## Day Four: The Luminaries, Distant Starlight, and the Age of the Cosmos

Then God said, “Let there be lights in the firmament of the heavens to divide the day from the night; and let them be for signs and seasons, and for days and years; 15 and let them be for lights in the firmament of the heavens to give light on the earth”; and it was so. 16 Then God made two great lights: the greater light to rule the day, and the lesser light to rule the night. *He made* the stars also. 17 God set them in the firmament of the heavens to give light on the earth, 18 and to rule over the day and over the night, and to divide the light from the darkness. And God saw that *it was* good. 19 So the evening and the morning were the fourth day. (Genesis 1:14–19)

Johannes Kepler was a 17th century astronomer who calculated planetary orbits in great detail. He studied under Copernicus, who had calculated the Earth's rotation around the sun. Kepler's work also helped in the area of optics, and discovered much that is still used today in astronomy. Kepler was also a devout believer. He once said, “The chief aim of all investigations of the external world should be to discover the rational order and harmony which has been imposed on it by God and which He revealed to us in the language of mathematics.”

As Kepler studied the heavens, he once wrote, “ “The heavenly bodies are nothing but a continuous song for several voices, perceived by the intellect, not by the ear”. A song is a thing of beauty which communicates. And the heavenly bodies do indeed communicate.

The Bible agrees that the sun, moon and stars display and celebrate the glory of God. Psalm 19 tells us that the heavens declare the glory of God, and it goes on to boast about the glory of the sun. In the book of Job, God challenges Job with the glory of the constellations “Can you bind the cluster of the Pleiades, Or loose the belt of Orion? 3Can you bring out Mazzaroth in its season? Or can you guide the Great Bear with its cubs? Do you know the ordinances of the heavens? Can you set their dominion over the earth? (Job 38:31–33)
Or when challenging Israel about its idolatry, God asks them through Isaiah who it is that shepherds the stars:
“ Lift up your eyes on high, And see who has created these *things,* Who brings out their host by number; He calls them all by name, By the greatness of His might And the strength of *His* power; Not one is missing.” (Is 40:26)

The stars, sun and moon are meant to be sources of great praise, glory, and honour to God, and rejoicing for His people. They are glittering, shining songs of glory.

Sadly, in a time of greater than ever knowledge of the stars, people are using knowledge of the heavenly bodies ever more to suppress the knowledge of God, inverting and twisting the knowledge they get from telescopes to teach a cold, lonely, barren and impersonal cosmos. I think C. S. Lewis was right when he pointed out that the Biblical word is heavens, which speaks of something full, whereas the modern word, “space” suggests nothingness, emptiness. The Bible uses the word heavens which refers to something, a glorious cathedral of light and beauty.

Genesis 1:14-19 describes the creation of these glory-bearers on Day Four of the creation week. To study this is to learn some precious truth about these heavenly bodies from God's perspective. Specifically, Genesis 1 will teach us their utility, their humility, and their antiquity. Utility: their function; humility: their service and place, and antiquity, their age.

### I. The Utility of the Light Bearers

Then God said, “Let there be lights in the firmament of the heavens to divide the day from the night; and let them be for signs and seasons, and for days and years; 15 and let them be for lights in the firmament of the

heavens to give light on the earth"; and it was so.

God places these light-bearers in the firmament. Remember that the firmament, the Heavens, have three sections: the atmosphere of clouds and rain, the starry domain of the heavenly host, and the third heaven where God is manifest to His angels and redeemed people. In the second layer of the firmament or heavens, He places these bodies.

Notice, they serve three functions: First, they divide day from night, by the way their light is perceived. As verse 16 says, the greater light, the sun, is the light for the day. The lesser light, the moon is for the night. Interestingly, the sun and the moon, appear to be nearly identical in size from Earth's perspective, which occurs only on Earth in all the solar system – this is why we are on the only place in the solar system where you can experience a total solar eclipse. And yet the Bible here recognises that the sun is greater than the moon. It is greater in actual size, it is greater in the intensity of its light, and it is greater in that it produces light, whereas the moon only reflects it.

