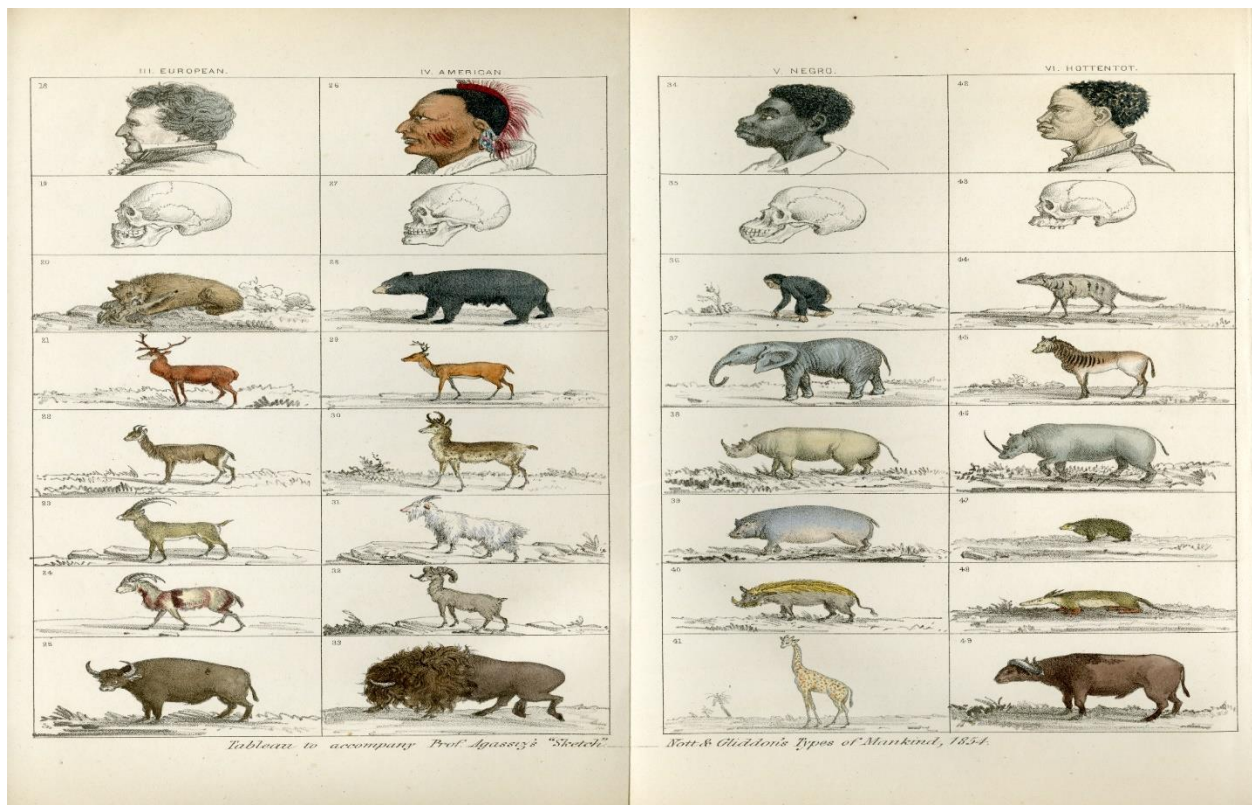


**AN INQUIRY INTO HUMAN ORIGINS & THE AGE OF THE EARTH** PART 3 OF 3

**INTELLIGENT DESIGN - 5 TYPES - DAYS LENGTH - FILLING IN THE GAPS**  
**2 SCHOOLS - REASONS/ANSWERS - EARTH AGE - BATTLING BRETHERN**

By David L. Burris

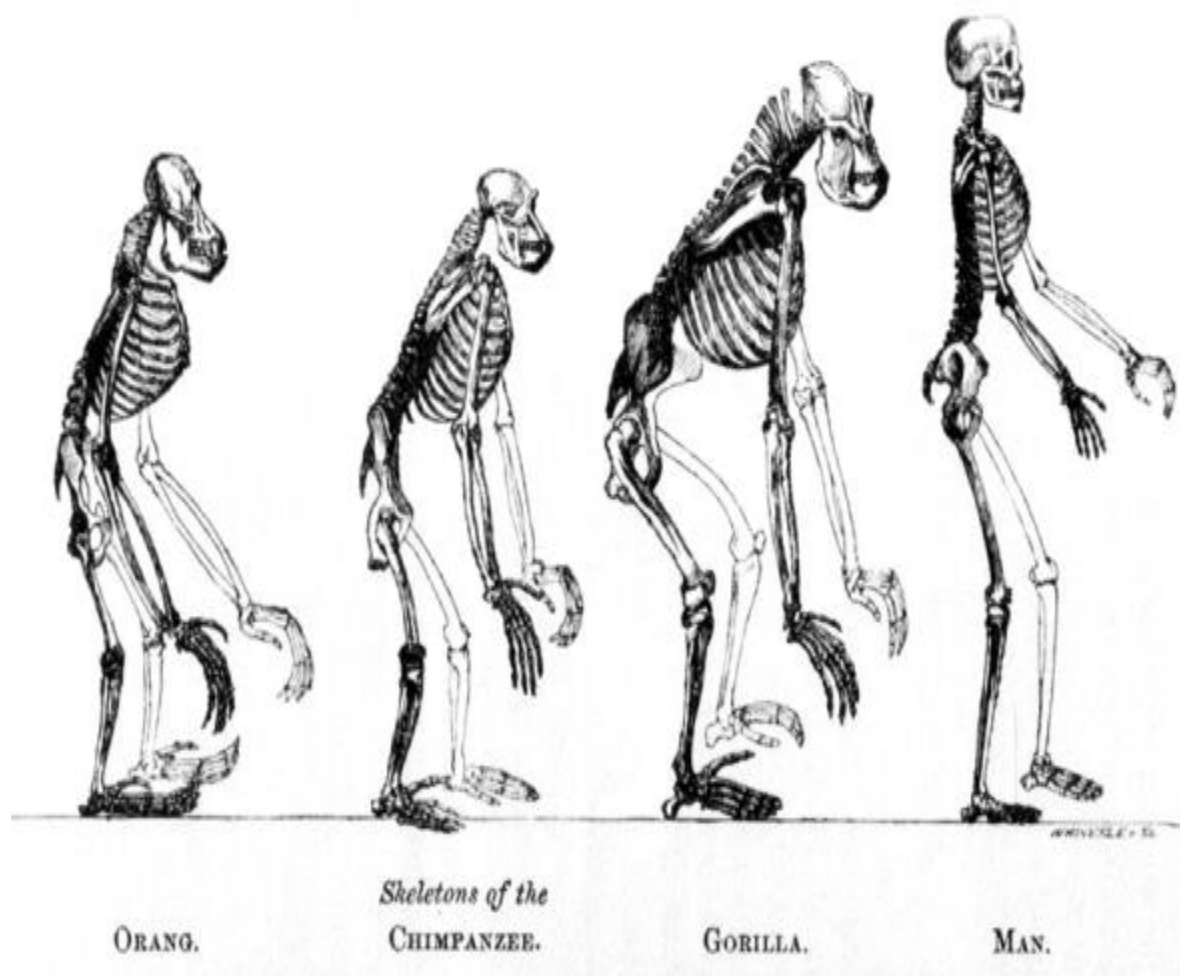
# **RACIAL POLYGENIST EVOLUTION THEORY: UNBIBLICAL & UNCHRISTIAN**





# Monogenism or Polygenism?: The Question of Human Origin

by [Dr. Edward Feser](#) (Loyola Professor)



**Question to Catholic Theologian: How is the *doctrine of original sin* reconciled with what evolutionary biology says about human origins?**

The Catholic Doctrine of Original Sin requires descent from a single original ancestor, whereas contemporary biologists hold that genetic evidence indicates modern human beings descended from a larger population of at least several thousand individuals.

“We need to distinguish the notion of a creature which is human in a strict *metaphysical* from that of a creature which is “human” merely in a looser, purely *physiological* sense. The latter sort of creature would be more or less just like us in its bodily attributes but would lack our intellectual powers, which are incorporeal. In short, it would lack a human soul. Though genetically it would appear human, it would not be a *rational* animal & thus *not* be human in the strict metaphysical sense. Now, this physiologically “human” but non-rational sort of creature is essentially what Pius XII, John Paul II, and the philosophers & theologians have in mind when they speak of a scenario in which the human body arises via evolution.

The Flynn-Kemp proposal is this. Suppose evolutionary processes gave rise to a population of several thousand creatures of this non-rational but genetically & physiologically “human” sort. Suppose further that God infused rational souls into two of these creatures, thereby giving them our distinctive intellectual & volitional powers and making them truly human. Call this pair “Adam” and “Eve.” Adam and Eve have descendants, and God infuses into each of them rational souls of their own, so that they too are human in strict metaphysical sense. Suppose some of these descendants interbreed with creatures of the non-rational but genetically and physiologically “human” sort. The offspring that result would also have rational souls since they have Adam & Eve as ancestors (even if they also have non-rational creatures as ancestors). This interbreeding carries on for some time, but eventually the population of non-rational but genetically and physiologically “human” creatures dies out, leaving only those creatures who are human in the strict metaphysical sense.

On this scenario, the modern population has the genes it does because it is descended from this group of several thousand individuals, initially only two of whom had rational or human souls. But only those later individuals who had this pair among their ancestors (even if they also had as ancestors members of the original group which did *not* have human souls) have descendants living today. In that sense, every modern human is both descended from an original population of several thousand and from an original pair. There is no contradiction, because the claim that modern humans are descended from an original pair does *not* entail that they received all their genes from that pair *alone*.

Of course, this is speculative. No one’s claiming to *know* that this is what happened, or that Catholic teaching *requires* this specific scenario. The point is just that it shows, in a way consistent with what Catholic orthodoxy and Thomistic philosophy allow vis-à-vis evolution, that the genetic evidence is not in fact in conflict with the doctrine of original sin. Naturally other Catholics and Thomists might reasonably disagree with it.

The claim is merely that *in fact* it may have happened, even if this was contrary to natural and divine law (just as Cain killed Abel even though this was contrary to the natural law, and just as Adam and Eve ate of the fruit of the Tree of Knowledge, even though this was contrary to divine law). Nor would it be a good objection to suggest that no one would plausibly have been *tempted* to engage in such interbreeding.

The scenario in question would hardly be comparable to that of the average member of contemporary civilization being tempted to have sex with an ape which would not (even) be psychologically plausible. For one thing, the sub-rational but genetically and physiologically “human” creatures in question would *not* be like apes, or indeed like any of the non-human animals with which we are familiar. They would more or less look like us. Furthermore, they would even *act* like us to *some* degree.

Recall Popper’s distinction between the four functions of language: expressive, signaling, descriptive, and argumentative. The sub-rational creatures in question would not be capable of the latter two functions (which presuppose rationality) but they might have exhibited very sophisticated versions of the first two functions. Meanwhile, earliest true humans would not have had anything like modern civilizational accompaniments of sexual activity, especially given the effects of original sin. Obviously, it would be absurd to think of their liaisons as involving smooth techniques of romantic seduction, contemporary standards of personal hygiene, etc. So, the cultural “distance” between primitive true human beings and the sub-rational creatures in question need not have been so great as to make the sexual temptation psychologically implausible. It might have been comparable to a very uncultured and unsophisticated person taking sexual advantage of an even more unsophisticated and indeed very stupid person. Not that it was *exactly* like that, since even a stupid person is still intelligent in the strict sense, whereas the sub-rational creatures in question wouldn’t even rise to the level of stupidity. The point is that the situation could have been psychologically close *enough* to that for the temptation to be real. (As I indicated, in earlier posts, we might think on the model of Charlton Heston’s character “Taylor” being attracted to the Linda Harrison character “Nova” in *Planet of the Apes* -- not that the early sub-rational creatures would have looked quite *that* good!)

It doesn’t seem that the “bestiality” issue is really the heart of Prof. Bonnette’s objection, though. His point seems instead to be that a “union” of a true human being with a sub-rational creature of the sort in question would be dysfunctional vis-à-vis the proper rearing of truly human children. All that it requires is that there was enough interbreeding to account for genetic evidence appealed to by contemporary biologists. It isn’t clear how the question of whether, how, and to what extent the sub-rational creatures were involved in child-rearing affects the judgment that there was sufficient interbreeding. Surely the child of a “union” between a true human being and one of the sub-rational creatures would have an *advantage* over the offspring of two sub-rational creatures, for such a child would itself have rationality and at least one rational parent, whereas the other sort of offspring would have neither.

Moreover, we needn’t think in terms of such pairings in the first place. Why not think instead of a scenario where a truly human male forms a union with a truly human female but also has several sub-rational but genetically & physiologically “human” females as concubines, where the resulting children are all essentially reared by the human couple? Such arrangements need only have occurred frequently enough for the truly human population to supplant the population of sub-rational creatures.



**AMERICAN  
FORUM**

**OSBORNE ARGUED SCIENCE "PROVED"  
WHITE RACE WAS SUPERIOR TO OTHERS**

# GREAT COURSES LECTURE SERIES

## *Theory of Evolution: A History of a Controversy*

**Missing Links.** *Scope:* Although by 1900 most Western biologists and intellectuals accepted some theory of evolution, popular and religious opposition remained.

Technical arguments that appealed to scientists failed to persuade the public, particularly when it came to the notion that humans evolved from apes. The same fossil record that inspired Lamarck and Darwin increasingly became a barrier to popular acceptance of their ideas. Opponents decried the lack of fossils linking either major biological types (such as reptiles and mammals) or humans to their supposed simian ancestors. Beginning late in the 19th century, those intent on proving the theory of evolution hunted for missing links in the fossil record.

Scientific & popular interest focused on finding evidence of prehistoric humans & hominids. Any such “missing links” became front-page news.

## **LECTURE OUTLINE**

### **I. Fossils have long been both a principal basis for, and a barrier against, belief in evolution.**

*A. Georges Cuvier’s early work with fossils suggested that species generally remain constant throughout their lives and are replaced quite suddenly by significantly different forms. Ever since, this pattern has been used as evidence against evolution.*

**B.** In arguing for uniformitarianism in geology, Charles Lyell countered fossils were laid down only intermittently; therefore, discontinuities proved nothing. To Lyell, the progressive order of the fossil record suggested gradual change rather than catastrophes.

**C.** Building on Lyell's argument, Darwin devoted a chapter in *Origin of Species* to showing that (despite notable gaps) the overall outline of the fossil record supports his theory.

**1.** The fossil record displays a basic similarity in the succession of forms in a contiguous area. There is also a tendency toward greater variety and complexity.

**2.** As unguided natural selection would suggest, there was no fixed rate of change. Some organisms endure; others rapidly change; none reappear.

**3.** Darwin was confident that once naturalists began looking for them, many of the missing links in the fossil record would be found.

**D.** During the late 1800s, paleontologists culled the fossil record for evidence of evolutionary development.

**1.** T. H. Huxley posited that the birdlike legs of some dinosaurs linked birds to reptiles.

**2.** The discovery during the 1870s of the fossil remains of a feathered reptile called *Archaeopteryx* further linked birds and reptiles.

**3.** During the 1880s, O. C. Marsh uncovered a complete series of fossils tracing the modern broad-hoofed horse back to a small multiple-toed ancestor.

**4.** Although such finds satisfied most paleontologists that species evolve, major gaps remained in the fossil record. Antievolutionists dismissed the intermediate species as separate creations and pointed to the remaining gap as evidence against evolution.

**5.** Especially problematic were: (1) the absence of fossils in Precambrian rocks (which suggested that life abruptly appeared at the beginning of the Cambrian era) and (2) the lack of fossils connecting humans to apes.



E. To the extent that some scientists and many non-scientists continued to reject the theory of evolution in the 1890s, their opposition focused on the issue of human evolution. The absence of hominid fossils became a stumbling block to popular acceptance of evolution.

**II. Darwin and other evolutionists never claimed that humans descended from apes. Rather, they believed that modern humans and modern apes had a common ancestor.**

A. As if to emphasize their differences, Cuvier had placed humans and apes into distinct orders based on differences in their hand and brain structures. *Asserting that Cuvier had exaggerated these differences, Huxley now argued that humans and apes belonged in the same order.*

B. Huxley offered Neanderthal skulls, first found in Germany in 1856, as a possible ape-like hominid but *ultimately acknowledged that, with a cranial capacity equal to that of a human, the Neanderthal could not come from a species linking humans with smaller brained ancestors.*

C. As late as the 1850s, *Lyell cited the absence of ancient human fossils to support man's recent creation.* In his 1863 book, *The Antiquity of Man*, he drew on new archaeological evidence to greatly push back the supposed first appearance of humans.

D. Accumulating archaeological evidence pointed to a long history of human cultural development, which such evolutionists as Huxley and Ernst Haeckel saw as evidence for the biological evolution of human races. Haeckel's views reflected his belief in an extreme racist variant of Lamarckism that later influenced Nazi thought.

### **III. Dutch physician Eugene Dubois set out to “prove” evolution by finding fossil evidence of the missing link between apes and humans.**

**A.** Born in 1858 in the conservative Catholic southeastern provinces of the Netherlands, Dubois consciously rejected *religious superstition* for scientific truth.

**1.** A brilliant and driven boy, Dubois sought to advance science and discredit religion.

**2.** He accepted a materialist form of Lamarckian evolution through reading Haeckel and Huxley, studied medicine in Amsterdam, and became a teacher there.

**3.** Following Haeckel, Dubois conducted morphological studies of the larynx, looking for physical evidence of human evolution in the origins of speech, but he became bored with the study. He wanted to find more dramatic proof of human evolution.

**B.** In 1887, Dubois abandoned a promising academic career and, with his young family in tow, became an army physician in the Dutch East Indies.

**1.** Although Darwin and Huxley proposed that humans evolved in Africa, Dubois convinced himself that it happened in the East Indian islands then ruled by the Netherlands. He aimed to find hominid fossils among the orangutans there.

**2.** Unable to obtain funding for his project, Dubois became an army physician and devoted all of his free time to searching caves and river valleys for fossils.

**3.** In 1892, after five years of searching on two islands, native workers digging under Dubois’s directions in a canyon on Java uncovered the skullcap, thigh bone, and teeth of a hominid that Dubois named *Pithecanthropus* in honor of Haeckel.

**C.** Popularly known as “Java Man,” *Pithecanthropus* was sensational but controversial.

**1. Its distinguishing characteristics were an intermediate-sized brain case and an upright posture. This fit Darwin’s prediction that an upright posture (which freed the hands for carrying and using tools), rather than a big brain, led to human evolution.**

**2. After initial interest, paleontologists generally dismissed Dubois’s claims of the great age and ape-like character of his fossils. *Back in the Netherlands, Dubois became reclusive and refused to show the fossils to critics.***

**3. Preferring to see brain development as the cause of human evolution, paleontologists embraced the 1912 fossil discovery of a big-brained hominid in Piltdown, England. *Until discredited in 1953, “Piltdown Man” confused the story of human evolution.***

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**Social Darwinism and Eugenics.** *Scope:* Evolutionary thinking in biology spilled over into social thought. Even before Darwin published his theory in 1859, Herbert Spencer promoted the idea of a survival-of-the-fittest process driving social progress. With the rise of Darwinian biology, such thinking gained credence under the banner of “social Darwinism.”

Theories about how humans evolved increasingly influenced ideas of how people should live. Competition appeared beneficial. Coupled with a rudimentary appreciation of genetics, social Darwinism fostered the eugenics movement, a social crusade advocating more children from genetically “fit” parents and fewer children from genetically “unfit” ones. Proponents typically equated fitness with intelligence, but they often favored physical strength, health, and beauty, as well. Some of their methods were voluntary, but many nations and most American states enacted at least some compulsory eugenic laws before the movement was discredited by Nazi practices during World War II.

## **LECTURE OUTLINE**

**I. Coined by its critics, the term “social Darwinism” gained currency during the Victorian era as a catch-all phrase to identify various utilitarian philosophies and policies that attributed human progress to unfettered competition among individuals.**

**A.** Valuing competition fit the spirit of the day. It predated Darwinian biology.

**1.** In the late 1700s, Adam Smith argued that economic progress depended on individual initiative. His faith in the natural harmony of human interactions gave him hope that all people would benefit from laissez-faire capitalism.

**2. Embracing the idea of laissez faire, by 1800, Thomas Malthus noted that because of natural limits in resources, any social competition would have losers as well as winners. He saw that a “struggle for existence” fostered the general good by weeding out the weak.**

**3. Malthus’s thinking inspired Darwin to conceive of natural selection as the engine of biological evolution, but he did not publish his views until 1858.**

**4. Beginning in the early 1850s, English philosopher Herbert Spencer popularized a Malthusian view of individual and group competition. He hailed the “survival of the fittest” as the only sure foundation for human progress.**

**5. With the advent of Darwinism in biology, Spencer’s views of social development became known as social Darwinism even though Darwin did not fully endorse them.**

**B. Social Darwinism encouraged laissez-faire capitalism and discouraged helping the “weak” in an era of widespread industrialization and urbanization.**

**1. Spencer maintained that government should never interfere in domestic economic or social affairs. Business regulation slowed progress, he said, while public health and welfare programs simply harmed people in the long run.**

**2. Under the banner of “root, hog or die,” Yale economist W. G. Sumner argued that nature eliminates inefficiency and that any interference would backfire.**

**3. Such Gilded Age industrialists as Andrew Carnegie, John D. Rockefeller, and James J. Hill publicly justified their business practices in social Darwinist terms.**

**4. Opponents of public health and welfare programs drew on social Darwinist thinking in shaping American and European public policy throughout the late 1800s.**

**5. Biological Darwinists did not necessarily accept social Darwinism (with some, such as Alfred Russel Wallace, arguing that humans could guide their own evolution), but social Darwinists did use biological Darwinism to justify their views.**

**II. For many late 19th-century Europeans and Americans, the most important area of competition was between races and among nations. Social Darwinism was invoked to justify Western imperialism, colonialism, militarism, and scientific racism.**

**A.** Racism predated Darwinism, but biological evolution appeared to justify it.

**1.** Lamarckism posited a hierarchical view of progressive development, with more “civilized” races seen as more biologically advanced.

**2.** Despite Darwin’s view of evolution as branching rather than linear, most 19th-century Darwinists saw a single line of human development, with Northern Europeans having evolved the farthest because of conditions in the locations they lived.

**3.** Both of these views inevitably blurred notions of cultural and biological evolution.

**4.** Darwin and Spencer believed that racial struggle contributed to human evolution by “superior” races replacing “inferior” ones where they mixed. Darwin subtitled his 1859 book “or the Preservation of Favored Races in the Struggle for Life.”

**5.** At the time, such views justified European colonization of Asia and Africa. They led many European-Americans to believe that Indians and Negroes would die out in the United States.

**B.** For some, social Darwinism called for militaristic competition among nations.

**1.** Beginning in the late 1800s, Germany’s leading Darwinian biologist, Ernst Haeckel, argued that nations and races advance through competition. An ardent nationalist, he advocated a strong, united Germany to dominate the world.

