



## Chapter 2

# The Universe Confirms the Bible

by Dr. Jason Lisle on March 6, 2008

In this chapter, we will explore some passages of Scripture which touch upon the topics of astronomy and astrophysics. It is interesting that many of the Bible's statements about astronomy went against the generally accepted teachings of the time. Undoubtedly, many of these verses would have seemed counterintuitive, and may have been difficult to believe when they were first written. However, modern science has confirmed what the Bible has taught. As in all things, the Bible is absolutely correct when it teaches about the universe.

## The Earth Is Round

The Bible indicates that the earth is round. Consider Isaiah 40:22 which mentions the "circle of the earth." This description is certainly fitting—particularly when the earth is viewed from space; the earth always appears as a circle since it is round.

Another verse that indicates the spherical nature of our planet is Job 26:10. This verse teaches that God has inscribed a circle on the surface of the waters at the boundary of light and darkness. This boundary between light and darkness (day and night) is called the "terminator" since the light stops or "terminates" there. Someone standing on the terminator would be experiencing either a sunrise or a sunset; they are going from day to night or from night to day. The terminator is always a circle, because the earth is round.

One of the great delights of observing the moon through a small telescope is to look at its terminator, especially during the first or third quarter phases when the terminator is directly down the middle of the moon. The craters are most easily seen at this boundary since the sun is at a low angle and casts very long shadows there. The moon looks particularly three-dimensional when viewed through a telescope during these phases; it is clear that the moon is a sphere—not a flat disk (see photo below).

For the earth, the terminator occurs not on a cratered rocky surface, but primarily on water (since the earth's surface is 70 percent water). Job 26:10 suggests a "God's eye" view of the earth. This biblical passage would be nonsense if the earth were flat, since there would be no true terminator; there is no line to "step over" that separates the day from night on a flat surface. Either it is day everywhere or night everywhere on a hypothetical "flat earth." However, the earth does indeed have a boundary between light and darkness which is always a circle since the earth is round.





Curiously, many astronomy textbooks credit Pythagoras (c. 570–500 B.C.) with being the first person to assert that the earth is round.<sup>1</sup> However, the biblical passages are older than this. Isaiah is generally acknowledged to have been written in the 700s B.C. and Job is thought to have been written around 2000 B.C. The secular astronomers before the time of Pythagoras must have thought the Bible was wrong about its teaching of a round earth, yet the Bible was exactly right. It was the secular science of the day that needed to be corrected.

## The Earth Floats In Space

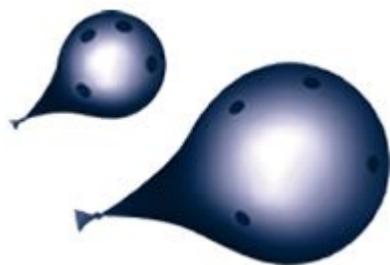
A very interesting verse to consider is Job 26:7 which states that God “hangs the earth on nothing.” This might evoke an image of God hanging the earth like a Christmas tree ornament, but hanging it on empty space. This verse expresses (in a poetic way) the fact that the earth is unsupported by any other object—something quite unnatural for the ancient writers to imagine. Indeed, the earth does float in space. We now have pictures of the earth taken from space that show it floating in the cosmic void. The earth literally hangs on nothing, just as

the Bible teaches.

## The Expansion of the Universe

The Bible indicates in several places that the universe has been “stretched out” or expanded. For example, Isaiah 40:22 teaches that God “stretches out the heavens like a curtain, and spreads them out like a tent to dwell in.” This would suggest that the universe has actually increased in size since its creation. God has stretched it out. He has expanded it (and is perhaps still expanding it). This verse must have seemed very strange when it was first written. The universe certainly doesn’t look as if it is expanding. After all, if you look at the night sky tonight, it will appear about the same size as it did the previous night, and the night before that. Ancient star maps appear virtually identical to the night sky today. Could the universe really have been expanded? It must have been hard to believe at the time.

In fact, secular scientists once believed that the universe was eternal and unchanging. The idea of an expanding universe would have been considered nonsense to most scientists of the past. It must have been tempting for Christians to reject what the Bible teaches about the expansion of the universe. Perhaps some Christians tried to “reinterpret” Isaiah 40:22, and read it in an unnatural way so that they wouldn’t have to believe in an expanding universe. When the world believes one thing, and the Bible teaches another, it is always tempting to think that God got the details wrong, but God is never wrong.



