

Does Old-Earth Creationism Contradict Genesis 1?

By Greg Moore

An article by Dr. Terry Mortenson—“Evolution vs. Creation: the Order of Events Matters”—claims long creation days only seem reasonable to those who pay insufficient attention to the order of events in Genesis 1.¹ The only way the day-age view can be harmonized with Genesis, it asserts, is by rearranging the biblical creation events. As proof, the article cites what Mortenson contends are numerous conflicts between science and Genesis 1.

Before addressing those supposed conflicts, several remarks about the day-age view warrant a response. First, Mortenson claims the Bible gives abundant evidence the creation “days” are to be understood as 24-hour days. Many notable Christians disagree.² There is no scriptural or hermeneutical requirement the creation “days” must be interpreted as 24-hour time periods. Indeed, because the Bible does not say exactly how old the earth is, a diversity of views on the “days” of Genesis has always been completely acceptable in the church.³

Second, Mortenson contends the day-age view of millions of years of animal death before the creation of man contradicts the Bible’s teaching about sin and death. The Bible speaks of sin, death and spiritual redemption. This limits the meaning to human death. For these teachings to apply to animals, Christ’s redemptive work would have to extend to animals, which is implausible. Such a wide interpretation of the scope of the atonement has no scriptural support.⁴

Third, Mortenson states the day-age view is based on the false assumption science has proven long ages, pointing to young-earth articles contesting radiometric dating, light travel time and other things. The evidence for an old earth is overwhelming and incontrovertible. Multitudes of dating methods—both radiometric and non-radiometric—present a consistent picture, indicating the earth’s age is best measured in millions or billions of years, not thousands of years.⁵

Fourth, Mortenson alleges the young-earth view was the orthodox view in the church until about 200 years ago. Prior to the advent of modern science, most people did believe the Earth was relatively young. It was simply beyond the scientific understanding of the day to think otherwise. However, throughout history, many church fathers, scholars and theologians have viewed the “days” of Genesis as not being ordinary calendar days and the age of the earth has never been a test of orthodoxy in the church.⁶

Now let’s examine the central claim of the article. Mortenson presents two columns of information. The first column lists the scientific order of various events; the second column the biblical order of those events. As presented, the two views disagree. The question is whether Mortenson’s statements accurately reflect the scientific and biblical views of those events.

In the remainder of this paper, I will scrutinize the information in those columns. First, I will examine whether Mortenson’s statements about the biblical order of events agree with the text of Genesis 1. Next, I will examine the accuracy of Mortenson’s statements regarding the scientific order of events and whether science contradicts the Bible. Finally, I will address the issue of animal death before the Fall, which Mortenson claims is contrary to Genesis 1.

GENESIS 1

Mortenson’s statements regarding the biblical order of events correspond to four creations in Genesis 1—namely, the creation of the universe, earth, plants and animals. My comments are organized accordingly.

The Universe

Mortenson states the Bible teaches the Earth was created before the Sun, stars and other planets. He also states there was light on Earth before the Sun was created. This is tied to the events of the fourth creation “day” (Genesis 1:14-19):

14 And God said, "Let there be lights in the expanse of the sky to separate the day from the night, and let them serve as signs to mark seasons and days and years, 15 and let them be lights in the expanse of the sky to give light on the earth." And it was so. 16 God made two great lights—the greater light to govern the day and the lesser light to govern the night. He also made the stars. 17 God set them in the expanse of the sky to give light on the earth, 18 to govern the day and the night, and to separate light from darkness. And God saw that it was good. 19 And there was evening, and there was morning—the fourth day. (NIV)

Verse 16 tells us God made the Sun, Moon and stars on the fourth “day.” Most young-earth creationists focus on the English translation and interpret this verse to mean God created the Sun and Moon that instant. The Hebrew does not support that interpretation. The Hebrew word for “made”(asah) refers to an action completed in the past.⁷ Thus, the verse is correctly rendered “God had made” rather than “God made.” This indicates God “had made” the Sun, Moon and stars earlier than the fourth “day.”⁸

This view of the fourth “day” has broad support. For example, Gleason Archer, one of the foremost evangelical Hebrew scholars, states: “Verse 16 should not be understood as indicating the creation of the heavenly bodies for the first time on the fourth creative day ...⁹ Likewise, Protestant theologian Wayne Grudem states: “[Verse 16] Can be taken as perfects indicating what God had done before ... This view would imply that God had made the sun, moon, and stars earlier ...”¹⁰

So, when were the Sun, Moon and stars created? Genesis 1:1 tells us, “*In the beginning God created the heavens and the earth.*” The Hebrew phrase “the heavens and the earth” (*hashamayim we ha’ erets*) refers to the entire universe, entire creation and everything that can be seen or has physical existence.¹¹ This indicates the heavenly bodies—the Earth, Sun, Moon, stars and other planets—were created “in the beginning” prior to the six creation “days.”

Mortenson contends the Earth was created before the other planets. This is because young-earth creationists assume the other planets are among the “lights” God created on the fourth “day.” The text does not support that view. There is no mention of the other planets in the narrative of the fourth “day.” Verse 16 speaks only of the Sun to govern the day, the Moon to govern the night and the stars.

The claim there was light on Earth before the Sun was created is another artifact of the young-earth model. The Bible states on the first creation “day” God said, “Let there be light” (Genesis 1:3). Because the young-earth model places the creation of the Sun on the fourth “day,” young-earth creationists insist this light came from a different source—many attribute it to God’s radiance (His Shekhinah glory). This is an unnecessary and strained interpretation. The text indicates the light God caused to appear on the first “day” was illumination from the sun in the daytime. This fact is specifically stated in Genesis 1:5.¹²

Based on the Hebrew word meanings, the following picture emerges. “In the beginning” God created the universe—the Sun, Moon, stars, Earth and planets (1:1). In verse 2, the viewpoint changes to the surface of the Earth (the Spirit of God was hovering “over the waters”). Initially, the Earth was dark (1:2). On the first “day,” God caused sunlight to penetrate the darkness (1:3-5). On the fourth “day,” God caused the Sun, Moon and stars to become visible from the surface of the Earth (1:19-20), having made them earlier (1:16) as part of His creative activity prior to the six creation “days.”