**2. Haeckel's social Darwinism contributed to German militarism leading up to the First World War. Germany's defeat in that war embittered Haeckel and his followers.**

**3. Convinced of the biological superiority of the German people, some of Haeckel's followers contributed to the rise of Nazism and its policies of racial purity.**

### **III. Combined with Mendelian genetics, social Darwinism led to the eugenics movement.**

**A. Shortly after Darwin published Origin of Species, his cousin, Francis Galton, conceived of applying its teachings to human development.**

**1. As in other species, Galton argued, fit humans produce fit offspring and unfit humans produce unfit offspring. As a thinking species, humans can use this understanding to accelerate the evolutionary process through selective breeding.**

**2. Galton defended his theory with surveys purportedly showing that ability and success ran in some families while inability and failure ran in others. He linked intelligence, beauty, and health with ability; ignorance, ugliness, and sickness with inability.**

**3. In 1883, Galton coined the term "eugenics" to designate policies and programs designed to encourage more children from the fit and fewer from the unfit.**

**B. Eugenics attracted widespread interest after the 1900 rediscovery of Mendelian genetics.**

**1. Genetics appeared to offer a physical basis for Galton's theories. Many experts saw such traits as mental illness and retardation, epilepsy, and criminality as the products of easily eliminated simple hereditary factors.**

**2. At a time when science was held in high esteem, eugenics offered a scientific methodology for the social sciences. Nature all but replaced nurture in social scientific thought. The intelligence quotient (IQ) was invented as an objective measure of intelligence.**

**3. Sociologists conducted public health surveys and compiled family pedigrees showing a hereditary basis for crime, poverty, anti-social behavior, and low IQ.**

**4. Although eugenics never gained broad popular support, many scientific, professional, and philanthropic organizations promoted its acceptance. These efforts influenced public policies throughout the United States and Europe.**

**C. “Positive eugenics” sought more children from the fit.**

**1. Winston Churchill, Theodore Roosevelt, and other prominent politicians openly worried that the professional classes were not reproducing in sufficient numbers. Progressive sociologist Edward A. Ross called it “race suicide.”**

**2. Educational efforts taught students the importance of eugenic mate selection and the civic duty of having children. Preexisting anti-miscegenation law was revived.**

**3. Eugenic societies held “fitter family” and “eugenic baby” contests.**

**4. Eugenic fitness was proposed as a prerequisite for marriage and adopted as a policy by some liberal Protestant churches. Some countries adopted tax and employment policies to encourage able citizens to have children.**

**D. “Negative eugenics” sought fewer children from the unfit.**

**1. Every American state and most Western countries adopted policies of sexually segregating certain supposedly dysgenic classes, typically the mentally retarded.**

**2. Thirty-five American states and many European countries instituted compulsory programs of sexual sterilization for the mentally ill and retarded, habitual criminals, or epileptics. Germany’s program was later extended to include Jews.**

**3. During the period from 1900 to 1960, some 60,000 Americans were sterilized under compulsory state programs. Such programs were upheld as constitutional by the U.S. Supreme Court in 1927.**

**4. Partly on eugenic grounds, Congress curtailed immigration by non-Nordic stock.**



**5. Nazi Germany moved from eugenic sterilization to euthanasia. German geneticists actively supported racial purity programs. Biologists joined the Nazi Party at a higher rate than any other professional group.**

E. Opposition to eugenics was disorganized and ineffective until the late 1930s, when Nazi practices discredited all such efforts.

**1. Beginning in the 1930s, social scientists increasingly looked to environmental causes of human behavior. Nurture replaced nature in social scientific thought.**

**2. More slowly, geneticists recognized the complexity of human heredity. Simple eugenic remedies were abandoned as ways to deal with multi-factorial traits.**

**3. By the end of World War II, social Darwinism appeared morally bankrupt.**

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**Selfish Genes and Intelligent Design.** *Scope:* Americans remain divided by the origins debate. Surveys indicate that half of them believe that God specially created the first humans. Most of the rest affirm that God guided evolution. Only about one in ten Americans accept the God-less theory of origins that dominates science.

For many in the 3<sup>rd</sup> camp, including popular science writer Richard Dawkins, a purely neo-Darwinian struggle for survival among randomly mutating genes replaces purposeful design as the source of life's diversity. Others in this camp, such as paleontologist Stephen Jay Gould, question the adequacy of the neo-Darwinian synthesis to account for evolution - but remain confident that wholly materialistic mechanisms can do so.

Creationists counter that evolution remains "just" a theory & worry about the social and religious consequences of believing it. Alternative ideas (or at least scientific objections to materialism) belong in the classroom, they maintain. Even many Americans who reject scientific creationism agree that an intelligent designer should not automatically be ruled out as the source of life & individual species. In America, the debate over origins remains as intense as ever.

**A. Surveys consistently find that 9 out of 10 Americans believe in spiritual causes for life.**

**1. Typically, about 50% of those surveyed say that they believe God created humans in their present form within the past 10,000 years; 40% believe the human body evolved over time with God guiding the process; and 10% opt for purely naturalistic evolution.**

**2. Surveys of scientists find that most support naturalistic evolution, some accept a role for God in evolution, and almost none accept special creation.**

**3. This disconnect between scientific and popular opinion over the nature of science lies at the base of America's continuing controversy over creation and evolution.**

**B.** Lost in the polarized conflict between materialistic evolution and special creation are those who accept that species evolve from species but see some role for God in the process. Broadly speaking, this is “theistic evolution.”

**1.** Asa Gray’s classic theory of theistic evolution held that God channeled evolution by guiding the process of variation. This intricate theory saw God intimately involved in evolution.

**2.** No such precise theories of theistic evolution command support today. The term is loosely used to identify anyone who invokes God at any point in organic origins.

**3.** For example, geneticist Francis Collins, director of the Human Genome Project, calls himself a “theistic evolutionist.” He believes that God used the mechanism of evolution to create humans, but that such human traits as altruistic behavior and longing for God were divinely created.

**4.** Such Darwinists as Alfred Russel Wallace and David Lack also believed that certain human traits, such as love and consciousness, were specially created in evolved hominids to form humans. The Catholic Church accepts this position.

**C.** Between theistic evolutionists and special creationists are the self-identified “progressive creationists.” They believe that God intervened at various points in the geologic past to create the basic life forms that then evolved into the various species.

**D.** Half of all Americans do not accept any significant role for evolution in the generation of different kinds of plants and animals. At most, they accept the so-called micro-evolution of such nearly similar species as Darwin’s finches on the Galapagos Islands.

**1.** For many Christians, Moslems, and other religious believers, God’s revealed word in their scriptures is reason enough to believe in special creation.

**2. During the 1990s, a loosely organized group of Christian scholars advanced the idea that species are simply too complex to evolve. While eschewing biblical arguments and chronologies, they saw species as the product of “intelligent design.”**

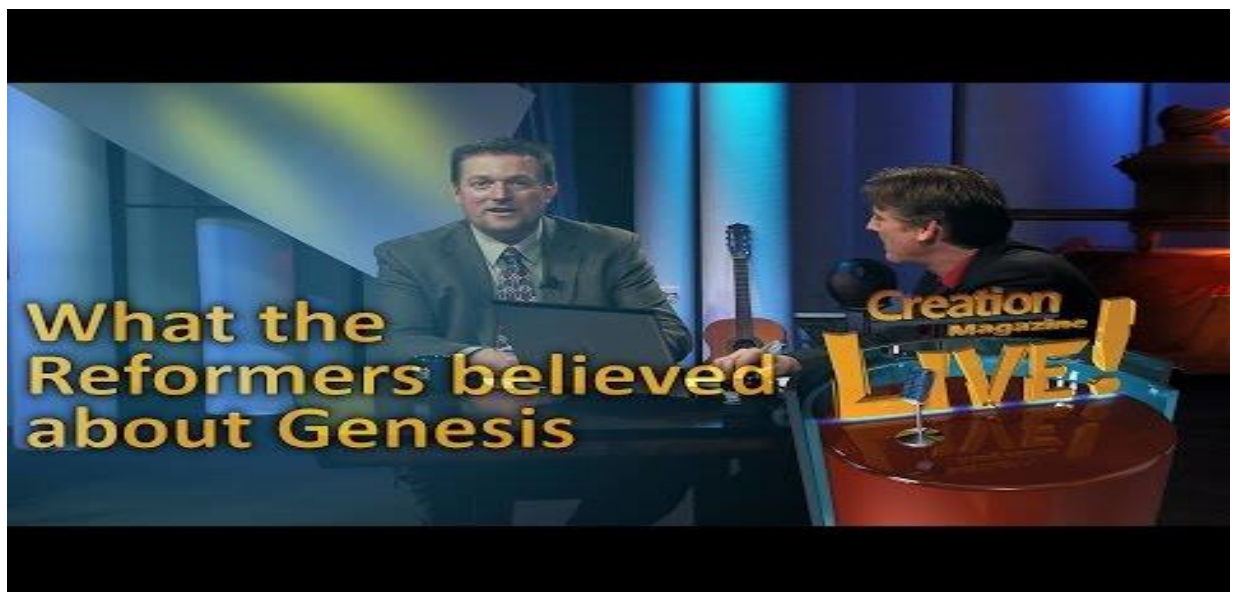
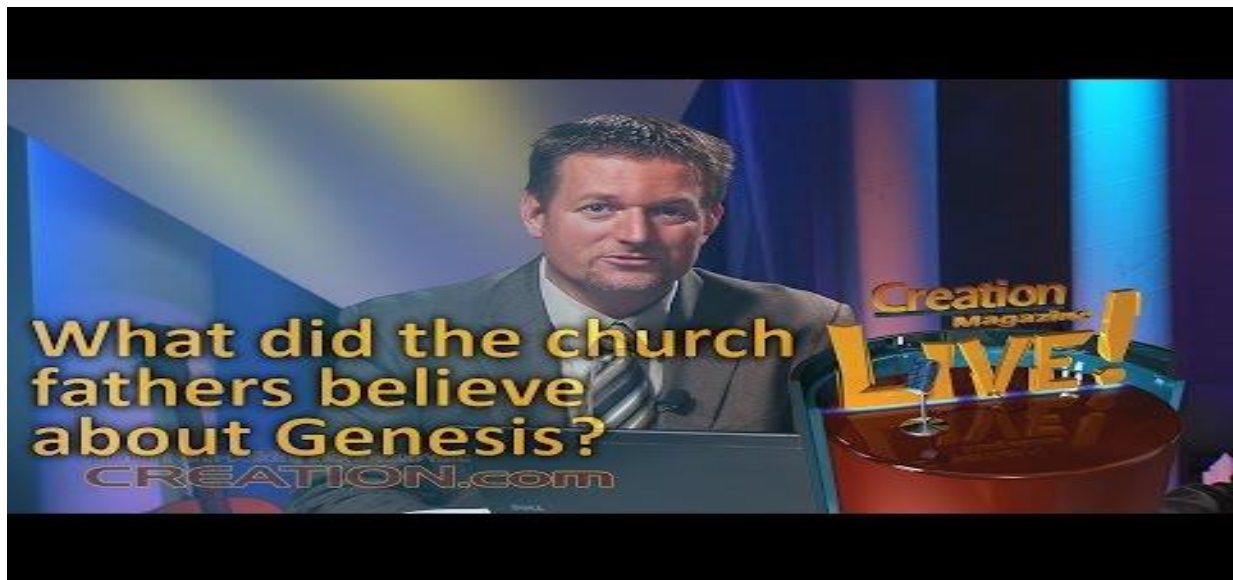
**3. In this group, law professor Phillip Johnson stresses that science should not a priori exclude supernatural causes for natural phenomena. For him, gaps and abrupt appearances in the fossil record are best explained by special creation.**

**4. Biochemist Michael Behe claims that organic molecules are too irreducibly complex to have evolved through small, random steps. This is similar to the old argument that such organs as the eye are too complex to evolve in a Darwinian fashion.**

**5. Johnson and Behe have written popular books pushing their challenge to Darwinism. Their arguments join those of scientific creationists in pushing for limits on the teaching of evolution in public schools.**

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# Systematist Creation Daters: Early Schools, Augustinian, & Reformation to Ussher



# An Examination of Augustine's Commentaries on Genesis One and Their Implications on a Modern Theological Controversy

by [Tim Chaffey](#) on July 13, 2011

## Abstract

*Few individuals in church history are as popular as Augustine of Hippo. His impressive body of work on diverse subjects, combined with his tremendous influence on Roman Catholics and Protestants, have led believers to imbue Augustine of Hippo's writings with great authority. Consequently, he is frequently cited by those seeking support for their particular position on theological matters.*

*This practice is especially observed in the creation vs. evolution and age of earth debate. Young-earth creationists, theistic evolutionists, old-earth creationists, and intelligent design proponents have each claimed Augustine as one of their own and each of these scholars has provided quotations of Augustine which seem to support their view. The famous church father wrote four separate commentaries on the first chapter of Genesis. This paper surveys these works and demonstrates that Augustine was not concerned with the modern controversy. Nevertheless, his purpose for writing each commentary and the varying hermeneutic throughout these works has led to the confusion that exists concerning his beliefs. Modern participants in the age of the earth debate can gain remarkable insight from these commentaries. Biblical creationists have repeatedly warned about the dangers of allegorizing narrative passages and reinterpreting the text based on the science of the day. Since these two practices are exemplified in Augustine's writings on Genesis, readers will see why the literal historical-grammatical hermeneutic protects one from making egregious interpretive errors.*

## Introduction

When the plain sense of Scripture makes common sense, seek no other sense, lest you make nonsense (Cooper 1970, p. 11). This common refrain, sometimes called the “Golden Rule of Interpretation,” was often practiced by St. Augustine. However, Augustine often sought another sense and this fluctuating hermeneutic has resulted in confusion over exactly what he really believed on some subjects. This is especially significant because of his tremendous influence over centuries of scholars from theologically diverse backgrounds. It is not uncommon to see scholars on opposite sides of a controversial subject cite him in support of their view.

Augustine’s varying hermeneutical approach is noticeable in his commentaries on the Book of Genesis. His interpretive schemes set forth in these volumes have been variously labeled as literal,<sup>1</sup> allegorical, (Clough 2001, pp. 39–40) spiritual, (Dockery 1992, p. 23) figurative, (Lavalley 1989, p. 458) and figural (Ellingsen 2005, pp. 27–28). Augustine’s influence, combined with diverse understandings of his writings, has contributed to the confusion in the modern church on many key subjects found in Genesis 1.

The modern debate over the Scripture’s teaching on the age of the earth is one of the hottest controversies in the church today. It is surprising that Augustine has been cited as a supporter of each of the views in this contest. This is largely due to a failure to recognize Augustine’s context and his purpose for writing what he did. However, his diverse teachings on these early chapters have not always helped matters. Because he is so greatly respected & frequently cited his work has infused confusion into an already misunderstood debate.

This paper will offer an examination of Augustine’s four commentaries on the book of Genesis. It will be demonstrated that the vast majority of his observations in these books have little bearing on the modern dispute because he was focused on entirely different issues. Nevertheless, even though he was not concerned with the modern contest, one of his hermeneutical practices set forth in these commentaries has contributed to the ongoing dispute.

## Augustine’s Writings on Genesis

St. Augustine paid special attention to the book of Genesis. He wrote commentaries on the book: *On Genesis: A Refutation of the Manichees*, *The Literal Commentary on Genesis*, and *The Literal Meaning of Genesis*. He also committed the final three books of his *Confessions* to Genesis as well as Book XI in his magnum opus, *The City of God*. Michael Fiedrowicz revealed that Augustine also dealt with the subject of creation in many of his other works, including *Answer to an Enemy of the Law & Prophets*,

*Faith and the Creed, & Answer to Julian* (Fiedrowicz 2002, p. 14). His commentaries and his books on Genesis included in *The Confessions* will be examined in detail. Augustine placed tremendous emphasis in the ability of the creation account to refute many of the false views of his day. At the risk of stating the obvious, it must be mentioned that if the Genesis creation account is true, then any view which contradicts it is necessarily false. Moreover, the study of origins is foundational to any belief system. If one's foundation is demonstrated to be flawed, then his beliefs cannot stand. This points up the wisdom which Augustine displayed in utilizing the Bible's first book in his apologetic approach.

The desire to defend the faith also played a part in Augustine's focus on Genesis. Like today, opponents of Christianity regularly attacked the Bible's opening chapters and he felt the need to defend their accuracy and historicity. For example, in his commentary against the Manichees, he not only refuted the foundational beliefs of Manichaeism, but did so in a manner in which both scholar and layman could understand. He began his commentary by explaining that he had been advised

not to turn [his] back on the usual common way of talking, if [he] had it in mind to purge from the spirits of less educated people also such pernicious errors as these (Augustine 2002a, I.1.1).

Augustine could have easily written at the scholarly level, but this approach illustrated his pastoral concern for his fellow believers.<sup>2</sup> His work on the Trinity revealed his erudition, but this work revealed his desire to communicate to the layman who is at the greatest risk of being deceived.

## Augustine's Hermeneutics in the Genesis Commentaries

It has already been mentioned that Augustine changed his hermeneutical approach in his Genesis commentaries. It is important to examine his reasons for doing this. Augustine relied heavily on an allegorical hermeneutic in his first commentary. He explained that he

did not dare expound in their literal meaning such great mysteries of the natural order, that is to say, how what is said there can be taken as strictly historical (Augustine 2010, I.18).

As a former Manichee, Augustine had believed a literal interpretation of the text led to ridiculous ideas about God. This will be explained in the next section. However, Ambrose's spiritual interpretation of the text convinced Augustine that Genesis could be accepted as long as one interpreted it allegorically.

Five years after completing his first commentary, Augustine tried his hand at a literal commentary. He never finished this commentary, but would spend 15 years



working on a second literal commentary. The concept of a literal interpretation is rather imprecise, as people understand this idea differently. As typically understood by conservative evangelicals, a literal interpretation of Scripture seeks the plain meaning of the text as if it was written in everyday language. One recognizes use of various figures of speech & is careful to interpret them accordingly. For Augustine, a literal interpretation was occasionally different. As Williams noted, Augustine considered his hermeneutic to be literal because he read the creation story as a creation story, rather than story about the church or individual salvation (Williams 2001, p. 62). This understanding allowed him to spiritualize passages as long as the overall subject was not altered.

Augustine also differentiated between what he believed was a literal interpretation and what might be called a hyper-literal interpretation, which was practiced by the Manichees. A hyper-literal interpretation takes everything in strictly literal fashion. For example, a person interpreting this way would believe that Jesus taught He was a physical door when he claimed, "I am the door" ([John 10:9](#)). At this point in his life, Augustine showed little patience for these individuals.<sup>3</sup> While discussing the shape of the earth & providing an allegorical interpretation of [Psalm 104:2](#), he wrote that

... to satisfy the tiresome people who persist in demanding a literal explanation I will say what in my opinion should be obvious to anyone of sense (Augustine 2002b, II.22).<sup>4</sup>

He followed this remark by explaining that a skin can literally be stretched around a rounded surface, such as a dome, or across a flat plane. Consequently, he thought it was possible to make sense of the passage through both an allegorical & a literal approach.

Before investigating the four commentaries, it must be noted that Augustine was commenting on the *Vetus Latina*, the Old Latin text of the Bible, which would soon be replaced by Jerome's *Vulgate*. This translation was based on the Septuagint, the Greek translation of the Hebrew Old Testament. Since *Vetus Latina* was translation of a translation and was somewhat unreliable, Augustine occasionally struggled to make sense of a passage which was inaccurately rendered. If a modern critical text was available to him, his commentaries would have been less problematic. Each commentary surveyed will contain a brief discussion of the problems caused by the *Old Latin Bible*.

## ***On Genesis: A Refutation of the Manichees***

Augustine's first commentary on Genesis was written with the specific goal of refuting Manichaeism & its assaults on early chapters of the book. Concerning this commentary, Augustine would later write in his *Revisions*,

It is true, of course, that I had had the Manichees in mind in those earlier books, in whatever arguments I used in order to show that God is supremely good and unchangeable, and yet the creator of all changeable natures, and that no nature or substance is evil precisely as a nature of substance (Augustine 2010. I.10.1).

Despite the Christian training of his youth, by the age of 19, Augustine of Hippo was persuaded against Christianity by Manichean arguments, which were often focused on Genesis 1 (Augustine 2002, I.2.3). He soon became a member of the sect but later began to have doubts about Manichean claims and came under the influence of Neo-Platonism. St. Ambrose's spiritual interpretations of the text eventually convinced Augustine of the reliability of the biblical account. Realizing Manichaeism and Neo-Platonism did not provide the answers which he sought, Augustine converted to Christianity and set out to critique his former beliefs which were a threat to other believers in Hippo (Fiedrowicz 2002, p. 105).

## Manichean beliefs

Like many of today's cults, Manichaeism accepted parts of Scripture and rejected other sections. They held the Apostle Paul in high esteem (O'Meara 1954, p. 63) yet criticized Genesis. This was due to several reasons. First, they held to a rigidly literal interpretation of the book which would not allow for figures of speech, such as anthropomorphisms. To claim that God spoke would be absurd to the Manichee because God is spirit and a spirit does not have a mouth with which he could speak. Since the Bible repeatedly utilized this type of anthropomorphism, the Manichees found numerous reasons to criticize it and their criticisms eventually impacted the young Augustine who was struggling to develop a reasonable understanding of Scripture.

Second, they believed the God of Scripture possessed some unattractive qualities. He favored one group of people over others. He commanded His chosen people to circumcise every male. He created poisonous animals and allowed all sorts of evil to occur in the world (O'Meara 1954, p. 66).

Finally, Genesis contradicted their rather elaborate cosmogony and theodicy. The Manichees held to a form of universal dualism. They believed that the Principle of Good and the Principle of Evil existed eternally and were diametrically opposed to each other. Man and the rest of creation are results of conflict between these two Principles. From this foundation, the Manichees developed a convoluted angelology and anthropology (O'Meara 1954, pp. 68–70). In contradistinction to these beliefs, the Bible explains that only the perfectly good God is eternal and evil is a result of the free choices made by His creatures.

## The commentary

He began his first commentary by elucidating issues advanced by the Manicheans and why a study of Genesis 1 would refute their claims. After a brief introduction he began to explain the text of the first three chapters. Due to space limitations, this paper can't adequately review all of Augustine's comments, but will highlight some selected portions to demonstrate the development of his thought over the years.

His first concern was to answer the Manichean charge about God creating "In the beginning." Similar to many skeptics today, the Manichee would ask what God was doing during the time before He created the world. Augustine's answer was that God not only created the world, but He also created time itself (Augustine 2002a, I.2.3). His answer makes good sense since it would not have been "the beginning" if time had existed prior to God's creating it. Dr. Geisler explained,

The world did not begin *in* time—the world was the beginning of time. Time did not exist *before* creation and then at some moment in time God created the world. Again, it was not a creation *in* time, but a creation *of* time (Geisler 2003, p. 433).

