


EQUIP

faith & science



TUESDAY, OCTOBER 1, 2019

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Outline of Next 2 Weeks

THIS WEEK

Recent Conflict Timeline

Forming of Earth

Genesis $\Leftarrow//\Rightarrow$ Planetary Geology

NEXT WEEK

What is Life

Origin of Life & Man

Genesis $\Leftarrow//\Rightarrow$ Bio-Chemistry

SESSION 2

Aligning: Formation of the Earth

Interpretation of Science

- The data should be taken as is and interpreted in accordance with (1) related scientific data and (2) spiritual insights
- If there is a beginning then a Beginner is required → God
- The “appearance” of design is design
 - Especially if effects accumulate toward an identified purpose
- Observations that are acknowledged to be statistically highly unlikely represent fine tuning
 - Especially if effects accumulate toward an identified purpose

Interpretation of Bible

- The Bible should be interpreted generally literally but also (1) in accordance with itself, according to its motif and (2) in light of observables
- Tonight a set of assumptions will be used to assess alignment of Bible & science – collectively, they are called “Day/Age”
 - Genesis is a historical account
 - God created the Universe, plants, animals, and humans (Adam/Eve)
 - God formed, allowed, let be, directed, caused, and/or sustained all that occurred from T=0 until now

Day/Age Interpretation of Bible

- יוֹם – **YOM** relates time in many ways in Biblical Hebrew
 - Like “day” in English; Hebrew did not have a rich set of long time words (=zero)
 - A few literal uses of YOM in the Bible:
 - Daylight time (~12 hours) • Solar day = 24 hours
 - A long but finite period of time:
 - The entire Creation (Gen 2) • Adam’s lifetime (Gen 2) • End of Creation until now (Heb 4)
 - “1 day is like 1000 years, and 1000 years like 1 day” (2 Pet 3)
 - 2 Peter 3: “day” here is Greek (ἡμέρα hēmera), but Peter spoke Hebrew
 - Ps 90: [Moses] “For a thousand years in Your sight are like yesterday”
 - For testing alignment with science, YOM will be interpreted as a long finite period (“age”) relative to the evening-to-morning breaks
 - 6 instances of “was evening and was morning” are the only ones in the Bible
- <http://factsandfaith.com/do-the-and-was-evening-and-was-morning-x-day-phrases-in-genesis-1-compel-a-yec-view>

A Possible Interpretation Mind Frame

Something that might help...

- God supernaturally revealed His creative action to some Man
- The Man knew God but knew nothing about the world beyond his senses and certainly not “science”
- God showed the Man what He had done
 - Perhaps visions like Ezekiel or Peter or John on Patmos
- The man remembered/wrote the fantastic things he saw under the inspiration of the Spirit to let all Men know

... If it doesn't help you, just put it out of your mind

History of Universe (last week)

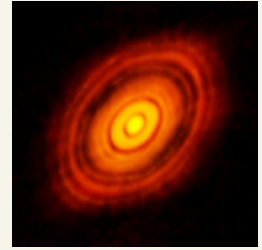
BIBLE

- **Genesis 1:1 (NAS)**
In the beginning God created the heavens and the earth.

SCIENCE

- Big Bang: Universe began 14 BYA
- Solar system forming ~5 BYA
- Earth forms ~4.5 BYA
- Small planet collision creates the Moon
 - Rotation & tilted axis (stabilized by Moon)
 - Radioactive/hot rotating iron+nickel core structure → life supporting magnetic field
 - Portion of (life non-supporting) atmosphere blasted away)
- Entire Solar system undergoes changes that lead to stability & support life

“Accretion” in Solar System



- Star / planetary system driven by gravity → physical chemistry
- Dust from previous star explosions begins to gravitationally accumulate
 - Central region grows fastest → heaviest → star
 - Other less dense regions begin to grow (rocky planets near; gas planets far)
 - Rotation begins as matter condenses
- If enough mass, star enters nuclear fusion and begins to shine “like the sun” ~4.5BYA
- Planets pounded by smaller collisions until ~3.5 BYA
- Earth fine-tuned in all “habitable zones” (need Earth, Moon, Sun, and planet features):
 - Liquid Water
 - UV Light
 - Photosynthesis
 - Ozone
 - Rotation Rate
 - Rotation Obliquity (angle)
 - Tides
 - Magnetic Field

History of Earth – Step 1

BIBLE

• **Genesis 1:2-5 (NAS)**

The earth was formless and void, and darkness was over the surface of the deep, and the Spirit of God was moving [hovering] over the surface of the waters.

Then God said, “Let there be light”; and there was light. God saw that the light was good; and God separated the light from the darkness. God called the light day, and the darkness He called night. And there was evening and there was morning, one [the first] day.