An additional point should be made about the verb “made” (*asah*) in verse 16. *Asah* means to fabricate or fashion something¹³ and is different from the Hebrew verb “create” (*bara*) used elsewhere in Genesis 1. *Bara* means to bring forth something brand new by divine fiat.¹⁴ God made (*asah*) the Sun, Moon and stars; He did not *bara* them. This suggests the heavenly bodies were not instantaneous creations but something God fashioned from the raw materials He created “in the beginning.”

It should also be noted that Genesis 1 does not describe the establishment of calendar days on Earth until the fourth creation “day.” Although the light-dark cycle began on the first “day,” it was not until the fourth “day” God commanded the Sun, Moon and stars to become visible to mark days, seasons and years.¹⁵ This is a strong point against the young-earth view that the creation “days” were normal days. At least the first three “days,” preceded God’s establishment of calendar days.

The Earth

According to Mortenson, the Bible teaches the sea preceded the atmosphere and the appearance of dry land. This is tied to the events of the second (Genesis 1:6-8) and third (Genesis 1:9-10) “days”:

6 And God said, "Let there be an expanse between the waters to separate water from water." 7 So God made the expanse and separated the water under the expanse from the water above it. And it was so. 8 God called the expanse "sky." And there was evening, and there was morning—the second day. (NIV)

9 And God said, "Let the water under the sky be gathered to one place, and let dry ground appear." And it was so. 10 God called the dry ground "land," and the gathered waters he called "seas." And God saw that it was good. ... the third day. (NIV)

The narrative of the second creation “day” speaks of God separating the waters—the water of the land from the water of the sky. This parallels a section of Psalm 104, known as the “creation Psalm.” There, God is depicted creating the upper waters, the watery clouds of heaven (104:3), and the lower waters of the earth (104:6).¹⁶ Thus, it seems evident Genesis 1 is describing an atmospheric division involving water, not the creation of the Earth’s atmosphere (i.e., the air surrounding the Earth).

This is supported by the description of the initial conditions of the Earth in Genesis 1:2—“*Now the earth was formless and empty, darkness was over the surface of the deep...*” Why was the Earth dark? The answer is found in Job 38: “*Who shut up the sea behind doors when it burst forth from the womb, when I made the clouds its garment and wrapped it in thick darkness ...*” (verse 8-9). Job tells us the Earth was dark because a thick cloud layer blanketed it. These clouds indicate the Earth had an atmosphere prior to the six creation “days.”

The Bible does say the early Earth was covered by water. Clearly, this was the case on the third “day” when God commanded the water to gather to one place and for dry ground appear (1:9). The statement in verse 2—“the Spirit of God was hovering over the waters”—also seems to suggest the Earth was covered by water prior to the six creation “days,” although it is not explicitly stated in the text. The question is whether the Earth was always covered with water. At issue are the first two verses of Genesis 1:

1 In the beginning God created the heavens and the earth. 2 Now the earth was formless and empty, darkness was over the surface of the deep, and the Spirit of God was hovering over the waters. (NIV)

These verses speak of two time periods: God’s work “in the beginning” and the conditions of the early Earth before God began to refashion it. Because the Bible does not tell us what transpired between these two verses, Genesis 1:2 places no restriction on the age of the Earth.¹⁷ It is entirely possible eons had

passed since God created “the heavens and the earth” and the Earth had been dry some point prior to verse 2.

The Plants

Mortenson maintains the Bible teaches plants were created before the Sun, fruit trees before other plants, land plants before sea creatures, trees before land animals and flowering plants before insects. This is tied to the events of the second half of the third creation “day” (Genesis 1:11-13):

11 Then God said, "Let the land produce vegetation: seed-bearing plants and trees on the land that bear fruit with seed in it, according to their various kinds." And it was so. 12 The land produced vegetation: plants bearing seed according to their kinds and trees bearing fruit with seed in it according to their kinds. And God saw that it was good. 13 And there was evening, and there was morning—the third day. (NIV)

The narrative of the third “day” tells us God caused the land to produce two types of vegetation: seed-bearing plants and trees bearing fruit. The Hebrew word for “plant” (*eseb*) refers to green grasses and herbs.¹⁸ The Hebrew word for “tree” (*ets*) connotes plants with woody stalks.¹⁹ From this, we have a general idea of the vegetation the land was to produce. However, we do not know the specific plants and trees that appeared, nor do the Hebrew word meanings seem to encompass all the plant life on the Earth.

Mortenson’s claim that plants were created before the Sun is based on the young-earth contention the Sun was created on the fourth “day.” Since this issue was addressed previously, I will focus on Mortenson’s other statements.

Mortenson states the Bible teaches fruit trees were created before other plants. He notes “the order mentioned in Scripture suggests a slight difference in the timing of their appearance; i.e., they were created on the same day, possibly moments or hours apart.” The text simply states God commanded the land to produce both plants and trees. Nevertheless, if we use Mortenson’s line of reasoning, the text would indicate plants were created before trees.

According to Mortensen, the Bible teaches plants and trees were created before sea and land creatures. The Bible does indicate sea creatures were created on the fifth “day” and land creatures on the sixth “day.” However, we need to be careful not to read too much into the narrative of the third “day.” The Hebrew phrase at the end of verse 11, “and it was so,” is better translated “and it did come to pass.” This indicates the command was completed but it does not indicate an immediate completion—it could have been completed in the future.²⁰ Thus, it is entirely possible the land continued to produce new plants and trees well into the following “days.”

Mortenson contends the Bible teaches flowering plants were created before insects. This is based on the belief that flying insects were created with birds on the fifth “day” and crawling insects with land animals on the sixth “day.” The text does not support that view. The Hebrew words for the birds and land animals God created do not normally refer to insects (discussed in the next section). Since insects play a critical role in the pollination of many plants, we are left with two possibilities: either God created plants and insects together, or God pollinated the plants until insects were created. We can speculate, but the Bible is silent on this issue.

It is worth noting that the verb “produce” (*dasha*) in verse 11 (“shall bring forth” in some translations) represents an incomplete action. It indicates the land was to be the agent producing the command. This, with the ending phrase “and it did come to pass,” implies this command took longer than 24 hours to

complete. A completion within 24 hours would require that we ignore the usual meanings of these words.²¹ This provides strong support for the view the third “day” was not a 24-hour period.