Balloon illustration

Most astronomers today believe that the universe is expanding. This expansion is a very natural result of the physics that Einstein discovered—general relativity. Moreover, there is observational evidence that the universe is indeed expanding. In the 1920s, astronomers discovered that virtually all clusters of galaxies appear to be moving away from all other clusters (see creation in-depth box at the bottom); this indicates that the entire universe is expanding.

This effect can be illustrated with points on a balloon. As the balloon is inflated, all points move farther away from each other (see illustration at left). If the entire universe were being stretched out, the galaxies would all be moving away; and that is exactly what they appear to be doing. It is interesting that the Bible recorded the notion of an

expanding universe thousands of years before secular science came to accept the idea.

## Conservation of mass-energy

A very important concept in physics is the conservation of energy. This principle states that energy cannot be created nor destroyed. There are a lot of different kinds of energy; heat, light, sound, and electricity are all forms of energy. We can change one type of energy into another and we can move energy from one place to another, but the total quantity of energy in the universe is constant and cannot be changed.

There is also a conservation principle of mass. Mass is the property of an object to resist a change in its motion. Things that possess a lot of mass are very heavy; things with little mass are light. We can move mass from place to place, and transform one kind of mass into another (by a chemical reaction for example), but, just like energy, mass cannot be created nor destroyed. So both mass and energy are conserved. In fact, Einstein was able to demonstrate that all energy possesses an equivalent mass, and vice versa. To put it another way, mass and energy are really the same thing manifesting in different ways. This is the meaning of Einstein's famous equation  $E=mc^2$ . We can combine these principles into the conservation of mass-energy. Colloquially speaking, the amount of "stuff" in the universe is constant.

Conservation of mass-energy is exactly what we would expect on the basis of Scripture. First, the Bible indicates that no new material can come into existence. This is indicated in John 1:3 and Genesis 2:2. John 1:3 states that all things were made by God, and nothing has come into existence apart from Him. Furthermore, God ended His work of creation by the seventh day of the creation week, according to Genesis 2:2. Since only God can bring new things into existence from nothing, and since God ended His work of creation by the seventh day, no new material will come into existence today.

Second, the Bible suggests that nothing will cease to exist. This is because God is upholding all things by His sustaining power (Hebrews 1:3) and by Him all things consist (Colossians 1:17). Neither matter nor energy will cease to exist, because God is sustaining them, and since nothing new will come into existence, we can conclude that the amount of material in the universe is constant. Of course, the Bible makes room for miracles—supernatural interventions by God, but miracles (by definition) do not conform to the laws of physics; they are exceptions by their very nature. The universe itself obeys the law of conservation of mass-energy.

## The number of the stars

The Bible often uses the "stars of heaven" to represent an extremely large quantity. Genesis 22:17 teaches that God would multiply Abraham's descendants "as the stars of the heaven, and as the sand which is on the sea shore." Genesis 32:12 makes it clear that this represents a number which is uncountable by humans: "the sand of the sea, which cannot be numbered for multitude."<sup>2</sup> These are excellent analogies. Clearly the sand of the sea and the stars in the universe cannot be counted exactly by humans, though of course, they can be roughly estimated. Interestingly, the two quantities come out to about the same order of magnitude:  $10^{22}$ , or ten billion trillion, give or take a factor of ten or so.<sup>3</sup> (For other verses using stars as an illustration of large numbers, see Deuteronomy 1:10 and 10:22.)

It was not always believed that the stars were so numerous. The astronomer Claudius Ptolemy (A.D. 150) cataloged 1,022 stars in his work *The Almagest*.<sup>4</sup> Many astronomers believed that these were the only stars that existed, even though Ptolemy never claimed that his catalogue was exhaustive.<sup>5</sup> Of course, there are many more stars than this number. The total number of stars that can be distinctly seen (from both hemispheres under ideal, dark sky conditions) with the unaided eye is around 10,000. The precise number depends on how good one's vision is.

Today, with the help of modern science, we have an even greater appreciation of just how innumerable the stars are. Powerful telescopes allow us to see stars much too distant and faint to be seen without optical aid. Even binoculars reveal countless multitudes of stars that cannot be seen by the unaided eye. It is estimated that our galaxy alone contains over 100 billion stars. Astronomers believe that there are more galaxies in the visible universe than there are stars in our own. Each of these galaxies would have hundreds of millions to trillions of stars. Modern science certainly confirms Genesis 22:17.