Augustine moves through the verses of the hexaemeron<sup>5</sup> explaining what God created on each of the days. At times, he interprets the passages in their literal sense. For example, the creation of fruit trees on Day Three is discussed in a straightforward manner, although he goes on to wonder when God created the non-fruit bearing trees. He makes a spiritual application from this musing by claiming that the barren trees were created to make man

understand how they should blush for shame at lacking the fruit of good works in the field of God, that is, in the Church ... (Augustine 2002a, I.13.19).

This shouldn't be understood as allegorical interpretation because he believed God truly created the fruit-bearing trees.

Despite his occasional foray into more of a literal hermeneutic, the majority of Genesis 1 is interpreted in allegorical fashion. Augustine offered two allegorical interpretations of the meaning of the six days. First, he sees the creation days as representing the six ages of the world. Augustine did not follow the example of other Church fathers<sup>6</sup> who believed each day was a literal normal-length day but symbolically represented a millennium, but cited the beginning and end of each age. For example, the first age stretched from Adam to Noah and the second from Noah to Abraham (Augustine 2002a, I.23.35–41). He also gave a more personal allegorical interpretation in which each of the days corresponds to a specific

developmental period of each person's life (Augustine 2002a, I.25.43). Perhaps the wisest statement in this commentary is found in a discussion about the number of animals God created. He stated that the Manichees often asked why God created so many animals that are unnecessary for human beings. In response, the animals are classified into 3 groups: those that are useful for man, pernicious, or superfluous. Ultimately, Augustine proclaims,

I, however, must confess that I have not the slightest idea why mice and frogs were created, and flies and worms; yet I can still see that they are all beautiful in their own specific kind, although because of our sins many of them seem to be against our interests . . . . If these insufferably talkative and wrongheaded people [the Manichees] would just stop to think about this for a moment, they wouldn't go on boring us to death, but by reflecting themselves on all such beauties from the highest to the lowest would in all cases praise God the craftsman; and since none of these things is offensive to reason, then wherever our carnal senses are offended, they would put it down to what is due to our mortality, not to anything wrong with the things themselves (Augustine 2002a, I.26).

Augustine admits there are instances which are beyond his understanding. This may seem like a foolish thing to admit in the course of a debate, but it displays his acknowledgment that God's ways are higher than man's ways ([Isaiah 55:9](#)).

## Concluding remarks concerning *On Genesis*

Augustine was destined to make some errors due to his reliance upon the *Vetus Latina*. He spent ten paragraphs attempting to explain that the "greenery and the fodder of the field" of [Genesis 2:5](#) somehow symbolized the creation of the human soul (Augustine 2002a, II.3.4–6.7). Apparently, this version translated verse 5 as stating,

when the day had been made on which God made heaven and earth, and all the greenery of the field before it was upon the earth, and all the fodder of the field before it sprouted.

Modern translations have corrected the text to indicate that the "plant of the field" and the "herb of the field" had not yet grown because it had not rained and there was no man to till the ground. The problem is that Augustine tries to expound on the creation of something that Scripture states was not in existence yet.<sup>7</sup> Another example of this is found in [Genesis 1:2](#). Augustine's version stated that the earth was "invisible and shapeless" (Augustine 2002a, I.3.5) rather than the modern "without form and void." Once again, Augustine is forced to explain something that would not be an issue if he had an accurate translation.

He also quoted freely from books which Protestants deem to be apocryphal works, such as Wisdom of Solomon and Sirach. Although he would continue to cite these books in his later commentaries, he modified his view of their authority. Augustine explained that he did not think it was right to ascribe the words of [Sirach 10:9](#) to a

prophet as he had done earlier since “they are not found in a book by an author we are absolutely certain should be called a prophet” (Augustine 2010, I.10.3). His tone might surprise the modern reader because of the harsh language used to describe his opponents. For example, he called them “irreligious wretches” (Augustine 2002a) & claimed that “nothing was more manifestly foreshadowed in that serpent [Satan] than [the Manichees]” (Augustine 2002a, II.). Augustine had little patience for Manichean beliefs & he certainly made it clear that he was no longer a member of that heretical sect. Overall, his first commentary provides invaluable information about his early years as a believer and some outstanding critiques of the Manichean cult.

## ***The Unfinished Literal Commentary on Genesis***

Approximately 5 years after publishing his work against Manichaeism, Augustine attempted a second commentary on the book of Genesis. Although they are not mentioned by name in the commentary, the Manichees were occasionally in Augustine’s sights. He now believed that a literal interpretation of Genesis was feasible, in addition to the allegorical hermeneutic of his first work. This aptly titled work is called the *Unfinished Literal Commentary on Genesis* because he started but never finished the work. He stopped after reaching the 26<sup>th</sup> verse of the first chapter. In his *Revisions* he added more paragraphs (Fiedrowicz 2002, p. 106) and then stopped. As such, his mature views on the subject would not be published until his comprehensive literal commentary.

Following some introductory remarks, Augustine began his unfinished commentary by expounding on four hermeneutical styles that had been practiced in his day: the way of history, the way of allegory, the way of analogy, and the way of aetiology. He explained,

History is when things done by God or man are recounted; allegory when they are understood as being said figuratively; analogy, when the harmony of the old and new covenants is being demonstrated; aetiology, when the causes of the things that have been said & done are presented (Augustine 2002c, 2.5).

The title of the work may suggest that Augustine sought out a strictly literal interpretation of the book over against the other three methods. However, he still resorts to the other styles at times & even warned against making confident claims about one’s interpretation. Concerning the interpretation of [Genesis 1:7](#),

Thus, God made the firmament, and divided the waters which [were] under the firmament from the waters which [were] above the firmament; and it was so,

he wrote,

You may choose whichever you prefer; only avoid asserting anything rashly, and something you don't know as if you did; and remember you are just a human being investigating the works of God to the extent you are permitted to do so (Augustine 2002c, 9).

The commentary proceeds in a fairly literal fashion except for the times in which he attempts to deal with the creation of light on the first day and the creation of the heavenly bodies on the fourth day. He wonders how it is possible that the heavenly bodies of the fourth day could have been given to mark days since three days had already passed (Augustine 2002c, 12.36). After consideration to a straightforward understanding—that days one through three were marked by the light created on Day One and that days four and following were marked by the heavenly bodies—Augustine opted for a timeless creation of all things. He stated,

So then, although it is without any stretch of time being involved that God makes things, having 'the power to act available to him whenever he will,' ([Wisdom of Solomon 12:18](#)) all the same the time-bound natures made by him go through their temporal movements in time (Augustine 2002c, 7.28).

Once again, the *Vetus Latina* caused him to reject a literal understanding of a particular passage. When discussing the creation of the flying and swimming creatures of the fifth day, Augustine could not imagine that a fish or bird could conceive, carry in the womb, and give birth before the evening of the fifth day arrived (Augustine 2002c, 51). The problem is that the text does not say that they did conceive, carry, and give birth before the end of the day. It merely mentions that God created the fish and birds on this day and that He had "programmed" them to perform these reproductive activities during their lifetimes. Yet, the *Old Latin* text is a bit ambiguous and seems to suggest that they performed these duties prior to the end of the fifth day.

*The Unfinished Commentary* may be the least important of Augustine's Genesis commentaries for several reasons. First, it remained unfinished and he would seek to improve upon it in his final literal commentary on the book. Second, it does not hold the rich apologetic content his commentary against the Manichees regularly exhibited. Thirdly, it has not been as well-read as the commentary included in his *Confessions*. Finally, much of the material is repeated in *The Literal Meaning of Genesis*. Despite these facts, the unfinished commentary provides a glimpse into Augustine's spiritual and mental development in his early years as a priest prior to becoming the famed Bishop of Hippo. It also reveals his newfound belief that Genesis could be understood in a literal fashion.

## The Genesis Commentary from *The Confessions*

Perhaps Augustine's best-known commentary on Genesis is found in his popular collection of books entitled *The Confessions*. The final three books in this work are often considered to be a commentary, although this may be an inaccurate term for what Augustine has written. After describing his journey to the Christian faith for

the first nine books and a book on memory, he added three books on Genesis. It seems that his goal was not to provide an actual commentary, but to use the passages about the creation of the world in a way in which he could elucidate the changes God had wrought in his own life. Thus, after moving toward a more literal hermeneutic in his unfinished commentary, Augustine returns to a nearly full-fledged allegorical style in *The Confessions*.

This work was composed soon after Augustine became the Bishop of Hippo. Having been unable to complete his first literal commentary on Genesis, the newly-ordained bishop wrote at length to justify his return to an allegorical stance. The majority of Book XII consists of arguments designed to refute those who may disagree with his particular interpretation. Augustine does not make the claim of infallibility for his own interpretation.<sup>8</sup> Instead, nearly the opposite is true. He argued that any number of interpretations may be acceptable. In concluding this extended argument,

Augustine wrote,

Accordingly when anyone claims, "He meant what I say," and another retorts, "No, rather what I find there," I think that I will be answering in a more religious spirit if I say, Why not both, if both are true? And if there is a third possibility, and a fourth, and if someone else sees an entirely different meaning in these words, why should we not think that he was aware of all of them, since it was through him that the one God carefully tempered his sacred writings to meet the minds of many people, who would see different things in them, and all true (Augustine 1997, XII.31.42).

Augustine would probably have never allowed for such variety of interpretation when it came to other key doctrines of the faith, such as the virgin birth, crucifixion, and resurrection of Jesus Christ. Certainly, these doctrines are more important to one's salvation, but the problem is the same. If one can allegorize or spiritualize a narrative passage, what hermeneutical principle forbids him to do the same with the passages on which salvific doctrines are based? If one arbitrarily chooses which passages are to be interpreted literally and which are allegorical, then the Bible can be made to say just about anything. This is not what Augustine advocated, yet, when it came to Genesis one, Augustine allowed for the possible truthfulness of "entirely different meanings" to come from the same text.

This difficulty stems from his commitment to charity being the highest ideal in exegesis. In *On Christian Teaching*, he wrote,

Whoever thinks he had understood the divine scriptures or any part of them in such a way that his understanding does not build up the twin love of God and neighbor has not yet understood them at all (Augustine 1996, I.36.40).

Echoing that statement is the following from *Confessions*,

... consider how foolish it is rashly to assert that Moses intended one particular meaning rather than any of the others. If we engage in hurtful strife as we attempt to expound his words, we offend against the very charity for the sake of which he said all those things (Augustine 1997, XII.35).

Thomas Williams declared that Augustine's commitment to this principle was so strong that "even misreadings of Scripture are scarcely objectionable if they build up charity" (Williams 2001, p. 68).

After opening with some introductory comments and a prayer for understanding, Book XI deals with the issue of time and eternity. Similar to his first commentary, he argued that time itself was created when God created the universe. He speculated that time may be simply a matter of one's consciousness but seems to reject that notion after contemplating some of its ramifications. Augustine even anticipated Einstein's theory that time is marked by the movement of physical objects, although he remained unsure of the very nature of time (Augustine 1997, XI.25.32). In the end, Augustine praised God for being beyond man's understanding and encouraged others to do the same (Augustine 1997, XI.31.41).

Following his excursus on time, Book XII marked the beginning of his exegetical study of the Bible's first chapter. Once again, his philosophical presuppositions and the *Vetus Latina* would hinder him from properly exegeting the passage. Because of his Neo-Platonic leanings, (Dengerink 1976, p. 33) Augustine believed that God created all things instantaneously in their potential forms or "predispositions" (Fiedrowicz 2002, p. 153). All of creation would eventually develop from this seed form over the course of time.<sup>9</sup> This assumption, along with the poor translation of verse 2, caused him to argue that time did not exist yet while the earth was "invisible and unorganized."

In the final book of *The Confessions*, Augustine began with some musings on why God created the world & its creatures. He rules out the possibility that God created these things because they were deserving of being created (Augustine 1997, XIII. 3.4). and the notion that God was lacking something until He created (Augustine 1997, XIII.4.5). He also offered some thoughts on the Trinity, especially the Holy Spirit.

Augustine's final comments in this commentary were reserved for a discussion of the hexaemeron. Although he believed these events are historical, his discussion of the six days is predominantly allegorical, with the lone exception of the creation of mankind. The African father seems to have always interpreted man's creation in a more literal sense. Following is a list of his allegorical interpretation of the Creation Week.

The light of Day One represents the enlightenment a soul receives which leads him to seek after God. The expanse, or "vault" (Augustine 1997, XIII.15.16) as he called it, of Day Two symbolizes the word of God in that just as the sky is stretched out to declare God's truth to the world, so is God's word stretched out on skins when a scroll is opened. The dry land of the third day represents those who hunger and thirst for God while the sea represents the masses of individuals who do not seek the Lord. The sun, moon, and stars of the fourth day are the various ways in which



God communicates His message to mankind. The stars are likened to the gifts of the Spirit given to individuals, while the sun and moon shine brighter and represent the meatier teachings of God's word which babes in the faith cannot handle. Swimming creatures of the fifth day symbolize God's holy signs upon the earth while the flying creatures "represent the voice of [God's] messengers" (Augustine 1997, XIII.20.26). The land animals of the sixth day are said to be true believers who no longer crawl or swim in the depths of the sea. These are living souls that have been regenerated and no longer need baptism as they once did while sunk beneath the waters.<sup>10</sup> He regarded the creation of man in God's image as literally true, yet he could not bring himself to do the same with the other verses about man. When God told man to be fruitful and multiply ([Genesis 1:28](#)), Augustine uses an argument from silence to claim that it should be interpreted figuratively.<sup>11</sup> Instead of physical sexual reproduction, he believes this verse refers instead to the human ability to learn and pass on what one has learned to others (Augustine 1997, XIII.37).

*The Confessions* is an outstanding resource for learning about Augustine's personal journey to the faith. In particular, this writing on Genesis magnifies his appreciation of the Lord who created new life in him in what he believed was a similar fashion to the way He created the world. However, since his goal was to use the hexaemeron as an allegory for his own journey to the faith, it has very little bearing on the modern debate over the correct interpretation of this chapter. His subjective interpretation and lengthy argument for multiple interpretations ultimately suggest that each reader can decide for himself what the text means as long as his interpretation does not contradict other teachings of Scripture (Augustine 1997, XII.18.27).

## ***The Literal Meaning of Genesis***

Augustine's final commentary on Genesis was undoubtedly his most concerted effort as it was written over a fifteen year period. His commentary against the Manichees and the commentary in his *Confessions* were based on allegorical interpretations. Since he had not finished his earlier literal commentary, he set out to demonstrate that the first three chapters of Genesis could be understood in a literal sense, as he defined it.

This commentary is particularly important for many reasons and, as such, it requires much more attention than the others. Since it was his final commentary, it represents Augustine's most mature understanding of these chapters. Also, he had a broader scope than the allegorical commentaries since was not focused merely on refuting one heretical view or showing how the creation account symbolized his own testimony. Third, it is by far the longest of the commentaries. In fact, it is longer than his first three commentaries combined. Fourth, he sought to offer a "proper assessment of what actually happened" (Augustine 2010, 11.24).

Finally, Augustine shared his beliefs on the proper relationship of science, reason, and faith. These final two reasons have direct relevance to the modern controversy in the Church over the Bible's teaching concerning the age of the earth.

## Augustine's Perspective on Faith and Science

One of the major problems Augustine faced in his literal commentaries is that he attempted to reconcile a straightforward reading of the text with the scientific understanding of his day. He devoted a considerable amount of space in laying out his perspective on the relationship between faith and science. In the first book of his final commentary, Augustine warned believers not to make bold assertions on matters in which they were not skilled.

There is knowledge to be had, after all, about the earth, about the sky, about the other elements of the world, about the movements and revolutions or even the magnitude and distances of the constellations, about the predictable eclipses of moon and sun, about the cycles of years and seasons, about the nature of animals, fruits, stones, and everything else of this kind. And it frequently happens that even non-Christians will have knowledge of this sort in a way they can substantiate with scientific arguments or experiments. Now it is quite disgraceful and disastrous, something to be on one's guard against at all costs, that they should ever hear Christians spouting what they claim our Christian literature has to say on these topics, and talking such nonsense that they can scarcely contain their laughter when they see them to be *toto caelo*,<sup>12</sup> as the saying goes, wide of the mark. And what is so vexing is not that misguided people should be laughed at, as that our authors should be assumed by outsiders to have held such views and, to the great detriment of those about whose salvation we are so concerned, should be written off and consigned to the waste paper basket as so many ignoramuses (Augustine 2002b, I.39).

Augustine was concerned that Christians might make fools of themselves by confidently declaring that Scripture taught something that was proven incorrect by the sciences. He felt that this type of activity would lead to a mockery of the faith by those who needed to be evangelized.

This concern is well-intentioned but he seemingly failed to notice the potential danger it could have on one's hermeneutic. That is, if scientific consensus disagrees with the properly exegeted findings of Scripture, then one should either remain silent or modify one's exegesis to match the science.<sup>13</sup> This is not what Augustine had in mind, but his quote has been used to support this notion.<sup>14</sup>

Based on this quote, one might think Augustine believed that science trumped biblical teachings, but he did not. Instead, he placed Scripture on a higher level of authority. Only three paragraphs after the above quotation, he wrote:

Some of the weaker brothers and sisters, however, are in danger of going astray more seriously when they hear these godless people holding forth expertly and fluently on the “music of the spheres,” or on any questions you care to mention about the elements of this cosmos. They wilt and lose heart . . . and can scarcely bring themselves to touch the volumes [Scripture] they should be devouring with delight . . . [because] they have no time to be still ([Psalm 46:11](#)), and to see how sweet the Lord is ([Psalm 34:8](#)). And that is why they are too lazy to use the authority they have received from the Lord . . . (Augustine 2002b, I.20.24).

Augustine firmly believed that true science and the true interpretation of Scripture would agree in every detail. However, rather than following his own advice in this comment, Augustine frequently rejected plain interpretation of Scripture because he was committed to particular philosophical and scientific beliefs, many of which have now been invalidated. Several examples of this will be cited later.

## **Review of *The Literal Meaning of Genesis***

Augustine’s goal in the commentary was to demonstrate the first three chapters of Genesis could be understood in their literal sense, as he defined it. The first three books are dedicated to discussing the first chapter of Genesis. The next six books deal with the second chapter of Genesis and the creation of angels and man’s soul. Books ten and eleven focus on Genesis 3 and the final book discusses various concepts about paradise.

Since this paper is designed to examine his comments on the hexaemeron, the following study will only cover the first three books in this commentary. In the first book, he discussed many of the same issues covered in his *Unfinished Literal Commentary on Genesis*. He wondered how God could have spoken words in a shapeless universe and when God did this. Was it in time or in eternity past? He mused about the nature of light on the first and fourth days and even argued that the Trinity is slightly revealed in the first few verses. He wanted to know why God said certain phrases in some instances but not others. For example, he sought an answer as to why God did not “see that it was good” in verse 2, but He did “see that it was good” after creating the light. His solution was that there was nothing to see because the initial creation mentioned in verses one and two were only of formless and invisible matter (Augustine 2002b, I.28).[15](#)

In the second book, he dealt with the second, third, and fourth days of creation. Here he dives into many of the scientific issues with which he was concerned. He wrote a lengthy essay on the nature of the elements as they were understood during his time. Although the modern scientist would be unimpressed with many of his ideas, the arguments presented in this section demonstrate his keen mind and his desire to understand both God’s word and God’s world. He developed another argument for the Trinity being involved in these particular days of creation.

Once again, Augustine revealed both his apologetic and pastoral interests as he introduced numerous questions that apparently were common in his day. One of these questions concerns the phase in which the moon was created. He presented the cases for the full moon and new moon positions, but concluded that he stood “in the middle between these two opinions, asserting neither of them, but definitely saying that whether God made the moon at its first phase or at the full, he made it perfect” (Augustine 2002b, II.15.30). He also addressed the question as to whether or not the luminaries of heaven were living beings. He remained undecided on the issue because he believed Scripture was silent concerning the subject (Augustine 2002b, II.18.38).

Perhaps his strongest arguments are found near the end of the second book. Just as it is in modern times, astrology was very popular in his day. Augustine logically refuted this practice and strongly warned anyone about the dangers of getting involved in it. To refute astrology, he pointed out that twins are conceived and born at the same time and yet so often their lives are completely different. The problem is that an astrologist would predict similar lives for the twins because their lives would have been directed by the stars based on the time of their births (Augustine 2002b, II.17.35). He used Jacob and Esau as examples since Jacob was holding Esau’s foot as they were delivered. He reasoned that there was surely no alteration in the stars during the moment of their birth that would modify their respective destinies so drastically. He concluded that astrology was the work of deceiving spirits, which accounted for the astrologers’ ability to occasionally make accurate predictions. After all, demons are extremely intelligent, have lived for a long time, and have learned some things from the holy angels. So they are capable of making well-educated guesses about the future, and sometimes have the ability to bring these things to pass (Augustine 2002b, II.37).

The third book focuses on the fifth and sixth days of the Creation Week. The fact that Augustine wrote so much on the creation of man in God’s image may lead one to believe this chapter would heavily emphasize man’s creation. However, he wrote very little about man’s creation here because he saved that topic for his commentary on the second chapter of Genesis.<sup>16</sup> He wrote,

There will be more fruitful passages time and again later on for a more thorough reflection on the nature of man . . . I must briefly insist . . . that the following point [concerning the phrase, “Let Us make man . . . ”] is not to be passed over lightly (Augustine 2002b, III,19.29).

Instead, Augustine focused on the creation of the animal kingdom and answering some of the many questions surrounding its formation.

Much of this book is devoted to explaining why God created animals from the elements of water and earth. If a better translation of this chapter was available to him Augustine's commentary would probably have been significantly different.

In translating [Genesis 1:20](#),

Then God said, "Let the waters abound with an abundance of living creatures, and let birds fly above the earth across the face of the firmament of the heavens"

the *Vetus Latina* stated, "*Let the waters produce reptiles of live souls & flying things over the earth along the solid structure of heaven.*" Modern critical texts do not attribute the creation of swimming and flying creatures to the water, but that the creatures would abound in the waters. The Hebrew יִשְׂרְצוּ הַמַּיִם שֶׂרָץ וְנִפְּשׁ חַיִּים is transliterated as *yishretsu hamayim sherets nephesh chayyah*, meaning "let them swarm the waters swarm with living creatures."<sup>17</sup> The *Vulgate* translates the last three words as *reptile animae viventis*. This error is likely due to a mistranslation in the Septuagint, which states that waters brought forth ερπετα (*erpeta*), which refers to a quadruped creature. This is translated from the Hebrew word שֶׂרָץ (*sherets*), which can refer to aquatic swarming things or to small reptiles or quadrupeds. As a result of this mistranslation, Augustine spends about one-fourth of the book explaining why flying creatures are rightly said to have been created from the waters and why fish are called "reptiles of live souls."<sup>18</sup>

Similar to the first two books in this commentary, Augustine frequently wondered why the chapter states what it does. He wanted to know why the blessing to man to be fruitful and multiply was also given to the fish and birds, but not land animals (Augustine 2002b, III.13.21). He speculated as to whether or not insects were made during the Creation Week or if the perishable material things from which they allegedly sprang contained them in seed form (Augustine 2002b, III.14.22–23). He sought an answer as to when plants with thorns and thistles, as well as non-fruit bearing trees were created.<sup>19</sup> The book concludes with a discussion of why God did not say that the creation of man was good as He said about many of the other things He created. Augustine's answer is perhaps the lacking of the oft-repeated phrase is due to a foreshadowing of man's fall, which was soon to follow.

