

Genesis and Time: 6 Days and 13.8 Billion Years
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Room for Doubt Apologetics Conference – March 20-21, 2015
Cincinnati Christian University

The Problem

- A) According to surveys, the church is losing a high percentage of church-raised youth.
- B) Much of this is due to a perceived incompatibility between things learned in secular science classes and in the Bible.
- C) A primary issue is the question of 6 days of creation in 4004 BC vs a universe 13.8 billion years (Gyrs) old.

A Different Approach

- A) Debates over 6 days vs 13.8 Gyrs are based on the concept of fixed time as measured on Earth today.
- B) But science has shown that time varies with high velocity and with high gravity.
- C) The concept of variable time is held both by secular scientists and prominent 6-day creationists:
 - 1) Henry Morris, Author of *The Genesis Flood*
 - 2) Russell Humphreys, *Answers in Genesis*.
- D) Through variable time, 6 days and 13.8 Gyrs can both be right.

Science and the Bible

- A) The Bible is inerrant . . . but there are two ways to get things wrong:
 - 1) The church adopts bad science
 - 2) The church preaches bad theology
- B) Consider two historical examples to illustrate this . . .

Aristotle's Science (4th century BC)

- A) Aristotle is considered the first scientist. But he "didn't do silly experiments, [he] proved truth with impeccable logic."
- B) Without experimental basis, Aristotle believed:
 - 1) The Sun and planets circle Earth (geocentricity).
 - 2) The Universe is eternal – no beginning or end.

- C) Today we know this approach is bad science because experiment is the “gold standard” of science.
- D) Yet Aristotle was the standard for science until Galileo and Newton.

The Inquisition of Galileo (1633)

- A) The Catholic Church adopted Aristotle’s physics and interpreted the Bible as saying the sun and planets circled the Earth.
- B) Copernicus and Galileo demonstrated from observation and mathematics that the Earth and the planets circle the Sun.
 - 1) Yet the church prosecuted Galileo for blasphemy.
 - 2) Adopting bad science thus led to bad theology.

The Eternal Universe

- A) Rashi (1040-1105), an eminent medieval Hebrew scholar, also adopted Aristotle’s physics.
 - 1) He realized Aristotle’s eternal universe contradicted the traditional, straightforward translation of Genesis 1:1.
 - a) “In the beginning, God created . . .”.
- B) So Rash did a convoluted retranslated of Genesis 1:1 based on Aristotle: an eternal universe and four elements: earth, air, fire, and water.
 - 1) This is detailed in a [separate article](#).
- C) Maimonides and Nahmanides disagreed.
- D) The modern New Jewish Publication Society Torah (NJPS or TNK) follows Rashi:
 - 1) “When God began to create heaven and earth—the earth being unformed and void, with darkness over the surface of the deep and a wind from God sweeping over the water—God said, ‘Let there be light’; and there was light” (Gen 1:1–3, NJPS).
- E) This claims God’s creative effort was forming pre-existing materials in an eternal universe.
 - 1) Yet Rashi’s retranslation of Genesis 1:1 followed Aristotle – not the Hebrew text.
- F) Bad science led to bad theology.

But it Took Another Millennium Before the Eternal Universe was Discredited

- A) Aristotle’s eternal universe was considered “settled science” well into the 20th century.
- B) As Einstein derived his theory of General Relativity, he predicted the universe had a beginning.
 - 1) Yet because of prevailing science, he put a “fudge factor” into the theory to force an eternal universe.
 - 2) Einstein later called this his “biggest blunder.”

The Eternal Universe Discredited

- A) In 1927 Georges Lemaitre, physicist and Catholic priest, proposed an expanding universe and the theory now known as the “Big Bang.”
- B) An expanding universe was experimentally verified by astronomer Edwin Hubble two years later.
- C) In 1965, Penzias and Wilson discovered cosmic radiation coming from all directions.
 - 1) This was predicted by the “Big Bang” theory.
- D) Lemaitre’s theory was affirmed. The eternal universe theory fell apart.
- E) Since 1965 there has been so much experimental verification that the Big Bang Theory is now called the “standard theory.”
 - 1) Science believes the universe had a beginning.

The Big Bang Theory

- A) The Universe and time (space-time) were created when a point source singularity of infinitesimal size yet infinite mass “exploded.”
 - 1) Since time was created with the Big Bang, it is irrelevant to ask what happened before.
- B) Many Christians denigrate the Big Bang, claiming it represents naturalism.
- C) But valid naturalism must have a supporting theory – and there is none.
 - 1) There is no theory to explain what happened in the first 10^{-43} seconds after the Big Bang.
 - 2) There is no theory for a naturalistic cause for the Big Bang.
- D) A being outside our space-time, God, is the most plausible cause for the Big Bang.**

The Bible and Modern Science Say Essentially the Same Thing

- A) Bible: “In the beginning God created the heavens and the earth.” (Gen 1:1 NASB).
 - 1) This has traditionally been interpreted as creation ex nihilo – from nothing.
- B) Science: In the beginning a point source singularity of infinitesimal size and infinite density exploded in a “Big Bang.”
 - 1) Most plausibly caused by God.
- C) These statements are essentially the same.

Historical Review of the Bible and Science

- A) The theory that the Sun revolves around the Earth was changed to the Earth revolves around the Sun.
 - 1) Science was right; bad theology was wrong.
 - 2) Theology was changed to agree with science.
- B) The theory of an eternal universe was changed to a universe which had a beginning – from nothing.
 - 1) The Bible was right; bad science was wrong.

