

My Theological Reflections

as an Astronomer and a Christian

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Hanshin University Conference



Background: Hubble Ultra Deep Field (NASA, ESA)

A Community of Scientists and Theologians



Isu Forum

Launched 15 years earlier



Science and Theology Research Group

10+ scientists and theologians · proposed by Dr. Lim Chang-se



Science-Theology Concert Team

Forum on East-West Knowledge and Action

MOU

The International Public Theology
Forum-Center, Berkeley (IPTFC)

Day 2

A session for the group's
presentations at this conference

Who Is Speaking



Astronomer
and educator



Ordained minister
seminary graduate



Not a theologian
an amateur student of theology



Why a testimony?

In natural science everything begins with observation. My experience may be one piece of observational data.

Skipped today: §1 My Journey to Embracing the Christian Faith · §2 The Latest in Astronomy Encountered While Studying Abroad

Frustration: Encountering Creation Science

Late 20s • USA

First hears of creation science, which calls the Big Bang theory incorrect

March 1985 • SNU

Professor, Dept. of Earth Science Education; most pastors and congregants hold creation science

A few years later

A church "creation science team": "You didn't receive a proper astronomy education in the U.S."

About 10 years later

Serious illness → early morning prayer → returns to that church; its stance remains the problem



*As a Christian, am I
obligated to believe in
creation science?*

God's Answer Came in an Unexpected Form



My prayer: "If it is Your will, enable me to believe in creation science."



1. A call

from a PUTS professor I
had never met



2. Teaching

natural science; religion
and science



3. Reading

"science and theology" —
unfamiliar terms



4. M.Div.

Presbyterian Univ. &
Theological Seminary



5. Sabbatical

one year at UC Berkeley



6. Meetings

Baik Chung-hyun (GTU) →
Ted Peters

Reading the Bible with Everything I Have Learned

Before

"Without theological training, it is inappropriate to interpret the Bible through science."

— my senior pastor

Now

M.Div. completed — free to undertake what I long wished to do: read Genesis 1 as an astronomer



Astronomy



Physics



Mathematics



Science education



Gifted education



Computer science

Genesis 1 and Two Millennia of Astronomy

7.5 years researching and writing the history of astronomy

West & Islamic world

Hipparchus

Ptolemy,
Almagest

Islamic
astronomy

Copernicus, De
revolutionibus

Tycho Brahe

Kepler &
Newton

China & Joseon

Season-Granting
Calendar

Shixian Calendar

Chiljeongsan (Inner &
Outer)

Joseon Shixian Calendar

Drawing ever closer to the truth

refined observation · theoretical models · instruments ·
mathematics · computation



Can I, as an Astronomer, Believe Genesis 1:1?

*"In the beginning **God** created the heavens and the earth."*

Special relativity

$$E = mc^2$$

Mass and energy are interchangeable

General relativity · Einstein's field equations

$$R_{\mu\nu} - \frac{1}{2}Rg_{\mu\nu} + \Lambda g_{\mu\nu} = \kappa T_{\mu\nu}$$

Left: spacetime · Right: energy-stress tensor. Mass-energy curves spacetime; curved spacetime governs the motion of mass and energy

Yet science could not find a nature or universe with God as its subject.

An Equation from the Bible: Romans 1:20a

"For ever since the world was created, people have seen the earth and sky. Through everything God made, they can clearly see his invisible qualities—his eternal power and divine nature."

— New Living Translation

**God's eternal power
and divine nature**
(divine action?)

=

Nature

The equation comes from the Bible, not from natural science — but read through science, the equals sign lets us infer the Creator's power and nature through nature itself.

God's Influence, Pictured as Two Fields



Gravitational field

Present around every mass; even massless light is bent by gravity — so all things are influenced.

God bestows His grace equally upon all creation.



Electric field

Arises only around charged particles; uncharged particles remain unaffected.

One must possess the Spirit of God to be influenced by Him.

Reason · profound emotion · spirituality → *in the beginning God created the heavens and the earth*

Genesis 1:2 — "Formless and Empty"

"The earth was formless and empty, and darkness covered the deep waters. And the Spirit of God was hovering over the surface of the waters."



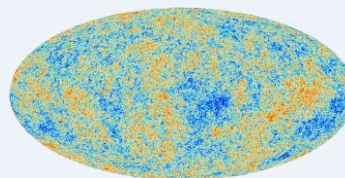
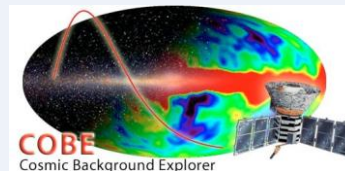
Reading 1 · The early Earth

- Formed from the solar nebula ~9 billion years after the beginning
- Water-bearing planetesimals rain down; the planet grows
- Water collects in low areas under a thick, dark atmosphere
- The Spirit hovers, planning the Earth's future