## The Ordinances of Heaven and Earth

The Bible teaches that the universe obeys physical laws—"the ordinances of heaven and earth" (Jeremiah 33:25). The universe is neither haphazard nor arbitrary; nature conforms to logical, mathematical relationships set in place by the Lord.

The laws of physics and chemistry are examples of these ordinances of heaven and earth. The clockwork precision of the planets as they orbit the sun is due to their strict obedience to God's ordinances. The stars and planets are never late nor are they early.

They do not fail to appear in their proper place at the proper time (Isaiah 40:26).

The laws of nature are consistent and logical, because the Creator is consistent and logical. We can trust that the same physics which worked yesterday will also work today. This principle is foundational to the scientific process. The very reason that science is possible is because the universe consistently obeys simple mathematical formulae. Furthermore, God created our minds with an impressive (though finite) ability to interpret the data around us, and draw logical conclusions. We are therefore able to discover (at least to some extent) the ordinances of the universe by observation, experimentation, and logical reasoning. Once we understand the nature of these physical laws, we can use them to make accurate predictions about the future—such as computing the positions of the planets in advance.

Both earth and the rest of the physical universe (“heaven and earth”) obey the laws of nature. Many ancient cultures believed that the universe beyond earth was the realm of the gods. Indeed, the planets were often worshiped as gods. In reality, the planets are simply created objects which obey the same laws of nature which we can study on earth. In an incredible leap of insight, the biblical creationist Isaac Newton realized that the moon orbits the earth because the moon is pulled by earth’s gravity. The moon “falls” just like any other object; earth’s gravity deflects the moon’s path through space (see the in-depth box below). Since the moon has a tangential (perpendicular to the line from the earth to itself) velocity, it falls “around” the earth rather than straight down. Newton also realized that the planets orbit the sun for the same reason; the sun’s gravity keeps them in their orbit. The planets and stars are not gods; they are mere creations (Genesis 1:14–19) in nature which obey the Lord’s ordinances.

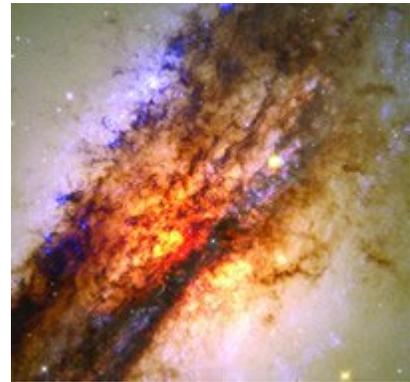
## Astronomy confirms the Bible

Today, the reliability of the Bible is being increasingly attacked. Can we really trust the Bible in our modern age of technology and science? As we have seen, science is not an enemy of the Bible. On the contrary, modern science has been able to confirm much of what the Bible teaches about astronomy. Many of the biblical teachings which would have been difficult to believe in the past (such as an expanding universe) are now accepted in science textbooks. This is an important lesson to learn. Ideas in secular science can change from time to time, but the Bible has demonstrated itself to be consistently true without the need for change.

Although much of secular astronomy has come to line up with the Bible, there are still a number of differences. What are we to do when the current consensus among scientists is at odds with the teachings of Scripture? Have we learned the lesson of history? Are we going to reject (or modify our “interpretation” of) the straightforward teachings of Scripture in light of the latest secular scientific claims? Or shall we trust that the Bible will prevail again as it always has in the past?

It may help to remember that our modern age is just another point in history. Future generations (should the Lord delay His return) will no doubt look back at our time as we look back to cultures of the past. Will students in some future classroom look back with amusement at some of the “scientific” beliefs and misunderstandings of our time, the same way we smile at the scientific mistakes of ancient cultures? Will they learn about the “Great Folly”—the nearly universal belief in the big bang and molecules-to-man evolution which reigned during the 20th and early 21st centuries? Perhaps future Christians will wonder at the rampant compromise so prevalent in our time: Why did Christians of the past compromise with the secular ideas of the big bang and billions of years?

In the next chapters, we will explore points of disagreement between the straightforward teachings of the Bible and the current opinions of the majority of astronomers. If the Bible really is the Word of God, as it claims to be, then it cannot fail. Inevitably, the secular opinion will collapse, and the Bible will again be vindicated in each of these points of disagreement.