The Animals

Mortenson makes numerous statements regarding what the Bible teaches about the creation of animals: starfish before earthworms, dolphins before dinosaurs, birds before dinosaurs and reptiles, pterosaurs before land reptiles, whales and bats before land animals, mammals (cattle) before “creeping things” and flying insects before land insects. This is tied to the events of the fifth (Genesis 1:20-23) and sixth (Genesis 1:24-25) creation “days”:

20 And God said, "Let the water teem with living creatures, and let birds fly above the earth across the expanse of the sky." 21 So God created the great creatures of the sea and every living and moving thing with which the water teems, according to their kinds, and every winged bird according to its kind. And God saw that it was good. 22 God blessed them and said, "Be fruitful and increase in number and fill the water in the seas, and let the birds increase on the earth. ... the fifth day." (NIV)

24 And God said, "Let the land produce living creatures according to their kinds: livestock, creatures that move along the ground, and wild animals, each according to its kind." And it was so. 25 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. ... the sixth day." (NIV)

The narrative of the fifth “day” describes the creation of two types of sea creatures: great creatures and creatures with which the water teems. The Hebrew word for great creatures (*tanniyn*) refers to “enormous creatures or whales.”²² The Hebrew word for the other creatures (*sherets*) means swarming things.²³ In verse 20, both these creatures are referred to as “living things.” The Hebrew word used here (*nephesh*) connotes creatures with the attributes of mind, will and emotion.²⁴ This indicates the sea creatures created on the fifth “day” were not fish but air-breathing mammals—whales, dolphins, porpoises and the like.²⁵

The narrative of the fifth “day” also states God created “every winged bird.” The Hebrew word used here (*owph*) means to fly and is normally restricted to birds. For example, this is the term used to describe the birds Noah took aboard the ark. It can refer to flying insects. However, in that usage, it is usually combined with the Hebrew word *sheres* connoting “winged creeping thing” (e.g., Leviticus 11:20-23).²⁶ The usage here seems to restrict the meaning to birds.

One possible exception is bats. Bats are listed among the unclean birds (*owph*) the Jews were instructed not to eat in Leviticus 11 and Deuteronomy 14. Some take this to mean the created *owph* included bats. Others claim the dietary statements have no bearing on Genesis 1—bats were listed with birds because the people of that day would not have understood the distinction between birds and mammals. The bottom line is we cannot rule out the possibility the *owph* on the fifth “day” included bats.

The narrative of the sixth creation “day” speaks of the creation of three types of land animals: livestock, creatures that move along the ground and wild animals. The Hebrew word for livestock (*behema*) refers to large four-footed mammals that are easy to domesticate.²⁷ The Hebrew word for creatures that move along the ground (*remes*) refers to the locomotion of small creatures—small rodents and certain small reptiles.²⁸ The Hebrew word for wild animals (*chay*) means wild or alive. *Chay* comes from the root *haya* that conveys living life to the fullest.²⁹ Because this requires the attributes of mind, will and emotion; *chay* seems to refer to wild mammals.

Many young-earth creationists assume the creatures that move along the ground (*remes*) include crawling insects. However, a Hebrew word with a similar meaning, *sheres*, is normally used for those creatures. *Sheres* is also used to refer to creatures that glide or have many legs such as snakes, spiders and caterpillars.³⁰

Based on the Hebrew word meanings, it is evident the text does not describe the creation of all sea and land creatures. The fifth “day” speaks of whales and other sea mammals, while the sixth “day” speaks of large mammals, small mammals and certain small reptiles. Therefore, we can only speculate as to where fish, amphibians, large reptiles, dinosaurs, insects and a host of other sea and land creatures fit into the scheme of the six creation “days.”

Many of Mortenson’s statements go beyond the details of the biblical text. We simply cannot say with certainty if starfish preceded earthworms, birds and dolphins preceded dinosaurs, pterosaurs preceded land reptiles, and flying insects preceded land insects. He interprets the narratives of the fifth and sixth “days” to mean God created all sea and air creatures before He created land creatures. The text does not support that view. The Hebrew terms clearly do not encompass all of the creatures of the sea, land and air.³¹

Mortenson states mammals preceded creeping things (the KJV translation for *remes*). He notes the order mentioned in Scripture suggests a slight difference in the timing of their appearance; i.e., they were created on the same day, possibly moments or hours apart. The text gives no indication the different land animals were created sequentially.

According to Mortenson, bats preceded land animals. As stated previously, it is unclear if bats were created with birds on the fifth “day.” If they were, they would have preceded only those land animals specified in the narrative of the sixth “day”—certain mammals and small reptiles.

Mortenson claims whales preceded land animals. The Bible does indicate whales were created on the fifth “day” and the land animals on the sixth “day.” Again, that does not include all land animals—only certain mammals and small reptiles.

Finally, Mortenson alleges that birds preceded reptiles. The Bible does indicate birds were created on the fifth “day” and reptiles (*remes*) on the sixth “day.” However, the Hebrew word *remes* does include all reptiles. It refers only to small, modern reptiles common to the area of Palestine.³²

It is important to note the verbs used in the narratives of the fifth and sixth “days.” The Bible states God created (*bara*) the sea creatures and birds. This indicates they were instantaneous creations by divine fiat. However, the text tells us God commanded the land to produce the land animals. The Hebrew verb used here, *yatsar*, has the meaning of “to cause to come forth.”³³ This suggests the land animals were not instantaneous creations but something God may have introduced over time.

It should also be added that, according to the young-earth model, God created all land the animals—both living and extinct—in a 24-hour period. Thus, they would have all been on the Earth simultaneously. The narrative of sixth “day” does not support that view. The Hebrew terms clearly do not encompass all the land animals and the verb usage (*yatsar*) suggests a creative process of longer than 24 hours.

SCIENCE

In this section, I will examine the scientific view of the origin of the universe, earth, plants and animals. I will also address the issue of whether science contradicts Genesis 1.

The Universe

Mortenson states science puts the Sun and stars before the Earth, the other planets at the same time as the Earth, and the Sun before light on the Earth. These statements accurately reflect the mainstream view known as big bang cosmology.

The Big Bang Theory postulates the universe sprang into existence from nothing some 13.7 billion years ago. It began as a very small, dense singularity. Since then, the universe has expanded into the vast cosmos we inhabit. Thus, all matter, energy, space and time are the result of this single cosmic event dubbed the “big bang.”

