

How can we see distant stars in a young universe?

Creation Answers Book Chapter 5

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We see distant starlight due to creation week miracles; time dilation or the anisotropic synchrony convention are also possible mechanisms.



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- Most stars are more than 6,000 light-years distant, so how can we see them?
- Did God create light in transit?
- Was the speed of light faster in the past?
- Were miracles involved?
- Does Relativity help our understanding?
- Is the speed of light the same in all directions?

One of the most-asked questions would have to be, ‘How can you believe in a straightforward biblical timeframe and explain distant starlight?’

The ‘problem’ is formulated thus:

- The biblical timeframe is about 6,000 years since creation.¹
- We can see stars that are millions and billions of light-years away. A light-year (ly) is the distance light travels in a year, at its current speed of 300,000 km (186,000 miles) per second. Note, ly is a *distance* measure **not** a time measure.
- Therefore, light must have taken millions or billions of years to travel from the stars to our eyes, so that we can see them.

Skeptics of the Bible’s history often frame this as a ‘gotcha’ question because they think that there can be no satisfactory answer. Theistic evolutionists, who accept the grand evolutionary tale and ‘add God’, often pose this question as a means of self-justification. Likewise with so-called ‘old earth creationists’ who wish to defer to the secular timeframe but retain other parts of the Bible’s account. They think that such an unanswerable question destroys belief in the Bible’s timeframe—and thus Genesis ‘must’ be poetic, ‘just theology’, or ‘the days are long periods of time’, etc.

First, we need to deal with two inadequate answers (you can skip this section if you are just interested in our favoured response—go to [“The question of distant starlight should not trouble us, for three reasons”](#)).

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1. Light created in transit?

Some time ago, perhaps the most common explanation from biblical creationists was that God created the light ‘on its way’. That way, Adam could see the stars immediately without having to wait years for the light from even the closest ones to reach the earth. While we should not limit the power of God, this has some immense difficulties.

It would mean that whenever we look at a very distant object, what we apparently see happening never really happened at all. For instance, say we see an object a million light-years away that appears to be rotating; that is, the light we receive in our telescopes carries this information, ‘recording’ this behaviour. However, according to the ‘created in transit’ explanation, the light we are now receiving did not come from the star, but was created ‘en route’.

This would mean, for a, say, 6,000-year-old universe, that anything we see happening beyond about 6,000 light-years is actually part of a gigantic picture-show of things that have not really happened, showing us objects that may not even exist.

To explain this problem further, consider an exploding star (supernova) at, say, an accurately measured distance of 100,000 light-years. (Remember we are using this explanation in a 6,000-year-old universe.) As the astronomer on Earth watches this exploding star, he is not just receiving a beam of light. If that were all, then it would be no problem at all to say that God could have created a whole chain of photons (light particles) already on their way. However, what the astronomer receives is also a particular, very specific pattern of observations, showing the changes that one would expect to accompany such an explosion. That is, a predictable sequence of events involving neutrinos, visible light, X rays, and gamma-rays. For example, because most neutrinos pass through solid matter as if it were not there, while light is slowed down, we can detect a massive neutrino burst before the light reaches us.

The light and neutrino burst carry information recording an apparently real event. The astronomer is perfectly justified in interpreting this ‘message’ as representing actual reality—that there really was such an object, which exploded, brightened, emitted X-rays, dimmed, and so on, all in accord with the expected outcomes of known physical laws.

Everything the astronomer sees is consistent with this, including the spectral patterns in the light from the star, giving us a chemical signature of the elements contained in it. Yet the ‘light created *en route*’ explanation would mean that this recorded message of events, transmitted through space, had to be contained within the light beam from the moment of its creation, or planted into the light beam later, without ever having originated from that distant point. (If it had started from the star the light beam would still be 94,000 light-years away from Earth, if the universe was 6,000 years old and the speed of light constant.)

