

Going Deeper EVIDENCE FOR GOD



Discipleship
Course

1. The Created Universe

CLOSED OR OPEN UNIVERSE?

A FORENSIC COLD CASE APPROACH TO THE EVIDENCE Closed or Open System?

J Warner Wallace in his book **GOD'S CRIME SCENE: A Cold-Case Detective Examines the Evidence for a Divinely Created Universe** points out that in examining a crime scene a detective is looking for two types of evidence:

- a. "Inside the Room" evidence - for example, whether a death is from natural causes, the result of an accident, or suicide
- b. "Outside the Room" evidence - that points to the involvement of some outside person or cause - suggesting murder or homicide.

Arguments about the origins of the universe revolve around the evidence as to whether it is viewed as a "closed" or an "open" system - that is whether the evidence points to its origins being from within a closed system of the known universe (ie 'In the Room' evidence) or an open system which is the result of an outside agent or cause (ie 'Outside the Room') evidence.

Scientific approaches to the origins of the universe reflect the bias of

- a. those scientists who view the universe as a closed system and deny the possibility of a supernatural Creator; and
- b. those who view the universe as an open system with evidence of an external source or agent and the appearance of intelligent design.

Question

Q Does the scientific evidence of the visible universe suggest it has always existed or came into being from nothing?
Or does the evidence point rather to a beginning and the existence of an outside agent?

CLOSED OR OPEN UNIVERSE?

A. "INSIDE THE ROOM" EVIDENCE

The evidence from within our known universe includes: -

1. The mathematical impossibility of "Infinite Regression" and the idea that the universe has always existed.
2. The Laws of Physics such as the force of gravity and the cosmological constants were *discovered, not invented*, by man. They have been discovered by scientists and mathematicians such as Newton, Pascal, Rutherford, Einstein and Hoyle.
- 3 The Genetic Code in animals suggests Someone wrote the code.

B. "OUTSIDE THE ROOM" EVIDENCE

The evidence for an agent outwith our known universe includes -

- 1 The Cosmological Evidence that shows our universe had a beginning
- 2 The immense explosive power of the 'Big Bang' suggests a supernatural Creator and is evidenced by an expanding universe.
- 3 Astronomers like Vesto Slipher and Edwin Hubble observed that stars are moving away from our galaxy faster the further away they are from us as shown by the 'Red Shift' spectroscopy.
- 4 The Laws of Mathematics & Physics that govern the known universe include -
 - a. The '*Nihil ex nihilo*' principle: '*nothing comes from nothing*'
 - b. The orderliness of the universe enabling scientific research
 - c. The fact that specific causes have mathematically predictable outcomes
 - d. The Cosmological Constants display a fine-tuning that *appears* to suggest the existence of a Designer Creator. Minute changes in any of these constants would render life on earth impossible
- 5 The beauty of the universe suggests a Designer
- 6 Life in the universe emerged from non-life.- ie was created

NOTHING COMES FROM NOTHING



Nihil ex Nihilo

One of the fundamental laws of physics is contained in the Latin expression 'nihil ex nihilo' - '*nothing comes from nothing.*'

Spontaneous Generation vs Biogenesis

The idea of **spontaneous generation** holds that living creatures can arise from inanimate material. This is in contrast to the concept of **biogenesis** which holds that one lifeform is required to produce another.

An experiment by Louis Pasteur in 1859 finally overturned the theory of spontaneous generation at the microscopic level.

The Origin of the Universe: Spontaneous Generation?

Some scientists, including Stephen Hawking, have argued that 'there is no need for God to light the blue touch paper to bring the universe into being.' Instead they propose either that ours is just one of several multi-verses or that it has always existed.

'The Big Bang' & An Expanding Universe

The idea that our universe has always existed or that it came into being spontaneously was finally disproved by astronomers such as Vesto Slipher and Edwin Hubble, who observed the so-called 'red shift' in the movements of stars away from one another, thus showing that the universe is expanding. This evidence has confirmed the **Big Bang Theory** of the origin of the universe espoused by Sir Fred Hoyle.

Question

Q. Has the suggestion of Hawking and other scientists that the universe came about by spontaneous generation been supported by evidence? What does this mean about the origin of the universe?