How was our solar system formed? Scientists believe, after the big bang, there were fluctuations in the density of the universe. Eventually, gravity condensed clumps of matter together into gaseous clouds and formed protogalaxies. Within our region of space, this molecular cloud was disturbed (perhaps by the explosion of a nearby star) and waves in space squeezed the cloud causing it to collapse. As gravity pulled the gas and dust together, the cloud began to spin. Eventually, the spinning disk became hot and dense in the center and cool at the edges. When the density and temperature high enough at the center, fusion ignition occurred, creating the Sun. Meanwhile, at the cool edges, particles collided and clumped together (a process known as accretion) to form the planets, all of which are about the same age.³⁴

The Big Bang Model has been subjected to numerous tests and thus far agrees with virtually all the data. Three compelling reasons to believe big bang cosmology are the Hubble expansion, cosmic microwave background and big bang nucleosynthesis. Hubble Expansion is the observed phenomenon that all galaxies (outside our local group of galaxies) appear to be moving away from us, implying the universe is expanding. Cosmic microwave background is observable radiation left over from the big bang. Big bang nucleosynthesis is the process by which lighter elements (such as hydrogen, helium and lithium) were formed. Scientists can calculate how much of which elements should have formed and observations agree with those calculations.³⁵

Scientific resistance to the big bang arises not from the data but from its profound theological implications—implications of a transcendent cosmic creation event and of supernatural design in so many of the universe’s characteristics.³⁶ That is the reason most of the competing models (e.g., infinite universes) seek to downplay the uniqueness of our universe and eliminate the need for a beginning. Since many atheists resisted the big bang model until the evidence compelled its acceptance, it is fallacious to characterize it as an atheistic proposal.

Does science conflict with the Bible? No. The Bible tells us the universe was formed at God’s command from nothing that preceded it (Hebrews 11:3). This agrees perfectly with the scientific view of an initial “big bang.” The Bible speaks of the universe being “stretched out.” This fits the big bang concept of cosmic expansion.³⁷ The Bible also tells us God created the heavens and the earth “in the beginning” but does not specify how it occurred. Therefore, it is entirely possible that God created the heavens and the Earth through a series of events consistent with big bang cosmology.

As to the issue of light on Earth, science maintains our young solar system was filled with a cloud of gas, dust and debris. As the Earth cooled and its gravitational field strengthened, it attracted meteorites and other objects that bombarded the earth for over 500 million years (known as the Hadean Era).³⁸ Thus, although the Sun ignited before the Earth formed, the early Earth would have been surrounded by a thick, dense mixture of cosmic gases and debris that blocked the sunlight for many millions of years.

Does this conflict with the Bible? No. The Bible tells us the earth was dark and formless as God prepared to begin His creative activity on Earth. On the first “day,” God separated light from darkness and caused

daylight to appear. On the fourth “day,” God caused the Sun, Moon and stars to appear in the sky. This agrees perfectly with the scientific view of the early Earth. Initially, the atmosphere would have been opaque and blocked all sunlight. Over time, the atmosphere would have become translucent, allowing some sunlight to penetrate the darkness (the first “day”). Later, the atmosphere would have become transparent, revealing the heavenly bodies in the sky (the fourth “day”).

The Earth

According to Mortenson, science puts dry land and an atmosphere before the sea on Earth. These statements accurately reflect the scientific view of the early earth. However, it is important to clarify the nuances of that view.

As previously stated, scientists believe the early Earth experienced impact events for over 500 million years in the Hadean Era. Some of these events would have produced enough energy to vaporize the surface of the Earth. Thus, the Earth would have been mainly molten liquid at that time.³⁹ As the bombardments ceased and the planet cooled, lighter elements rose to the surface and hardened to form the outer crust of the Earth.

During the same general time period, scientists believe the outgassing of gases trapped in the interior of the Earth began to form an atmosphere around the Earth.⁴⁰ Eventually, the atmosphere cooled to the point water began to condense and heavy rains poured down on the planet. After several hundred million years of constant rain, great oceans formed on the surface.⁴¹ The extent to which the water covered the Earth cannot be verified; however, many scientists believe the quantity of water was sufficient to cover the entire planet.⁴²

Scientists generally agree the continents formed several hundred million years later.⁴³ This occurred as molten rock rose upward and erupted to form “island arcs.” These arcs slowly drifted across the planet and clumped together; forming progressively larger pieces of land that eventually became continents.⁴⁴ This was the result of plate tectonics.

According to plate tectonics theory, the uppermost portion of Earth’s interior consists of two parts: the lithosphere, the solidified top layer, and an inner viscous layer known as the asthenosphere. The lithosphere exists as separate and distinct “tectonic plates” that float on the fluid-like asthenosphere. It is the movement of these “plates” that causes the formation and breakup of continents. Mountain ranges and other features of the Earth’s surface are also the result of tectonic compression, folding and faulting produces.⁴⁵

Does science conflict with the Bible? No. Genesis 1:2 indicates the Earth had an atmosphere and was covered by water prior to the six creation “days.” This agrees with the scientific view of the Earth in the latter stages of the Hadean Era. According to science, the continents appeared after the great oceans formed (through plate tectonics). Again, there is no conflict with Scripture. The Bible tells us on the third “day,” God separated the water and caused dry land to appear. The Hebrew verb in this passage (*hayah*) means to come into existence.⁴⁶ Because the land was not an instantaneous *bara* creation, the land could have appeared gradually as God orchestrated the process of plate tectonics.

The Bible does not tell us what the Earth was like prior to Genesis 1:2. Therefore, the Bible does not rule out the possibility the Earth began as a hot, dry planet. Young-earth creationists seem to assume, in order for Genesis 1 to be compatible with science, the Bible would have to state the earth was hot and dry at some point in the past. That is unreasonable. Genesis 1 is a short account of God’s creative work that omits many details. The fact some details are missing has no bearing on the truth of the statements it does

make. It merely indicates that God did not feel those details were critical to the message He wanted to communicate to us.⁴⁷

Mortenson contends that the Bible teaches the atmosphere was created after the Earth was covered with water. This is based on the belief the atmosphere was created on the second “day.” As discussed previously, the second “day” describes an atmospheric division involving water, not the establishment of the Earth’s atmosphere. Genesis 1:2 indicates the earth was covered by water and had an atmosphere prior to the six creation “days.”