The second function is that they will be for signs and seasons, for days and years. Again, for the most part, these light bearers will mark time: the phases of the moon marking out the month, the Earth's tilt with respect to the sun marking out the four seasons of the year, and the star constellations marking out months. Stars have also served as signs to people seeking direction, such as Polaris, the North Star, or using Orion to find east and west, or the Southern Cross in the southern hemisphere. We could include the Magi of Matthew finding their way to the newborn Christ as one way that the stars served as signs. This doesn't give credence to astrology in the sense of divination: believing that the constellation you were born under determines your character and the events of your life. Instead, it simply means they have served to mark time and give direction.

The third function is simply to provide light: let them be for lights in the firmament of the heavens to give light on the earth". They provide light. The word for lights is a Hebrew word best translated as luminaries, light bearers. These are objects which may produce their own light, or reflect light, but the point is that they will bear light. And this is their basic function. Now we know that our sun and moon do more than provide light (they provide heat, and regulate the tides) and the Bible acknowledges that elsewhere. But here the emphasis is on providing light.

Now of course, there was light shining on Earth from day 1, from when God says, "let there be light." And since this is the first mention of created light-bearers, we must assume that the light that was present on days 1, 2, and 3 was the light of God Himself. That's no surprise. Listen to how the Bible closes describing a new earth that is pristine and perfect, like this one was. "The city had no need of the sun or of the moon to shine in it, for the glory of God illuminated it. The Lamb *is* its light. 24 And the nations of those who are saved shall walk in its light, and the kings of the earth bring their glory and honor into it." (Revelation 21:23–24)

This might be speculative on my part, but perhaps in the first three days, the Earth began an orbit around the living Word Himself, rotating on its axis, experiencing day and night as its surface faced the glory of the Lamb. Here on day 4, God as it were places a substitute light bearer for Himself, perhaps in the place where He had stood, in the centre of the solar system.

**II. The Humility of the Light Bearers**

Obviously I'm personifying sun, moon, and stars; they are not humble like rational beings, but they do occupy a humble role.

One of the most obvious differences between the cosmology of modern evolutionary science and

the Genesis account is what comes first, and what is central. In modern cosmology, everything begins with a infinitely dense tiny spot containing all the matter and energy that the universe will ever have. This explodes and over the next few million years becomes the stars and galaxies. Planets form around stars and then those planets evolve, and in the case of Earth, life eventually evolves. Earth is very much a late afterthought after billions of years of stars and even of our sun.

In the Genesis timeline, the sun, moon and stars come after the creation of the earth, and in fact, after the land and sea are ready, and plants have sprung up everywhere. Day 4.

Why is it in this order?

Well, first, there is a point that God is making. The Earth is created first, not other stars, planets or galaxies. As beautiful as they are, they are not the spiritual focus of God's creative activity. Had God made the sun and moon and stars on day one, it would have seemed to give them a kind of priority over the Earth. In fact, it is likely that Moses is even taking a poke at the idolatrous nations around who worshipped the stars, and then the sun and then the moon. And here the Word says, almost like an afterthought: " *He made* the stars also>"

A second point is related to the first. The sun, moon and stars serve the Earth. They serve as light to the Earth, they divide night and day on the Earth, they mark seasons on the Earth. In other words, the central drama, where God will become man and die and rise for His creation is on Earth. And this means that the luminary bodies are not meant to be worshipped. The beauty and glory of the sun, moon, and stars have always tempted fallen man to worship them, and most often, they have.

God expressly forbad this: 19 And *take heed,* lest you lift your eyes to heaven, and *when* you see the sun, the moon, and the stars, all the host of heaven, you feel driven to worship them and serve them, which the LORD your God has given to all the peoples under the whole heaven as a heritage. (Deuteronomy 4:19)

But the report of Romans 1 is that man repeatedly "exchanged the truth of God for the lie, and worshiped and served the creature rather than the Creator, who is blessed forever. Amen. (Romans 1:25)

So doesn't that mean we should embrace a geocentric view of the universe, with Earth at the centre and everything revolving around the Earth? Spiritually speaking, yes, but physically speaking, we do not need to. In fact, there is a second principle that we are supposed to hold alongside the fact that Earth is the centre of the spiritual drama being played out.