SCIENCE

- Heavy bombardment of Earth by comets, meteors prevents stable surface
 - Brings significant water to the Earth which boils
 - Surface is sterilized (several times)
- Thick dense atmosphere clears slowly over time
- First prokaryotes appear (3.8 ~ 3.5 BYA)

Interpretation of Step 1

BIBLE

- Earth is dark and formless and empty
- Action moves to the water-covered surface of the Earth
 - God intimately engaged
 - “An eagle hovering over her young”
 - Spawning invisible life
- God removes some of shrouding gas/dust to let some sunlight reach the surface
 - The rotating Earth has day and night
 - Nothing in the sky is clearly visible from the surface of the Earth

SCIENCE

- Precambrian Era 4.6 ~ 3.5 BYA
- Fine-tuned transitions begin for eventual human life on Earth
 - Surface covered with water
 - Dense gas/dust atmosphere
 - Initially little light reaching the surface
 - Some light as atmosphere thins
 - Simple, single-cell life originates in shallow water (not photosynthesizing)
 - Within < 50 MY of bombardment
 - No “primordial soup”
 - No workable science model for first life

History of Earth – Step 2

BIBLE (NAS)

- **Genesis 1:6-8**
Then God said, “Let there be an expanse in the midst of the waters, and let it separate the waters from the waters.” God made the expanse, and separated the waters which were below the expanse from the waters which were above the expanse; and it was so. God called the expanse heaven [sky]. And there was evening and there was morning, a second day.

SCIENCE

- Establishment of water cycle on the Earth
 - Evaporation and condensation
 - Earth covered by water-based clouds with other gasses

Interpretation of Step 2

BIBLE

- Earth closely shrouded in dense gases from sea level up
 - Job 38:4-9: God Where were you when I laid the foundation of the earth? ...When I made a cloud its garment, And thick darkness its swaddling band (Job 38:4-9)
- God lifts the atmosphere
 - Clouds from water vapor and other gases
 - Sky above the seas below the clouds

SCIENCE

- Early atmosphere
 - Hydrogen, helium, methane, and ammonia, CO₂, N₂ with interplanetary dust and debris
 - Greenhouse gases balance early drop in luminosity of Sun (prevent freezing)
 - Translucent from humidity and volcanic activity
- Troposphere begins forming
 - But no oxygen in air yet

History of Earth – Step 3

BIBLE

- **Genesis 1:9-13**

Then God said, “Let the waters below the heavens be gathered into one place, and let the dry land appear”; and it was so. God called the dry land earth, and the gathering of the waters He called seas; and God saw that it was good.

Then God said, “Let the earth sprout vegetation, plants yielding seed, and fruit trees on the earth bearing fruit after their kind with seed in them”; and it was so. The earth brought forth vegetation, plants yielding seed after their kind, and trees bearing fruit with seed in them, after their kind; and God saw that it was good. There was evening and there was morning, a third day.

SCIENCE

- Land rises above the water 3 ~ 2.7 BYA
 - Erosion begins to make land habitable
 - Land absorbs O₂ from bacteria 2.4 ~ 1 BYA
- Paleozoic/Silurian era (~½ BYA)
 - First plant life originates on dry land
 - Sufficient light for photosynthesis of simple plants

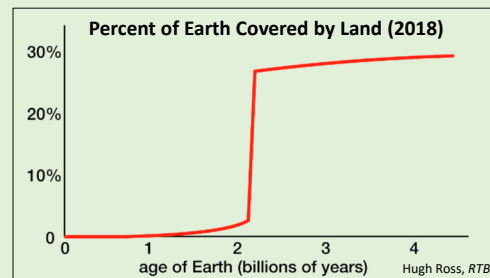
Interpretation of Step 3 (part 2)

BIBLE

- God caused the land to rise above the seas
 - Ps 104:6-9: You covered [Earth] with the deep as with a garment; The waters were standing above the mountains. At Your rebuke they fled, At the sound of Your thunder they hurried away. The mountains rose; the valleys sank down To the place which You established for them. You set a boundary that they may not pass over, So that they will not return to cover the earth.

SCIENCE

- Plate tectonics began ~3+ BYA
- The rise of land above the water was geologically quick (~100 MY)



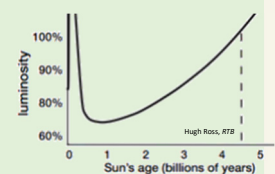
Interpretation of Step 3 (part 2)

BIBLE

- **Focus on the land**
- God caused plant life to emerge on the newly formed land
 - “The Earth brought forth” the plants
 - Same plant reproduction processes as today
- The three plant types mentioned are somewhat generic:
 - Green vegetation, bare seed, and stalky w/ enclosed seed
- “After their kinds” → DNA