Mortenson also claims science rejects the idea of a global ocean and accuses Hugh Ross of being “badly uninformed” for saying the earth began with water covering the surface. However, it is Morrison who is mistaken. Support for a global ocean comes from three facts. First, the rain that fell on the early Earth for millions of years would have been of global proportions.⁴⁸ Second, comet impacts during the late Hadean Era would have increased the net amount of water on the Earth.⁴⁹ Third, the surface of the Earth would have been relatively flat due to the impact events that had liquefied the surface.⁵⁰ Therefore, the idea of a global ocean is not as far-fetched as Mortenson would have readers believe.

The Plants

Mortenson contends that science puts the sun before plants, simple plants before fruit plants, sea creatures before land plants, land animals before trees and insects before flowering plants. Based on the preceding discussions, it is clear the first statement—the sun before plants—accurately reflects the view of science. Let’s examine the other statements.

According to science, life first appeared in the sea about 3.8 billion years ago in the form of single-celled microorganisms. These were prokaryotes—single-celled organisms with no nucleus—such as blue-green algae (cyanobacteria). Next eukaryotes appeared—single-celled organisms with a nucleus—about 1.8 billion years ago. These included green algae that many scientists consider the first plants.⁵¹

Scientists believe the first plant life on the land was algae and cyanobacteria.⁵² It is not known precisely when they first appeared but some researchers place them at about 1.3 billion years ago.⁵³ However, it is generally agreed that the first real “plants” (multicellular organisms) appeared about 700 million years ago. These were seedless, spore-producing plants known as the bryophytes—mosses, lichens and liverworts.⁵⁴

The bryophytes were followed by a series of progressively more complex plants. First, spore-producing vascular plants (plants with water-conducting tissue) appeared about 425 million years ago. Next, spore-producing progymnosperms and lycophytes appeared about 410 million years ago.⁵⁵ (The progymnosperms can be considered the first trees because they produced secondary growth or wood each year.⁵⁶) The first seed-bearing plants, the gymnosperms, appeared about 390 million years ago. Finally, about 145 million years ago, the first angiosperms appeared—flowering plants with seeds enclosed in fruit. By about 100 million years ago, the angiosperms dominated the land, from grasses (rice, wheat, etc.), to fruit trees.⁵⁷

The scientific model is based on fossil evidence.⁵⁸ Of course; it is possible plants appeared earlier than the fossil record indicates. As a result, the dates assigned to the various types of plants should be seen as approximate timeframes.

Mortenson states science places simple plants before fruit trees. This is correct. Does this conflict with the Bible? No. The Bible tells us God commanded the land to produce seed-bearing plants and fruit-bearing

trees. It does not speak of all plant life on the Earth. Hence, God could have introduced a series of simple plants before the plants and trees He created on the third “day.”

According to Mortenson, science places insects before flowering plants. This is also correct. Science places the first insects in the Devonian Period, about 400 million years ago.⁵⁹ The first flowering plants—the angiosperms—appeared 145 million years ago. Does science conflict with the Bible? No. The Bible does not tell us when insects were created. It should be noted, however, that science places the appearance of pollinating insects much later, at about the same time as the appearance of the flowering plants. This would seem reasonable from a creationist perspective.

Mortenson claims science places sea creatures before land plants. This is incorrect. Science places the first true plants—the bryophytes—at about 700 million years ago. Sea creatures appeared much later (in the Cambrian Explosion of 540 million years ago or the earlier Vendian Period).⁶⁰ Does science conflict with the Bible? No. The Bible speaks only of seed-bearing plants and sea mammals. Science places the first seed-bearing plants—the gymnosperms—at 390 million years ago. The sea mammals described in the narrative of the fifth “day” would have appeared in the upper Tertiary Period, around 30 million years ago.⁶¹

Mortenson also incorrectly maintains that science places land animals before trees. Science places the first trees—the progymnosperms—at over 400 million years ago. The first terrestrial animals appeared in the late Devonian or early Carboniferous Period, about 360 million years ago.⁶² Does science conflict with the Bible? No. The Bible places fruit-bearing trees on the third “day” and land mammals and small reptiles on the sixth “day.” Science places the first fruit trees—the angiosperms—at 145 to 100 million years ago. The land animals described in the bible would have appeared in the upper Tertiary Period, around 30 million years ago.⁶³

Some Christians are uncomfortable with the idea of vegetation gradually appearing on the Earth in progressively more complex forms because it seems to support naturalistic evolution. They assume creationism requires an instantaneous creation of the plant life on Earth. However, the Bible does not demand that. The text tells us it was the land that was to produce the plants. Therefore, God could have introduced plants in a stepwise manner—each group of plants perfectly suited to the conditions on Earth and designed to transform the planet for the eventual creation of human beings.

The Animals

Mortenson states science puts earthworms before starfish, reptiles and dinosaurs before birds, land mammals before whales and bats, insects before mammals and land insects before flying insects, dinosaurs before dolphins and land reptiles before pterosaurs. As stated previously, many of these statements are beyond the level of detail of the biblical narratives of the fifth and sixth creation “days.” Nevertheless, let’s briefly examine them.

Scientists postulate sometime after eukaryotes—single-celled organisms with a nucleus— appeared in the seas, some diverged into animal cells about 1 billion to 700 million years ago.⁶⁴ Of course, this is based on the evolutionary paradigm. In reality, it is difficult, if not impossible, to differentiate primitive animal eukaryotes from plant eukaryotes.

Some scientists believe the first multicellular creatures appeared in the seas during the Vendian Period of 650 to 540 million years ago. They believe these organisms resembled worms, soft-bodied relatives of the arthropods (creatures with an exoskeleton) and cnidarians (jellyfish, coral, etc.). However, not all scientists agree with this interpretation because the fossil record of this period is extremely sparse and open to interpretation.⁶⁵

The first uncontested record of multicellular creatures is in the Cambrian Period, beginning 540 million years ago. This is known as the “Cambrian explosion,” a time when representatives of all the modern phyla (groupings of animals based on their external or internal characteristics) suddenly appeared in the sea. This includes such things as sponges, jellyfish, corals, starfish, sea cucumbers, sea worms, mollusks and some vertebrates.⁶⁶

From there, the scientific model shows a series of progressively more complex animals appearing—first in the sea, then on land. Sharks and primitive fish appeared in the Ordovician Period, about 450 million years ago. Insects and amphibians appeared in the Devonian Period, about 400 million years ago. The first reptiles appeared in the Carboniferous Period, about 320 million years ago. The first dinosaurs and mammals appeared in the Triassic Period about 250 million years ago. The first birds appeared in the Jurassic Period about 150 million years ago. Whales and the more modern varieties mammals and reptiles appeared in the Tertiary Period—the first whales about 50 million years ago, modern mammals and reptiles around 30 million years ago. The first hominids (bipedal primates) appeared from 5 to 1.8 million years ago. Finally, human beings appeared, about 40,000 to 100,000 years ago.⁶⁷

Scientists generally agree on the order in which the major animal groups appeared. For the most part, the sequence of events is supported by fossil evidence.⁶⁸ However, dates are being constantly adjusted as new discoveries are made. There are also controversial areas such when the first birds and whales appeared. Therefore, it is very important to distinguish between facts and interpretations when examining the scientific view of the appearance of the animals.