*The Literal Meaning of Genesis* offers incredible amount of insight into Augustine's beliefs about the origin of the world & his understanding of the Bible's first chapter. It is also possible to discover many of the questions people asked about Genesis during his time. Finally, this commentary reveals greatly of Augustine's attempts to reconcile the words of Scripture with the scientific understanding of his day. It is this point that must be examined in some detail because his archaic beliefs often led him to an improper interpretation. Ultimately, this problem can be blamed on his hermeneutic of allowing prevailing scientific and philosophical beliefs to override the clear words of Scripture.

## Critique of *The Literal Meaning of Genesis*

The greatest obstacle facing Augustine in his attempts to exegete the first chapter of Genesis was his a priori acceptance of an instantaneous or timeless creation.<sup>20</sup> This interpretation cannot be found in the text, but is almost certainly due to his Neo-Platonist leanings.<sup>21</sup> Instead, the text clearly demonstrates that God spaced the time of creation over a period of six days. Genesis 1 is clear that God created everything over the course of six consecutive normal-length days. This truth is said repeated in [Exodus 20:11](#) and [Exodus 31:17-18](#). A simple study of the creation order reveals the chronological progression of the creation account as each of the days after the first one depend upon the completed action of an earlier day. The waters made on the first day were divided on the second. The waters were gathered together in one place on the third day while dry land appeared and vegetation was created on it. The sun, moon, and stars of the fourth day were placed in the expanse created on the second day. The swimming creatures of the fifth day were created in the waters, while the flying creatures flew on the face of the expanse of the second day and multiplied on the land of the third day. The land animals lived on the land and ate the vegetation of the third day. Finally, mankind was created and given dominion over all these things (Chaffey 2008, p. 51). Rather than recognizing the necessity of a progression of time, his a priori commitment to a timeless creation caused him to search for non-literal elements in the text.

The *Vetus Latina* once again led him to believe that when God began creating the world it was shapeless and invisible rather than simply being unfinished.<sup>22</sup> With this in mind, Augustine speculated about how God could have spoken words, such as “Let there be light” ([Genesis 1:3](#)). He reasoned that since matter was shapeless and invisible then it would have been impossible for a sound to have actually been made. Consequently, the statement “Let there be light” could not have been made in time, but in eternity, and it could not have literally referred to the creation of light, but of intelligent life (Augustine 2002b, I.17). These errors led him to spiritualize the creation of the sun, moon, and stars on the fourth day (Augustine 2002b, II.23). This complicated reasoning could have easily been avoided if he would have accepted a progression of time during the creation rather than clinging to an instantaneous creation.

Instead of making definite statements about the text, he often asked questions that came to his mind and then sought out the answers. In the process of answering his own questions, he made numerous errors based on the science of his day. He also accepted geocentrism as the proper view of the solar system. After a discussion on the various weights of water, earth, air, and fire, he tried to answer why Saturn was believed to be so cold. He mused that this “star” should have been the hottest for two reasons. First, it was the fastest moving star. Second, since it was made of fire, which was the lightest of the elements, it would have rose highest above the Earth.

However, he solves this “problem” by citing separation of the waters on Day Two. Since some of the waters were put above the firmament they would have been in the form of ice. And since Saturn was closest to the icy waters above the firmament, it remained cooled by the ice (Augustine 2002b, II.5.9).

He accepted the belief in the spontaneous generation of insects by the putrefaction of material items (Augustine 2002b, III.14.22). This led him to conclude that insects were not a part of the Creation Week, except possibly in seed form. A more natural solution is to hold insects were created on the sixth day when God made everything that “creeps on the earth” ([Genesis 1:25](#)). It is also possible that some of them were created on the fifth day when God made the flying and swimming creatures. This provides an illustration of the dangers of allowing scientific understanding to trump Scripture. It does seem wise to allow scientific understanding to elucidate unclear passages, but these conclusions should only be held tentatively since scientific conclusions regularly change. When Scripture clearly teaches something, science should never be used to overrule it.

Finally, Augustine occasionally ignored or missed an obvious answer to questions. For example, he asked why some beasts were created to harm each other. His own response is that these serve as admonitions to man that he should observe what trouble he ought to take over his spiritual, everlasting health and welfare (Augustine 2002b, III.16.25). However, the likely answer is found in [Genesis 1:30](#),

Also, to every beast of the earth, to every bird of the air, and to everything that creeps on the earth, in which there is life, I have given every green herb for food.[23](#)

It is strange that Augustine does not comment on or cite this verse in any of his commentaries. Of course, many of these animals are now carnivorous so it is a fair question to ask. Perhaps the best solution is that these animals were changed at the time of the Curse. The serpent was “cursed more than all cattle and more than every beast of the field” ([Genesis 3:14](#)). This implies these animals were also cursed.[24](#) This may very well have involved a change of diet.

## Implications for Today’s Debate

Augustine’s changing hermeneutic set a dangerous precedent in the church and has provided fodder for all sides of the ongoing controversy over the age of the earth. Old-earth creationists often cite Augustine as a supporter of their view. Dr. Hugh Ross, perhaps the world’s foremost old-earth creationist, lists Augustine as a church father who favored an old-earth interpretation (Ross 2001, p. 66).

Theistic evolutionists often claim Augustine as an ally of their view that God used evolutionary processes to create the universe (Young 1988). [Not only that but] Young-earth creationists have even quoted Augustine to show that he believed that man's time on earth was less than 6,000 years.<sup>25</sup>

The fact is Augustine was not concerned with the issue of the age of the earth. It would be wrong to classify him as an old-earth creationist, theistic evolutionist, young-earth creationist, or even as a theologian supporter of the Intelligent Design Movement.<sup>26</sup> Nowhere in his commentaries did he make an attempt to prove one of these views, because he was focused on other issues.

Despite the fact that Augustine was not concerned with the same issues involved in the modern battle, his hermeneutic has direct correspondence to the underlying issues of the debate. As shown in the sections about his two literal commentaries, Augustine frequently avoided the literal interpretation of a passage if it did not mesh with his understanding of the science or philosophy of his day. In his efforts to marry Genesis with the science of the day, Augustine asserted an interpretation of Scripture that would now be deemed false. This precedent has had disastrous results throughout history. The embarrassing episode of Galileo and Pope Urban VIII would have been avoided had the Church not melded their interpretation of Scripture with the Ptolemaic view of the solar system.<sup>27</sup>

In the same way, old-earth creationists today often marry modern scientific conclusions with the text of Scripture. For example, in a debate on *The John Ankerberg Show*, Dr. Ross claimed that he could not claim credit for finding the alleged consistencies between the Bible and the big bang theory because David, Isaiah, Jeremiah, and Zechariah had already discovered it more than 2,500 years earlier (Ross 2000). He believes that because these books contain verses that state God "stretched out the heavens" the Bible must teach the big bang theory. This conclusion goes far beyond what the text actually states, especially when one considers the numerous discrepancies between the big bang theory & the Genesis creation account.<sup>28</sup> Moreover, other cosmogonies have been proposed which are based on God stretching out the heavens.<sup>29</sup>

There are three major problems with this approach. Scientific opinion is constantly changing. Although scientific understanding has vastly improved since Augustine's day, it is by no means infallible or static. Instead, scientific consensus is continually changing. If proper biblical interpretation must be determined by the science of the day, then the meaning of God's word must continually change along with the science.

The second major problem is that the modern debate is based on misunderstanding of science and its limits. The claims that the earth and universe are billions of years old are not based on observational science. Rather they are based on methods of dating that are all based, in turn, on unverifiable and naturalistic philosophical assumptions.<sup>30</sup> The question of the age of something is not a question for the



scientist, but for the historian. Asking when something happened is different than asking how and why something works. To properly answer the question of the age of the earth, one should consult a reliable historical record that reveals the answer. God's word is infallible, unchanging, and historically reliable and a plain reading of the text along with some simple calculations place the age of the earth at roughly six thousand years.

Finally, perhaps the biggest problem remaining is the inconsistency with which this hermeneutic is used. If those who practiced it were to apply the same principle to other key doctrines, crucial passages of the Bible would need to be reinterpreted to fit modern scientific consensus. Modern science does not accept virgin births or resurrections from the dead. Thankfully, these Christians inconsistently apply their hermeneutic; otherwise, they would not believe the Gospel. Yet there is simply no justification for picking and choosing which portions of Scripture one reinterprets based on science and which sections he accepts by faith despite the conclusions of science.

## Conclusion

Augustine's commentaries on the first chapter of Genesis contain much invaluable information for the Church. His insights reveal many of the threats facing the early Church, whether they were from cults like the Manichees or the skeptical natural philosophers of the day. His use of Genesis to refute false teachings and set forth the truth should be instructive for church leaders today.<sup>31</sup> His conviction that God's word is authoritative and inerrant should also be emphasized among modern believers.

It would be wrong to fault Augustine for how others have misused and abused his writings. Much of the misuse is due to a failure to recognize his context and his changing interpretive approaches throughout the commentaries. However, one must realize that the cause of his changing hermeneutic had more to do with his spiritual growth than with trying to appease the beliefs of his contemporaries. He certainly published contradictory interpretations and he could rightly be blamed for this. Yet, he should not be held accountable for the way in which modern participants in the debate utilize his statements in support of their view since he did not concern himself with these issues. He must be interpreted in light of his contextual setting. He was concerned with refuting the Manichees, Donatists, and many others, rather than teaching about the age of the earth.

Finally, Augustine's greatest fault in these commentaries lies in the fact that he often tried to reconcile God's word with the scientific views of his day. Surely, the word of truth properly interpreted will never contradict accurate conclusions of scientists, but it will contradict incorrect conclusions made by fallible and limited men whose ideas are often based on naturalistic assumptions. Furthermore, man should not

expect that every aspect of the creation week would be palatable to human reason or science. After all, God was creating miraculously and His ways are higher than man's ways ([Isaiah 55:9](#)). Moreover, [Hebrews 11:3](#) claims that it is "By faith we understand that the worlds were framed by the word of God, so that the things which are seen were not made of things which were visible." A humble recognition that God has revealed to man precisely what He did during the Creation Week would go a long way in resolving the ever-present controversies surrounding the hexaemeron. Just as Augustine must be interpreted in context, so must the Bible be allowed to speak for itself. If the Bible clearly affirms a truth then it matters not what the majority of scientists claim, because God knows exactly what He did, how He did it, when He did it, and He is capable of revealing it to man in an understandable manner.

It is fitting to end this paper by citing a comment made by Luther about Augustine's allegorizing hermeneutic. He wrote,

I ask you, dear reader, what need is there of those obscure and most foolish allegories when this light is so very clear . . . Do they not smother the true meaning and replace it with an idea which is not merely useless but disastrous? . . . For we have the Holy Spirit as our Guide. Through Moses, He does not give us foolish allegories, but He teaches us about most important events (Pelikan and Lehmann 1955).

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## Footnotes

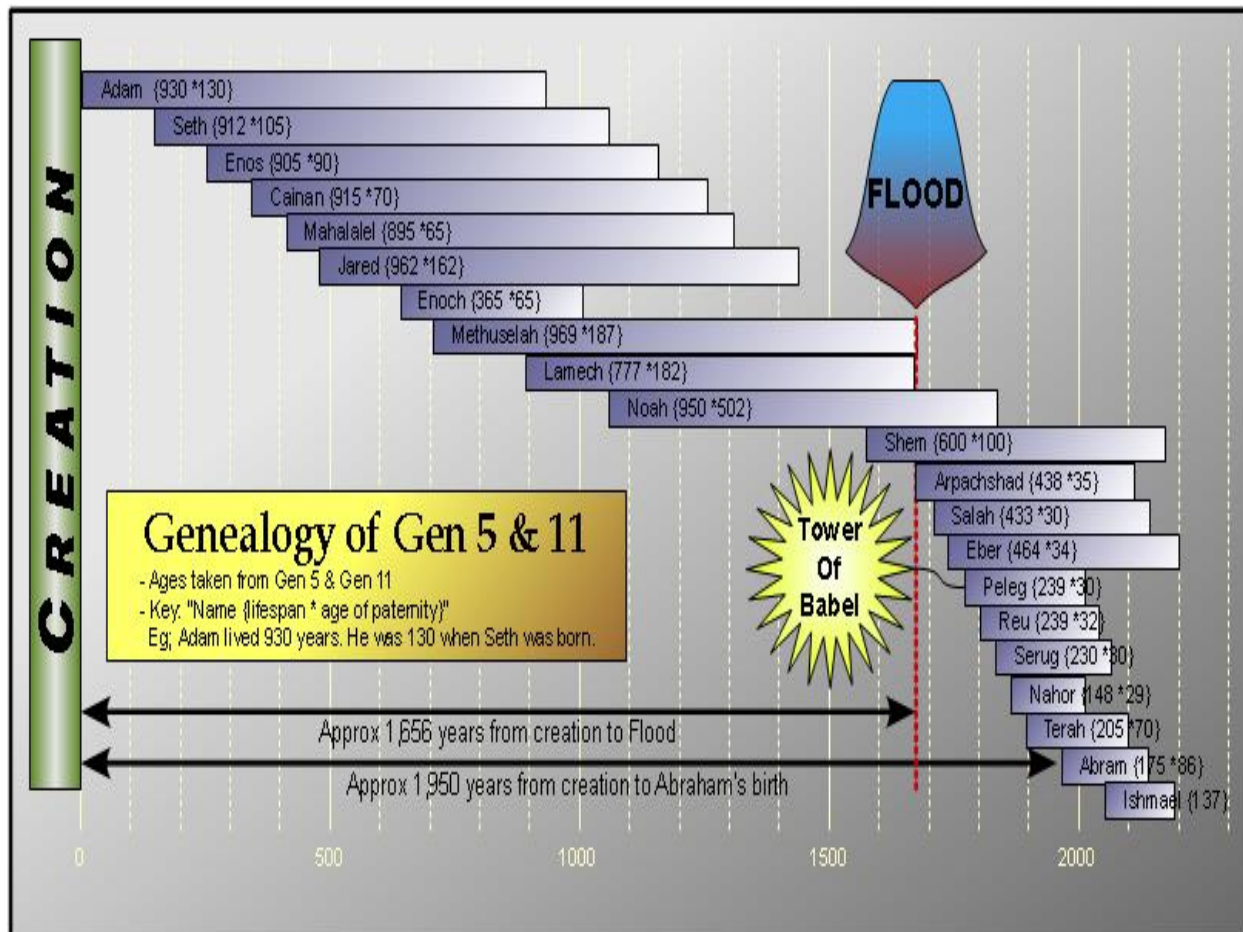
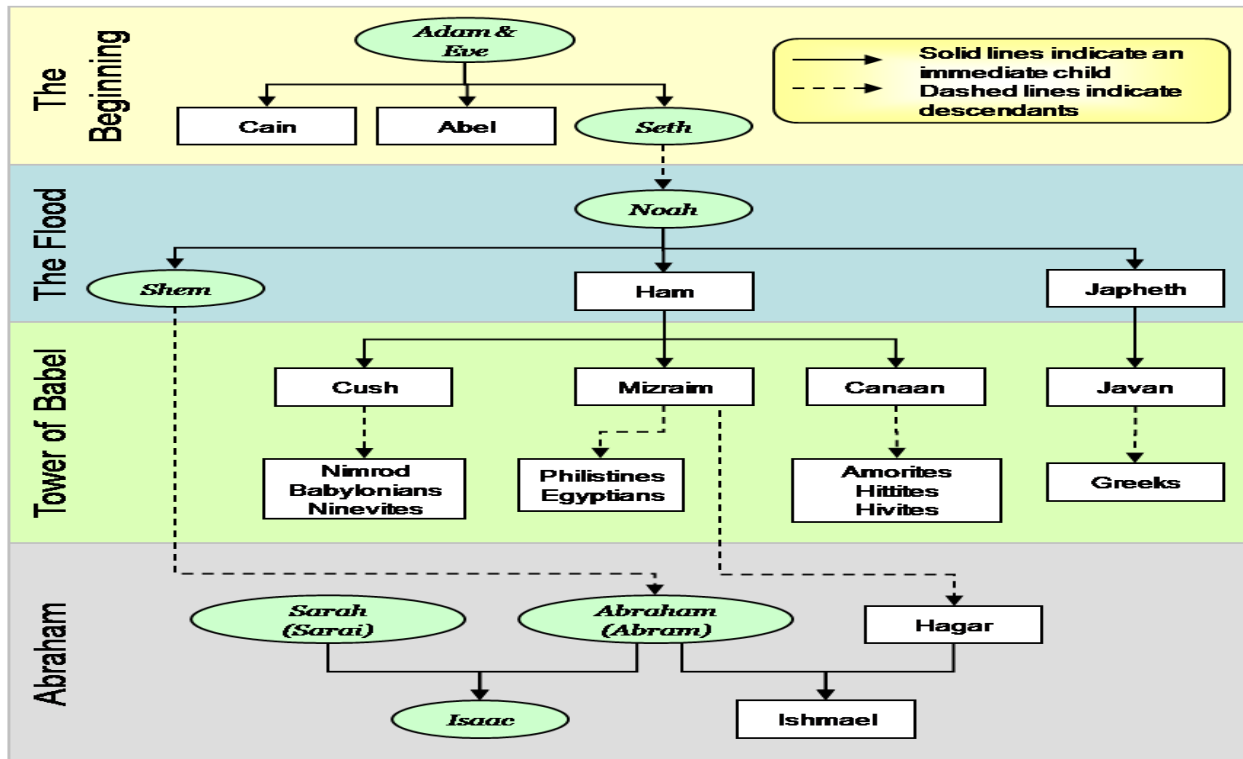
1. Williams 2001, p. 62. Augustine himself believed he was literally interpreting Genesis as evidenced by the fact that the titles of two of his commentaries on Genesis contain the word “literal”. Thomas Williams explains that even though Augustine’s interpretation of Genesis 1 would not qualify as literal by today’s standards, Augustine viewed it as such because he was “reading the creation story as a creation story, not as (for example) the story of the Church or of individual salvation.”
2. Smither 2008, pp. 142–143. Although this commentary was written approximately eight years before he became a bishop, Augustine already demonstrated his concern for training fellow believers. Smither rightly included this book as being concerned with Christian teaching in his chapter of Augustine’s mentoring work prior to his role as bishop.
3. The Manichees did not allow for non-literal interpretations, so Augustine likely reacted strongly against anyone adopting their particular hermeneutic. Also, as a maturing believer, he would surely have recognized the many errors of hyper-literalism.
4. [Psalm 104:2](#) states that God stretched out the heavens like a curtain or, in Augustine’s translation, a skin (Augustine 2002b, II.22).
5. This term was often used by the Latin fathers and was a loan word from the Greek referring to the six days of creation.
6. Irenaeus wrote, “For in as many days as this world was made, in so many thousand years shall it be concluded . . . For the day of the Lord is as a thousand years; and in six days created things were completed: it is evident, therefore, that they will come to an end at the sixth thousand year” (Irenaeus 1994, V.28.3). See also Lactantius 1994, VII.14; “God completed the world and this admirable work of nature in the space of six days, as is contained in the secrets of Holy Scripture, and consecrated the seventh day, on which He had rested from His works . . . Therefore, since all the works of God were completed in six days, the world must continue in its present state through six ages, that is, six thousand years.”
7. These comments are not meant to diminish Augustine’s work, but to point out that some of his comments are irrelevant because they do not deal with the actual text.
8. It should be pointed out that because Augustine went to great lengths to argue for the validity of multiple interpretations, he was actually dogmatically asserting his own view that no one particular interpretation is the true meaning of the text. As such, even though he seemed to display humility in this conclusion, he was actually refusing to allow the author’s intended meaning to prevail and opted for a multiple subjective meanings instead.
9. It is this sort of statement that has led some to claim Augustine believed in, or would at least be open to, some form of biological evolution. For example, see McGrath (2009). McGrath claims that Augustine’s views are crucial to today’s debate because he was not compromising with or impacted by the scientific views prevalent today. He goes on

to mistakenly claim that Augustine was concerned only with the text, but as has already been shown, he was very strongly influenced by Neo-Platonic beliefs and sought to fit these presuppositions into the text.

10. Augustine seems to support the concept of baptismal regeneration here by writing, "... for since you ordained baptism as the means of entry into the kingdom of heaven no one can get in by any other way" (Augustine 1997, XIII.21.29).
11. His argument is that this must be interpreted figuratively because this command is only given to the birds and fish (whom he sees as representative of unregenerate humanity) and man (regenerate humanity), and not to the vegetation and land animals, which also reproduce physically. He stated that if God would have also told the vegetation and land animals to be fruitful and multiply then he would have been forced to interpret it literally.
12. Latin for "by the whole extent of the heavens."
13. For example, Hodge wrote, "It is of course admitted that, taking this account by itself, it would be most natural to understand the word [day] in its ordinary sense; but if that sense brings the Mosaic account into conflict with facts, and another sense avoids such conflict, then it is obligatory on us to adopt that other [long periods of time]" (Hodge 1872, pp. 570–571).
14. This quote can be found on numerous websites promoting an old-earth creationist view of the earth and universe. Those who cite it believe the quote can be used against the young-earth creationist viewpoint because they are allegedly boldly proclaiming that Scripture teaches something that contradicts many things that can be substantiated by scientific arguments and experimentation. While Augustine certainly did not have this issue in mind, the use of this quote misses his point because the age of the earth and universe cannot be substantiated by scientific arguments and experimentation. It is a question of age, which is actually a history question. To answer this, one should consult an accurate history book, if available. Young-earth creationists point out that the Bible is a reliable history book that teaches how and when the Lord created the earth and universe.
15. As was mentioned earlier, this is likely based on the poor word choice of the *Vetus Latina*.
16. He devotes only six paragraphs to discuss the creation of man in this book.
17. Hebrew text from *Biblia Hebraica Stuttgartensia*. Transliteration and translation mine.
18. Hebrew definition from Brown, Driver, and Briggs 2000, S. 1056.
19. Augustine provided an interesting but flawed response to this question. He rightly pointed out that [Genesis 3:18](#) mentioned the beginning of thorns and thistles. He elaborates on the phrase "to you" in this verse and supposes that thorns and thistles may have existed elsewhere prior to Adam's sin because many birds eat thorny plants and these would not impact Adam's work at the time (Augustine 2002b, III.18.27–28).