- 2) Science was changed to agree with the Bible.
- C) Until ~1970, Christians were ridiculed for believing the universe had a “beginning.”
 - 1) We were called “anti-science.”
 - 2) This led many Christians to believe the Bible and science are incompatible.
 - a) This attitude persists today.
- D) Yet by acceptance of the Big Bang Theory, science now confirms the Bible!
 - 1) It is impossible to express how important this is.

This Historical Review Illustrates A Fundamental Point:

- A) Science and the Bible should agree.
- B) If they don’t, the problem is bad theology or bad science – or both.

That Brings Up the Original Question: 6 Days or 13.8 Billion Years?

How Does Science Date the Universe?

- A) Six independent measurements suggest the universe is $10\text{-}19 \times 10^9$ years (10-19 Gyrs)
 - 1) They are essentially the same within experimental error.
 - a) The most recent and most accurate measurement suggests 13.8 Gyrs?
- B) These measurements are all based on solid, experiment-based science.
 - 1) They need to be taken seriously.
- C) Good science and good theology should agree.

What does the Bible say?

- A) Genesis 1 Proclaims Creation in Six Yôm
 - 1) The Hebrew Word Yôm in Genesis 1 is traditionally translated “day”
 - 2) But Yôm Can Also Mean an Indefinite Period of Time
 - a) Brown, Driver, Briggs defines yôm as not only a “day,” but also as an indefinite time period.
 - b) Yôm as an Indefinite Period of Time is suggested by Genesis 2:4 and Daniel 12:13.
- B) We will not dwell on this – or claim it’s right.
 - 1) We mention this to emphasize the flexibility of biblical Hebrew – part of the main point.

In Considering the Time of Creation, Remember . . .

- A) Since God is the creator of the universe and time:
 - 1) God’s Heaven must be outside our physical universe.
 - 2) Yet our omnipotent God is able to enter our universe undetected.
- B) God must also be outside of time.
 - 1) Our omniscient God transcends time.

- a) God knows the past – and the future.

The Perspective and Framework of Genesis 1 is Critical In Calculating Creation Time.

- A) Genesis 1 Illustrates Divine Action from Heaven
 - 1) God is in Heaven, Commanding and Observing His Creation

God's Time is not Our Time

- A) Psalm 90:4 and 2 Peter 3:8 proclaim a day is as a thousand years to God – and vice versa.
- B) Such verses are usually interpreted figuratively . . . and together with the Genesis 1 framework, they provide biblical justification for the scientific principle of Time Dilation.

Time Dilation

- A) Science has experimentally verified that time is variable – not fixed.
- B) This is because the speed of light is not relative to the observer.
- C) It is fixed at 186,282 mi/s for all observers, regardless of their relative motion.
 - 1) Predicted by Maxwell's Equations.
 - 2) Confirmed by Michelson-Morley Experiment (1887) – and many others since, including:
 - a) Jets flying around the world in opposite directions in 1971.
 - b) The presence on Earth of large numbers of Muons (subatomic particles created high above the Earth's surface).

Knowing that the speed of light is constant, we can show that time isn't.

- A) Do a simple thought experiment.
 - 1) Set up a flashbulb and a photo-detector.
 - a) The bulb sends out a flash of light.
 - b) The flash reflects off the mirror and triggers the detector.
 - c) Measure the time between sending and receiving the flash of light.
- B) Put the experiment on a space ship
 - 1) Have the astronaut measure the time the light travels.
 - 2) You, a ground-based observer, also measure the transit time for the astronaut's light beam.
- C) Since the speed of light is constant, the two measured times are different.

The Implications of Time Dilation

- A) Time passes slower in a moving system, compared to a system at rest.
 - 1) If a twin goes away in a space ship at a high speed for a long time, then returns to earth, the traveling twin will be younger than the stay-at-home twin.
- B) Time depends on velocity.

- 1) Very High velocity, to be precise.
 - a) Time dilation is insignificant at human velocities.
 - b) But it becomes important at velocities approaching the speed of light.

Recall . . .

- A) Science suggests time was created by God when He created the universe.
 - 1) Time is a created entity.
 - a) Time is not absolute – it's relative.

Gravitational Time Dilation

- A) Time dilation also occurs due to gravity.
 - 1) Time moves more slowly in high gravity.
 - 2) In a black hole, it moves infinitesimally slowly.
- B) Gravity may have been higher the universe was created . . .

Recall from the Bible:

- A) God the creator is outside His creation.
 - 1) God not confined to our space and time.
 - 2) God dwells in a real and physical Heaven distinct from man's universe.
 - 3) God visits our universe, but does not live here.
- B) Genesis 1 is written from God's vantagepoint.
 - 1) If 6 yôm mean six 24-hour days, it is measured in "heavenly time."

Can 6 days in Heavenly Time be 13.8 Gyrs in Earthly time?

- A) Yes . . . with a relative velocity very close to the speed of light
 - 1) Parts of the universe are moving away from Earth this fast.
 - 2) Hence such a velocity between Heaven and Earth at the time of creation is plausible.

In Summary . . .

- A) The Bible says God's time is not Man's time
- B) Time is not a constant.
 - 1) Time depends on relative velocity and on gravitational conditions.
 - a) High velocity time dilation suggests 6 days and 13.8 billion years might plausibly be the same, measured from different perspectives.
 - b) Gravitational time dilation also makes it possible that these two times might be the same.

Hence there may be no discrepancy between 6 days and 13.8 billion years.