scientific study of the large scale properties of the universe as a whole. It endeavors to use the scientific method to understand the origin, evolution and ultimate fate of the entire Universe."

WMAP Science Team, "Cosmology: The Study of the Universe," NASA,

https://map.gsfc.nasa.gov/universe/ (accessed August 3, 2018)

³ Sarah Knapton, "Stephen Hawking Mission to Find Alien Civilization Detects Radio Signals Coming from Dwarf Galaxy," The Telegraph, September 1, 2017. www.LutheranScience.org/HawkingAlien (accessed August 3, 2018) 4 "Curiosity: Did God Create the Universe?" Discovery, Curiosity, season 1 episode 1, August 10, 2011 (accessed August 3, 2018)

https://www.discovery.com/tv-shows/curiosity/full-episodes/curiosity-did-god-create-the-universe

At St. John's school in Milwaukee, the upper grade teachers and I were able to do some switching so that among other things I would be able to teach 5th through 8th grade science. One of the many blessings of that arrangement is that if something comes up in current events that pertains to science, I can share and discuss it with all of those classes. After Hawking's death and finding that episode online, I found myself with a great teaching opportunity.

My upper-grade science class was about to practice some apologetics. The lesson was framed with these two objectives:

- 1) Identify assumptions that Stephen Hawking has about the universe and about God.
- 2) Find Bible verses that address those assumptions.

Let's go inside the mind of Stephen Hawking, where we'll look at some of his principal assumptions in explaining the nature of the universe, its natural laws, and how it was created.

Hawking's Assumption #1

We "can understand how the universe works."

This claim is made near the beginning of the episode.⁵ You may question why I want to debate and discuss this assumption. Don't we already have a pretty good understanding of how the universe works? We can explain why it rains, how a cell grows into a mature organism, and why the sun shines. If you were to attend a modern-day science class from a middle school or high school you might start to think that we have most everything in the universe figured out. The thing that some or most of

^{5 &}quot;Mere mortals like you and I can understand how the universe works." Curiosity video, (4:54).

those classes won't tell you is that in reality scientists are far from having a complete picture of everything.

Imagine yourself sitting in on a science class from 100 years ago. Some of the theories and models being taught then would be different from what is being taught today. You may recognize some or most of the vocabulary and concepts being used but some words would be foreign and some concepts would seem almost comical. Over those past 100 years science has changed due to new evidence, new equations, and technology that has allowed us to peer deeper and further than previous generations. For example, picture in your mind what you think an atom looks like. Many of you probably imagine a nucleus at the center with electrons whizzing around in orbits like planets orbiting the sun. For a time, scientists thought that this is what the atom looked like but now this model is considered incorrect. Electrons, as small as they are, actually don't behave like planets. They follow these strange rules of probability which allow them to be in multiple places at once until you try to observe them.⁶ The model that describes the weird behavior of electrons is known as quantum mechanics.

This is just one example out of many that shows how science has changed over time. Within each model, theory, or explanation is the hope that it will be correct over time and not need to be changed. However, time and again science books have needed to be rewritten because a model or theory has been refined by new evidence or completely replaced by something new. Another example of this took place in 1916 when Einstein's theory of gravity, known as general relativity,⁷ took over as the dominant theory of gravity. This supplanted the theory of gravity that had been

^{6 &}quot;It is more accurate to say that the electrons occupy an area of probability around the nucleus known as an electron cloud. According to quantum mechanics you cannot know with complete accuracy both the momentum (the product of mass and velocity) and the location of an electron or other small particles. This is known as Heisenberg's uncertainty principle."

Amretashis Sengupta, ed. Amretashis Sengupta and Chandan Kumar Sarkar. Introduction to Nano –Basics to Nanoscience and Nanotechnology (Berlin: Springer, 2016), 9.

^{7&}lt;sup>7</sup> Einstein's equations said that space and time are woven together and that objects of great mass distort this fabric of space-time like a heavy ball placed on a rubber sheet. These equations also explained some phenomena that Newtonian physics could not.

derived by Isaac Newton in 1687⁸. We must realize that the models and theories of science today are not guaranteed to be 100% correct.