To create such a detailed series of signals in light beams reaching Earth, signals which seem to have come from a series of real events but in fact did not, has no conceivable purpose. Worse, it is like saying that God created fossils in rocks to fool us, or even test our faith, and that they don’t represent anything real (a real animal or plant that lived and died in the past). (Critics sometimes accuse biblical creationists of believing this, but no notable creationist has ever taught such a thing. Rather, as will be seen in later chapters, most fossils were buried by Noah’s Flood.) This would be a strange deception for a holy God to engage in.

Functional maturity vs apparent age

Such ‘apparent age’ or ‘apparent history’ arguments are different in kind from the biblical position that God created everything *functionally mature*. E.g. God created Adam and Eve as adults, so they could obey His command to reproduce and take dominion. Their adulthood had a *function*, so God dispensed with the subsequent norm of creating humans starting from a fertilized egg. Adulthood was not hiding an imaginary history of human growth. But Adam and Eve would not have needed navels, which are the scars of being attached to mothers via umbilical cords. This really would have indicated a false history without function.

Similarly, God made trees mature, so they could immediately bear fruit and multiply. But these trees would not have had growth rings, which are not functional but reflect seasonal growth rates.²

Light created in transit clearly falls under the false apparent age category, not under the true functional maturity category. Such light is not a result of maturity, but exists only to portray a history that never happened.

2. Did light always travel at the same speed?

An obvious solution would seem to be a higher speed of light in the past, allowing the light to cover the same distance in less time. This seems at first glance a too-convenient *ad hoc* explanation. Some years ago, Barry Setterfield raised such a possibility to a high profile by showing that there seemed to be a decreasing trend in

the historical observations of the speed of light (c) over the past 300 years or so. Setterfield (and his later co-author, Trevor Norman) produced evidence in favour of their ‘cdk’ theory.³ They believed that it would have affected radiometric dating results, and even have caused the red-shifting of light from distant galaxies, although this idea was later dropped, and other modifications were made.

Many attacked the idea on the fallacious grounds that Einstein’s Special Relativity says that the speed of light could not change. It just says that the speed of light measured by observers will be invariant regardless of the speed of the source or observer.

Much debate raged within creationist circles about whether the statistical evidence supported cdk or not. A major problem was the large error bars that apply to the early measurements of c.

The biggest difficulty, however, lies with certain physical consequences of the theory. If c had declined the way Setterfield proposed, these consequences should still be discernible in the light from distant galaxies, but they are apparently not. High-precision tests of Einstein’s Theory of General Relativity, in our galaxy, using co-orbiting pairs of neutron stars, where at least one is a pulsar, within thousands of light-years distance, indicate the same value for c as we measure locally.⁴ In short, none of the theory’s defenders have been able to answer all the problems raised.

Interestingly, big bang defenders treated the idea of cdk with contempt. However, one of their own, astrophysicist João Magueijo, proposed a similar idea to rescue the big bang from its own light-travel (horizon) problem (see later)!⁵

The question of distant starlight should not trouble us, for three reasons:

1. Creation Week entailed a series of miracles.

Throughout the account in [Genesis 1](#), the Bible says that God spoke things into existence—eight times, “And God said...”. And after He spoke it is often concluded with, “and it was so”. The New Testament tells us,

“
The Genesis account makes it clear that the creation of the heavenly bodies was just as miraculous as the creation of the first people.

By faith we understand that the universe was created by the word of God, so that what is seen was not made out of things that are visible. ([Hebrews 11:3](#))

The word of God brought the universe into existence from something that is not visible, something unlike ordinary visible/tangible matter and energy. This is consistent with the scientific conclusion that the matter and energy that comprise the universe cannot be eternal. Thus, the cause of the universe must be *supernatural* (see [Chapter 1](#) for more).

And so, the Bible describes the Word of God as *powerful*:

So shall my word be that goes out from my mouth; it shall not return to me empty, but it shall accomplish that which I purpose, and shall succeed in the thing for which I sent it. ([Isaiah 55:11](#))

The New Testament tells us that this agency of God, the Word by which He created everything, was none other than the Lord Jesus Christ:

In the beginning was the Word, and the Word was with God, and the Word was God. He was in the beginning with God. All things were made through him, and without him was not anything made that was made. ([John 1:1–3](#))

[Genesis 2](#) tells us that God made the first man and woman. He took dust and made the man, Adam ([Genesis 2:7](#)), and took his rib and fashioned the woman, Eve, the mother of all.

