

What Caused the Universe?

If the universe had beginning then it must have a cause. The Big Bang does not only involve the start of matter but also space and time. Matter, space and time are interdependent. The explosion of the universe was a highly orchestrated cosmic explosion with just the right mixture of gravity and explosive energy. John Polkinghorne, a theoretical physicist, and a colleague of Stephen Hawking, writes:

"In the early expansion of the universe, there has to be a close balance between the expansive energy (driving things apart) and the force of gravity (pulling things together). If expansion dominated then matter would fly apart too rapidly for condensation into galaxies and stars to take place... (The possibility of our existence) requires a balance between the effects of expansion and contraction which at a very early epoch in the universe's history (The Planck time) has to differ from equality by not more than 1 in 10^{60} . The numerate (mathematical) will marvel at such a degree of accuracy. For the non-numerate, I will borrow an illustration from Paul Davies of what that accuracy means. He points out that it is the same as aiming at a target an inch wide on the other side of the observable universe, twenty thousand million light years away, and hitting the mark."

If the existence of the cosmos as a whole needs to be explained, and if it cannot be explained by natural causes, Then we must look to the existence and action of a supernatural cause for its explanation. Since it is impossible for nothing to produce something, something must have always existed as the "First Cause" of the universe. Furthermore, this First Cause must be eternal (outside of time, since time is part of the finite universe) and powerful enough to account for the origin and existence of the Universe. This Cause must be knowledgeable, powerful and eternal.

How does Science respond to these finds?

Agnostic scientist *Robert Jastrow* founder of the *Goddard Institute of Space Studies* writes about the implications of these discoveries in science.

"Theologians generally are delighted with the proof that the Universe had a beginning, but astronomers are curiously upset. Their reactions provide an interesting demonstration of the response of the scientific mind--supposedly a very objective mind--when evidence uncovered by science itself leads to a conflict with the articles of faith in our profession. It turns out that the scientist behaves the way the rest of us do when our beliefs are in conflict with the evidence. We become irritated, we pretend the conflict does not exist, or we paper it over with meaningless phrases."

Conclusion

Therefore we can say belief in a "Creator" (Cause) is logical and even justified by the findings of science. While atheism is illogical because it requires the belief that that the Universe came into existence out of nothing.

In the beginning God created the heavens and the earth Genesis 1:1

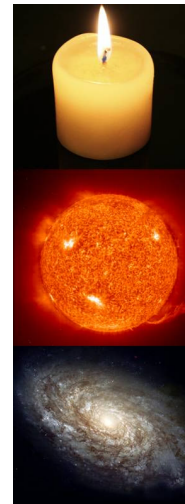
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The Cosmological Argument

Why do we need to know if God exists? Can't I just be a good person without knowing if God exists? Doesn't believing in God require "blind faith"? You like many may have heard and thought about these questions. First, if you want to know who you are and how you got here, you can't help but ask, "does God exist?"

A Starting Point



Look around, everything you see including yourself has a cause and a beginning. Your parents brought you into the world and their parents brought them, all the way to the first humans. The world itself had a starting point. According to some scientists the earth is 4.5-billion years old. The Sun which our earth revolves around had a starting point, some say 8-billion years ago.

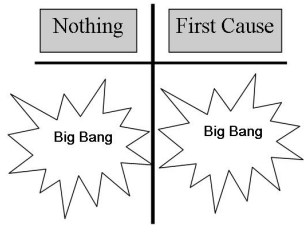
Light a candle, it will only burn for limited amount of time, the "wax-fuel" is a finite (limited) source. The candle had **starting point** and has **ending point**. Our Sun is like a giant candle, the fuel is finite, it had a starting point and will have an ending point. This same point can be made for every dot of light in the sky; they are "finite" energy sources which will burnout.

Regarding their "Cause", Sir Francis Bacon (1561-1626) writes, "*True knowledge is knowledge by causes*" David Hume (1711-1776) the skeptic wrote, "*I never asserted so absurd a proposition as that anything might arise without a cause*". The understanding of "Cause" is known as the *principle of causality*.

The principle of causality: Only being can cause being. Nothing does not exist, and only what exists can cause existence, since the concept of "Cause" implies an existing thing that has the power to effect another. From absolutely nothing comes absolutely nothing.

Since they had a starting point, they had a cause. We know the

cause of a candle, but what caused the Sun, stars, galaxies and the Universe? What was this “First Cause”? Everything which *has a beginning* requires a cause. So if our universe had a beginning, then it requires a cause.