3 When I consider Your heavens, the work of Your fingers, The moon and the stars, which You have ordained, 4 What is man that You are mindful of him, And the son of man that You visit him? (Psalm 8:3–4)

Here the Psalmist is obviously reflecting on the vastness of the cosmos and the smallness of man and his home. The idea is that the sheer size of the cosmos is meant to dwarf us, humble us, confront us with our physical insignificance and make us wonder why such an immense God would ever pay attention to us. Both principles need to be kept in mind to have a healthy worldview.

On the one hand, we need to know that the Earth was created before any other astronomical body, reminding us of our importance as image-bearers of God, reminding us that we are not meaningless, insignificant travellers . We have massive spiritual significance. When the Voyager spacecraft turned to photograph the Earth from a vast distance, and captured a tiny blue dot in the rays of the sun, the atheist astronomer Carl Sagan wrote, "Our posturings, our imagined self-importance, the delusion that we have some privileged position in the Universe, are challenged by this point of pale

light. Our planet is a lonely speck in the great enveloping cosmic dark. In our obscurity, in all this vastness, there is no hint that help will come from elsewhere to save us from ourselves."

But the Genesis account says, no, that is wrong. We do have significance. Our planet is privileged, privileged to be made first, privileged to be populated with life, privileged to be the scene of God's display of His glory.

But on the other hand, we need to take Psalm 8 to heart and agree, we are very tiny. Physically speaking, we are less than insignificant on the cosmic scale. Physically speaking, nothing except the gracious presence of God could single us out and give us significance.

We take both truths. Earth is spiritually central and physically insignificant.
The Earth made before sun, moon and stars gives us dignity. The Earth being a tiny planet orbiting one star of billions in one galaxy of billions gives us humility. Dignity and humility. A sense of purpose and a sense of proportion.

**III. The Antiquity of the Light Bearers**

Then God made two great lights: the greater light to rule the day, and the lesser light to rule the night. *He made* the stars also. [17] God set them in the firmament of the heavens to give light on the earth, [18] and to rule over the day and over the night, and to divide the light from the darkness. And God saw that *it was* good. [19] So the evening and the morning were the fourth day.

The Bible says God made these on Day Four of the creation week.

But what should we say about the Big Bang Theory and the proposed age of the universe being 13.7 billion years?

Well, first, it is not only Christian young earth creationists who have a problem with the Big Bang. You might be surprised to learn that many atheistic scientists have hated the theory because it meant that the universe had a beginning. If the universe had a beginning, then it had a cause, and that forces them to consider the possibility of a Creator. They preferred what was known as the steady-state theory: that the universe was eternal.
Then there are other scientists today who have problems with the Big Bang theory. They point out several problems, including the uniform distribution of heat, that it seems to defy the laws of thermodynamics, that the expansion of the universe in the Big Bang model is faster than the speed of light.

Young Earth creationists also point out several features of the cosmos that don't seem to harmonise with an ancient universe. Here are a few of them.
**Comets in the solar system.** Comets are basically large snowballs that slowly melt each time they rotate around the sun. After a few thousand years of this, they should essentially have melted away altogether. After billions of years, you shouldn't have comets in a solar system, unless there is some means to replenish them and introduce new ones.

**The rings around planets.** These usually cannot last for millions of years before being absorbed into the planets, and planets that are billions of years old should not have rings.

**The sun's brightness.** Since the sun burns fuel, a sun billions of years old should look dimmer than it is.

**Spiral galaxies.** Galaxies spin, but the inside of galaxies spin faster than the outside. In a billion-year universe, we shouldn't see any spiral-arm galaxies, because they should have wrapped their arms around the centre already.

**Volcanoes on Io**. One of Jupiter's moons has multiple active volcanoes. It should not still be volcanically active if it is billions of years old.

**Poynting effect**. This is an effect that the sun's radiation has on dust, generally pushing it away and clearing it over time. The amount of solar dust in our solar system does not point to a multi-billion year old solar system.