Would anyone demand that we explain how God made a man from dust? And yet there is this demand that we explain how God could have created the stars such that we can see the light from distant stars.

The Genesis account makes it clear that the creation of the heavenly bodies was just as miraculous as the creation of the first people:

And God said, “Let there be lights ...And God made the two great lights—the greater light to rule the day and the lesser light to rule the night—and the stars.

([Genesis 1:14...16](#)).

Was this any less a miracle than the creation of the man from dust? And yet there is a demand for a naturalistic explanation for how God did this! This is inconsistent and unreasonable to demand such a thing as a condition of believing the Bible's account, especially the timeframe.

The bottom line: Creation Week involved a series of miracles. Thus, these are things for which we can provide no natural explanation. We do not know how God could speak the stars into existence, and thus we cannot know how He created things in such a way that we can see the light from celestial objects millions and billions of light-years distant.

2. There are potential explanations

Christian astrophysicists have proposed various explanations as to how God *might* have created things in such a way that even Adam and Even would have been able to see distant starlight. This section is a bit technical, but we have tried to make it as easy as possible to understand. The ideas are mind-stretching because they seem to conflict with our everyday experience of the world, like relativity and quantum mechanics

Time dilation models

Einstein is famous for discovering that time is not constant but is affected by movement (speed) and gravitational forces. This is known as Special Relativity and General Relativity, respectively. When an object moves very fast, time for that object slows down, or even stops at the speed of light. Also, when an object is in the presence of a very dense object, which provides a strong gravitational attraction, time slows down. These effects are measurable and have been verified by experiment. GPS satellites depend on precision clocks for global positioning calculations. Thus, their on-board clocks must be adjusted for the lesser gravity (being further from the earth) and for the speed of movement of the satellite.⁶



Gravity distorts time so that a clock on the top of a mountain runs faster than a clock at sea level.

Now we can try to imagine God creating the universe, “stretching out the heavens” ([Psalm 104:2](#)) on Day 4 of Creation Week. This would entail massive gravitational forces and enormous differences in speeds, both of which would change the time ‘out there’ compared to planet Earth. Thus, in one Earth day (Day 4) an enormous amount of time could transpire ‘out there’ allowing ample time for the light to travel to Earth.

Various models have been proposed based on these ideas. Physicist Dr Russell Humphreys was the pioneer and is still actively refining the models.^{7,8}

Could a different philosophy of time explain it?

Einstein's findings of time changing with motion means that the speed of light (c) cannot be measured in one direction. It can only be measured for the round trip (two-way speed).

Physicists have been wracking their brains ever since Einstein to try to figure out how to measure the speed of light in one direction. For example, we might want to fire a laser beam at the moon and measure how long it takes to get there. However, we need to place a clock on the moon that is telling the same time as a clock on Earth. That is a problem, because as we fly the clock to the moon, the time changes on the clock (due to Relativity)! Putting it another way, the only way the observer on the moon can know when the light beam is sent from Earth is to be sent a message. That message travels at the speed of light. It all becomes totally circular!

There has been quite some renewed discussion about this in recent times—including from secularists—that the speed of light might not be the same in all directions.⁹

Einstein *assumed* that the speed of light perceived by all observers was the same (called the synchrony convention) but he realized that it was an assumption without proof. This can be called the Einsteinian Synchrony Convention (ESC) and it works fine, but it is an assumption and there might be another way of looking at this that also works.