Mortenson claims science places earthworms before starfish. This is incorrect. Science places starfish in the Cambrian Period—about 540 million years ago—long before the appearance of the first land creatures.⁶⁹ Does this conflict with the Bible? No. The Bible does not specify when earthworms and starfish were created. Mortenson assumes starfish were created with sea creatures on the fifth “day” and earthworms with land animals on the sixth “day.” The Hebrew word meanings do not support that interpretation.

Mortenson states science places reptiles and dinosaurs before birds. This is correct. Science places the first reptiles in the Carboniferous Period, about 320 million years ago, and the first dinosaurs in the Triassic Period, about 250 million years ago.⁷⁰ The first birds are placed in the Jurassic Period, about 150 million years ago, although recent discoveries, such as *Protoavis*, suggest true birds may have appeared around the time of the first dinosaurs.⁷¹ Does this conflict with the Bible? No. The Bible does not specify when dinosaurs were created. The narrative of the sixth “day” speaks only of small, modern reptiles. These reptiles would have appeared in the upper Tertiary Period, about 30 million years ago, long after the first birds.

Mortenson’s statement that science places land mammals before whales is correct. Science places the first land mammals in the Triassic Period, about 250 million years ago, and the first whales in the Tertiary Period, about 50 million years ago.⁷² Does this conflict with the Bible? No. The Bible tells us whales were created on the fifth “day” and land mammals on the sixth “day.” However, the narrative of the sixth “day” only speaks only of advanced land mammals: wild and easy to domesticate large mammals and small, low to the ground mammals. The fossil dates for these mammals post-date the first whales by many million of years.⁷³

Mortenson statement that science places insects before mammals is also correct. Science places the first insects in the Devonian Period, about 400 million years ago⁷⁴, and the first mammals in the Triassic Period, about 250 million years ago. Does this conflict with the Bible? No. The Bible does not specify when insects were created. Mortenson assumes insects are included with the birds God created on the fifth “day.” The Hebrew word meanings do not support that interpretation.

Mortenson states that science places land mammals before bats. This is correct. Science places the first mammals in the Triassic Period, about 250 million years ago, and the first bats in the Cretaceous Period, about 80 to 100 million years ago.⁷⁵ Does this conflict with the Bible? No. Mortenson assumes bats are included with the birds created on the fifth “day.” This is possible but not required by the Hebrew word meanings. However, assuming that is the case, the advanced land mammals God created on the sixth “day” would have appeared in the upper Tertiary Period, about 30 million years ago, long after the first bats.

Mortenson correctly states that science places dinosaurs before dolphins. Science places the first dinosaurs in the Triassic Period, about 248 million years ago, and the first dolphins in the Miocene Era, about 24 million years ago.⁷⁶ Does this conflict with the Bible? No. The Bible does not specify when dinosaurs were created. Mortenson assumes dinosaurs are included with the land creatures created on the sixth “day.” The Hebrew word meanings do not support that interpretation.

Mortenson also correctly states that science places land reptiles before pterosaurs (prehistoric flying reptiles). Science places the first reptiles in the Carboniferous Period, about 320 million years ago, and the first pterosaurs in the Triassic Period, about 225 million years ago.⁷⁷ Does this conflict with the Bible? No. Mortenson assumes pterosaurs are included with the birds created on the fifth “day.” The Hebrew word meanings do not support that interpretation. It should be noted, however, the advanced land mammals God created on the sixth “day” appeared long after the first pterosaurs.

Finally, Mortenson states that science places land insects before flying insects. This is also correct. Science places the first land insects in the Devonian Period, about 400 million years ago, and the first winged insects in the Carboniferous Period, about 320 million years ago.⁷⁸ Does this conflict with the Bible? No. Mortenson assumes flying insects are included with the birds created on the fifth “day” and land insects with the land creatures on the sixth “day.” The Hebrew word meanings do not support that interpretation.

Admittedly, much of the scientific view of the appearance of sea and land animals is influenced by Darwinian evolution. However, that is not reason to reject mainstream science. Looking at the data objectively, the scientific view of the timing of the sea and land creatures does not contradict the Bible. As has been shown, a close examination of the facts of science and Hebrew word meanings of the narratives of the fifth and six “days” can resolve supposed conflicts.

ANIMAL DEATH

Mortenson claims the Bible teaches there was no animal death before man was created. He gives the impression this comes from order of events recorded in Genesis 1. It does not. It is based entirely on the young-earth view of the Fall (Adam and Eve’s sin in Genesis 3). Young-earth creationists contend animal death was not part of the original creation but something God introduced as a consequence for Adam and Eve’s sin. It is beyond the scope of this paper to provide a lengthy analysis of this theology. For those who desire such a review, many good resources are available.⁷⁹ However, I will briefly comment on this issue.

Young-earth creationists maintain there have been two physical existences on the Earth. Prior to Adam and Eve’s sin, paradise literally existed on earth—there was no disease, decay or animal death. Then, at the Fall, God changed the creation from a perfect place to a fallen one that included those things. However, nowhere does the Bible indicate the world God created was different than ours. Indeed, the Bible tells us the creation was earthly by nature (1 Corinthians 15:46) and not heavenly (1 Corinthians 15:50).⁸⁰

Some Christians point to Genesis 1:31—"God saw all that He had made, and it was very good." They argue God would call a creation that included animal death "very good." However, we must be careful not to put too much weight on our ideas of what "good" means. The Bible does not tell us the creation was perfect. The Hebrew word for good, *towb*, connotes a practical or economic benefit.⁸¹ Thus, the creation was "very good" for achieving God's goals for mankind—namely, to allow rational, morally free agents to come into existence and make free choices to love and obey God and be in relationship with Him.⁸² Animal death in no way conflicts with that goal.