SCIENCE

- Carbonate-Silicate cycle begins pulling CO₂ out of the air into the seafloor
 - Compensates for brightening Sun
- Plants consume CO₂
 - Ice ages
- Plants release Phosphorus
 - Algae blooms deplete O₂
 - Many sea animals extinct
- Plant types emerge:
 - Sporophytes: Paleozoic (~400 MYA)
 - Gymnosperm: Mesozoic (~250 MYA)
 - Angiosperms: Cenozoic (~65 MYA)
 - Speciation via macro-evolution



History of Earth – Step 4

BIBLE

• Genesis 1:14-19

- Then God said, “Let there be lights in the expanse of the heavens to separate the day from the night, and let them be for signs and for seasons and for days and years; and let them be for lights in the expanse of the heavens to give light on the earth”; and it was so. God made the two great lights, the greater light to govern the day, and the lesser light to govern the night; He made the stars also. God placed them in the expanse of the heavens to give light on the earth, and to govern the day and the night, and to separate the light from the darkness; and God saw that it was good. There was evening and there was morning, a fourth day.

SCIENCE

- Atmosphere of the Earth clears
 - Paleozoic Era
 - Similar to today
- Sun, Moon, and stars now clearly visible
- Distinct day/night and seasons initiate daily and annual cycles for higher plants and animals

Interpretation of Step 4

BIBLE

- God clears the sky to let the Sun, Moon, and stars shine through for the first time
 - “let” (*haya*) is not creation or formation, but allowance
 - “made” (*asa*), which means completed action in the past or present
- Heavenly bodies are not to be worshipped
 - God made the Sun – not *Ra*
 - God made the Moon – not *Khonsu*
 - God made the stars – not *Nut*
- Calendars now possible

SCIENCE

- O₂ begins building in the air ~ 2.5 BYA
 - Dust gone
 - O₂ converts methane, consuming CO₂
 - Temperature falls – water condenses from sky
- Direct diurnal sunlight supports growth of higher plants
- Distinct day/night with seasons creates global climate systems to support diversity of higher plant and animal life

History of Earth – Step 5

BIBLE

- **Genesis 1:20-23**
 - Then God said, “Let the waters teem with swarms of living creatures, and let birds fly above the earth in the open expanse of the heavens.” God created the great sea monsters and every living creature that moves, with which the waters swarmed after their kind, and every winged bird after its kind; and God saw that it was good. God blessed them, saying, “Be fruitful and multiply, and fill the waters in the seas, and let birds multiply on the earth.” There was evening and there was morning, a fifth day.

SCIENCE

- “Cambrian Explosion” ~540 MYA
 - First sea animals 500 ~ 300 MYA
- First birds arose ~70 MYA
- First sea mammals ~50 MYA

Interpretation of Step 5

BIBLE

- **Focus on the sea**
- Only mentions God creating:
 - Lower vertebrates in sea
 - Water mammals (*nephesh* – “soul-ish”)
 - Birds
- “After their kinds” → DNA
- No mention of insects, dinosaurs

SCIENCE

- Paleozoic Era (500 ~ 250 MYA)
 - Insects
- Mesozoic Era (250 ~ 65 MYA)
 - Dinosaurs
- Cenozoic Era (~65 MYA until now)
 - Mammals
- Six big extinction/recovery events
 - Each deposited resources, e.g., oil, coal, limestone
 - New plants and animals emerged
- Speciation via Macro-evolution

History of Earth – Step 6A

BIBLE

- **Genesis 1:24 – 31a**
 “And God said, “Let the land produce living creatures according to their kinds: the livestock, the creatures that move along the ground, and the wild animals, each according to its kind.” And it was so. God made the wild animals according to their kinds, the livestock according to their kinds, and all the creatures that move along the ground according to their kinds. And God saw that it was good.

SCIENCE

- **Cenozoic Era**
 - Small mammals: ~65 MYA
 - Carnivores: ~ 42 MYA
 - Extinct cows: ~2 MYA
 - Sheep/Goats: ~4 MYA

Interpretation of Step 6A

BIBLE

- **Focus on animal-man relationships**
 - Nephesh – “soul-ish”
- Only mentions God creating:
 - Domesticated quadrupeds (livestock)
 - Non-dangerous animals (rodents, etc.)
 - Wild animals (lions, jackals, bears, cats, dogs, etc.)
- “After their kinds” → DNA
- No mention of primates, hominids

SCIENCE

- Speciation via Macro-evolution
- Domestication by man 10 ~ 20 TYA

History of Earth – Step 6B

BIBLE

- **Genesis 1:26 – 31a**

Then God said, "Let Us make man in Our image, according to Our likeness; and let them rule over the fish of the sea and over the birds of the sky and over the cattle and over all the earth, and over every creeping thing that creeps on the earth." God created man[kind] in His own image, in the image of God He created him; male and female He created them. God blessed them; and God said to them, "Be fruitful and multiply, and fill the earth, and subdue it; and rule over the fish of the sea and over the birds of the sky and over every living thing that moves on the earth." Then God said, "Behold, I have given you every plant yielding seed that is on the surface of all the earth, and every tree which has fruit yielding seed; it shall be food for you; and to every beast of the earth and to every bird of the sky and to every thing that moves on the earth which has life, I have given every green plant for food"; and it was so. God saw all that He had made, and behold, it was very good. And there was evening and there was morning, the sixth day.