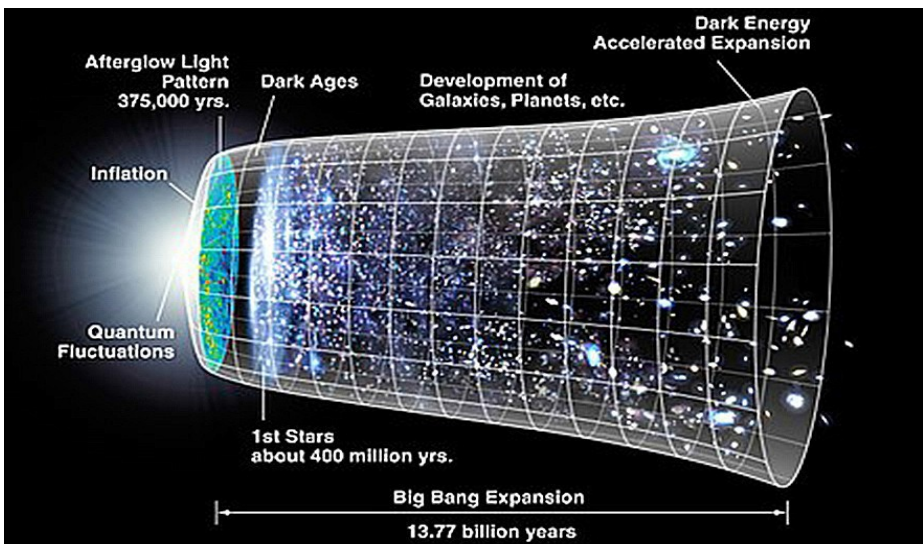
THE BIG BANG THEORY

The Big Bang & An Expanding Universe

The best estimate of the age of the known universe is 13.798 ± 0.037 billion light years. Because the universe is expanding ever since the Big Bang, we are observing objects that were originally much closer, but are now considerably farther away than a static 13.8 billion light years distance.

The diameter of the observable universe is estimated at about 93 billion light years. So the furthest edge of the observable universe is about 46–47 billion light-years away.

The diagram below shows a timeline of how the universe has developed since the Big Bang.



THE SIZE OF THE UNIVERSE



The Immensity of the Universe

It's impossible for us with our finite human minds to grasp the enormous size of the known universe. Our galaxy, the Milky Way, contains up to 400 billion stars. There are more than 200 billion galaxies (some estimates put this figure at up to 500 billion) – each with billions or even trillions of stars within it. There are **roughly 100,000,000,000,000,000,000,000 stars in the observable universe.**

Our Universe & The Speed of Light

The distance between galaxies, stars and planets is measured in **light years** - that is **the number of years it takes for a beam of light travelling at 186,282 miles per second (299,792 kilometers per second) to reach us on earth.**

The light-year is a unit of length used to express astronomical distances and measures **about 9.5 trillion kilometres or 5.9 trillion miles. It is the distance travelled by a beam of light through the vacuum of space in one year. So 1 Light Year = 9,461 trillion kilometres or 5,878,625 trillion miles!**

Space Travel In Light Years

Alpha Centauri is the nearest star system to our sun at 4.3 light years away. That's **about 25 trillion miles (40 trillion km) away from Earth** – nearly 300,000 times the distance from the Earth to the sun.

Question

Q What does the immense size of our universe suggest to you?



THE ORDERLINESS OF THE UNIVERSE

The Orderliness of the Universe Enables Scientific Discovery

The universe is governed by an incredible system of laws of mathematics and physics that enable scientists to undertake scientific discoveries, space exploration and even for men to travel to the moon and back.

The laws of nature can be measured and computed in the language of mathematics. Many of the greatest scientists have been struck by the fact that there is no logical necessity for a universe that obeys rules, let alone one that abides by the rules of mathematics.

The speed of light measures the same 186,000 miles per second, no matter if the light comes from a child's flashlight or a star that's galaxies away. Mathematically, there is an exact speed of light that doesn't change. But why this is so no one knows.

Physicist Eugene Wigner confesses that the mathematical underpinning of nature *"is something bordering on the mysterious and there is no rational explanation for it."*

Richard Feynman, a Nobel Prize winner for his work on quantum electrodynamics, said, *"Why nature is mathematical is a mystery...The fact that there are rules at all is a kind of miracle."*

The Goldilocks Enigma

The *"Goldilocks Enigma"* has been coined to refer to the amazing way in which the universe seems to have been fine-tuned so that it is *"not too hot, not too cold but just right."* It is based on the fine tuning of a number of cosmological constants, the slightest variation in which would make life as we know it impossible on earth.

Fine Tuning & The Cosmological Constants

Author Ruth Piercey in her book FINDING TRUTH comments on the fine-tuning of our universe.

"The origin of the universe has given rise to a puzzle known as the fine-tuning problem. The fundamental physical constants of the universe are exquisitely balanced, as though on a knife's edge, to sustain life. Things like the force of gravity, the strong nuclear force, the weak nuclear force, the electromagnetic force, the ratio of the mass of the proton and the electron, and many other factors have just the right value needed to make life (on earth) possible. If any of these critical numbers were changed even slightly, the universe could not sustain any form of life. For example, if the strength of gravity were smaller or larger than its current value by only one part in 1060 (10 followed by 60 zeros) it would make the universe uninhabitable."

The Universe Appears To Be Finely Tuned

A number of eminent scientists have commented that our universe appears to be finely tuned for life as we know it. Physicist Paul Davies, for example, has asserted that *"There is now broad agreement among physicists and cosmologists that the universe is in several respects 'fine-tuned' for life"*.