It is important to examine what happened at the Fall (Genesis 3:14-19). The reality is God judged only those who had sinned. The serpent would crawl on his belly and be bruised on the head by the seed of the woman. Eve was judged by having more pain in childbirth. Adam was judged by having to work harder for his food because the ground would no longer freely give its' fruit. There were no other judgments because all the guilty parties were punished.⁸³ Nothing in this passage states or implies the judgment included the imposition of animal death.

It is also important to keep in mind that Adam and Eve were not created immortal. Eternal life was only available to them through the supernatural "tree of life." If they were not immortal, then the animals were not immortal either. Unlike Adam and Eve, however, the animals did not have access to the "tree of life" and had no way to avoid death.⁸⁴ Also consider God's warning to Adam that, if he ate from the tree of good and evil, he would surely die (Genesis 2:17). Unless Adam understood the concept of physical death, there was hardly any point in telling him the consequence of disobedience would be death. Only animal death would have provided Adam an adequate example of what "death" meant.⁸⁵

Finally, the Bible tells us that God's creative activity ceased on the seventh "day." Genesis 2:1 states: "*Thus the heavens and the earth were completed...*" The Hebrew word for completed (*kalah*) means to bring a process to completion.⁸⁶ The following verse tells us God rested from all His work. The Hebrew word for rested, *shabat*, means to cease, desist and put an end to.⁸⁷ This clearly indicates God's creative activity had ended. There is nothing in Scripture that suggests God created carnivores, or changed herbivores to carnivores, after the Fall. Hence, it is reasonable to conclude they were part of the original creation.

There are several problems with the young-earth view of the relationship between sin, death and the atonement. First, although human death is linked with human sin, it moves beyond the clear teaching of Scripture to claim all death is the result of human sin. Second, since animals are amoral creatures that are incapable of sinning, it is an unwarranted extrapolation to extend the consequences of human sin to them. Third, and most important, while it is true there is no remission of sin without the shedding of blood, Christ's blood, it does not follow that there could have been no bloodshed before sin.⁸⁸

CONCLUSION

The message and purpose of Genesis 1 is the revelation of the one true God who created all things and ever keeps the universe under his sovereign control. The second major aspect of Genesis 1 is the revelation God brought forth His creation in an orderly and systematic manner.⁸⁹ It is a historical account that can and should be taken literally. However, the text does not provide all the details of exactly how God did everything. We can speculate about the missing details only if we approach the text with the respect it deserves, neither minimizing the message nor twisting it to promulgate our personal views.

In his passion to refute old-earth creationism, Mortenson presents his young-earth interpretations of Genesis 1 as biblical facts and criticizes old-earth creationists—calling them "evolutionized Christians" who play "fast and loose with the sacred text." A better approach to the age of the Earth debate is to avoid

name calling and examine arguments on both sides of the issue to see whether they are biblically defensible.

As we study the text of Genesis 1, we have a responsibility to ascertain as clearly as possible what God meant by the language He guided His inspired prophet to employ.⁹⁰ This requires that we go beyond the English translations of the text—no matter how well those translations seem to fit our personal view of Genesis 1—and carefully examine the text in the original Hebrew. When we do, we see the supposed conflict between Genesis 1 and the factual data of science does not exist.⁹¹ Rather than contradicting Genesis 1, science underscores the veracity of the Bible.

Christians have nothing to fear when it comes to old-earth science. Since God is truth, we can be confident the facts of nature will always agree with the facts of the Bible. When we take the time to properly understand the two, we can see the revelation of God's world agrees perfectly with the revelation of God's word.

NOTES

1. Terry Mortenson, "Evolution vs. creation: the order of events matters!" <http://www.answersingenesis.org/docs2006/0404order.asp> (April 4, 2006).
2. Lane Coffee, compiler, "Notable Christians Open to an Old Earth Interpretation," http://www.reasons.org/resources/apologetics/notable_leaders/index.shtml (June 7, 2006).
3. "Westminster Theological Seminary and the Days of Creation: A Brief Statement," <http://www.wts.edu/news/creation.html> (August 25, 2006).
4. R. H. Johnston, "By Man Came Death," <http://www.amen.org.uk/studies/rhj/mandeat5.htm> (August 23, 2006).
5. Hugh Ross cited in Jon Greene, "Old-Earth Creationism: Setting the Record Straight," <http://www.reasons.org/chapters/seattle/newsletters/200608/200608.pdf> (September 1, 2006).
6. "Westminster Theological Seminary and the Days of Creation."
7. Rodney Whitefield, *Reading Genesis One—Comparing Biblical Hebrew with English Translation* (San Jose, R. Whitefield, 2004), 104.
8. Ibid.
9. Gleason L. Archer, *Encyclopedia of Bible Difficulties* (Grand Rapids, Zondervan, 1982), 61.
10. Wayne Grudem, *Systematic Theology: An Introduction to Biblical Doctrine* (Grand Rapids, Zondervan, 1994), 300.
11. Whitefield, p. 17; W.E. Vine, Merrill F. Unger, William White, *Vine's Complete Expository Dictionary* (Nashville, Thomas Nelson, 1996), 110.
12. Whitefield, 54-55.
13. Laird Harris, Gleason L. Archer, Bruce Waltke, *Theological Wordbook of the Old Testament* (Chicago, Moody, 1980), 701.
14. Harris, Archer and Waltke, 127.
15. Whitefield, 58-89.
16. Harris, Archer and Waltke, 501.
17. Whitefield, 21-52.
18. Harris, Archer and Waltke, 700.
19. Ibid., 688.
20. Whitefield, 91-95.
21. Ibid., 97.
22. Harris, Archer and Waltke, 976.
23. Ibid., 956.
24. Ibid., 587-591.
25. Whitefield, 110-120.
26. Harris, Archer and Waltke, 655.

