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Does the Universe Have a Beginning?

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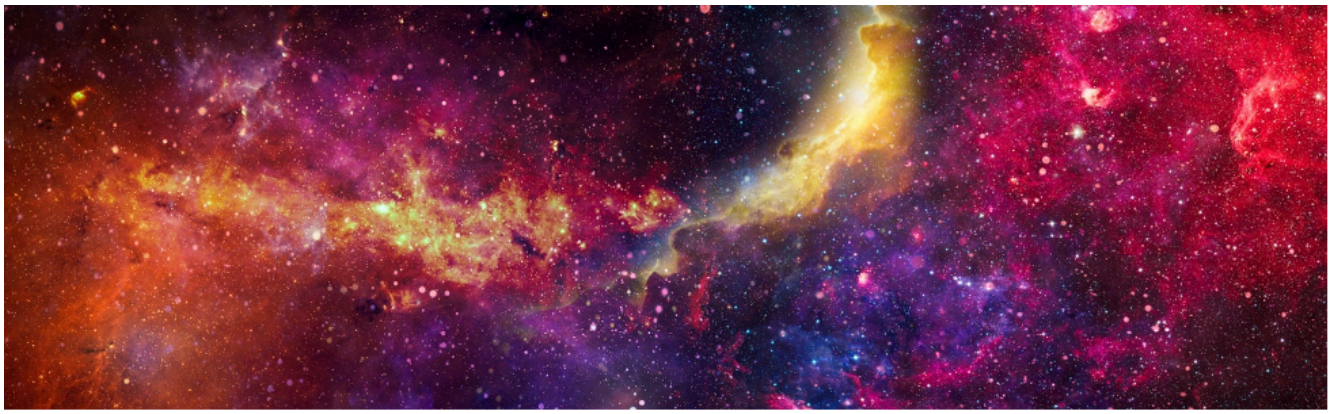

Since the dawn of civilization man has gazed in awe at the stars, wondering what they are and how they got there. Although our unaided eyes can only see about 6,000 stars on a clear night, the Hubble and James Webb telescopes reveal there are as many as 2 trillion galaxies, each with hundreds of billions of stars. Our sun is like one grain of sand amidst all the world's beaches.

Prior to the 20th century, astronomers believed our own Milky Way galaxy was the entire universe, and that only about 100 million stars existed. The prevalent scientific opinion at that time was that the universe had always existed.

But in the early 20th century, George Lemaitre, a Belgian priest, who was also a professor of physics, showed mathematically from Einstein's theory of relativity that the universe was expanding. This was a revolutionary thought that most scientists rejected, until 1929 when American astronomer Edwin Hubble discovered evidence that Lemaitre was correct.

Hubble had been spending countless nights at the Mount Wilson Observatory, studying the stars and galaxies and the spectrum of color in the light they sent our way. He discovered the further away a galaxy was from us, the more intense its red shift on the color spectrum. The implication was revolutionary to astronomy because it proved the universe was expanding. That meant it must have had a beginning in the distant past.[1]

And yet not everyone accepted the proof at first, including the great Albert Einstein.

EINSTEIN'S BIGGEST BLUNDER

When Einstein developed his revolutionary theory of general relativity in 1916, his mathematical calculations proved the universe was expanding. And rewinding the tape on the expansion of the universe, you get back to a point where it didn't exist, confirming it must have had a beginning.[2]

But Einstein was unwilling to accept a beginning to the universe, fudging the numbers of his own theory to avoid the conclusion that the universe was expanding. So, why would this great scientist fudge his own equations that showed an expanding universe?

University of California astrophysicist George Smoot explains that Einstein's main problem with an expanding universe was its inference of a beginning. And a beginning pointed to a Beginner beyond scientific investigation.[3] However, to Einstein's credit, once experimental data proved him wrong, he admitted his error, calling it "the biggest blunder of my life."[4]

THE BEGINNING NAMED A "BIG BANG"

British astronomer Sir Fred Hoyle also opposed the evidence for a beginning to the universe, sarcastically calling it a "Big Bang." Hoyle's name for the creation event stuck. Physics professor Brian Greene explains that the term "Big Bang" is actually misleading since there was nothing to explode and no space for an explosion to take place.[5]

For example, when a bomb ejects shrapnel into the air, both the bomb material and the space it blows into have already been there. However, in the beginning of the universe, neither space nor matter existed until the moment of creation.

Hoyle, along with his colleagues Bondi and Gold had proposed the steady-state theory as an alternative to the "big bang." Their theory predicted the universe is eternal and continually creates new matter to balance its expansion. The steady-state theory was the main scientific rival to Hubble's evidence that the universe had a one-time beginning.

Professor Dennis Sciama, Steven Hawking's supervisor while he was at Cambridge, admits his reasons for supporting the steady state theory rather than a one-time beginning:

I was a supporter of the steady state theory, not in the sense that I believed that it had to be true, but in that I found it so attractive I wanted it to be true."[6]

Few scientists are willing to be as candid as Dennis Sciama's admission about why they opposed a beginning to the universe. Einstein, Sciama, Hoyle and other great scientists had originally allowed their materialistic biases to blind them to the new evidence.