20. Augustine wrote, “Here we have the spiritual creation which in its contemplation of Truth is beyond all time, and God giving an order outside time, and the spiritual creation hearing it outside time” (Augustine 2002b, I.17).
21. Neo-Platonism held a view of the “One” that was wholly other or transcendent, and which had both spiritual and physical emanations springing from it. As the “One” was timeless, so the physical emanation from the “One” must have been timeless.
22. The modern “without form and void” (Hebrew *tohu waw bohu*) conveys the meaning that the earth had not yet been given the form it has now (Kelly 1997, p. 82).
23. While it may be impossible to be dogmatic that all animals were originally vegetarian, since the fish are not listed, this verse mentions “every beast of the earth, every bird of the air,” and “everything that creeps on the earth.” These three classifications cover all land creatures which are frequently carnivorous today.
24. It may be that these animals had their diets changed following the Flood because this is when God revealed to Noah that man could begin to eat meat ([Genesis 9:3](#)). However, [Genesis 6:12](#) reveals that “all flesh had corrupted” its way on the earth. It is natural to include the animals in this because they are included five verses later when God said that He would destroy “all flesh in which is the breath of life.”
25. Augustine did in fact claim that man’s history on earth was less than 6,000 years, but he was unclear about the amount of time that may have passed, if any, prior to man’s creation (Ham 2006, pp. 89–90).
26. Augustine certainly used arguments similar to those in the Intelligent Design Movement. As cited earlier, he wished the Manichees would simply stop and reflect on the creature because it would cause them to glorify God. Nevertheless, Augustine held to the authority of Scripture and relied on Genesis for many of his views, whereas proponents of the Intelligent Design Movement often intentionally avoid citing Scripture.
27. The Galileo affair is often used by old-earth creationists to discredit young-earth creationists. They claim that science proved that the church should adjust its interpretation to scientific fact (Rusbult 2001). However, the real problem at the time was that the church had already blended science and Scripture and stubbornly refused to rethink the position when new discoveries proved the earlier science to be wrong.
28. The big bang proposes that the sun formed long before the earth while the Bible states the earth was created on the first day and the sun on the fourth. Also, the big bang proposes that earth originally formed as a hot molten ball, while the Bible states that earth was originally created as covered by water. From the big bang perspective, the earth has never been entirely covered by water.
29. Humphreys has proposed what he calls a white hole cosmology (Humphreys 1994). This view is based on the biblical idea that God stretched out the heavens yet it does not require billions of years. Instead, Humphreys effectively demonstrates how light could have traveled billions of light years while only a few days passed on earth.

30. Every dating method, including starlight from distant galaxies and radiometric dating techniques, are based on three assumptions. First, it is assumed that one knows the initial conditions of what they are examining. Second, it is assumed that the process has always occurred at a steady rate. It is easy to show this assumption is wrong in every case and is refuted in *2 Peter 3*. Finally, it is assumed that contamination of the data has not occurred.
31. Sadly, due in large part to the controversy over the age of the earth, many Christian leaders ignore Genesis and the issues surrounding it. Yet this is one of the major areas of Scripture being attacked by critics.





# Creation | Flood | Abraham Septuagint Chronology<sup>1</sup>

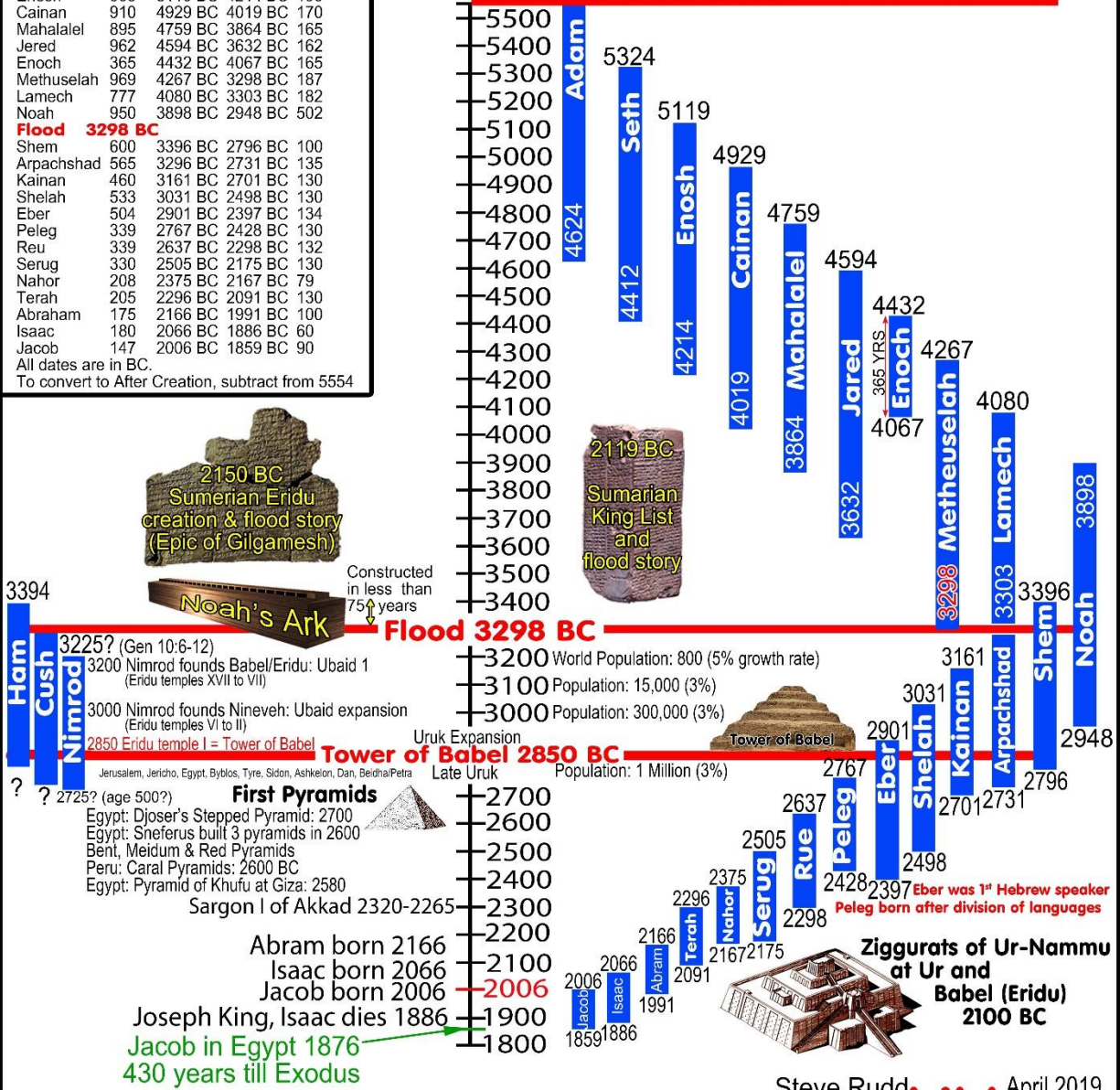
## Genesis 5 & 11 Chronology LXX

	Life	Birth	Death	Son
Adam	930	5554 BC	4624 BC	230
Seth	912	5324 BC	4412 BC	205
Enosh	905	5119 BC	4214 BC	190
Cainan	910	4929 BC	4019 BC	170
Mahalalel	895	4759 BC	3864 BC	165
Jered	962	4594 BC	3632 BC	162
Enoch	365	4432 BC	4067 BC	165
Methuselah	969	4267 BC	3298 BC	187
Lamech	777	4080 BC	3303 BC	182
Noah	950	3898 BC	2948 BC	502

**Flood 3298 BC**  
 Shem 600 3396 BC 2796 BC 100  
 Arpachshad 565 3296 BC 2731 BC 135  
 Kainan 460 3161 BC 2701 BC 130  
 Shelah 533 3031 BC 2498 BC 130  
 Eber 504 2901 BC 2397 BC 134  
 Peleg 339 2767 BC 2428 BC 130  
 Reu 339 2637 BC 2298 BC 132  
 Serug 330 2505 BC 2175 BC 130  
 Nahor 208 2375 BC 2167 BC 79  
 Terah 205 2296 BC 2091 BC 130  
 Abraham 175 2166 BC 1991 BC 100  
 Isaac 180 2066 BC 1886 BC 60  
 Jacob 147 2006 BC 1859 BC 90

All dates are in BC.  
 To convert to After Creation, subtract from 5554

**5554 BC Creation** Earth is 7572 years old in 2019 AD



Steve Rudd April 2019  
[www.bible.ca](http://www.bible.ca)

**1:** The Masoretic Text chronology from Abraham to Adam was corrupted by Jews in 160 AD at Zippori for anti-Christian theological reasons. The Septuagint Chronology in whole is the original and correct. Jacob's birth is 2006 BC, Exodus 1446 BC, Solomon's temple started 967 BC in both MT and LXX texts.

# Systematic Theology Texts and the Age of the Earth

## A Response to the Views of Erickson, Grudem, and Lewis and Demarest

by [Dr. Terry Mortenson](#) on December 16, 2009

### Abstract

*In the past few decades there has been a growing controversy in society and in the Church over evolution and the age of the earth. Some Christians accept the idea of billions of years, as taught by the scientific establishment, while others contend that Scripture requires that we believe that creation is only a few thousand years old. Systematic theology texts are influential in this debate as they are used in the training of future pastors, missionaries, seminary and Christian college professors and are also read by many lay people, thus affecting the Church's witness. After briefly explaining the evidence in defense of the young-earth creationist view & why this subject is important, three deservedly respected theology textbooks will be examined regarding their teachings on the age of the earth. It will be argued that in spite of their helpful remarks, these scholars have not adequately explained the biblical truth on this subject nor have they persuasively defended their old-earth positions & provided convincing rebuttals to the young-earth view. On this subject then, I conclude, these systematic theology texts are not helping but rather hindering the Church in her witness in our evolutionized world.*

## Introduction

Over the past few decades there has been a growing and often heated controversy in the public square and in the Church (not only in America but other countries as well) over evolution and the age of the earth. Over twenty states are considering changing (or have recently tried to change) their high school science standards to allow students to be exposed to scientific criticisms of evolution. This is due to the combined efforts of young-earth creationists and people in the Intelligent Design Movement.

Almost every day articles appear in leading newspapers, news magazines, and popular science magazines dealing with these issues. Many of those articles deal with the age of the earth. In fact, in one week in October 2006 several magazines produced by Lutherans, Presbyterians, Catholics, and Jews, all had cover stories on the question of origins.<sup>1</sup> **And the documentary - *Expelled: No Intelligence Allowed* has generated much discussion since its release in 2008.**

Many Christians today accept the idea of billions and billions of years, as taught by the scientific establishment, while others contend that Scripture requires that we believe that creation is only a few thousand years old. Systematic theology texts significantly influence this debate as they are used in the training of pastors, missionaries, Christian college students, and future Christian college and seminary professors. These texts are also read by many lay people. And through translation into a growing number of languages, these texts are having a worldwide impact.

After briefly summarizing the creationist view and explaining further why this subject is vitally important, I will examine the old-earth views of three justifiably respected theology textbooks by Millard Erickson, Wayne Grudem, and Gordon Lewis and Bruce Demarest. It will be argued that in spite of their many helpful remarks on creation, these scholars have not explained the biblical truth on this subject adequately, defended their old-earth positions persuasively, or provided convincing rebuttals to the young-earth view. On the question of the age of the earth, I will conclude, these fine systematic theology texts are misleading the Church and weakening her witness in our evolutionized world.

## Creationist View Summarized and Defended

Young-earth creationists believe that the creation days of Genesis 1 were six literal (24-hour) days which occurred 6,000–12,000 years ago.<sup>7</sup> They believe that about 2,300–3,300 years before Christ, the surface of the earth was radically rearranged by Noah's Flood. All land animals and birds not in Noah's Ark (along with many sea creatures) perished; many of which were subsequently buried in the sediments of the Great Flood. Therefore, creationists believe that the global, catastrophic Flood was responsible for *most* (but not all) of the rock layers and fossils. In other words, some rock layers and possibly some fossils were deposited before the Flood, while other layers and fossils were produced in postdiluvian localized catastrophic sedimentation events or processes).

The biblical arguments in support of this view can be summarized as follows.<sup>8</sup>

1. Genesis is history, not poetry,<sup>9</sup> parable, prophetic vision, or mythology. This is seen in the Hebrew verbs used in Genesis 1 (Boyd 2008),<sup>10</sup> the fact that *Genesis 1–11* has the same characteristics of historical narrative as in *Genesis 12–50*, most of Exodus, much of Numbers, Joshua, 1 & 2 Kings. (which are discernibly distinct from characteristics of Hebrew poetry, parable, or prophetic vision), and the way the other biblical authors and Jesus treat *Genesis 1–11* (as literal history) (Kaiser 2001, pp. 53–83).<sup>11</sup>
2. The very dominant meaning of *yôm* in the Old Testament is a literal day, and the context of Genesis 1 confirms that meaning there (Hasel 1994; McCabe 2000; Steinmann 2002). *Yôm* is defined in its two literal senses in verse 5. It is repeatedly modified by a number (one day, second day, etc.) and with evening and morning, which elsewhere in the Old Testament always means a literal day. It is defined again literally in verse 14 in relation to the movement of the heavenly bodies.
3. God created the first animate and inanimate things supernaturally and instantly. They were fully formed and fully functioning. For example, plants, animals, and people were mature adults ready to reproduce naturally “after their kinds.” When God said “let there be . . .” He did not have to wait millions of years for things to come into existence. He spoke, and things happened (*Psalms 33:6–9*).
4. The order of creation in *Genesis 1* contradicts the order of events in the evolution story in at least 30 points. For example, the Bible says the earth was created before the sun and stars, which is just the opposite of the big bang theory's order. The Bible says that fruit trees were created before any sea creatures and that birds were created before dinosaurs (which were made on Day 6, since they are land animals), exactly the opposite of the evolution story. The Bible says the earth was covered completely with water before dry land appeared, and then it was covered again at the Flood. Evolution theory says the earth has never been covered with a global ocean, and dry land appeared before the first seas (Mortenson 2006).

5. [Exodus 20:8–11](#) resists all attempts to add millions of years anywhere in *Genesis 1* because it says that God created everything in six days. The day-age view is ruled out because “day” (*yôm*) is used in both parts of the commandment. The days of the Jewish work-week are the same as the days of Creation Week. God could have used several other words or phrases if He meant to say “work six days because I created in six long, indefinite periods” (Stambaugh 1991a). But He didn’t. These verses also rule out the gap theory or any attempt to add millions of years before verse 1 because God says He created the heavens, the earth, the sea, and *all that is in them* during the six days. He made nothing before the six days. It should be noted that the fourth commandment is one of a few of the Ten Commandments that contains a reason for the commandment. If God created over millions of years, He could have not given a reason for Sabbath-keeping or He could have given a theological/redemptive reason as done elsewhere.<sup>12</sup>
6. In Jesus’ comments about Adam and Eve, Cain and Abel, Noah and the Flood, Sodom and Gomorrah, etc., He clearly took the events recorded in Genesis as literal history, as did all the New Testament writers. Several passages show that Jesus believed that man was created at the beginning of creation, not billions of years after the beginning (as old-earth views imply), which confirms the young-earth creationist view ([Mark 10:6](#) & [13:19](#) & [Luke 11:50–51](#)) (Mortenson 2004a, 2008a). His miracles also confirm the young-earth view. From His first miracle of turning water into wine (which revealed His glory as the Creator, cf. [John 2:11](#) & [1:1–5](#)) to all His other miracles, His spoken word brought an immediate, instantaneous result, just as God’s word did in Creation Week.<sup>13</sup>
7. The Bible teaches that there was no animal or human death before the Fall of Adam and Eve. So the geological record of rock layers and fossils could not have been millions of years before the Fall. See my development of this point on page 178.
8. The nature of God as revealed in Scripture rules out the idea that He created over millions of years. See on page 179.
9. The global catastrophic Flood of Noah was responsible for producing most (but not all) of the geological record of rock layers and fossils (Barrick 2008). Careful exegesis has shown that this was not a local flood in Mesopotamia (Sarfati 2004, pp. 241–286; Whitcomb and Morris pp. 1–88). It is most unreasonable to believe in a global, year-long Flood that left no geological evidence (or that it only left evidence in low lands of the Fertile Crescent, as some suppose) (Hallo and Simpson 1998, pp. 32–33). The global evidence of sedimentary rock layers filled with land and marine fossils is exactly the kind of evidence we would expect from Noah’s Flood. If most of the rock record is the evidence of the Flood, then there really is no geological evidence for millions of years. But the secular geologists deny the global Flood of Noah’s day because they deny that there is any geological evidence for such a flood. So, the fossiliferous rock record is either the evidence of Noah’s Flood or the evidence of millions of years of geological change. It cannot be evidence of both. If we do not accept the geological establishment’s view of Noah’s Flood, then we cannot accept their view of the age of the earth. So, it is logically inconsistent to believe in both a global Noachian Flood and millions of years.

10. The genealogies of *Genesis 5 and 11* give us the years from Adam to Abraham, who virtually all scholars agree lived about 2000 BC. This sets the date of creation at approximately 6,000 years ago. Some young-earth creationists say the creation may be 10,000–12,000 years old, but the arguments for gaps of any length of time in the *Genesis 5 and 11* genealogies are not compelling to this writer and many others. Freeman, Jones, and Pierce present strong arguments for accepting these genealogies as tight chronologies with no gaps (Freeman, 1998, 2008; Jones, 2005; Pierce, 2006).
11. For eighteen centuries the almost universal belief of the Church was that the creation began 4,000–5,000 years before Christ (Mortenson 2004b, pp. 40–45).<sup>14</sup> So, young-earth creationism is historic Christian orthodoxy. It was also Jewish orthodoxy at least up to the end of the first century of church history (Whiston 1987, pp. 29–33). In light of this fact, it seems inconsistent with the truth-loving nature of God revealed in Scripture to think that for about 3,000 years God let faithful Jews and Christians (especially the writers of Scripture) believe that Genesis teaches a literal six-day creation about 6,000 years ago but that in the early nineteenth century He used godless men (who rejected the Bible as God’s Word) to correct the Church’s understanding of Genesis.<sup>15</sup>

Two of the points above require further explanation because they are so important and overlooked or resisted by the authors under consideration (as well as by nearly all other old-earth creationists).

## Death before the Fall?

Simply put, the evolutionary idea of millions of years is diametrically opposed to the Bible’s teaching about death.

Evolution says that during the course of millions of years, death, bloodshed, suffering, and disease eventually led to man’s existence. The late evolutionary astrophysicist Carl Sagan said, “The secrets of evolution are time and death: time for the slow accumulations of favorable mutations, and death to make room for new species” (Sagan 1978/1979). So when evolutionists talk about millions of years, they are not merely referring to a large number. They are imagining a long period of history in which certain events took place.

The fossils, which the evolutionists say represent millions of years of history, are a record not of life, but of death. And in many places around the world we see evidence of massive and violent carnage in fossil graveyards containing millions of former living creatures packed in high concentrations.

So, whether we believe in Neo-Darwinian evolution, or we believe that God supernaturally created different kinds of plants and animals occasionally during the course of millions of years, we are still adopting an evolutionary view of death if we accept millions of years.

But the biblical teaching on death is very clear and consistent from Genesis to Revelation. *Genesis 1* says six times that God called the creation “good.” When He finished creation on Day 6, He called everything “very good.” Man, animals, and birds were originally vegetarian according to [Genesis 1:29–30](#). Plants are not living in the same sense as people, animals, and birds are, according to this and other Scripture passages. Plants are never called “living creatures” (Hebrew: *nephesh chayyah*), as people, land animals, birds, and sea creatures are called ([Genesis 1:20–21, 24 and 30](#); [Genesis 2:7](#); [Genesis 6:19–20](#) and [Genesis 9:10–17](#)) (Stambaugh 1991b; Todhunter 2006). So plant “death” is not the same as animal or human death ([Job 14:7–12](#), [John 12:24](#)).

Adam and Eve sinned, resulting in the judgment of God on the whole creation. Instantly Adam and Eve died spiritually, evidenced by their hiding from God. But they also began to die physically and Paul clearly had physical death in mind in [Romans 5:12](#) and [1 Corinthians 15:21–22](#) (as the context shows), when he says that death came into the human race through Adam’s sin. The serpent was cursed, along with other animals, resulting in a physical transformation. It is reasonable to assume that the other cursed animals were also altered physically in some way ([Genesis 3:14](#)). Eve was changed physically to have increased pain in child-birth ([Genesis 3:16](#)). And the ground itself was cursed ([Genesis 3:17–19](#)), a fact that was still on the minds of people 1,000 years later when Noah was born ([Genesis 5:29](#)). The whole earth was cursed again at Noah’s Flood ([Genesis 8:22](#)). The whole creation now groans in bondage to corruption (because of the *Genesis 3* curse) waiting for the final act in the redemption of Christians—giving them immortal resurrected bodies ([Romans 8:19–25](#)) (Moo 1996, pp. 513–514; Murray 1993, pp. 301–302; Schreiner 1998, p. 435).<sup>16</sup> When that redemptive event happens, we will see the restoration and redemption of all things ([Acts 3:21](#) and [Colossians 1:20](#)) to a state similar to the pre-Fall world. Then there will be no more carnivorous behavior ([Isaiah 11:6–9](#)) and no disease, suffering, or death ([Revelation 21:3–5](#)) because there will be no more curse ([Revelation 22:3](#)).<sup>17</sup> To accept millions of years of animal death before the creation and fall of man contradicts and destroys not only the Bible’s teaching on death but also undermines its teaching on the full redemptive work of Christ.

If God cursed the earth with thorns *after* Adam sinned (as [Genesis 3:18](#) says, “both thorns and thistles it *shall* grow for you”),<sup>18</sup> then why do we find fossil thorns in rocks that the evolutionists claim are about 350 million years old (Stewart and Rothwell 1993, pp. 172–176<sup>19</sup>)? If the millions of years are true, then God lied. If [Genesis 3:18](#) is true, then the millions of years are a lie. Were arthritis and cancer in the “very good” world before man sinned? If the evolutionists’ dating methods are correct, the answer must be “yes.” Many kinds of disease have been found in the fossil record, including arthritis, abscesses, and tumors in dinosaur bones dated to be 110 million years old. A researcher of these bones tells us that “diseases look the same through time . . . it makes no difference whether this is now or a hundred

million years ago” (Anonymous 1998). There is also considerable evidence of rickets, syphilis, dental disease, etc., in human fossil bones that evolutionists date to be tens or hundreds of thousands of years before any biblically plausible date for Adam (Lubenow 1998). If the Bible is true, then those dates are false and there was no pre-Fall death and disease.

Evolutionists believe that over the course of a half billion years there were 5 major extinction events/periods,<sup>20</sup> when 65–90% of all species living at those particular times went extinct. They also claim many lesser extinction events/periods. If this was the way the creation was for millions of years, then what impact on the creation did the Fall have? None. Contrary to what the Bible says, the Fall would have only caused spiritual death in man. In fact, we can go further and say that if the millions of years of death and extinction really did occur, then that “very good” creation was considerably *worse* than the world we now inhabit where habitats are polluted or destroyed and creatures are brought to extinction due to human sin. We have never seen in human history<sup>21</sup> the kind of mass-kill, extinction events that evolutionary geologists say occurred before man came into existence. So, if the millions of years really happened, then the Fall actually improved the world from what it was in the “very good” pre-Fall creation. In this case, the curse at the Fall would actually be a blessing! So, if the Bible’s teaching on death, the curse and the final redemptive work of Christ is true, then the millions-of-years idea must be a grand myth, really a lie. Conversely, if the millions of years really happened, then the Bible’s teaching on these subjects must be utterly false, which is devastating for the gospel.