Galaxy Centaurus A (Image taken from the Hubble Space Telescope)

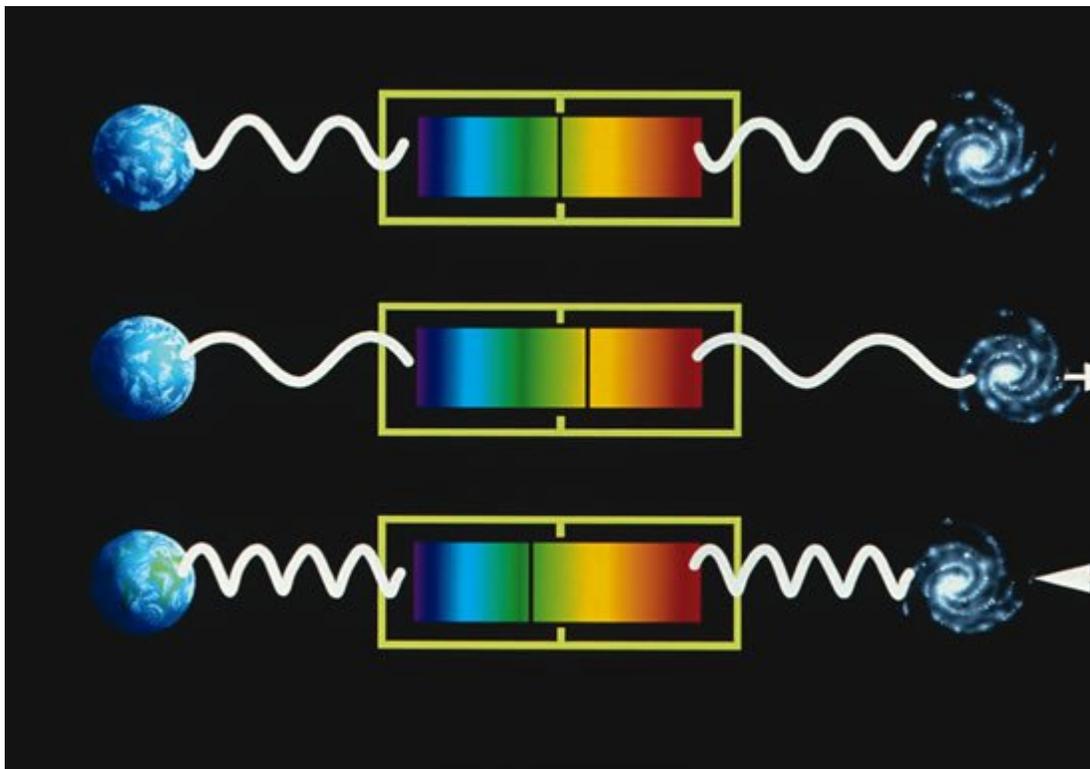


Trifid Nebula M20

## Creation In-Depth:

### The Hubble Law: What Does it Mean?

Nearly all galaxies in the universe are “redshifted.” That means that the wavelengths of the light they emit have been increased. The light has been stretched out since it was emitted—it is shifted toward the red end of the spectrum (since red light has a longer wavelength than blue).



### Doppler Effect

There are several ways in which light can be redshifted. Motion is one way; this is called the “Doppler effect.” When a car passes by, its sound changes pitch because the sound waves are either compressed or stretched out depending on whether the car is approaching or moving away.

Likewise, the wavelength of light is changed when the source is moving. The effect is not as easy to see with light as it is to hear with sound. Since the speed of light is so much greater than the speed of sound, objects must be moving very fast in order to see the Doppler effect.

Gravity can also affect the wavelength of light. Strong gravitational fields slow the passage of time in accordance with Einstein’s relativity. This means that light emitted near a massive object will be redshifted. Expansion of the universe can also cause light to be redshifted. As the universe expands, any light traveling within it will also be stretched out along with the universe. The longer the light has been traveling, the more redshifted it will be.