What if the speed of light towards an observer was assumed to be infinite and the speed away was then $c/2$? That would give an average speed of c , which we measure. Astrophysicist Dr Jason Lisle proposed this. He calls it the Anisotropic Synchrony Convention (ASC).^{10,11,12} More, simply, it can be called the ‘visual synchrony system’, that we are seeing things *as they are now*. There is no way that we can know that this is not so. Thus, we are seeing the Universe as it is now, we are not looking back into the past. Then there is no problem in seeing distant stars.

3. Everyone has a distant starlight problem!

Most who raise the distant starlight problem don’t seem to realize that the standard ‘big bang’ secular view of origins has exactly the same problem *in principle* That is, their view *also* has *far more light years than years* too. Big bangers likewise resort to essentially miraculous explanations—but with no miracle worker!

The problem is that the distribution of the cosmic background microwave (CMB) radiation in the universe is very uniform. The differences are only about one part in 100,000. However, if regions of space are at the same temperature, they must have been in contact. The contact can be via radiation of heat energy from hot things to cold things at the speed of light.

However, there has not been enough time for radiation (at the speed of light) to disperse over such a large universe. This is called the ‘horizon problem’. Just as we can’t see beyond a literal horizon, the horizon in this case is the furthest distance that light could have travelled. In this case, regions of space at almost the same temperature must have been in contact. But they are much too far apart for light to have travelled from one region to another. It is really the big bang’s very own ‘light travel time’ problem.

To ‘explain’ this, cosmologists invoked a period of super-fast expansion of the universe—*much* faster than the speed of light—for a brief time just after the ‘bang’. This was dubbed ‘inflation’. What started it, how it could proceed, and what stopped it are all mysteries. These are in effect naturalistic miracles, with no sufficient cause or explanation.¹³ Alternatively, instead of space expanding much faster than light, João Magueijo proposed that light itself was much faster, as mentioned earlier. These ideas are used to prop up a theory that would not work without them.

So, it is not that miracles are not allowed in explaining origins. Ironically, they are apparently only disallowed when it comes to biblical creation, which the Bible says is miraculous!

Bible-believing Christians are ‘streets ahead’ of secularists here because we have an all-powerful Creator-God who is able to do things beyond our ken.

Great is our Lord, and abundant in power; his understanding is beyond measure.
The Lord lifts up the humble; he casts the wicked to the ground. ([Psalm 147:5–6](#))

God calls us to humbly submit to Him and His Word.

References and Notes

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3. Norman, T.G. and Setterfield, B., *The atomic constants, light and time*, privately published, 1990.
4. Creationist physicist Dr Keith Wanser pointed out that the rate of energy loss of a pulsar due to gravitational radiation is proportional to c , according to General Relativity. The 1993 Nobel Prize in Physics was awarded to Russell Hulse and Joseph Taylor for discovering a binary pulsar and showing that the observed energy loss matched the predictions of General Relativity to within 0.4%. But this indicates that c hasn’t changed in the thousands of years since light left that pulsar. See also Wieland, C., [Speed of light slowing down after all? Famous physicist makes headlines](#), *J. Creation* **16**(3):7–10, 2002; creation.com/cdk.
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7. See articles at: [creation.com/topics/starlight-and-time](#).
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10. Lisle, J., [Distant starlight in a young universe: Rømer, Maxwell, and Occam](#) (and related articles), 2020, Biblical Science Institute; biblicalscienceinstitute.com.
11. A similar proposal is Tenev, T.G., Baumgardner, J., and Horstemeyer, M., [A solution for the distant starlight problem using Creation Time Coordinates](#), *Proc. 8th ICC*, 2018; digitalcommons.cedarville.edu; main points summarized in [Supernovae and gamma-ray bursts in a biblical cosmology](#), creation.com/supernovae-gamma-ray-bursts, 13 October 2018.
12. Note that light speed constant in all frames of reference (as per Einstein) and ASC are not physical models of light travel; rather they are different coordinate systems, akin to choosing a measuring system such as metric vs imperial—neither system is true or false, but they give different numbers. See Ref. 11 for explanation.
13. Lisle, J., [Light-travel time: a problem for the big bang](#), *Creation* **25**(4):48–49, 2003; creation.com/lightravel.