## The nature of God

Closely related to this issue of death is the incompatibility of the idea of millions of years with the character of God, as revealed in Scripture.<sup>22</sup>

The events of creation in *Genesis 1* were clearly miraculous. God spoke and things immediately came into existence, as both *Genesis 1* and [Psalm 33:6–9](#) state. The emphatic repetition of “and it was so” and “God saw that it was good” and “there was evening and there was morning, the Xth day” strongly indicate this in *Genesis 1*. Also, it is difficult to imagine how God could say “let there be light” and then have to wait millions of years for light to appear. Similarly, Adam surely did not sleep for days, weeks, months, years or millions of years while God made Eve. These facts support the conclusion that all the other divine acts in *Genesis 1* were essentially instantaneous or occurred in a miraculously short period of time, on the respective days they occurred. Conversely, there is nothing in the text that indicates that thousands or millions of years would have been required for God to accomplish His objective in each act of creation.



It is also clear in *Genesis One* that God supernaturally created the first plants, sea creatures, birds, land animals and the first human couple because the description of those events is stated in a way that contrasts with the description of how other such creatures would come into existence after the original ones—that is, by the natural growth of seeds in the fruit of the first plants or by the sexual reproduction of the first animal and human pairs. Also, the nature of all God’s later miracles in the Bible and the miracles of Jesus in the Gospels were instantaneous.

If the gap theory is true, then what kind of God is it who would create the earth and all forms of life, except man, and let them live and die for millions of years and then destroy them all (perhaps in a flood associated with Satan’s fall) before He recreated the world with creatures very similar to the ones He had already destroyed?

If the day-age view or framework hypothesis or any other old-earth view is true, then what kind of God is it who would create the earth instantly and then leave it covered with water for millions of years and then create dry land and plants and let them produce for millions of years before He made the sun? And what kind of God would make the sun, moon, and stars to enable man to measure time, but then wait billions of years before He made man to measure the time? Or if we reject the order of events in *Genesis 1* and say that the evolutionary order of appearance of the different creatures and the time-scale are correct, we have other problems. What kind of God would create the earth 4.5 billion years ago and let it exist for one billion years before He made the first microscopic creatures (protozoans)<sup>23</sup> and then waited another 2.875 billion years before He made the first metazoans<sup>24</sup> and then waited another 625 million years before He made Adam, who was the ultimate goal of His creation and was made to rule over all the animals, most of whom lived and died before Adam was created?<sup>25</sup> This is a bizarre, wasteful God, and nothing like the wise and omnipotent Creator revealed in Scripture. And if God really created in the order and over the long timescales that evolutionists claim, does this not make God a deceiver or a liar when He inspired Moses to write the *Genesis 1* account of the order of His creative acts, which is so contradictory to the evolutionary order of events of history?

Furthermore, as noted before, at the end of Creation Week God called everything that He had made “very good.” But could the God of Scripture really describe as “very good” a fossil graveyard of thousands of feet of sedimentary rocks covering the whole earth and containing billions of fossils of former living things? Could He really call cancer “very good”? Could He call thorns and thistles “very good,” when in *Genesis 3* He says they are the result of His curse? If God called all this death “very good” and told Adam that thorns were a consequence of his sin when in fact they existed long before he was created, then again God lied. But the biblical God is the God of truth. It is Satan who is a liar and a deceiver.

Furthermore, if God created through a process (either of progressive or theistic evolution) that involved millions of years of death, then He is very different from the God revealed in the post-Fall world. The God of the post-Fall world commanded His people (the Israelites) to take care of their animals and give them a day of rest ([Exodus 20:10](#) & [23:12](#)). The post-Fall God commanded them to help lost or trapped animals ([Exodus 23:4-5](#)). That God told them not to be cruel to their animals (such as muzzling an ox while it was threshing ([Deuteronomy 25:4](#))). The post-Fall God says that “a righteous man has regard for the life of his beast, but the compassion of the wicked is cruel” ([Proverbs 12:10](#)). That God says that He cares for the creatures of the earth in His fallen, cursed creation ([Psalm 104:14-16](#) and [27-28](#), [Psalm 145:14-16](#), [Psalm 147:9](#), [Jonah 4:11](#), [Matthew 6:26](#), and [Luke 12:24](#)).<sup>26</sup>

If millions of years of death and extinction and disease really occurred, then God is like the wicked man of [Proverbs 12:10](#), and He was doing exactly the opposite of what He told the Jews to do. The acceptance of millions of years is an assault on the character of Almighty God. If God created over millions of years, then He clearly was not intelligent enough and powerful enough to create the world right in the first place. Either He lacked the sovereign power to control His creation so that it did not destroy most of His previous work or He intentionally created obstacles to hinder Himself from accomplishing His intention of making a very good world. And then all along the way He kept making creatures very similar to the creatures that He had just destroyed by intention or by incompetence and impotence. What a monstrous God this would be! He would be less competent than the most incompetent engineer or construction worker. And He would be grossly unjust and unrighteous compared to the God of Isaiah, who said that when the knowledge of Him fills the earth, animals will not hurt or kill each other or people ([Isaiah 11:6-9](#) and [65:25](#)).<sup>27</sup> Such a cruel, bumbling, and weak God could not be trusted and would not be worthy of our worship.

And if these millions of years of death really occurred, then God’s curse on creation really did nothing to the nonhuman creation, and His promises about the future cannot be trusted. In fact, in this case none of His Word can be trusted.

This point has not escaped notice of non-Christians. The evolutionist philosopher, David Hull, is one of many who could be cited. He remarks on the implications of Darwinian evolution for the nature of God, but his comments equally apply to all old-earth views, even if we reject Darwinism as the explanation for the origin of the various forms of life. Hull reasons:

The problem that biological evolution poses for natural theologians is the sort of God that a Darwinian version of evolution implies. . . . The evolutionary process is rife with happenstance, contingency, incredible waste, death, pain and horror.. Whatever the God implied by evolutionary theory and the data of natural history may be like, he is not the Protestant God of waste not, want not. He is also not a loving God who cares about his productions. He is not even the awful God portrayed in the book of Job. The God of the Galápagos is careless, wasteful, indifferent, almost diabolical. He is certainly not the sort of God to whom anyone would be inclined to pray (Hull 1991, pp. 485–486).

In his opposition to the old-earth geological theories developing in the early nineteenth century, the Anglican minister, George Bugg, reasoned this way:

Hence then, we have arrived at the wanton and wicked notion of the Hindoos, *viz.*, that God has '*created and destroyed worlds as if in sport, again and again*'!! But will any Christian Divine who regards his Bible, or will any Philosopher who believes that the Almighty works no 'superfluous miracles,' and does nothing in vain, advocate the absurdity that a wise, just and benevolent Deity has, 'numerous' times, wrought miracles, and gone out of his usual way for the sole purpose of destroying whole generations of animals, that he might *create others* very like them, but yet differing a little from their predecessors!! (Bugg 1826, pp. 318–319).[28](#)

Only young-earth creationism gives us a view that is consistent with the glory, wisdom, power, holiness, truthfulness, and omniscient intelligence of the God revealed through the pages of Scriptures. As the Bible presents them, the two doctrines of death and the nature of God are utterly opposed to the millions-of-years view. If we believe the Bible on these points, then we must reject the old-earth view. They cannot both be true.[29](#)

Having presented the young-earth creationist view we can now turn to an evaluation of three of the leading systematic theology textbooks regarding their views of the age of the earth.

## Views of Millard Erickson

### *Christian theology,*

### **Grand Rapids: Baker, 1983 and 1998**[30](#)

Erickson's text is valued for helpful explanations of many points of doctrine.

### **The doctrine of Creation**

In his sections on creation and on the origin of man, he provides good arguments for affirming the theologically foundational importance of the doctrine of creation (Erickson 1983, pp. 366–367, 385–386 and 487–493).

Erickson affirms that the Bible teaches why, what, and how God created (Erickson 1983, p. 379). He rejects the gap theory, ideal time theory,<sup>31</sup> and pictorial day (or framework) theory of Genesis 1.<sup>32</sup> He expounds the doctrine of *ex nihilo* creation, namely that much of what God created during Creation Week (including the original earth and heavens) was created without using preexisting materials. And he affirms that everything (even things made from preexisting material, such as Adam from dust and Eve from Adam's rib) was created by His Word. He notes that creation is the work of the Triune God; all three members of the Godhead were involved and they created for God's glory (Erickson 1983, pp. 367–373). Erickson also affirms the historicity of Adam, citing New Testament evidence (Erickson 1983, pp. 476–477). We can be thankful for these affirmations and defenses of biblical truth. However, there are also many weaknesses in these sections of his text.

Erickson says that from the fact that God created by His Word, we can conclude that things “immediately come to pass exactly as He has willed” (Erickson 1983, p. 370). But then he contradicts this by advocating progressive creation which posits many supernatural acts of creation of plants and animals scattered over millions of years. But what is the divine purpose for creating, say, the first plants supernaturally and instantly and then waiting for millions of years to create animals & the insects that pollinate plants? And how did the plants survive the millions of years of darkness (figurative “evening” of the fourth figurative “day”)? What is the point of instantly creating sea creatures and birds on “day” 5 and then waiting millions of years to create any land animals and then waiting more millions of years to create man, whom He created to rule over the sea creatures, birds, and land animals? This bizarre way of creating is not consistent with the intelligence & wisdom of God revealed in Scripture.

Erickson uses New Testament evidence to affirm the historicity of Adam and many New Testament verses to defend the doctrine of *ex nihilo* creation (Erickson 1983, pp. 368–369). However, although he cites [Matthew 19:4](#), [Mark 10:6](#) & [Mark 13:19](#) in support of the creation having a beginning, he does not discuss (and has apparently overlooked) what these verses reveal about Jesus' belief in recent creation, namely that mankind is as old as the rest of creation.

Erickson teaches that the fourth commandment in [Exodus 20:8–11](#) indicates that the creation days were in a chronological sequence (Erickson 1983, p. 382). But, actually, that commandment is not stressing the sequence of the days but rather their duration.

## The age of the earth

In his section on the age of the earth, Erickson holds to an old-earth, day-age, progressive creationist view because it “fits well the biblical data” (Erickson 1983, p. 384). But he presents no biblical support for this statement. When he compares the gap theory, pictorial-day (framework) theory, and the day-age theory to “Flood geology,” he doesn’t give an accurate description of the young-earth view. But Flood geology is only one part of the young-earth view, which deals with all of *Genesis 1–11*, not just chapter 1 or 6–8. He asserts that

considerable amounts of time are available for microevolution to have occurred since the word יום (*yôm*), which is translated ‘day,’ may also be much more freely rendered.

He cites in support of that claim a 1948 book on progressive creation by Edward Carnell (Erickson, p.482). But Erickson has no interaction with or acknowledgement of, scholarly young-earth arguments for literal days. He also says that in the day-age view “the geological and fossil records correspond to the order of [God’s] creative acts” (Erickson 1983, p. 381). But as explained and documented earlier, that is incorrect (Mortenson 2006). Erickson also makes the exegetically unsupported and erroneous assertion that the sun, moon, and stars were created on the first day and only appeared on day four (Erickson 1983, p. 382).<sup>33</sup> Furthermore, he distorts the young-earth view by saying that creationists believe the created kinds of Genesis 1 were the same as modern biological species (Erickson 1983, pp. 383, 480).<sup>34</sup> Erickson rejects atheistic evolution (because of an absence of transitional fossils) (Erickson 1983, p. 384).<sup>35</sup> Erickson then contradicts himself when elsewhere he rejects *theistic* evolution as inconsistent with Scripture, but nonetheless says that theistic evolution “handles quite well the scientific data” (Erickson 1983, p. 383). The addition of God to atheistic evolution cannot make it fit the scientific data any better than it did without God.

It is clear that the real reason for his old-earth view is the supposed evidence from science. However, he is at least twenty years out-of-date in his reading of creationist literature.<sup>36</sup> Judging from his text and notes, he consulted only four old creationist texts: one from 1857 (his citation mistakenly has “1957”), one from 1923 (which apparently was Erickson’s only source of information about Flood geology), and two from 1970–1971 (Gosse 1857; Price 1923; Lammerts 1970, 1971).<sup>37</sup> He constantly refers to scientific or empirical “data” (Erickson 1983, pp. 378, 384, 477, 480ff) that supposedly make the young-earth view improbable, if not impossible. But he gives no specific examples. He says that the radiometric dating methods have led to a scientific consensus that the earth is billions of years old (Erickson 1983, p. 380). But truth is not determined by majority vote, and he shows no understanding of the role of philosophical assumptions used in those methods to interpret that data to arrive at the idea of millions of years (Morris 1984, pp. 51–67; Mortenson 2004c;

Mortenson 2008b, pp. 79–104). Furthermore, he arrived at his old-earth conclusion without carefully considering the current young-earth scientific arguments against those dating method assumptions and for a young earth, which were available at the time of both editions of his text.<sup>37</sup> Instead he relies (in both 1983 and 1998) on the 1954 book *The Christian View of Science and Scripture* by Bernard Ramm (1916–1992), Erickson’s first theology professor, to whom Erickson dedicates his theology text. Since then, Ramm moved into Barthian Neo-orthodoxy (as Erickson himself documented the year before his 1998 revised theology text) (Erickson 1997, pp. 33–38) & Ramm’s old-earth views were no doubt contributing cause of that theological slide. From a reading of Erickson’s text, one would not know that there has been a growing young-earth creationist movement within evangelical Christianity since 1961, when the monumental book *The Genesis Flood* was published by Whitcomb and Morris. They gave 230 pages of geological arguments<sup>38</sup> and refuted many of Ramm’s ideas about creation and the Flood. Erickson does not even mention that key book.

## The Flood

The only book Erickson footnotes in defense of Flood geology is the 1923 book by George McCready Price. And in his 1998 revised text, Erickson demonstrates no awareness of John Morris’s *The Young Earth* (1994), a fully documented book on the geological evidence, written by an evangelical Ph.D. geologist, for lay people and other non-geologists.

Erickson quickly dismisses Flood geology because it “involves too great a strain upon the geological evidence.” To support this statement, Erickson gives footnote reference to a mere five pages in Ramm’s 1954 book (Erickson 1983, p. 382). But Ramm was not a geologist, nor even a scientist of any kind.<sup>39</sup> He apparently didn’t discern the philosophical assumptions embedded in the geological arguments for millions of years, though he was trained in philosophy of science. Ramm simply accepted the claims of the geological establishment as fact & Erickson has followed suit.

Erickson does not affirm or deny belief in the global Flood, but since he rejects Flood geology, he possibly holds to the local regional flood view, which is advocated by most progressive creationists. But that view does not stand up to careful scrutiny with an open Bible (Barrick 2008, pp. 1–88; Sarfati 2004, pp. 241–286; Whitcomb and Morris 1961, pp. 1–88). If he does believe in a global Flood, he does not see that such a belief is incompatible with his acceptance of millions of years.

## The origin of man

In Erickson's discussion on the origin of man, he gives a brief but somewhat inaccurate summary of the young-earth creationist view (Erickson 1983, pp. 479–480). Unfortunately, he does not even appear to have read carefully the two older young-earth books (from 1970–1971) that he cites in a footnote, for as he did in his section on creation he misrepresents their views once again by implying that creationists believe that the original created kinds are the same as modern species with no biological development since the original creation.<sup>40</sup> But these and all other informed young-earth creationists believe that the created kinds were a much larger biological category than “species” and that much genetic variation and even rapid speciation has occurred within the created kinds since the beginning (for example, Lightner 2008).

Regarding the dating of man and the relationship of *Genesis 4* to the Neolithic period of evolutionary theory, Erickson accepts the evolutionist timescales (Erickson 1983, pp. 484–487). He considers five different Christian views on the subject and says they all have serious hermeneutical problems. But he does not present the young-earth view as one of the options even though a thorough creationist analysis of the claims about human evolution and the nature and dating of ancient man was available before his first edition (Bowden 1981; Wilder-Smith 1975).<sup>41</sup>

## Sin and death

In his section on the results of sin, (Erickson 1983, pp. 601–619). Erickson correctly teaches that the fall of man had cosmic impact on the whole creation. Unfortunately, this truth's implications for the age of the earth seem to have escaped his notice. He discusses the results of sin's impact on man, namely physical, spiritual, and eternal death. But he does not explain the impact of sin on the rest of creation, and he says nothing about whether there was animal death before the Fall or not.

Elsewhere in one short paragraph he does briefly refer to [Romans 8:18–25](#) in his discussions of “the social dimension of sin” (Erickson 1983, p. 655). He rightly observes that toilsome work, thorns and thistles, painful childbirth, and human disease are part of the curse of *Genesis 3* (Erickson 1983, pp. 655, 837–838). In his thinking, *Romans 8* shows the “cosmic character of sin” and that “the sin of mankind has distorted the entire creation” and that the creation “is waiting for the time when it will be set free from its bondage to decay” (Erickson 1983, p. 655).

In the section “the glorification of the believer's body” he says the liberation of believers from their bondage to toil, sickness, and death will happen “suddenly, dramatically” (not as a result of a process or growth), when God instantly makes a new heavens and new earth.

So, it will be, he says, with respect to the bondage to corruption that the whole creation is now suffering: “Part of the glorification of man will be the provision of a perfect environment in which to dwell” (Erickson 1983, pp. 1001–1002). Neither the nature of that perfect environment nor the change to the animals in the new creation, as we might expect from a consideration of [Isaiah 11:6–9](#) and [65:25](#), is discussed, however.

In his chapter ( “section 19”) on the problem of evil, he identifies two general types of evil. One is moral evil such as war, crime, slavery, injustice, etc., which are the result of the choices and actions of people. The second is natural evil, which he describes as “the destructive forces of nature: hurricanes, earthquakes, tornadoes, volcanic eruptions and the like” (Erickson 1983, p. 412). Moral evils are relatively easy to explain; natural evils cannot be dismissed from our consideration, because “they simply seem to be there in the creation which God has made” (Erickson 1983, p. 412). After discussing and rejecting various attempts to solve the problem of apparent contradiction between the reality of God (especially His goodness and omnipotence) and the reality of natural evil,<sup>42</sup> he affirms again that when Adam sinned, “a radical change took place in the universe.” Human death, childbirth pain, male domination in the home, hard labor, and thorns “are merely a sample of the actual effects upon the creation.” Citing Romans 8, he again says “the whole creation has been affected” by sin, and “a whole host of natural evils may also have resulted.”

So he concludes,

We live in the world which God created, but it is not quite as it was when God finished it; it is now a fallen and broken world. And part of the evils which we now experience are [sic] a result of the curse of God upon creation (Erickson 1983, p. 428).

But then in a final paragraph in this section, before turning to a discussion of moral evil, Erickson discusses the problem of millions of years of natural evil before Adam sinned. Erickson wisely rejects as “artificial” the suggestion by some that “evils were put there [in the rocks of the earth] anticipatively by God in light of the sin that He knew man was to commit.”<sup>43</sup> But Erickson’s solution is equally unacceptable. He states,

While a full-length exploration of this issue goes beyond the scope of this volume, it seems best to think of those conditions as being present from the beginning, but neutral in character. The evil effects of those phenomena may then have resulted from the sinfulness of man. For example, earth layers may naturally shift (earthquakes). When man unwisely, perhaps as a result of greed, builds upon geological faults, the shifting of the earth’s layers becomes an evil (Erickson 1983, p. 428).

Erickson’s view is unacceptable because God declared the pre-Fall creation to be “very good,” not “neutral in character.” And the natural evils are not just bad for the people who live on the fault lines or at the base of volcanoes or sea coasts where hurricanes hit. Furthermore, the natural evils are bad for the animals too. As noted before, the rock layers contain a fossil record of death, disease, mass extinctions, and even thorns and thistles.



If those rocks are millions of years old, then natural evil is not the result of sin at all and the curse did not bring corruption into the whole creation, as Erickson correctly teaches. Erickson's unacceptable and inconsistent answer to the problem of natural evil is the result of his uncritical acceptance of millions of years and his apparent lack of familiarity with creationist literature.

In his chapter on God's continuing work of providence, Erickson notes that God preserves His creation as a whole, citing [Nehemiah 9:6](#), [Colossians 1:17](#), and [Hebrews 1:3](#) (Erickson 1983, p. 388). He rightly observes that *Psalms (104)* speaks of God providing for the beasts of the earth (Erickson 1983, pp. 388–394).<sup>44</sup> Elsewhere he reasons that “God cannot be cruel, for cruelty is contrary to his nature” (Erickson 1983, p. 423). But he apparently does not see the serious conflict between his belief in this benevolent and faithful post-Fall activity of God and his acceptance of the idea that God created over millions of years with the attending death, disease, violence, and extinction that the evolutionists say actually happened.

## **Views of Wayne Grudem**

### ***Systematic Theology,***

### **Grand Rapids: Zondervan, 1994**

Wayne Grudem's theology text is immensely influential, having been translated into at least eight major languages. On the positive side, Grudem affirms *ex nihilo* creation and the direct supernatural creation of Adam and Eve (Grudem 1994, pp. 262–266). He has a helpful discussion of the biblical view of God's relation to creation compared to the views of deists, atheists, pantheists, and others (Grudem 1994, pp. 266–270). He rejects biological evolution and presents good reasons for rejecting theistic evolution, the framework hypothesis, and the gap theory (Grudem 1994, pp. 279–286 (biological evolution), pp. 276–279 (theistic evolution), pp. 300–304 (framework hypothesis) and pp. 287–289 (gap theory)). He also affirms belief in a global Flood (Grudem 1994, p. 306). In the bibliography at the end of his chapter on creation, Grudem refers to a number of young-earth books dealing with the age of the earth (most of which he identifies with “young earth view” after the citation). In this he is far more up-to-date and fair in his treatment of the young-earth view than Erickson and Lewis/Demarest are. But his old-earth arguments fail at many points.

## Inconsistencies in rejecting some old-earth views

For example, he affirms that an atheistic form of big bang theory is inconsistent with Scripture, but his qualified wording does not rule out a theistic big bang theory (Grudem 1994, p. 275).<sup>45</sup> Since he is open to the evolutionary timescale as advocated by old-earth proponents who are astrophysicists & do accept the big bang as fact,<sup>46</sup> he must, to be consistent, be open to the big bang order of events which contradict the order in Genesis (with the earth created before stars and sun), even though he rejects theistic evolution. In rejecting the framework hypothesis, he says that the strongest argument against it is that “the implication of chronological sequence in the [*Genesis 1*] narrative is almost inescapable” (Grudem 1994, p. 303.) But if the days are sequential, then the events that occurred on each day must be sequential also (unless the text explicitly tells us otherwise, which in the case of the sun, moon, and stars, it does not). So any theistic version of the big bang theory is also inconsistent with Scripture. But Grudem does not clearly say so.