Astronomers can determine the distances to galaxies, and are also able to determine the redshifts of those galaxies. Observations have shown that the redshift of a galaxy is proportional to its distance from our galaxy. The more distant a galaxy is, the more its light is shifted toward the red; this is called the “Hubble law.” Most astronomers believe that expansion of the universe is the most likely cause for the redshifts, because it would naturally lead to this result: more distant galaxies would be more redshifted because their light has been traveling longer and has thus been expanded by a greater amount. The “Hubble law” is the evidence—distant galaxies show greater redshifts than nearby galaxies. The interpretation is that universal expansion has caused these redshifts.

Recently, some astronomers have questioned this interpretation. Might there be another cause of these redshifts? This is certainly possible. However, there are some good reasons to think that universal expansion is the correct interpretation of the Hubble law. First of all, a static universe is nearly impossible according to general relativity. The laws of physics indicate that the universe must either be expanding or collapsing, so we would expect the universe to be expanding (or possibly

collapsing) on the basis of known physics—even if we had no observations of redshifts at all. Secondly, other known ways of producing redshifts would not necessarily produce a Hubble law relation. Expansion of the universe naturally produces the result that more distant galaxies are more redshifted—all on the basis of known physics. I would suggest that expansion of the universe is the best explanation of the data at the moment, though other interpretations are possible.

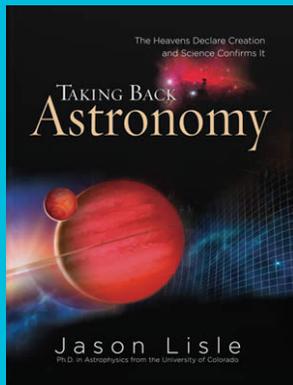
An expanding universe does not necessarily support the big bang. Just because the universe is apparently expanding does not mean that it was ever infinitely small; nor does this indicate that a big bang caused the expansion. It is also important to note that the big bang did not predict any such expansion. On the contrary, the big bang was invented to explain such expansion within the framework of naturalism. The Bible, however, did refer to an expanding universe—long before secular astronomers came to accept that idea.

## The Law of Gravity

Consider the law of gravitational attraction:  $F = GMm/r^2$ .

Here, the force of gravity ( $F$ ) on an object of mass ( $m$ ) produced by a nearby mass ( $M$ ) at a distance ( $r$ ) is related by this simple equation. The parameter ( $G$ ) is the gravitational constant of the universe; it sets the overall strength of gravity.  $G$  is a very tiny number, which is why gravity is weaker than the three other known fundamental forces (electromagnetism, the weak nuclear force, and the strong nuclear force). If creation were not true—if the universe had no designer—then why should gravity obey such a simple, logical formula? For that matter, why should gravity obey any formula at all? The law of gravity suggests a law-giver; it is consistent with creation.

Of course, many of the laws of nature can be derived mathematically from other laws. For example, Kepler's laws of planetary motion can be derived from Newton's laws of gravity and motion (classical physics). And (it is thought that) the reason gravity works the way it does is because mass "curves spacetime." Essentially, space and time are treated as a "fabric" which is distorted by the presence of mass; the mass curves spacetime, and then spacetime tells the mass how to move. Many laws of nature depend on other laws which depend on still others, and so on. Ultimately, there must be a foundational set of principles which exist for no other reason than that God has so decreed. Ultimately, the fundamental laws of nature require a law-giver.



## Taking Back Astronomy

Dr. Lisle communicates the truths of creation and the fallacies of evolution with authority and enthusiasm. In this richly illustrated book, Lisle debunks the most widely accepted teachings about the idea of evolution. Readers are given solid answers to many questions, including the speed of light, the big bang, extraterrestrials, the reliability of the Bible regarding astronomy, and more.

## Footnotes

1. Snow, *The Dynamic Universe*, p. 44; W. Hartmann and C. Impey, *Astronomy: The Cosmic Journey* (Belmont, CA: Wadsworth Publishing Company, 1994), 5th edition, p. 44; T. Snow and K. Brownsberger, *Universe: Origins and Evolution* (Belmont, CA: Wadsworth Publishing Company, 1997), p. 46.
2. Of course, God can count the number of stars, and in fact does so according to Psalm 147:4. God has a name for every star, even though human beings cannot even count the number of stars.
3. The order of magnitude of the estimate can vary slightly depending on the exact assumptions involved in the calculation.
4. Hartmann and Impey, *Astronomy: The Cosmic Journey*, p. 52.

5. D. Faulkner, *Universe by Design* (Green Forest, AR: Master Books, 2004), p. 15.

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