This is what one author said in *Scientific American* about the changing nature of science,

Every generation tends to believe that its views on the nature of reality are either true or quite close to the truth. We are no exception to this: although we know that the ideas of earlier generations were each time supplanted by those of a later one, we still believe that this time we got it right.⁹

From God's word we get another perspective. The Bible is not a science textbook but it does offer great insight into how we should view human knowledge and wisdom compared to that of our almighty Creator.

Do you not know? Have you not heard? Yahweh is the everlasting God, the Creator of the whole earth. He never grows faint or weary; there is no limit to His understanding. *Isaiah 40:28 (HCSB)*

See to it that no one takes you captive through philosophy and empty deceit, which are in accord with human tradition, namely, the basic principles of the world, but not in accord with Christ. *Colossians 2:8 (EHV)*

Instead we speak God's wisdom that has been hidden in mystery—before the ages, God foreordained that this wisdom would result in our glory. *1 Corinthians 2:7 (EHV)*

O'Connor, J. J. and Robertson, E. F., "General Relativity," School of Mathematics and Statistics, University of St Andrews, Scotland.
<u>http://www-history.mcs.st-and.ac.uk/HistTopics/General_relativity.html</u> (accessed August 3, 2018)
9 Kastrup, Bernardo. "Should Quantum Anomalies Make Us Rethink Reality?"

Scientific American Blog Network, April 19, 2018. www.LutheranScience.org/SAanomalies (accessed August 3, 2018) From these passages we see that any amount of knowledge we can accumulate pales in comparison with that of our all-powerful and all-knowing Creator. All human knowledge and wisdom is tainted by sin. It is imperfect and it is incomplete. Therefore, we should view all the knowledge, models, and theories of science with some skepticism. From our vantage point we will never be able to see the whole picture as God can. Science will continue to refine its theories and models about the universe but we will never have a perfect understanding of it. This is a limitation that was set by sin when humankind fell in the garden of Eden.

Juxtaposed to human attempts at describing the universe is God's Word, which provides everything we need to know about our wrongdoings and our need for a Savior. It lays out God's plan of salvation for us and is a comfort to us, because of all the promises that He made, kept, and will keep. Our God does not change (Numbers 23:19 and Hebrews 13:8). His Word does not change. We also see in his Word how God created the world (the universe) to display His wonders so that we may marvel at His power and knowledge. The mind needed to understand the universe perfectly can only be perfect.

Hawking's Assumption #2

The Universe is a Machine with Laws

This assumption is closely tied to the first. If we can fully understand something it must be because there is a set of rules or laws that govern it. Again, we may say to ourselves that we agree with this assumption. Certainly, we know about many laws of nature which we attempt to describe with scientific laws and theories (scientific models) such as gravity, thermodynamics,¹⁰ and motion. I teach many of these lessons to my students in science class. Where Hawking differs is that he believes that laws of nature cannot be broken in any circumstance. If a scientific law or theory (a model) is broken (such as when God performs a miracle),

10 Laws pertaining to the transfer of heat and other forms of energy.

then that means that scientific model was not correct in the first place and must be refined or discarded and replaced with a model that does fit the evidence or findings. This is one of the cornerstones of science when it comes to experimentation. There must be an equation, a mathematical constant, or a postulate that satisfies all of the findings of an experiment.

The Bible on the other hand shows that laws of nature *can* be broken by the power of God. We call this a miracle. The Scriptures report many miracles. Spectacular miracles include when God made the sun and moon stand still for nearly an entire extra day (Joshua 10:12-15), and when God made the sun's shadow go backwards (2 Kings 20:8-11; Isaiah 38:7-8;).

God is not constrained by the laws of nature which He set up to allow our universe to work. In fact, God continually holds our universe together (Colossians 1:16-17, Acts 17:28). If God would remove himself from the universe, it would fall apart. In our everyday lives we often take this extraordinary fact for granted.

God usually holds the universe together by upholding His laws of nature. An exception is when He performs a miracle. When He does, He is simply changing the way He holds the universe together for a short time.

God takes an active role in making sure the universe operates as it should even down to the concept of time. God created a universe for us where time always goes forward. We cannot comprehend experiencing time any other way. The construct of time is so concrete to us (unless you are waiting in line at the grocery store)¹¹. God though, is independent of time, as time is part of His creation. "In the beginning," when time itself began because God just created time, "God created the heavens and the earth" (Genesis 1:1, HCSB). "For a thousand years in your sight are like a day, like yesterday that has gone by, or like a watch in the night" (Psalm 90:4, EHV).