Those are some phenomena that seem to point to a young cosmos. But there is one very obvious problem that young earth creationists face in astronomy and that is the distant starlight time-travel problem.

Here is why. Most astronomers (including creatonists) agree that the distances that have been calculated are correct. They use parallax trigonometry combined with red shift data. A small minority of Christians do not believe the stars are actually that far away, or that they are all just lights imprinted or placed within a dome called the firmament. Most Christians, like me, do not have any serious reason to doubt the many thousands of observations independently made by astronomers, laymen, university academics, and multiple public and private space agencies, using both visual and radio telescopes, so I'm just going to deal with the mainstream view that the stars are actual suns, and are that far away.

Once you accept the distances as valid, the distances become a time problem. That is, the distances in God's cosmos are so vast, that it takes light many years to cross those distances. Our nearest star, Proxima Centauri is 4.2 light years away. That means the light from Proxima Centauri that we see now, left that star in 2019. We are seeing it as it was in 2019. If it exploded this year, we won't know until 2027. Now that phenomenon becomes more problematic, when we see stars further away than a few thousand light years. If the Earth is somewhere between 6-10 000 years old,we should not be able to see any stars further away than 6 – 10 000 light years. Anything further away should still be invisible to us. Their light beams are on their way, but only 6000 years along, and still far away from reaching us, like an arrow that has been shot from Cape Town to Paris, but is still barely past Stellenbosch, but still has a long way to go before it lands.

But the fact is, we do see those stars. Not just stars in our own galaxy, but we can see millions of other galaxies, entire clusters of galaxies. And the red-shift of these furthest objects places them at 13 billion light years, and accounting for expansion, they are even further away than that, about 26 billion.
Now there are only two possible conclusions. The uniformitarian conclusion, which says that those stars began shining that long ago, and that far away, and the light has reached us, therefore the universe is at least that old. Those who believe in a Day Age Theory, or a Gap Theory will explain distant starlight that way.
The young Earth creationist says, those stars are that far away, but we don't have a biblical reason to hold to an ancient cosmos, therefore the light has reached us some other way.

So how have Young Earth creationists explained how light 13 billion light years away can be seen, if the universe is not older than 10000 years? There are four main theories.

1. The first is the Decreasing Speed of Light theory. Barry Setterfield claimed to have shown

that the speed of light, compared to measurements made a few centuries ago, seemed to have slowed down. Using this, he calculated that the speed of light may have been at near-infinite speeds just a few thousand years ago. That would explain how the light from such distant objects reached us, because the light travelled across the universe at incredible speeds. Also it would affect all dating methods that use radioactive decay to determine age, since the velocity of an electron around the nucleus is proportional to the speed of light. This theory has had several problems. One, it appears that the measurements taken a few centuries were not accurate. The percentile of change in speed is within the percentage for experimental error. More accurate measurements taken in the last few decades have shown no decay in the speed of light. However, some have pointed out that modern clocks are atomic clocks, which mean they rely on the speed of light to do their measurements, meaning, they cannot detect a change. Second, you cannot change the speed of light, without also changing several other physical constants. That would have affected not just light, but matter and space. In fact, it may have altered whether matter could have existed at all. Our universe is finely tuned, and to change even one physical constant by a fraction is to throw it all out. Not many young Earth creationists still hold this theory.