Despite his initial opposition, Hoyle finally became convinced by the overwhelming evidence that the universe—including time, space, matter and energy—did have a one-time beginning from nothing.

Stephen Hawking called Hubble's discovery of an expanding universe "one of the great intellectual revolutions of the twentieth century."[7] The discovery that the universe had a beginning has led to a new science called cosmology, which attempts to understand what happened at the origin of the universe, how it works, and what will happen in its future.

The discovery of a one-time beginning led cosmologists to take another look at a seemingly mundane insight from the 19th century, the second law of thermodynamics. That law states that everything in the universe is constantly moving from a state of order to disorder. A simple illustration is how a hot cup of coffee will gradually become cold as its heat dissipates. The same is true of stars and planets throughout the universe.

In addition to Hubble's discovery, the second law of thermodynamics also predicts a beginning to the universe. If the universe were eternal, it would have gone cold and lifeless long ago. The stars would have burned out. Planets would have broken up into clouds of dust. And even the black holes would have ceased vacuuming the universe of unsightly stars and planets.

There is still another way that the measurement of heat helps to prove that the universe is expanding. In the spring of 1964, two researchers at Bell Labs observed a persistent hiss while testing their microwave radiation detector. Regardless of

which direction they aimed the antenna, the static was the same. Those men, Arno Penzias and Robert Wilson, had discovered what scientists say is the echo from the birth of the universe.[8]

SCIENTIFIC EVIDENCE OF THE BIRTH

According to mathematicians, if the universe began in an intense "explosion," the heat would have been 100 million trillion trillion degrees Kelvin. However, due to its expansion, that enormous heat would have cooled to slightly under three degrees Kelvin today.

In 1992, a team of astrophysicists led by George Smoot launched the COBE satellite to verify the temperatures in space. The satellite would be able to take precise measurements and determine whether predicted fluctuations in temperature existed.

The results stunned the scientific world. Not only was the temperature of empty space (2.7 degrees Kelvin) confirmed, but more importantly, the profiles of the fluctuations were discovered to be a match with what had been expected.[9] Hawking called the discovery "the scientific discovery of the century, if not all time." Smoot himself excitedly stated to newspaper reporters,

What we have found is evidence for the birth of the universe.[10] If you're religious, it's like looking at God.[11]

Astounded by the news, TV journalist Ted Koppel began his *ABC Nightline* program with an astronomer quoting the first two verses of the Bible. The other special guest, a physicist, immediately added his quote of the third Bible verse:

In the beginning God created the heavens and the earth. … And God said, 'Let there be light,' and there was light. (Genesis 1:1, 3).[12]

A NIGHTMARE FOR MATERIALISTS

And the evidence kept mounting. Tests from an array of radio telescopes at the South Pole have confirmed the universe had a beginning to a still higher degree of accuracy than ever before. Background radiation measurements exceed 99.9% of what had been predicted.[13]

There are now more than 30 independent confirmations that the universe had a one-time origin.[14] That's as much forensic proof as most DNA matches.

Today, most cosmologists and physicists accept the Big Bang theory as the scientific explanation of how our universe began. In fact, scientists believe they can trace the history of the universe all the way back to 10^{-43} of a second. Prior to that point (singularity) in the history of the universe, all theories break down, and science can see no further back.

Some scientists aren't willing to accept the fact that everything was created from nothing and have attempted to propose alternative ideas as to how the universe came to exist. But these hypothetical proposals are highly speculative without any evidence to support them.

The evidence for a one-time beginning of space, matter, energy, and time itself is like a bad dream for materialists. Smoot remarks,

Cosmologists have long struggled to avoid this bad dream by seeking explanations of the universe that avoid the necessity of a beginning.[15]

What scientists do know from the evidence is that the universe, and everything in it had a beginning. What materialists struggle with is how it got started and was there a Beginner.

WHO LIT THE MATCH?

Imagine rewinding the universe back to when nothing existed. No stars. No light, No matter, quantum particles or energy. Not even space or time.

Suddenly, a cataclysmic explosion erupted at a temperature exceeding a million trillion trillion degrees.[16]

At that point, time, matter, energy, and space all began.

Scientists began asking: “Who or what started it?” Einstein’s theory of relativity predicts that the universe needed an outside force or Beginner.[17] Since Einstein’s theory of relativity ranks as the most exhaustively tested and best proven principle in physics, his conclusion is deemed correct by scientists.[18]

The Genesis account of creation clearly states that God spoke everything into existence from nothing. For centuries, scientists scoffed at the Genesis account as mythical. But with the new evidence, Nobel Prize-winning physicist George Smoot admits,

> *Until the late 1910's ... those who didn't take Genesis literally had no reason to believe there had been a beginning.*[19]

He also pointed out how the new discovery of a beginning agreed with the Bible.

There is no doubt that a parallel exists between the Big Bang as an event and the Christian notion of creation from nothing.[20]

The mounting evidence for a one-time beginning has caused many scientists to rethink both the origin of the universe and the biblical story of creation.

Endnotes