¹¹ Einstein did show, however, that the passage of time can be slowed when speeds close to the speed of light are obtained or when extreme amounts of gravity are involved. This is part of his theory of special relativity.

Paul G. Hewitt, Conceptual Physics: the High School Physics Program - Teacher's Edition (Upper Saddle River: Prentice Hall, 2002) 218-222.

To say that the universe is a machine that we can one day have a full blueprint for is folly. Just like the builders of the tower of Babel wanted to make a name for themselves reaching for the heavens, so scientists today have built a tower of scientific laws and theories that, for a time, may seem to get us closer to the full picture but we will never have a complete or perfect picture.

Hawking's Assumption #3

The Big Bang Created the Universe from Nothing

Our fifth-grade science textbook claims "The Big Bang theory states that the universe started with a big bang at a single point and has been expanding ever since. Evidence suggests that the Big Bang happened 13.7 billion years ago."¹² As evidence for the Big Bang, evolutionists cite the observation that galaxies and other objects very far away from us seem to be moving farther away from us.¹³ Scientists believe that since the universe seems to be expanding it would be logical to think that at some point in the past the universe was very small. So small in fact that some believe it would have started out smaller than an atom.

Let us, for a moment, indulge in this theory. We must then ask, "Where did this single point¹⁴ come from?" Hawking has an answer ready for such a conundrum. Back in assumption #1, I mentioned a field of science known as quantum mechanics. This model allows for some pretty unintuitive and downright weird things to happen. One weird thing that is

¹² Jay K. Hacket et al., Science, a Closer Look, Grade 5 Ecosystems - Unit B. (Columbus: Macmillan/McGraw-Hill School Div., 2013), 466.

¹³ The specific evidence is called redshift where the light from distant objects is shifted toward the red end of the visible light spectrum. Something similar happens when you hear the pitch of a train horn go down as it travels away from you.

¹⁴ This single point is often called a singularity, a point of infinite density and spacetime.

Hossenfelder, Sabine. "Are Singularities Real?" PBS. Public Broadcasting Service, December 9, 2015. (accessed August 3, 2018)

http://www.pbs.org/wgbh/nova/blogs/physics/2015/12/are-singularities-real/

allowed in quantum mechanics is for small particles to pop into existence at random.¹⁵

Hawking and other scientists apply this idea to the singularity that they think started the universe. They say that the laws of quantum mechanics allow for such a singularity to come into existence without the need for God. Hawking further explains that at the time when the singularity came into existence which consists of entirely positive matter and energy (stuff that we can interact with and see) an equal amount of negative energy was created. He would say that if you took the sum total of all the positive and negative energy and matter in the universe it would equal zero¹⁶. My inkling is that this may make more sense if you had a PhD in cosmology and could look at and understand the equations that Hawking worked with.

Hawking bases all of this on the current model of quantum mechanics. As we have seen, no model of science can give us a perfect summation of all of nature. There are still many mysteries that general relativity and quantum mechanics cannot explain.

Black holes present a number of issues that still remain a mystery. One issue they present is the need for a model that combines quantum mechanics and general relativity. One generally accepted model is that black holes are created when the material of a star is compressed into a tiny area creating a singularity. This singularity is both very small and very massive therefore the laws of both quantum mechanics and general relativity need to be applied. The current difficulty is that the equations of these two models don't play well together in the extremes inside of a black hole. There have been some attempts, such as string theory, to reconcile these two models, but at the time being it is impossible to test¹⁷. As time

¹⁵ Gordon Kane, "Are Virtual Particles Really Constantly Popping in and out of Existence? Or Are They Merely a Mathematical Bookkeeping Device for Quantum Mechanics?" *Scientific American*, Oct 9, 2006. (accessed August 3, 2018) https://www.scientificamerican.com/article/are-virtual-particles-rea/

¹⁶ Stephen Hawking and Leonard Mlodinow, *The Grand Design*, (New York: Transworld Digital, 2010), 109.