Three of his arguments against the gap theory also count against all other old-earth views, including Grudem’s tentatively-held day-age view. First, Grudem correctly says there is no verse explicitly speaking of a previous creation before this one. But likewise there is not a single verse in the Bible that explicitly speaks of or supports the idea of millions of years of time in *Genesis 1*. Second, he explains that if the gap theory is correct, then God calls the creation “very good” as He looks at an earth “full of the results of rebellion, conflict and terrible divine judgment” (Grudem 1994, p. 288). But in accepting the millions of years, Grudem is implying that God looked at the fossil record of death & disease, the destructive results of supernova explosions and asteroids bombarding the earth and other planets, and the other evidence of His apparently clumsy attempts at creation over millions of years, and then He called it all “very good.” Third, Grudem rightly reasons that the theistic evolution theory...

must assume that all of the fossils of animals from millions of years ago that resemble very closely animals from today indicate that God’s first creation of the animal and plant kingdom [*sic*] resulted in a failure (Grudem 1994, p. 289).

But the same indictment can be made of all old-earth theories, for they concur with theistic evolution on this point. Only the young-earth view reflects the wisdom and power and creative success of our Creator, because in that view all the death and suffering is post-Fall.

As noted, Grudem rejects theistic evolution. But his first two reasons for doing so also stand against all other old-earth views. First, he says that the “purposefulness in God’s work in creation seems incompatible with the randomness demanded by evolutionary theory” (referring to the millions of random mutations that the theory requires) (Grudem 1994, p. 276). But this counts equally against the blind, random,

millions-of-years process of star and galaxy evolution in the big bang theory and the randomness of the millions-of-years formation of the earth and its strata to become our current habitable planet. If Scripture speaks of God's intelligent design of living creatures, as Grudem rightly understands, it equally clearly speaks of His intelligent design of the stars and the earth, which were made for His glory and by His wisdom and have always operated according to His righteous ordinances.<sup>47</sup> Grudem holds to a "straightforward biblical account of creation" to oppose theistic evolution (Grudem 1994, p. 276) and insists that the account of the Fall of Adam and Eve is a "straightforward narrative history" (Grudem 1994, p. 493). But the same type straightforward exegetical approach to all of *Genesis 1–11* requires the rejection of all old-earth theories.

Second, Grudem quotes [Psalm 33:6–9](#) and says that we should reject theistic evolution because "Scripture pictures God's creative word as bringing immediate response" (Grudem 1994, p. 277). He says that these verses seem incompatible with the idea that "after millions of years and millions of random mutations in living things" the creation was what God called for. But these same verses are equally incompatible with the theory of slow gradual, millions-of-years evolution of things nonliving such as the stars, galaxies, and the earth. In fact, these verses specifically mention the heavenly bodies, but not living creatures. So, Grudem has missed the explicit teaching of the passage. God did not need and God did not take billions of years to make the earth and the heavenly objects. As the psalmist says, God spoke and it was done. He spoke and there was light. He spoke and dry land appeared. He spoke and the sun, moon, and stars came into existence. He did not have to wait millions of years for things to happen in response to His commands.

Since Grudem accepts the Creation account as straightforward history and the chronological sequence of events in *Genesis 1*, and since he believes the divine acts of creation instantaneous, then by accepting millions of years he must necessarily believe that the divine creative acts were separated by millions of years. There is no other place to put the time. But where is the wisdom or even purpose of God in creating plants instantly and then waiting millions of years to create the sun, or in creating the sea and flying creatures instantly and then waiting millions of years to create land animals and man?

## The importance of the age of the earth

Before entering into a discussion of the age of the earth, Grudem says that the topic “is really much less important than the[se] doctrines:” (1) God created the universe out of nothing; (2) creation is distinct from God, yet always dependent on God; (3) God created the universe to show His glory; (4) the universe God created was very good; (5) there will be no final conflict between Scripture & science; and (6) secular theories that deny God as Creator, including Darwinian evolution, are incompatible with belief in the Bible. Grudem then says that the age of the earth is much less important than 2 additional subjects to be treated later in his text: (7) the creation of the angelic world, and (8) the creation of man in the image of God (Grudem 1994, p. 289).

But this statement about what is most important is simply an assertion. He gives no arguments or biblical evidence to support it. In response, we should note that his first point is not explicitly stated in Scripture, although it is a sound theological conclusion based on Scripture. Contrast that to many explicit statements about the days of creation (in Genesis and other Bible passages) and the time since creation in the genealogies of *Genesis 5 & 11* & the other chronological statements in Scripture covering the period from Abraham to Christ. Also, as I previously explained, points 3 and 4 affect our conclusions about the age of the earth and are consistent only with the young-earth view. The age of the earth is directly related to point 5 as well.

Furthermore, judging from how much God says about the age of the creation (as presented earlier in this essay) compared to how much He says about most of these other matters that Grudem mentions, the age of the earth is far more important. And the age of the earth strikes at the heart of the question of the authority of Scripture. Whether secular scientific theories that are based on antibiblical, philosophical presuppositions should be the controlling judge in the exegesis of Scripture (the hermeneutic of old-earth views) or whether Scripture truth should be determined by comparing Scripture with Scripture and careful attention to the text and context (as young-earth proponents insist) is vitally important.

Grudem is correct that secular theories which deny God as Creator, including Darwinian evolution, are clearly incompatible with belief in the Bible. But we can only say they are incompatible with the Bible, if we interpret literally the Genesis account about the creation of the first plants, animals, and people, where ten times God emphasizes that He made these creatures as distinct “kinds” in mature form ready to reproduce “after their kind” (rather than to change from one kind into a different kind). If this be the case, then why not take Genesis literally about the date and duration of creation week and the order of creation events? Why not reject the big bang cosmology completely because Genesis says that God created the plants

before the sun, moon, and stars? And why not assume that the global, world-destroying Flood would have produced a massive amount of lasting geological evidence (for example, sediment layers, erosional features, lava deposits, and fossils), instead of following Davis Young's tranquil flood view, as Grudem appears to do? Furthermore, the evolutionary theories for the origin of the universe and the earth over millions of years equally deny God as Creator and so are just as incompatible with belief in the Bible.

## The age of the earth

Turning to arguments regarding the age of the earth, Grudem begins with a discussion of the Genesis genealogies (Grudem 1994, pp. 290–291). Earlier in his text he had said that no evangelical scholar today holds to Bishop Ussher's date for creation (Grudem 1994, p. 273). But this statement probably was incorrect when he wrote it in 1994 and is demonstrably incorrect now, as several scholars have contended for no gaps in the *Genesis 5 and 11* genealogies (Freeman 1998, 2008; Jones 2005; Pierce 2006.<sup>48</sup>) I and other scholars think their arguments are compelling as well. Grudem's argument for gaps, which he takes from Francis Schaeffer,<sup>49</sup> is weak. The fact that *Matthew 1* has missing names does not mean that *Luke 3*, or *1 Chronicles (1)*, or *Genesis 5 and (11)* do also.<sup>50</sup> The other verses Grudem uses are not genealogies but rather verses where (as he rightly shows) the verbal pattern "son of" does not mean a literal father-son relationship. However, *Genesis 5 and 11* do not use this "son of" language but rather say that one man "begat" (יָלַד, *yālad*) another. This construction always means a literal parent-child relationship (Ham and Pierce 2006).<sup>51</sup> In any case, these verses cited by Grudem are irrelevant to the question of Genesis for the same reason that Matthew is—unlike verses cited by Grudem, the Genesis genealogies give detailed chronological information and other personal details. Grudem says "it seems only fair to conclude that the genealogies of Scripture have some gaps in them" (Grudem 1994, p. 291). Actually, it is only fair, or rather faithful to all the biblical data, to say that *some* of the genealogical statements in Scripture have gaps. Neither Grudem nor his cited references have demonstrated that *Genesis 5 and 11* have gaps.

Aware of the young-earth theodicy, Grudem devotes a mere two paragraphs to the issue of animal death before the Fall (Grudem 1994, pp. 292–293). Earlier he had affirmed that the initial creation was called "very good." But he added that, in spite of sin, the material world is presently good, citing [1 Timothy 4:4–5](#). However, in the context of the preceding verse, Paul is talking about food, not everything in the material world. Furthermore, Paul's statement here must be interpreted in light of his [Romans 8:20–23](#) teaching about the nonhuman creation's bondage to corruption and longing for redemption. The present creation is not all good. It is a fallen, cursed creation with remnants of goodness from the original creation.

In the section on animal death, he says that “there was no doubt death in the plant world” before the Fall (Grudem 1994, p. 292), but his comments reveal a need for further study of the creationist view on this point. He cites [Romans 8:20–23](#), but does not discuss this very relevant text. His objection that [Genesis 2:17](#) indicates that Adam’s disobedience would only affect man is an argument from silence, which is invalid, given all the texts I discussed on this point earlier. I would agree with him that [Romans 5:12](#) is irrelevant to this question (though it has often been mistakenly used this way by many creationists) because context shows that the verse is only referring to Adam and his descendants. But Grudem has not refuted the young-earth argument about no pre-Fall animal death. And as we have seen, some of his own statements weigh heavily against the acceptance of millions of years of death, disease, and extinction of animals before the Fall, including the extinction of the dinosaurs 65 million years ago, which Grudem leans toward accepting (Grudem 1994, p. 293). In a footnote, he admits that having all that fossil evidence of death in a very good creation is a “difficulty” for old-earth views and “perhaps” favors young-earth Flood geology, but he asserts that “this is not a decisive objection” (Grudem 1994, p. 305, footnote 75.) Why not? God’s description of the pre-Fall creation, the impact of the Fall and the cosmic consequences of the full redemptive work of Christ is not decisive for a Bible-believing Christian?

In his later chapter on the Fall of man he does not discuss the impact of the Fall on the nonhuman creation. But in his chapter on the glorification of the believer he affirms that God cursed the ground because of Adam’s sin, “so that it brought forth thorns and thistles and would only yield food useful for mankind by painful toil” (Grudem 1994, p. 835). He quotes [Romans 8:19–23](#) to say that the creation will be set free from corruption when Christians receive their resurrection bodies. He says,

In this renewed creation, there will be no more thorns or thistles, no more floods or droughts, no more deserts or uninhabitable jungles, no more earthquakes or tornadoes, no more poisonous snakes or bees that sting or mushrooms that kill (Grudem 1994, p. 836).

But he apparently does not realize that in accepting millions of years, he is accepting that the thorns and thistles and all those other things were part of the pre-Fall “very good” creation. So, none of those things could be part of the curse of *Genesis 3*, as he previously said. Like Erickson, he has not carefully considered the implications of his belief in the cosmic impact of the Fall.

Grudem acknowledges that young-earth biblical arguments about death have “some force” (Grudem 1994, pp. 295, 296 and 297). But he does not present those arguments very thoroughly, which significantly diminishes their force on the minds of his readers.

## Science and the Flood

Like Erickson, Grudem frequently refers to “scientific data about the age of the earth” & the “overwhelming evidence from geology,” (Grudem 1994, pp. 279, 295, 298, 302, 307, 308) as if the data and evidence speak for themselves and scientists are unbiased, objective pursuers of truth. And like Erickson, Grudem shows little grasp of the role of *assumptions* used in the *interpretation* of the geological (and astronomical) data relevant to the age of the earth. Therefore, he believes that the scientific evidence is against the young-earth view (Grudem 1994, pp. 307–308). In arguing against theistic evolution, Grudem says that “the scientific data do not force one to accept evolution” (Grudem 1994, p. 279). But most of the scientific establishment insists that the biological and paleontological data *do* force us to accept evolution. Why then should we trust the conclusions of the same godless scientific establishment about the age of the earth, when that establishment insists that the geological and astronomical data also force us to accept millions of years and reject Noah’s Flood? Why not believe God and doubt the evolutionists on all these points, especially since, as Grudem says, “sin makes us think incorrectly about God and about creation” (Grudem 1994, p. 79) and most evolutionists are unrepentant sinners? To believe some parts of *Genesis 1–11* but not other parts is neither reasonable nor consistent.

While Grudem affirms belief in a global Noachian Flood (Grudem 1994, p. 306), he does not accept the geological evidence for the Flood and a young earth (including why radiometric dating cannot be trusted) presented in nine of the thirteen young-earth creationist books that he cites in the bibliography. But it is not clear to what extent he has read those works that he cites, since he says that some of the titles were supplied by a young-earth creationist.<sup>52</sup> He states plainly he leans toward an old-earth view because arguments of Davis Young (Grudem 1994, p. 307)<sup>53</sup> who for many years was a geologist at Calvin College and who has accepted the naturalistic and uniformitarian assumptions that have controlled geology for the past 150 years. At the time of Young’s 1977 book *Creation and the Flood* (which greatly influenced Grudem), Young believed in a global, tranquil Flood which left no lasting geological evidence, a view that essentially turns the Flood into a myth.<sup>54</sup> Grudem accepts Young’s interpretations of geological arguments but gives no reasons for rejecting John and Henry Morris’s strong scientific rebuttals to Young’s assertions, although Grudem cites the Morris book in a footnote.<sup>55</sup> He says that “the controversy over flood geology is strikingly different” from other aspects of the creation-evolution debate because “its advocates have persuaded almost no professional geologists” (Grudem 1994, p. 306). Even at the time Grudem wrote that, there were a small number of Ph.D. geologists in many countries who were young-earth creationists. There are more now. But the number of geologists who accept flood geology should not be the criteria for determining the truth. If it is, then we all (including Grudem)

should accept biological evolution too, since the vast majority of biologists do. But truth is not determined by majority vote. If Grudem doesn't feel confident to assess the various geological arguments, why does he trust the Christian geologists who reject Noah's Flood and follow the assumptions and interpretations of godless, secular scientists rather than trusting Christian geologists and other geologically well-informed creationists who like Grudem do believe God's inerrant Word about that Flood? Furthermore, the unsoundness of trusting Young is shown in the fact that Young no longer holds to the day-age view defended in his two books that influenced Grudem.

When Grudem's theology text was published in 1994, he may not have been aware that at a 1990 conference on Christianity and science at Wheaton College, Young said that he had "repented" of his previous day-age view because of all the "textual mutilation" and "exegetical gymnastics" involved. But that so-called repentance did not lead Young to believe Genesis as literal history, as the Church did for eighteen centuries. Rather, Young advocated the utterly illogical view that *Genesis 1-11* "may be expressing history in nonfactual terms."<sup>56</sup> Why should anyone trust a geologist (even if he professes to be an evangelical) who reasons and "repents" like that? Young has since abandoned the tranquil flood view and now argues (contrary to Grudem's view) that the Flood was localized in the Middle East (Young 1995, p. 242). Such changing interpretations of Genesis result from Young's elevation of current majority views in geology/archeology (which are controlled by naturalistic, uniformitarian assumptions) above the authority of the Word of God. In Young's latest book, he is not sure what the Genesis text means for he does not clearly advocate any view, except for rejecting the young-earth view without dealing with the best defenses of that position (Young and Stearley 2008). This makes Young an unreliable guide for understanding both Genesis and the geological evidence.

## The length of the creation days

Grudem gives a few young-earth arguments in support of literal days (Grudem 1994, pp. 295-297). He says that the repeated refrain of "there was evening and there was morning, the Xth day" in *Genesis 1* is a "strong argument from context." But he then objects that we could not have evening and morning before the sun was created on Day 4. He fails to note that all that is needed is a source of light external to the earth on the first three days. And God made that light on Day One. Can our supernatural God not create the phenomenon of light without the sun? He did so in the middle of a sunny day to blind Saul on the road to Damascus ([Acts 9:4](#) and [22:6](#)) and will do so in the new creation ([Revelation 21:23](#) and [22:5](#)). Why not on Day 1 ([Genesis 1:3](#))?

As noted at the beginning of this essay, [Exodus 20:8-11](#) is a very important passage for the defense of young-earth creationism, and Grudem says that it "is hard to



avoid” our conclusion. However, he attempts to neutralize these verses by saying that the passage teaches that the Jews were to work six days because God set a pattern of working six successive periods and resting on the seventh (Grudem 1994, pp. 295–296). But if God created over six long ages of time and was only establishing a pattern of 6 + 1 for the Jewish work-week, He could have (and would have) used an indefinite time word or phrase,<sup>57</sup> rather than the only Hebrew word that means a twenty four hour day. Also, Grudem declares that in the very next sentence (and commandment, [Exodus 20:12](#)) “‘day’ means ‘a period of time’.” However, that verse does not use “day” singular, but “days” plural and everywhere else “days” (Hebrew, *yamim*) is used in the Old Testament, the context shows that it always means literal days. Furthermore, when the commandment says that our “days may be prolonged” it does not mean that the days will be longer than 24 hours (and Grudem agrees), but that we will live a greater *number* of days, that is, a longer life. So, Grudem’s comments fail to refute the creationist argument from the fourth commandment. Grudem’s arguments against literal days and for the day-age view include the fact that [Genesis 2:4](#) is a nonliteral use of *yôm* (day) in the Genesis creation account and *yôm* sometimes has a nonliteral meaning elsewhere in the Old Testament. But all his verses supporting the latter point have *yôm* connected to nouns in construct state (for example, day of God’s wrath or battle, day of harvest, etc.). Furthermore, none of these verses prove a nonliteral meaning for *yôm*, because these phrases can also just as legitimately be interpreted as the first literal day of a longer time period (for example, battle, harvest, etc.). Also, in *Genesis 1* (as in [Exodus 20:11](#)) we do not have this grammatical construction (nouns in the construct state with *yôm*). Rather, in *Genesis One* we find *yôm* modified by number, which everywhere else in the Old Testament always means a literal 24 hour day. A similar argument applies to [Genesis 2:4](#) where the construction is *beyom* (literally, “in day”), an adverb (functioning as a prepositional phrase) which is not used in *Genesis One* with respect to each day of creation. [Numbers 7:10–84](#) provides a similar use of *beyom* (in verses 10 and 84, referring to a twelve day period of Jewish sacrifice) in context with *yôm* + number (verses 12, 18, 24) where the days are literal, when each Israelite tribe sacrificed). So, the nonliteral *beyom* in [Genesis 2:4](#) does not negate the literal interpretation of *yôm* in *Genesis 1*.

Grudem also raises the old & frequently refuted objection that too much happened on the sixth day of creation to fit into twenty-four hours. But no time duration for the events is given in the text. The miraculous events of creation (creating all the land animals, making the Garden of Eden, creating Adam, putting Adam to sleep and creating Eve) were instantaneous or required only minutes, at most. Surely, putting Adam in the Garden (for the purpose of caring for it)<sup>58</sup> and telling him not to eat from one tree took at most two minutes to accomplish. Grudem assumes that an “incredibly large number of animals” were named (Grudem 1994, p. 294). But what is that number? The text does not inform us of the number of “beasts of the field” and “birds of the sky” God brought to Adam to name (he did not need to name

sea creatures, “beasts of the earth,” or creeping things). They may have only been only the animals that Adam would domesticate. Naming at the leisurely pace of six animals per minute, Adam could have effortlessly named 3,000 animals and birds in ten hours as God brought them by Adam ([Genesis 2:19](#)). Nor does the text require us to think that the names were technical (for illustration, double-Latin), taxonomic names based on extensive scientific observations, rather than simple names like dog, pig, cow, goat, horse, duck, chicken, or robin, which have no connection to the morphology or behavior of the animals. So there is no logical or textual justification for saying that these events of Day 6 could not happen even in just twelve hours. Contrary to Grudem’s assertion, the “contextual considerations” (Grudem 1994, p. 294) do not support the day-age view.

The fact that the 7<sup>th</sup> day of creation does not have the phrase “there was evening and there was morning, the seventh day” does not necessarily imply that it is continuing through to the present time, as Grudem suggests, and that therefore the six days of creation were not literal (Grudem 1994, p. 294). The phrase’s absence may be a literary device to reinforce the fact that God completed His creation and did not resume creation activities on the eighth day of history. The parallel of the creation week to the Jewish week in [Exodus 20:8–11](#) confirms that the seventh day in both weeks was completed, and it was the same length as the previous six days. Also, the past tense verbs<sup>59</sup> of [Genesis 2:1–3](#) and [Exodus 20:8–11](#) show that Moses is looking back at past completed days long before he wrote either book. Furthermore, Adam was created on the sixth day and lived on the seventh day and all the literal days of his literal life totaled 930 years of days ([Genesis 5:5](#)). So, if the seventh day is still continuing, then Adam is not yet dead. But also, if we accept that the seventh day of creation week continues to our time, then this means that God is not now creating but is resting. Consequently, the processes that scientists study today are not God’s creation activities, but rather His resting activities of providence. Therefore, the old-earth theories, which rely on evolutionist geological & astronomical interpretations of & extrapolations from present processes to say how things came into existence and how long ago, are false.

Another objection raised by Grudem to the literal-day view is that although God could have used other time words in Hebrew (rather than *yôm*), if He wanted to say He created over long ages, “the original readers knew that the word ‘day’ could mean a long period of time,” so there was no need to use one of those other words (Grudem 1994, pp. 294–295). But how does Grudem know that the Israelites at the time when Moses wrote the Book of Genesis knew this? He offers no biblical or logical justification for this assertion. None of the poetic or prophetic books of the Old Testament where a nonliteral *yôm* is used (and which Grudem cited earlier) were written at that time. So we can just as well say that the Jews only had literal uses of *yôm* to reference. Besides, orthodox Jews took the creation days literally until they, along with most Christians, accepted the idea of millions of years in the early nineteenth century).

Grudem acknowledges that the young-earth argument from Jesus' words in [Mark 10:6](#) "has some force." His one-sentence reply is that "Jesus is just referring to the whole of *Genesis 1-2* as the 'beginning of creation,' in contrast to the argument from the laws given by Moses that the Pharisees were depending on (verse 4)" (Grudem 1994, p. 297). But this is precisely what creationists believe, so this does not refute their argument.

Grudem expresses hesitancy about his views on the age of the earth more than once (Grudem 1994, pp. 297, 308) and this is understandable, given his admitted need for further study. But given his uncertainty about the age of the earth, how can he be so confident in telling Christians that the age of the earth is not important and "that God may not allow us to find a clear solution to this question before Christ returns," so that therefore old-earthers and young-earthers should just work together in peace? If the Bible teaches a young earth, then it is very important that we believe it and not compromise with contrary ideas.

## **Views of Gordon Lewis and Bruce Demarest *Integrative Theology*, (Grand Rapids: Zondervan, 1996, 3 volumes in one)[60](#)**

Space prevents me from giving an equally thorough analysis of Lewis & Demarest's theology text. Only a sampling of their problematic reasoning can be given.

### **The days of creation**

Lewis and Demarest say that "*Genesis 1* does teach a chronological order of origins," (Lewis and Demarest 1996, vol. 2, p. 41) even stating that the solar system was not arranged until the fourth day, after the earth was created (Lewis and Demarest 1996, vol. 2, pp. 42, 44).