Did our Universe Have a Beginning?

If the Universe had a beginning, it has a Cause, this Cause would be the “**First Cause**”. The cause is greater than the effect, because the effect is contingent (dependent) and needs the cause to exist. The cause of the universe would be greater than the Universe. God would be the “First

Cause”.

Based on the observable universe, we know there was a time when our universe did not exist like it exists today (see below). If this is the case, what brought the universe into existence? We have 3 options:

1. The Universe came into existence from a “First Cause”
2. The Universe came into existence out of nothing
3. The Universe always existed



The Evidence for a Finite Universe with a beginning

Laws Governing the Universe:

1. **The First Law (Law of Energy Conservation)** states energy can neither be created nor destroyed.
2. **The Second Law (Law of Energy Decay)** states that “in a closed system, the amount of usable energy in the universe is decreasing.” Entropy is the level of disorder in system. A highly ordered system is in a low state of entropy. A disordered system is in higher state of entropy.

Understanding these laws, we learn that the Universe is **running out of usable energy**. Think of the universe as “gigantic heat engine” with no external source of energy input. As stars and galaxies burn off energy the energy is distributed throughout universe...from order to disorder. What this tells us is at some point the Universe was highly ordered. So according to the **2nd Law**, the universe is expected to run out of usable energy.

Roy Peacock, an expert in thermodynamics, author of “*Brief History of Eternity*” writes about the 2nd Law and the finite nature of the universe:

“The Second Law of thermodynamics is probably the most powerful piece of legislation in the physical world. It ultimately describes every process we have ever discovered: it is the final Court of Appeal in any dispute relating to action and procedures, whether they are naturally generated or man inspired. It draws the conclusion that in our universe there is an overall reduction in order, a loss of available energy that is measured as an increase in entropy. So the available stock of order is being exhausted. Akin to the dying battery of a flashlight, useful energy is being dissipated into entropy after which none remains for use...For us to live in a universe in which the Second Law of thermodynamics holds, then, it must be a universe that has a starting point, a creation.”

Therefore the 2nd Law proves our universe is finite and has a starting point. What does that mean? The logic works this way;

1. Everything that has a beginning has a cause
2. The universe had a beginning
3. Therefore the universe has a cause

Along with the evidence of the 2nd Law, science also demonstrates we live in “Finite” universe with a starting point.

The Radiation Echo:

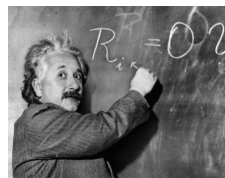


Arno Penzias and Robert Wilson, two physicists at Bell Laboratories discovered the earth is bathed in a faint glow of radiation. They were awarded the Nobel Prize in 1978. Their data found this radiation was left over from the initial explosion of the beginning of the universe, commonly referred to as the Big Bang.

In November of 1989, a satellite named **COBE**, (Cosmic Background Explorer) was successfully launched into space with instruments aboard capable of measuring the *radiation echo* left behind from the Big Bang. In April 1992, the final summation of COBE’s data was made public and hailed as unprecedented. Stephen Hawking, author of “*A Brief History of Time*”, called the discovery, “*The most important discovery of the century, if not all time.*” affirming the universe had a beginning.

The Expanding Universe

Albert Einstein’s **General Theory of Relativity** predicted that the universe had a beginning and is expanding in all directions. If we reversed the theory, there would be a starting point to the universe. This disturbed Einstein; his own theory demanded a starting point for the universe.



Robert Jastrow, founder of NASA’s Goddard Institute for Space Studies and served for twenty years as its director wrote about Einstein’s reaction in his realization of a finite universe:

“Around this time, signs of irritation began to appear among the scientists. Einstein was the first to complain. He was disturbed by the idea of a Universe that blows up, because it implied that the world had a beginning. In a letter to de Sitter—discovered in a box of old records in Leiden some years ago—Einstein wrote, “This circumstance (of the expanding Universe irritates me,” and in another letter about he expanding Universe, he said: To admit such possibilities seems senseless.”...I suppose that beginning in time annoyed Einstein because of its theological implications.

Based on Einstein’s theory of general relativity, the universe is finite and expanding in all directions. Since 1919 this theory has been verified numerous experiments. Therefore, we can conclude the universe had a beginning. It is finite.