2. The second theory is that God created the light beams separately with the stars. In other words, God created the light beam of each star touching Earth so that we could see it. The problem with this theory is that it means we have never actually seen light from most stars in the universe. We have only seen the beam God made, which is an additional creation, but it is not the light from that star. The light that actually left most stars has never reached us. Most of what we are seeing is a slide show of the universe. First, it seems like an odd thing, to create stars so far away that we will never see them as they are, and then create beams of light that are not actually emanating from those stars. Second, it is even stranger to have included in those beams of light events, such as stars exploding or colliding. In that case, we are seeing a slide show of events which never actually happened. They didn't leave the star and then reach us, they are just events in that beam of light. This all seems rather strange, and almost a little like deception. Most young earth astronomers do not like this theory, and have abandoned it.
3. A third theory is the time dilation theory. Since Einstein, we have some to understand that time can run at different speeds, depending on the speed of objects relative to each other. The faster you travel, and the greater your gravity, the more time slows down for you, and relative to you, clocks outside of you run faster. A theoretical spaceship that travelled to Proxima Centuri at light speed would take 4 years to get there from Earth's perspective, but inside a spaceship travelling at that speed, it would take you 2 years. Time dilation has been proved and recorded even on jets travelling at high speed, and even satellites have to have their clocks reset because of the few seconds they lose due to time dilation. Young Earth creationists have argued that you could have had massive time dilation during the Creation week. Earth's clocks running the slowest, and all objects extending out from Earth, running at much higher speeds. One suggested that if the universe is bounded, and the Earth were the centre from which all was stretched out, then Earth would have been in a kind of gravity well, the opposite of a black hole, a white hole, or what some have called a light fountain, that distant objects could have experienced billions of years, while only a single day on Earth was passing. Millions and billions of years at the edge, only six days on Earth, and six days only 6-10 000 years ago. In that way, the light really did travel for that long, and traverse that distance, while on Earth it was one solar week only a few thousand years ago. In theory, this is all possible, but it remains to be proven mathematically or through observations. Some astronomers have pointed out that if this is the case, we would expect light from the stars to be blue-shifted, not red-shifted. It's an attractive theory, but no one has yet shown the maths to work.

4. A fourth theory actually combines some of these theories. It points out, like we saw last week with the processes that formed the Earth's crust, that in a miracle, God accelerates natural processes in a highly compressed time frame. God brings forth plants, trees, a mountains, not by always just making them out of nothing, but by shaping and directing processes that would take millions of years, and accelerating those processes into a day. Now if that is what we see God doing with miracles in the rest of Scripture, if that is the most likely explanation of what is happening in day 2 and day 3, it stands to reason that this is what is going on on day 4. God is creating quasars, pulsars, galaxies, stars and planets. He is bringing them forth using the same processes they would normally have taken billions of years to form but compressing that into a day. That includes not only the formation process, but the emitting of light, accelerating that process so that what would have taken billions of years to cross the universe is miraculously brought across those distances during day 4. Now this is not the same as saying, God created the light beams. It is saying, God created the stars, and accelerated the normal processes of forming and emitting light so that their actual light reached the Earth by the end of day 4. Now if that sounds implausible to you, stop and consider that supporters of the Big Bang solve their own problems of how the universe expanded faster than the speed of light by saying that the laws of physics don't apply to the Big Bang, they only began after the Big Bang. But how different is that from me saying, the laws of physics didn't operate at their normal speeds during the six day creation, God miraculously accelerated them? It is a double standard to criticise Christians for invoking miracles during the six day creation, and then turn around and basically do the same thing in the Big Bang.
   What we are seeing is not a slide show, but actual light from those stars that was miraculously accelerated to reach the Earth between 6 and 10 000 years ago. I think this fourth theory is the best explanation we have, unless more data emerges about time dilation, the speed of light, or something else that better explains distant starlight.

For now, we know that our Creator made the sun, moon, and stars on the fourth day of creation. We believe this was recent, less than 10 000 years ago. The stars are much further away than 10 000 light years away, and yet we see them, meaning we are either wrong about the age of the Earth, or the light got here in unusual and non-uniformitarian ways.

Distant starlight is not enough to make me conclude that we are wrong about six 24 hour days of creation, or that we are wrong to conclude that our home is about the same age as our race. Therefore, I believe we are wise to assume that the same miracles that formed the earth, sea and atmosphere, that began life and created its variety, also created the cosmos and brought forth its light so that we could see it. In many ways, it also means that when you look up into the night sky, you are beholding a miracle, a miracle that brought forth light you would not otherwise have seen.

And how old did Johannes Kepler think the cosmos was? According to his calculations, the Earth was made in 4977 B.C., which would make this year, the year 7000 since creation.

Scripture says: this glorious heavenly bodies function for mankind, they are humble servants not gods. Scripture says they were created by God on the fourth day, and the same miraculous power that made them, brought them forth to our eyes.