SCIENCE

- Hominids split off from primates 6 MYA
- *Homo sapiens* became the dominant primate and life form on earth ~150KYA

Interpretation of Step 6B

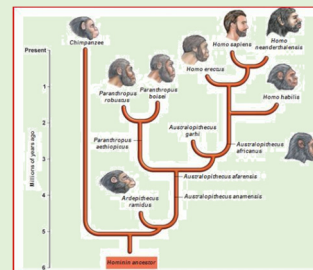
BIBLE

- Humans (M/F) were both formed (asa) and created new (bara)

NEXT WEEK

SCIENCE

- In a complex tree of extinctions, *homo sapiens* became the dominant primate and life form on earth



History of Earth – Step 7

BIBLE

- Genesis 31:19b – 2:3

Thus the heavens and the earth were completed in all their vast array. By the seventh day God had finished the work he had been doing; so on the seventh day he rested from all his work. Then God blessed the seventh day and made it holy, because on it he rested from all the work of creating that he had done.

- 2 Peter 3

The heavens will disappear with a roar; the elements will be destroyed by fire, and the earth and everything done in it will be laid bare... That day will bring about the destruction of the heavens by fire, and the elements will melt in the heat.

- Rev 21:1a

Then I saw “a new heaven and a new earth,” for the first heaven and the first earth had passed away

SCIENCE

- The universe continues under fixed natural laws
 - The expansion of the universe goes permanently onward
 - Andromeda collides with MW (~4BY)
- Heat ends all life (1.0~1.2 BY)
- The sun will become a “red giant” then a “white dwarf” (4.5 ~ 8 BY)
 - Earth enveloped/cinderized (8~10 BY)
- Other galaxies disappear from view (~100BY)
- A new Big Bang might occur
 - Almost ∞ into the future

But What Does Scientism Say?

- Generally admit Earth appears Fine-Tuned for human life
- Generally admit that Life appears to be Intelligently Designed
- Natural processes account for all the features of Earth
 - Response: Natural processes exist and are maintained by God (why else would they stay constant)
 - The inherent design and overwhelming fine-tuning of the Earth defies “random” origin – even across the whole Universe
- Evolution better explains all the life on Earth than creation
 - Response: Scientists acknowledged there’s no data/model for the origin of life
 - No “natural selection” before life
 - First life appeared already complex
 - Way too fast for anything like evolution or “random” events to drive it

Placing Your Faith

- The Bible is a trustworthy source of truth
 - Where it should agree with what we see – it will agree with what we see
 - So we should agree with it when it sees where we cannot → spiritual matters
- Being made in the image of God, we can discover truth about God through the observable world:
 - Rom 1:20: For since the creation of the world His invisible attributes, His eternal power and divine nature, have been clearly seen, being understood through what has been made, so that [men who suppress the truth] are without excuse
- But... Our faith is in the One who made it all and paid it all – Jesus
 - NOT the universe, earth, or life
 - NOT our favorite translation or interpretation of Genesis, Revelation, ...

Putting It All Together

- The Day/Age interpretation is not perfect or “done”
 - Science is never perfect or done
 - It resolves many more interpretation problems than it leaves behind
 - It is well-aligned with the physical transformation of the Solar system and Earth
 - It challenges the macro-evolutionary model (next week)



This we we'll put Faith & Science
in “yellow check” alignment

Putting It All Together

- Talking to believers – tolerance, grace, humility
 - [Young Earth Creationism](#) has categorical disagreement with mainstream science and places its interpretation of the Bible against counter interpretations
 - [Old Earth Creationism](#) (Day/Age interpretation) sort of in the middle ground of Biblical interpretations –literal interpretation of the Bible; generally agrees with the geochemical theories of science but disagrees with the life-related theories; acknowledges Design and Fine-Tuning
 - [Theistic Evolutionism](#) accepts the current “How?” of science as true and says that God created those processes for nature to follow according to His plan
- Talking to non-believers – love, sensitivity, humility
 - They will be holding a cell phone (just like you are)
 - Lead them to Jesus
 - If they want to stumble over creation, Day/Age has a backbone but no claws

Resources

- Brad Thomas has a sermon in his Genesis series regarding Genesis 1
 - You can watch it on-line
 - It's called “Genesis” and started on Sept 15, 2013

Q&A