27. Ibid., 92.
28. Ibid., 850.
29. Ibid., 279-281.
30. Ibid., 851.
31. Hugh Ross, "Word Studies in Genesis One," <http://www.reasons.org/resources/apologetics/wordstudies.shtml> (April 4, 2006).
32. Harris, Archer and Waltke, 850.
33. Ibid., 393.
34. "Solar System Formation," http://www.indows.ucar.edu/tour/link=/our_solar_system/formation.html (July 21, 2006); Paul Shestope, "Big Bang Cosmology Primer," http://cosmology.berkeley.edu/Education/IUP/Big_Bang_Primer.html (July 21, 2006).
35. Shestope.
36. Hugh Ross, "Big Bang Passes Big Test," http://www.reasons.org/resources/connections/2003v5n2/index.shtml#big_bang_passes_big_test (August 25, 2006).
37. Hugh Ross and John Rea, "Big Bang – The Bible Taught it First!" <http://www.reasons.org/resources/fff/2000issue03/index.shtml> (August 25, 2006).
38. "Deep Time," <http://www.pbs.org/wgbh/evolution/change/deeptime/precamb.html> (July 21, 2006).
39. Sarah Flagg, "Formation of Earth," <http://www.physci.wsc.ma.edu/young/hgeol/geoinfo/timeline/formation/formation.html> (July 21, 2006).
40. "Deep Time."
41. Ibid.
42. Armin Held, "Taking Genesis as Inspired," Perspectives on Science and Christian Faith 52 September 2000, 212-214, <http://www.asa3.org/ASA/PSCF/2000/PSCF9-00Held.html> (April 5, 2006).
43. "Deep Time."
44. "Plate Tectonics," http://en.wikipedia.org/wiki/Plate_tectonics (August 28, 2006).
45. Ibid.
46. Harris, Archer and Waltke, 213.
47. Held.
48. "Earth's Early Years: Differentiation, Water and Early Atmosphere," http://www.globalchange.umich.edu/globalchange1/current/lectures/first_billion_years/first_billion_years.html (July 21, 2006).
49. "Impact Delivery of Early Oceans," Science Frontiers Online, No. 68: Mar-Apr 1990, <http://www.sciencek-frontiers.com/sf068/sf068g12.htm> (July 21, 2006).
50. Held.
51. "Plant Evolution," <http://sci.waikato.ac.nz/evolution/plantEvolution.shtml> (April 21, 2006).
52. Ibid.
53. "First Land Plants and Fungi Changed Earth's Climate, Paving the Way for Explosive Evolution of Land Animals, New Gene Study Suggests," ScienceDaily, August 10, 2001, <http://www.sciencedaily.com/releases/2001/08/010810070021.htm> (July 27, 2006).
54. "Plant Evolution."
55. Ibid.
56. "Introduction to the Progymnosperms," <http://www.ucmp.berkeley.edu/seedplants/progymnosperms.html> (July 27, 2006).
57. "Plant Evolution."
58. "Plantae: Fossil Record," <http://www.ucmp.berkeley.edu/plants/plantaefr.html> (July 27, 2006).
59. "Insect Evolution," http://www.fossilmuseum.net/Evolution/evolution%20segues/insect_evolution.htm (July 27, 2006).
60. "The Cambrian Period," <http://www.ucmp.berkeley.edu/cambrian/camb.html> (July 27, 2006).
61. J. Floor Anthoni, "Geologic Time Table," <http://www.seafriends.org/nz/books/geotime.htm> (August 30, 2006).

62. "Life of the Carboniferous," <http://www.ucmp.berkeley.edu/carboniferous/carblife.html> (July 27, 2006).
63. Anthoni.
64. "The History of Animal Evolution," <http://sci.waikato.ac.nz/evolution/AnimalEvolution.shtml> (April 21, 2006).
65. Ibid.
66. Ibid.
67. Anthoni.
68. "The History of Animal Evolution."
69. "Metazoa: Fossil Record," <http://www.ucmp.berkeley.edu/phyla/metazoaf.html> (July 31, 2006).
70. Anthoni.
71. "Aves: Fossil Record," <http://www.ucmp.berkeley.edu/diapsids/birds/birdfr.html> (July 31, 2006).
72. "Primitive Whales and Whale Evolution," <http://www.enchantedlearning.com/subjects/whales/allabout/Evol.shtml> (August 1, 2006).
73. Hugh Ross, "A Whale of a Change," <http://www.reasons.org/resources/faf/96q3faf/whale.shtml> (August 2, 2006).
74. "Insect Evolution," http://www.fossilmuseum.net/Evolution/evolution%20segues/insect_evolution.htm (July 27, 2006).
75. "The Evolution of Chiroptera," <http://www.nhc.ed.ac.uk/index.php?page=24.134.166.169.177> (August 16, 2006).
76. "Introduction to Cetacea," <http://www.ucmp.berkeley.edu/mammal/cetacea/cetacean.html> (August 16, 2006).
77. "Pterosaurian Flight," <http://www.ucmp.berkeley.edu/vertebrates/flight/pter.html> (August 16, 2006).
78. "Fossil Insect Classification: Class Insecta and Subphylum Hexapoda," http://www.fossilmuseum.net/Tree_of_Life/Phylum%20Arthropoda/Subphylum_insecta/subphylum_insecta_fossils.htm (August 16, 2006).
79. For example see: Mark S. Whorton, *Peril in Paradise* (U.K., Send the Light Inc., 2005); John C. Munday Jr., "Creature Mortality: From Creation Or The Fall?" www.reasons.org/resources/apologetics/other_papers/creature_mortality.shtml (June 22, 2006); Rev. Lee Irons, "Animal Death Before the Fall: What Does the Bible Say?" http://www.reasons.org/resources/apologetics/other_papers/animal_death_before_the_fall.shtml (June 22, 2006); Rich Deem, "No Death Before the Fall—A Young-Earth Problem," <http://www.godandscience.org/youngearth/death.html> (July 19, 2006); R. H. Johnston, "By Man Came Death," <http://www.amen.org.uk/studies/rhj/mandeat5.htm> (July 19, 2006).
80. Johnston.
81. Harris, Archer and Waltke, 345.
82. Munday.
83. Deem.
84. Johnston.
85. Darrick Dean, "No Death Before the Fall?" <http://www.geocities.com/darrickdean/> (July 19, 2006).
86. Harris, Archer and Waltke, 439.
87. Ibid., 902.
88. Gary Emberger, "Theological Analysis of Selected Recent Creationist Assertions Concerning the Occurrence of Death before Sin," *Perspectives on Science and Christian Faith* 52, September 2000, 160-168, <http://www.asa3.org/ASA/PSCF/2000/PSCF9-00Emberger.html> (July 16, 2006).
89. Archer, 60.
90. Ibid., 58.
91. Ibid.