^{17 &}quot;Black Hole Information Paradox: An Introduction." Of Particular Significance, February 4, 2014. <u>www.LutheranScience.org/opsBlackHole</u> (accessed August 3, 2018)

progresses we will certainly see science continue to change and new models will replace the old and obsolete.

You can see here how far scientists have to stretch to explain the universe when they refuse to allow for miracles. You should know as well that the Big Bang theory is not the only theory evolutionists use to explain how the universe came about. There are many competing theories and therefore evolutionists are far from consensus on the origin of the universe.

On the other hand, we have the Biblical account of creation. God reveals in Hebrews 11:3 (EHV), "By faith we know that the universe was created by God's word, so that what is seen did not come from visible things." I find it awe-inspiring and comforting to know that the true God was able to make all of this and more in just six days. God not only made all the things that we can see and observe today but also all the intangible things such as the laws of nature that help govern the universe. He made them with such exactness and precision. We see this today in the wonderful balance of his creation: the balance of the distance of the Earth from the Sun; the balance of the different forces like electricity, magnetism, and gravity; and not to mention the balance of all the living things here on Earth.

Hawking's Assumption #4



This assumption is not directly stated in the video or in Hawking's book. However, I think it is implicitly stated in the title of his video and throughout his book.

Hawking is challenging the belief that God only created the universe and all of its natural laws. In doing so he has belittled God to no more than a watchmaker that puts the pieces together and sets the watch

in motion. We know that the Bible has one central teaching and theme: God's plan of salvation for the crown jewel of his creation, humankind. Hawking's mistake is one made by so many people today. People have taken God and constrained Him to what only the human mind is comfortable with. In that mistake many people have rejected the need for a Savior and it is my fear that all evidence points to Hawking passing away without saving faith.

Conclusion

It is my prayer that by learning about Hawking's assumptions you will be better prepared to engage, on level ground, the many others who also make such assumptions. When we better understand where people are coming from (understand their assumptions) we demonstrate that we desire to better understand others. It allows us to enter into conversations and build relationships that allow a sharing of the gospel. We don't want to sound ignorant when proclaiming the most important message anyone can ever hear.

We Pray:

Holy Spirit, work in the hearts of people like Stephen Hawking. People who work so hard to shut you out, to ignore the gospel. Use us to reach such people who, like us all, need a Savior. Lead them to faith in their Redeemer, Jesus Christ. Amen.

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Black Holes

Mark Bergemann

The late Stephen Hawking's most famous discovery was on black hole radiation. NASA remembered Hawking with these words,

Hawking's best known work found that black holes should glow, emitting what is now known as Hawking radiation. Hawking's theories have unlocked a universe of possibilities that NASA and the world are exploring today.¹

"What Is a Black Hole?"

NASA answers this question in an article with that title,

A black hole is a region in space where the pulling force of gravity is so strong that light is not able to escape. The strong gravity occurs because matter has been pressed into a tiny space. ...Because no light can escape, black holes are invisible. However, space telescopes with special instruments can help find black holes. They can observe the behavior of material and stars that are very close to black holes.²

How Can We Detect Something Invisible?

NASA answers this question in that same article,

If Black Holes Are "Black," How Do Scientists Know They Are There? A black hole can not be seen because

https://www.nasa.gov/feature/nasa-remembers-dr-stephen-hawking

¹ Sarah Loff, ed., "NASA Remembers Dr. Stephen Hawking," NASA, updated March 16, 2018. (accessed August 3, 2018)

² Heather R. Smith, "What Is a Black Hole?," ed. Flint Wild, NASA Educational Technology Services, updated Aug. 7, 2017.

www.LutheranScience.org/NASAbh (accessed August 3, 2018)

of the strong gravity that is pulling all of the light into the black hole's center. However, scientists can see the effects of its strong gravity on the stars and gases around it. If a star is orbiting a certain point in space, scientists can study the star's motion to find out if it is orbiting a black hole. When a black hole and a star are orbiting close together, high-energy light is produced. Scientific instruments can see this high-energy light. ...How Is NASA Studying Black Holes? NASA is learning about black holes using spacecraft like the Chandra X-ray Observatory, the Swift satellite and the Fermi Gamma-ray Space Telescope. Fermi launched in 2008 and is observing gamma rays - the most energetic form of light – in search of supermassive black holes and other astronomical phenomena.³