Stephen Hawking noted: *"The laws of science, as we know them at present, contain many fundamental numbers, like the size of the electric charge of the electron and the ratio of the masses of the proton and the electron. ... The remarkable fact is that the values of these numbers seem to have been very finely adjusted to make possible the development of life."*

Question

Q What does the fine-tuning of our universe suggest to you?

Six Cosmological Constants & Fine Tuning

There are six cosmological constants governing the fine tuning of the universe.

N = the ratio of the strength of electromagnetism to the strength of gravity for a pair of protons, is approximately 1036.

Epsilon (ϵ) = a measure of the nuclear efficiency of fusion from hydrogen to helium, is 0.007: when four nucleons fuse into helium, 0.007 (0.7%) of their mass is converted to energy. The value of ϵ is in part determined by the strength of the strong nuclear force. If ϵ were 0.006, only hydrogen could exist, and complex chemistry would be impossible.

Omega (Ω) = commonly known as the density parameter, is the relative importance of gravity and expansion energy in the Universe. It is the ratio of the mass density of the Universe to the "critical density" and is approximately 1. If gravity were too strong compared with dark energy and the initial metric expansion, the universe would have collapsed before life could have evolved. On the other side, if gravity were too weak, no stars would have formed.

Lambda (λ), = commonly known as the cosmological constant, describes the ratio of the density of dark energy to the critical energy density of the universe, given certain reasonable assumptions such as positing that dark energy density is a constant. In terms of Planck units, and as a natural dimensionless value, the cosmological constant, λ , is on the order of 10⁻¹²². This is so small that it has no significant effect on cosmic structures that are smaller than a billion light-years across. If the cosmological constant were not extremely small, stars and other astronomical structures would not be able to form.

Q, = the ratio of the gravitational energy required to pull a large galaxy apart to the energy equivalent of its mass, is around 10⁻⁵. If it is too small, no stars can form. If it is too large, no stars can survive because the universe is too violent, according to Rees.

D = the number of spatial dimensions in spacetime, is 3. Rees claims that life could not exist if there were 2 or 4 dimensions of spacetime nor if any other than 1 time dimension existed in spacetime

THE HEAVENS DECLARE THE GLORY OF GOD



Photo: © Mairi Nonhebel

The Heavens Declare The Glory Of God

In PSALM 8 the psalmist David expresses his wonder at the immensity of God's creation and at God's love for us human beings, who appear so insignificant in contrast to the grandeur of the universe.

"O Lord, our Lord, how majestic is your name in all the earth! You have set your glory in the heavens. Through the praise of children and infants you have established a stronghold against your enemies, to silence the foe and the avenger."

"When I consider your heavens, the work of your fingers, the moon and the stars, which you have set in place, what is mankind that you are mindful of them, human beings that you care for them? You have made them a little lower than the angels and crowned them with glory and honour. You made them rulers over the works of your hands; you put everything under their feet: all flocks and herds, and the animals of the wild, the birds in the sky, and the fish in the sea, all that swim the paths of the seas."

"O Lord, our Lord, how majestic is your name in all the earth!"

Abraham Lincoln on God

"I can see how it might be possible for a man to look down upon the earth and be an atheist, but I cannot conceive how a man could look up into the heavens and say there is no God."

Surely God would not have created such a being as man, with an ability to grasp the infinite, to exist only for a day! No, no, man was made for immortality."

SCIENCE & RELIGIOUS BELIEFS

Below is a table summarizing the main arguments for and against belief in a Creator God and Intelligent Designer of the universe

Arguments for God (*supernaturalist*)

The Kalam Argument
the universe had a cause

The Big Bang
involved immense power
& supernatural creation

Orderliness of Universe
enabling scientific research

The Cosmological Constant
involving fine-tuning of constants
such as electro-magnetic force & gravity

Intelligent Design
seen in the fine-tuning of the universe
and the coding in DNA of life forms

Sudden Appearance of Phyla
in the Cambrian Explosion with no
evidence of transitional forms

The Moral Argument
human beings created by a personal God
distinct from the rest of the animal world

Humans Have Free Will
to make moral choices between good & evil

The Beauty In Nature
is evidence of a Creator of beauty

Arguments against God (*anti-supernaturalist*)

Who created God?

Spontaneous Generation
The Universe arose spontaneously:
no need for God to light the touch paper

Evil & Suffering in Nature
denies idea of a good Creator God

Anthropic Argument
no answer for the 'Goldilocks Enigma'
& the fine-tuning of the universe

Less Than Perfect Design
a creator God could do better with
the design of some aspects

The Origin & Evolution of Species
the result of evolution through natural
selection, not by creative design

The Natural World Is Amoral
and operates on materialist
laws of cause and effect

Universe Governed By Laws
deterministic, beyond man's control

The Universe Is A Closed System
there is no such thing as the supernatural

Question

Q. In the light of the evidence you have seen, which of the alternative beliefs about the origins and features of our universe do you think is more reasonable?

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