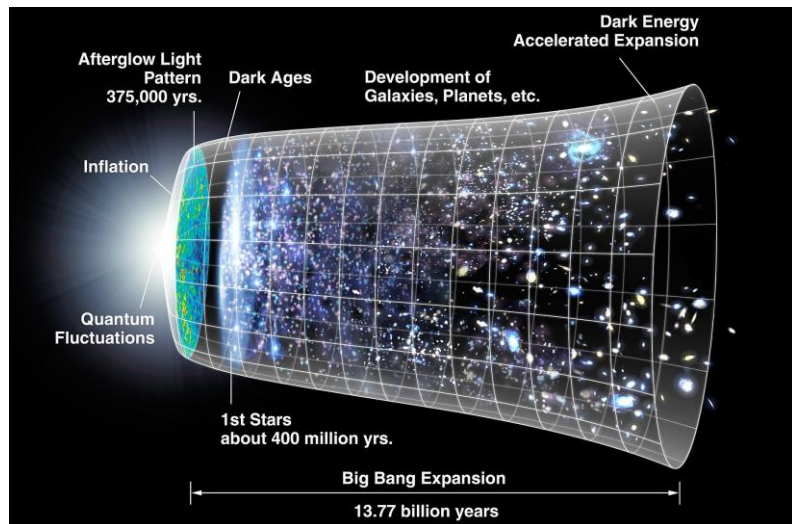
Reading 2 · The cosmic "earth"

- COBE (1992): CMB anisotropies → Nobel 2006 (Smoot, Mather)
- 380,000 years: "formless and empty"
- Earlier era: beyond EM observation



COBE · CMB sky (Planck, 2013)

Recreating the Universe: The Λ CDM Simulation



Cosmic timeline (NASA / WMAP Science Team)

- 1 Initial conditions** $z \approx 100$ · 10–50 Myr
CMB data + linear theory; dark matter begins to clump
- 2 Cosmic Dark Ages** before the first stars
dark-matter halos and filaments
- 3 Cosmic Dawn** 100–400 Myr
Pop III stars and first galaxies
- 4 Galaxy evolution** mergers & feedback
supermassive black holes grow
- 5 Today** $z = 0$ · 13.8 Gyr
accelerated expansion; galaxy clusters

"The universe that exists for us is defined by the extent of our perception and knowledge."

Proposing a "Principle of All Things"

Genesis 1:28

"govern it ... reign over"

→ read as: study the universe and all creatures

Genesis 2:19–20a

The man names every creature: learn about them and build healthy relationships

Related ideas: Anthropic Principle · fine-tuning · multiverse

Co-evolution: all entities are interconnected



Rocks on Earth



Earth–Moon system



Life



Humans

"nature" → **"divine action"** following the equation of Romans 1:20a

God's Choice, Human Sin



Natural evolution

All creatures function in harmony with nature and co-evolve, along pathways described by physics



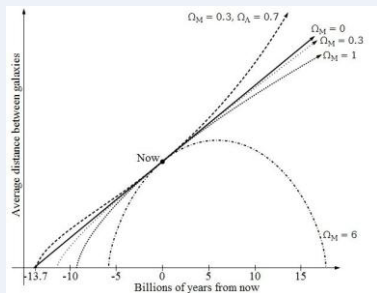
Artificial evolution

The Anthropocene; the rapid advance of AI and robotics — risking the catastrophic collapse of creation

Humans, chosen to care for creation, now drive it from natural toward artificial evolution — repeating the sin of Adam and Eve.

Jesus Is the Answer

Big Bang cosmology: the end



Depends on the ratio of dark energy to dark matter

Every scenario means destruction

Big Freeze

Big Rip

Big Crunch



Christian eschatology

Birth, crucifixion, resurrection of Jesus

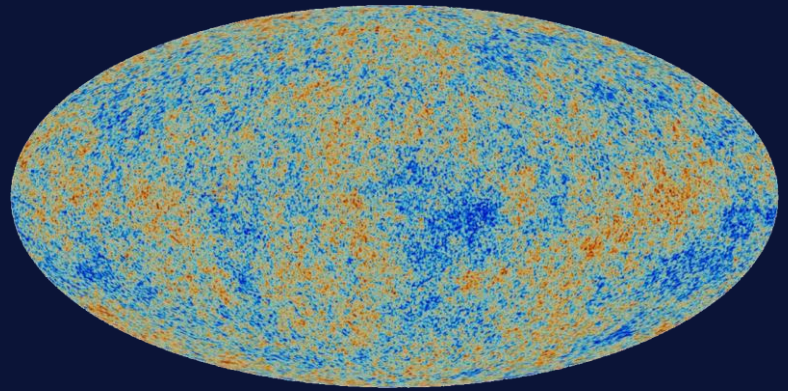
→ a prolepsis of the new heaven and new earth

→ complete restoration of all creation

Romans 8:19–21 · Colossians 1:20

Anthropocene · AI & robotics · war · economic polarization · rapid climate change: the Earth system can no longer be confined to natural evolution.

Thank You



Questions are welcome — please speak slowly.

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