"NASA's Swift Satellite Spots Black Hole Devouring A Star"

NASA Reported the discovery of a black hole using an article with this title. NASA reports,

In late March 2011, NASA's Swift satellite alerted astronomers to intense and unusual high-energy flares from a new source in the constellation Draco. They soon realized that the source, which is now known as Swift J1644+57, was the result of a truly extraordinary event — the awakening of a distant galaxy's dormant black hole as it shredded and consumed a star. ...Most galaxies, including our own, possess a central supersized black hole weighing millions of times the sun's mass. According to the new studies, the black hole in the galaxy hosting Swift J1644+57 may be twice the mass of the four-million-so-

³ Smith.



NASA's Swift Satellite with X-Ray and Optical Telescopes credit: NASA/Goddard Space Flight Center

lar-mass black hole lurking at the center of our own Milky Way galaxy. As a star falls toward a black hole, it is ripped apart by intense tides. The gas is corralled into a disk that swirls around the black hole and becomes rapidly heated to temperatures of millions of degrees. The innermost gas in the disk spirals toward the black hole, where rapid motion and magnetism creates dual, oppositely directed "funnels" through which some particles may escape. Particle jets driving matter at velocities greater than 80-90 percent the speed of light form along the black hole's spin axis. In the case of Swift J1644+57, one of these jets happened to point straight at Earth.⁴

⁴ Francis Reddy, "NASA's Swift Satellite Spots Black Hole Devouring A Star," NASA Goddard Media Studios, August 24, 2011, <u>http://svs.gsfc.nasa.gov/10807</u> (accessed August 3, 2018)

X-rays from Swift J1644+57



What Did Swift "See"?

NASA's Swift satellite recorded spikes of x-ray energy, and that has been interpreted as a particle jet reaching the earth from a black hole which may be consuming a star. The brightness of the x-rays as measured by the Swift satellite is graphed in the image⁵ above. NASA describes that image with these words,

> Swift's X-Ray Telescope continues to record high-energy flares from Swift J1644+57 more than three months after the source's first appearance. Astronomers believe that this behavior represents the slow depletion of gas in an accretion disk around a supermassive black hole. The first flares from the source likely coincided with the disk's creation, thought to have occurred when a star wandering too close to the black hole was torn apart.⁶

⁵ Image credit: NASA/Swift/Penn State.

⁶ Reddy.



NASA's Swift satellite has both x-ray and optical telescopes. This is important as it allows us to correlate data from two different parts of the electromagnetic spectrum (x-ray and optical). Data from each is combined into the image shown on page 31.

What Did Other Imaging Equipment "See"?

Radio wave images of this same patch of sky taken by other imaging equipment, show what is assumed to be a distant galaxy emitting strong radio waves. A gray-scale image⁷ of those radio waves is shown above (the NASA original is colorized). NASA writes about this image [XRT is the x-ray telescope on the Swift satellite],

> Positions from Swift's XRT constrained the source to a small patch of sky that contains a faint galaxy known to be 3.9 billion light-years away. But to link the Swift event to the galaxy required observations at radio wavelengths, which showed that the galaxy's center contained a brightening radio source. Analysis of that source using the Expanded Very Large Array and Very Long Baseline Interferometry (VLBI) shows that it is still expanding at more than half the speed of light.⁸

⁷ Image credit: NRAO/CfA/Zauderer et al.

⁸ Reddy.

Interpreting Data

All of this data must be interpreted. What may explain such data? Scientists make "models," which are proposed explanations for the data. One model that may explain the data discussed above, is that of a black hole consuming a star. NASA describes this interpretation,

> Theoretical studies of tidally disrupted stars suggested that they would appear as flares at optical and ultraviolet energies. The brightness and energy of a black hole's jet is greatly enhanced when viewed head-on. The phenomenon, called relativistic beaming, explains why Swift J1644+57 was seen at X-ray energies and appeared so strikingly luminous. When first detected on March 28, the flares were initially assumed to signal a gamma-ray burst, one of the nearly daily short blasts of high-energy radiation often associated with the death of a massive star and the birth of a black hole in the distant universe. But as the emission continued to brighten and flare, astronomers realized that the most plausible explanation was the tidal disruption of a sun-like star seen as beamed emission.⁹

Artistic Depictions

NASA has a video¹⁰ showing an artistic depiction of this proposed interpretation of the data. Still images from that video are shown on page 32. NASA describes this video with these words,

On March 28, 2011, NASA's Swift detected intense X-ray flares thought to be caused by a black hole devouring a star. In one model, illustrated here, a sun-like star on an eccentric orbit plunges too close to its galaxy's central black hole. About half of the star's mass feeds an accre-

9 Reddy. 10 Reddy. tion disk around the black hole, which in turn powers a particle jet that beams radiation toward Earth.¹¹

Quasars

Back in the 60s and 70s I remember hearing about quasars all the time in TV shows and magazines. Quasar was even a line of Motorola television sets. Quasar is a contraction of "quasi-stellar radio source." NASA reports that "Quasars are capable of emitting hundreds or even thousands of times the entire energy output of our galaxy."¹² Fifty years ago, quasars were very mysterious, since almost nothing was known about them.

Today, it is commonly accepted that quasars are black holes feeding on matter and streaming massive amounts of energy across the universe. The European Space Agency (ESA) explains,

> Today most astronomers believe that quasars, radio galaxies and the centres of so-called active galaxies just are different views of more or less the same phenomenon: a black hole with energetic jets beaming out from two sides. When the beam is directed towards us we see the bright lighthouse of a quasar. When the orientation of the system is different we observe it as an active galaxy or a radio galaxy. This 'unified model' has gained considerable support through a number of Hubble observational programs. The simplistic early ideas have however been replaced by a more complex view of this phenomenon – a view that will continue to evolve in the years to come.¹³

12 ESA/Hubble & NASA, "NASA's Hubble Gets the Best Image of Bright Quasar 3C 273," <u>https://www.nasa.gov/content/goddard/nasas-hubble-gets-thebest-image-of-bright-quasar-3c-273/#.W1zAI_ZFxzx</u> (accessed August 3, 2018) 13 The Hubble European Space Agency Information Centre, "Black holes, quasars and active galaxies," Hubble Space Telescope, <u>http://www.spacetelescope.org/science/black_holes/</u> (accessed August 3, 2018)

¹¹ Reddy.

Science

Personally, I think it likely that the scientific modeling of this data as depicted in the artistic renderings and video is reflective of what actually emitted this radio and x-ray energy. Alternatively, it may be completely incorrect. That is the nature of science. As Paul Boehlke wrote in the *Lutheran Educator*, "Science changes; new ideas replace the old. Science does not generate truth, but rather, useful explanations."¹⁴

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Page 32: NASA descriptions of these images,¹⁵

Top left image on page 32

"A sun-like star on an eccentric orbit plunges toward the supermassive black hole in the heart of a distant galaxy."

Top right image on page 32

"Strong tidal forces near the black hole increasingly distort the star. If the star passes too close, it is ripped apart."

Bottom left image on page 32

"The part of the star facing the black hole streams toward it and forms an accretion disk. The remainder of the star just expands into space."

Bottom right image on page 32

"Near the black hole, magnetic fields power a narrow jet of particles moving near the speed of light. Viewed head-on, the jet is a brilliant x-ray and radio source."

¹⁴ Paul Boehlke, DINOSAURS, GOD'S CREATURES, The Lutheran Educator, 31, no. 3 (1991): 57. (accessed August 3, 2018)

https://mlc-wels.edu/library/wp-content/uploads/sites/14/2015/12/luthed313.pdf 15 Reddy.



Image Depicting Actual Data from the Swift Satellite

The data depicted in the above image, along with other data, must be interpreted using various scientific models about black holes (various ideas of how black holes behave). One interpretation of the data resulted in the artistic drawings shown on page 32. NASA explains the above actual data image,

Images from Swift's Ultraviolet/Optical (white, purple) and X-Ray telescopes (yellow and red) were combined to make this view of Swift J1644+57. Evidence of the flares is seen only in the X-ray image, which is a 3.4-hour exposure taken on March 28, 2011.¹⁶

16 Reddy.

Black Holes



Sequential Artistic Depictions (top left to bottom right) of How Some Scientists Think a Black Hole May Be Able to Consume a Star. Details on page 30. credit: NASA/Goddard Space Flight Center/Swift