They suggest (though without any exegetical argument) that the sun was created on Day 1, but that on Day 4 God placed it at the right distance from the earth. But they do not realize that this view is incompatible with the secular cosmology which they are trying to fit into *Genesis*,[61](#) which says that the sun and some other objects in the solar system were made before the earth, and the sun was always the same distance from the earth as it is now.

They do accurately present many of the creationist arguments for literal creation days, but their objections are as weak as Erickson's and Grudem's. For example, they say that the term "day" can mean month (citing [Genesis 29:14](#)), seven sabbaths of years ([Leviticus 25:8](#)), "a long time" of forty years ([Joshua 24:7](#)) and a "long time" of

Israelite rebellion ([2 Chronicles 15:3](#)) (Lewis and Demarest 1996, vol. 2, p. 44). But Lewis and Demarest should have looked more carefully at the Hebrew text in these cases. They fail to note that all these verses use the plural “days” (*yamim*), not the singular “day” (*yôm*) and that every use of *yamim* in the Old Testament means literal days. In [Genesis 29:14](#) the Hebrew reads “month of days” (where “days” are literal). In [Leviticus 25:8](#) the Hebrew text says “days of seven sevens of years” (which are literal days of literal years). The Hebrew of [Joshua 24:7](#) and [2 Chronicles 15:3](#) has the same wording and reads “many days” (which may be a long time, but a time period consisting of literal days).

Like Grudem, and following Gleason Archer’s erroneous argument,<sup>62</sup> Lewis and Demarest assert that in a 24-hour sixth day Adam could not have “completed the encyclopedic task of naming . . . all the kinds of animals and birds God created” (Lewis and Demarest 1996, vol. 2, p. 44).

Additionally, they contend, “By assuming literal days before literal days were possible [i.e. Days 1–3] recent creationists assume the point to be established. They fallaciously reason in a circle” (Lewis and Demarest 1996, vol. 2, p. 46). Even their own text shows that creationists do not *assume* the days are literal: we give strong exegetical arguments for all the creation days being literal. But a literal day is not possible before the sun was created Day 4? How do they know? All that is needed for a literal day is for the earth to rotate once on its axis in 24 hours. The sun does not cause a day, but merely serves as an instrument of measuring the passage of 24 hours of earth rotation. But a different light source external to the earth could also enable us to discern one day’s time and God created that external light source on Day 1. So, who really is assuming and reasoning fallaciously?

They assert, “A fully Christian doctrine of origins integrates careful interpretation of all the relevant Scriptures,<sup>63</sup> a historical survey of the doctrine in the Church, a systematic formulation of the Scripture’s teaching, an interaction with alternative views, and an application to life and ministry.” But the combined writings of Henry Morris alone, without adding the many contributions of other creationists over the past forty years, have done all this. Nevertheless, Lewis and Demarest state that “although scientific creationist doctrine may provide some interesting data from science, it can’t, by its own limitations, provide alternative full-orbed *theological* position for consideration” (Lewis and Demarest 1996, vol. 2, p. 46, italics in the original). It is understandable that they would come to this conclusion given that (judging from their text & endnotes) they refer to only 3 young-earth creationist books (one from 1974 and 1984), which mainly deal with scientific arguments, although they cite many more old-earth creationist books. But their apparent ignorance of creationist literature does not justify their criticism of creationist theological thinking.

## The Flood

In dismissing Flood geology they rely heavily on Davis Young, apparently without considering the Morris response to Young's arguments.<sup>64</sup> And like Erickson, they depend on the arguments of Bernard Ramm. They say "Recent creationist attempts to undermine the results of the several scientific methods of dating are insufficient to discount these methods entirely. The data for scientific dating are drawn from many different sources and show a significant degree of agreement" (Lewis and Demarest 1996, vol. 2, p. 46). However, recent creationists do not discount the dating *methods, per se*, but rather the *assumptions* hidden in those methods and the final conclusions drawn from the *interpretations* of the data based on those assumptions.<sup>65</sup> Also, as creationists have documented, those dating methods do not all agree for a particular rock sample, except when evolutionists selectively force them to do so.<sup>66</sup> In support of their assertion about dating methods, Lewis & Demarest quote Richard Bube, who wrote, "The vast majority of professionally engaged geologists, both Christian & non-Christian, reject the arguments for Flood geology as indefensible science." What Lewis and Demarest do not tell their readers, (Lewis & Demarest 1996, vol. 2, p. 46) however, is that Bube has a Ph.D. in physics and taught materials science and engineering all his academic career.<sup>67</sup> Therefore, Bube is simply trusting claims of old-earth geologists. But also, the fact that most Christian and nonchristian geologists regard Flood geology as indefensible means nothing. Truth has never been determined by a majority vote. In fact, science has often progressed by the efforts of men who thought outside the limits of majority view on a scientific problem. Also, there is a growing number of Bible-believing geologists and geophysicists in many countries who think geology does provide powerful confirmation of Noah's Flood.

Lewis & Demarest misrepresent the creationist view of the Flood by saying that we believe that it "accounts for the observable geological evidence by observable evidence from all of the areas universally" (Lewis and Demarest 1996, vol. 2, p. 47).<sup>68</sup> Creationists, however, are careful to say that the Flood produced *most* (not all) of the geological record of rock layers & fossils. Some layers are antediluvian deposits (without fossils and possibly formed on the third day of creation when God made dry land) and some were deposited after the Flood.

## Facts or Interpretations of Science

Like Erickson and Grudem, Lewis and Demarest frequently refer to the “findings” and “data” of science (Lewis and Demarest 1996, vol. 2, pp. 23, 40, 45, 46, 48, et al.). But they display no understanding of the philosophical *assumptions* that are used to *interpret* the data to arrive at the so-called “findings” (interpretive conclusions). Lewis and Demarest tell us that “[s]cientific views that prevail today may in the future be regarded improbable. We must avoid undue dogmatism concerning scientific evidence” (Lewis and Demarest 1996, vol. 2, p. 48). Furthermore, in discussing special revelation & general revelation, they even add that “the dangers of misinterpretation are less for the linguistic revelation [i.e., Scripture] than for the revelation in nature and historical events” (Lewis and Demarest 1996, vol. 2, p. 48). Given these statements, which are surely correct, is it not ironic & even inconsistent for Lewis and Demarest to argue for the day-age view, concluding that “ultimately, responsible geology must determine the length of the Genesis days”? (Lewis and Demarest 1996, vol. 2, p. 29). But, also, what is responsible geology? How would Lewis and Demarest, as theologians, ever know when geologists are doing their research responsibly? Have the majority of geologists been doing so for the past 150 years when they have been telling us that the earth is millions of years old? Lewis and Demarest do not tell us.

So, for them, godless evolutionary theories about earth history, which are based on antibiblical philosophical assumptions, trump the plain reading of the biblical text, which has been rigorously defended by careful, responsible Scripture interpreters for many years and was the orthodox Christian understanding for the first 18 centuries.

They do cite the verses which show that Jesus was a young-earth creationist ([Mark 10:6](#) and [13:19](#) and [Luke 11:51](#)). But they do so only to contend that Jesus “endorsed the validity of the Old Testament creation doctrine” (Lewis and Demarest 1996, vol. 2, p. 33). They do not explain what they mean by that obscure statement, and they miss the truth of these verses related to the age of the creation.

Although they mention the creationist argument about no animal death before the Fall (Lewis and Demarest 1996, vol. 2, p. 45), they make no attempt to refute it in the chapter on creation. In their chapter on the Fall, they quote twice from [Romans 8:20–23](#) to say “God judged the entire animate and inanimate order” at the Fall and that natural evils such as hurricanes, volcanoes, and floods are a result of the curse (Lewis and Demarest 1996, vol. 2, pp. 195–196, 209). But like Grudem and Erickson, they fail to see that this militates against their and all other old-earth views.

## Summary and Conclusions

Although these three leading systematic theology textbooks have much helpful discussion of orthodox Christian doctrines, they are seriously flawed in their teaching on the age of the earth. I have cited several problem areas.

### Weak exegesis of the relevant Scriptures

They have failed to pay careful attention to the biblical text and deal with the best young-earth exegetical arguments and to some extent have not accurately represented the young-earth view which they reject. The very limited exegetical arguments of Erickson and Lewis and Demarest and the more extensive exegetical arguments of Grudem (and the sources they reference) do not stand up under careful scrutiny and comparison with the best creationist biblical arguments.[69](#)

### Inadequate consideration of the relevant creationist literature

Because of an inadequate consideration of the creationist literature, these men have uncritically accepted the millions of years that are proclaimed as fact everywhere in our culture by the scientific and educational establishment and media.

Erickson's acquaintance with creationist literature was very out-of-date in 1983 when he admitted that "at present we cannot be dogmatic. The age of the universe is a topic which demands continued study and thought."[70](#) But in the fifteen years preceding the second revised edition in 1998 he made no changes in the chapter on creation & he apparently did no study on this subject, even as the creation-evolution issue has moved to center stage in the culture wars. Lewis and Demarest also reveal an unacceptably superficial acquaintance with creationist literature. Grudem writes with considerable hesitation about his old-earth leanings. He does show awareness of the existence of much creationist literature dealing with the age of the earth, but it is not clear from his text if he has carefully considered the young-earth (especially scientific) arguments in that literature.

In any case, even stronger biblical and scientific defenses of young-earth creationism have been produced since these three theology texts were written, especially on the subject of radiometric dating.

These and other theologians need to give more careful attention to the biblical text and to young-earth creationist arguments. A person does not require months of study to become well acquainted with the best creationist biblical and scientific arguments related to age of the earth. I plead with my old-earth Christian brethren to become better informed on the most up-to-date scientific arguments for a young earth.[71](#)

## Inadequate consideration of the impact of the Fall

While these theologians all believe that the Fall of Adam and Eve was historical and resulted in the curse of God *on the whole creation*, they have failed to see the utter incompatibility of that biblical truth with their acceptance of millions of years. I have found from my reading and personal interactions with many theologians and other scholars, that most of them who espouse or lean toward acceptance of millions of years have not carefully considered this vital point. All old-earth views of Genesis undermine the Bible's teaching about death, the curse, and the full effects of the redemptive work of Christ, and these views *unconsciously* and *unintentionally* assault the very character of God and His "very good" declaration about His initial creation.

Undermining authority of Scripture, the late James Montgomery Boice, pastor of Tenth Presbyterian in Philadelphia and chairman of the International Council of Biblical Inerrancy, wrote in his commentary on Genesis:

We have to admit here that the exegetical basis of the creationists is strong. . . . In spite of the careful biblical and scientific research that has accumulated in support of the creationists' view, there are problems that make the theory wrong to most (including many evangelical) scientists . . . Data from various disciplines point to a very old earth and an even older universe (Boice 1982, pp. 57–62).

Numerous examples could be given of other theologians who, like Boice and the theologians discussed in this essay, show that it is not Scripture, but evolutionary theory in geology and cosmology that is controlling their interpretation of Scripture.[72](#)

In his excellent book *Evangelical Feminism: A New Path to Liberalism?*, Grudem documents the times when many liberal or liberal-leaning denominations and seminaries endorsed the ordination of women (Grudem 2006, pp. 23–29). Many of them now approve of homosexuality. Grudem recognizes that before those institutions embraced feminism & homosexuality they had already abandoned belief in the inerrancy of Scripture.



This, Grudem rightly says, is ultimately a rejection of the authority of Scripture. But looking back over the last 200 years, we can see much evidence that the most important reason these institutions & denominations rejected the inerrancy and authority of Scripture (which their denominational forefathers once believed) is their acceptance first of the idea of millions of years & often later Darwinian evolution as well. The compromise with millions of years was the first step along the path to liberalism.<sup>73</sup> So, ultimately, what is at stake in the debate about the age of the earth is the authority of Scripture.

Now, the authors of these systematic theology texts would probably protest that the issue is not the authority of the Bible, but the correct interpretation of the Bible. However, we have seen that these theologians all admit (with varying degrees of hesitation) that the final arbiter in their interpretation of the Scriptures which deal with the age of the earth is evolutionist claims about the age of the universe and earth (even though these theologians demonstrate an inadequate understanding of the methods & *assumptions* used by the evolutionists to arrive at those claims). So, if secular scientific theories are allowed to override plain meaning of the text, then those theories have become the final authority.

I am certain *none* of these four evangelical theologians has *intended* to undermine the authority of Scripture. On the contrary, they love God's Word, believe it is inerrant and want to teach & defend its truth faithfully and accurately. Their good intentions to uphold the truth of Scripture are undoubtedly sincere and deeply felt. But their old-earth views (or leanings in that direction) nevertheless do *in effect* undermine the Bible's authority.

These otherwise fine systematic theology texts are misleading the Church by encouraging Christians to put more confidence in secular scientific theories than they do in the teaching of the Word of God, which these theologians admit seems to teach young-earth creationism. And they do so because they (like all the rest of us) have been led to believe by the museums, national parks, zoos, science programs on TV, school textbooks, and the popular press that scientists have proven that the universe and earth are millions of years old. But they have not proven this. Paying careful attention to all relevant Scriptures and to creationist biblical and scientific arguments will expose the myth of millions of years.

I sense, from reading and from personal conversation, that many theologians and Bible scholars are old-earth or age undecided because they do not feel qualified or knowledgeable enough to evaluate the scientific arguments for a young earth. So, they accept the majority view among scientists. I suspect that is what is happening with the authors of these systematic theology texts as well.

But there's an inconsistency in this position. A great many evangelical theologians (including the four reviewed) reject Neo-Darwinian biological evolution as an explanation for the origin of life from nonliving matter and for the origin of the various distinct kinds of plants and animals from the first living cell.<sup>74</sup> Yet the scientific establishment claims that biological evolution is proven scientific fact just as dogmatically as it claims the earth and universe are billions of years old. If the majority of scientists (most of whom are unbelievers)<sup>75</sup> are wrong about biological evolution, why should Christians accept what they say about the age of the creation, given that their theories about evolution and the age of the creation are based on the same antibiblical philosophical assumptions?

Why do so many evangelical theologians bow the knee to the majority view in science regarding the age of the earth, but reject the majority view regarding the origin of living things, even though for the most part theologians are no more academically qualified to understand and evaluate the technical arguments for biological evolution than they are to both understand and evaluate the technical geological or astronomical arguments for millions of years? The Bible is equally clear on both points and equally incompatible with the dominant "scientific" view. And why do such theologians trust the professing evangelical scientists who follow the godless scientific majority, but dismiss with little or no careful examination the arguments by Bible-believing evangelical scientists who endured the pressure of getting their Ph.D. degrees under the supervision of evolutionists and have given thorough biblical and scientific arguments for a recent creation and global Flood? Is majority vote being used to determine truth here? Is there a fear of man, rather than a fear of God ([Proverbs 29:25](#))? Is there a fear of being labeled "fundamentalist" or "biblical literalist" or "flat-earther"<sup>76</sup> or by some other pejorative term?

Furthermore, if theologians do not feel competent to judge the scientific arguments of young-earth creationists, then how can they have any confidence that scientific arguments in favor of millions of years are valid? And besides all this, is this sense of inadequacy in judging scientific arguments a justifiable reason for rejecting the clear teaching of Scripture and the virtually unanimous belief of Christians for eighteen centuries about Noah's Flood and the age of the earth? What is really happening here is that for the past two hundred years most theologians have abandoned the authority of Scripture on this issue and instead have submitted to the authority of the current majority of scientists. But most scientists are no more qualified or even knowledgeable than the theologians are to evaluate the geological and astronomical arguments for billions of years, because they are specialists in some other field of science and so are laymen when it comes to the age of the earth or the universe. Even in geology and astronomy scientists are so specialized that they must take an enormous amount "by faith," trusting that their colleagues have made accurate observations, collected sufficient data, and come to valid interpretations of the

evidence directly observed by those colleagues. So, finite people are trusting finite fallible people. Yet the history of geology and astronomy is littered with examples of inaccurate or insufficient observations and invalid interpretations of the data collected, as well as examples of where the majority was wrong and often wrong for a long time.

The issue of the age of the earth really is an issue of authority. Do we believe the infallible, inerrant Word of God, who was there at the beginning & at Noah's Flood, who knows everything, who always tells the truth, who never makes mistakes, and who inspired men to write the Scriptures without error so that we would have an accurate account of the key events of history? Or, do we believe the fallible opinions of sinful men (in this case, scientists) who were not there to scientifically observe the events in the beginning or during most of their imagined millions of years, who know next to nothing compared to God, who do not always tell the truth (sometimes intentionally and sometimes through ignorance<sup>77</sup>), who make mistakes (which is why they keep rewriting their scientific textbooks), and most of whom are trying to explain the world without God so they do not have to feel morally accountable to Him? Whom do we believe? If we believe the Bible is the uniquely inspired and inerrant Word of God, if we believe there is no other divinely inspired, inerrant book, then how can we place the authority of the Bible under the authority of the scientific majority? The Bible's divine inspiration necessarily implies its absolute authority on every thing it teaches. We cannot accept the one and deny the other. Despite good intentions to the contrary, the teaching of these systematic theology texts on the issue of the age of the earth is weakening the Church by damaging the foundations of Christianity. All major and minor doctrines are directly or indirectly built upon the foundational truths of *Genesis 1-11*, such as the doctrines of God, sin, death, moral absolutes, the Messiah's first coming to begin redemption, His second coming to create a new heavens & earth, marriage, male headship in the home, work and the six-day work-week, man's dominion over creation, modesty in clothing, all people being descended from Adam (and so there is only one race of people), etc.

The literal history of *Genesis 1-11* is critically relevant to social issues confronting our culture today: divorce, homosexuality, feminism, postmodern relativism, euthanasia, cloning, abortion, racism, pornography, school violence, drugs, etc. These things are the result of sin, of course. But as the history of the formerly Christian West over the past two hundred years shows, the more people are taught that they are the product of blind evolutionary forces over millions of years, the more they reject Biblical truth and morality. They think the Bible's credibility has been destroyed by "science." So why submit to its authority? [\*Psalm 11:3\*](#) says, "If the foundations are destroyed what can the righteous do?"

For the past 200 years the enemies of the gospel have been hammering away at the foundations. The book of Genesis has been the most attacked book and *Genesis 1–11* is the most attacked section of Genesis. It is no wonder that people’s faith in the historical truthfulness of *Genesis 1–11* has been destroyed by “what is falsely called knowledge” ([1 Timothy 6:20–21](#)) and that many have fallen away from their church upbringing, and many others have refused to seriously consider the gospel and instead are living in all kinds of moral depravity and theological error. As Ken Ham and Britt Beemer have shown, we are losing the next generation because we have allowed or even helped the foundations to be destroyed (Ham and Beemer 2009).<sup>78</sup> And this is not just happening in America, but is a worldwide problem in the church.

## 2014 Addendum

In 2013 Erickson published the third edition of his *Christian Theology*. His chapter on creation is no different from his second (1998) edition (which is essentially the same as his first edition in 1983). The only difference between the second and third editions is the third’s addition of four lines of text about the “revelatory day” view of Genesis 1 (which he rejects) and one page about the Intelligent Design movement (citing the post-1991 writings of Philip Johnson, Michael Behe, & William Dembski).

Under the heading “The Age of Creation” Erickson summarizes the various views on Genesis 1 and the age of the earth: the “gap theory,” the “age-day theory,” and the “pictorial-day (or literary framework) theory.” It is hard to imagine that he is unaware of the labels “young- earth creation” or “biblical creation” or “scientific creationism” that are so widely used today by both proponents and opponents of the view. Erickson never uses any of those & instead in this section (as in previous editions) refers only to “flood theory” and “ideal-time theory” thereby dividing the young-earth view into two different views.

With respect to the (global) flood theory, he still only refers to the 1923 book by the Adventist George McCready Price. Why the continuing avoidance of Whitcomb and Morris’ *The Genesis Flood* (1961) that launched the modern creationist movement, and numerous other more recent books scientifically and biblically defending the global Flood/young-earth view?<sup>80</sup> In this third edition he still refers to only two young-earth creationist books: Price’s 1923 book and Philip Gosse’s *Omphalos*, a 1857 book which Erickson (as in the previous editions) has footnoted as being published in 1957!

After once again affirming his non-dogmatic belief in the day-age view of Genesis 1, he again states, “The age of the universe is a topic that needs continued study and thought” (p.352). But in thirty 30 years since Erickson’s first edition he gives no indication that he has done any serious study of & thinking about the voluminous biblical and scientific scholarly literature defending the young-earth/global-Flood view. It is hard not to conclude that he has deliberately avoided that literature. Why has he? After all, for this third edition he obviously did some reading of scholarly literature from the Intelligent Design movement. I suggest it is because he has uncritically accepted what the majority of scientists say about millions of years.

It is sad that Erickson’s widely used text is misleading many evangelical seminary and Bible college students not only in America but through translation in other countries as well. I know the director of a creation apologetics ministry in Ukraine that is working all over the Russian-speaking world. He told me the Russian version of Erickson’s text—like the Russian translation of Grudem’s text (below)—is leading many young Russian pastors astray on creation, which is why my whole article here has been translated into Russian.[81](#)

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## Footnotes

1. Hollabaugh, 2006, with response articles following it; Laliberte, 2006; Parker, 2006; Rothenburg.
2. The evolutionist Deborah MacKenzie noted 35 such organizations in her concerned article about creationism.
3. Henry Morris listed the names and addresses of 33 foreign creationist organizations (Morris 1993). Contrary to most people's expectations, one of the largest creationist organizations is in Korea.
4. As of 30 September 2009.
5. See, for example, the English-Russian web site of geophysicist Sergei Golovin in Ukraine, which is having an impact across the Russianspeaking world: [www.scienceandapologetics.org/engln.html](http://www.scienceandapologetics.org/engln.html).
6. Get a virtual tour at [www.answersingenesis.org/museum](http://www.answersingenesis.org/museum).
7. See point 10 below in the text for an explanation on the range of years here.
8. Most of these points are well defended (including refutation of the most common objections to the young-earth view) in Chaffey and Lisle, (2007), Sarfati (2004) and Mortenson and Ury (2008). Other books defending most of these points before the systematic theology texts discussed in this essay were written will be footnoted in the discussion on each text.
9. The fact that Genesis records Adam's poetic and romantic statement in [Genesis 2:23](#) and the words of Jacob's poetic prophecy given to his sons does not negate the fact that Genesis is history. It accurately records what those men poetically said on those occasions.
10. A fuller technical discussion is Boyd (2005). A layman's summary of Boyd's research in DeYoung (2005, pp. 157–172).
11. Even most old-earth proponents recognize that *Genesis 1–11* is history.
12. [Exodus 31:13](#) and [Deuteronomy 5:13–15](#).
13. This is true even of the two-stage healing of the blind man ([Mark 8:22–25](#)). Each stage of the healing was instantaneous. Jesus apparently did this miracle in stages for a pedagogical purpose.
14. Some followed the Genesis chronology of the Septuagint, rather than the Massoretic text, and so calculated creation at about 5400 B.C.
15. An earlier reader of this paper objected that God used many "evil" nations to judge ancient Israel (for example, Babylon, Greece, Medo- Persia, Rome, etc.) and He has used non-Christians to make discoveries in medicine to cure disease or improve technologies. So why would it be surprising or unlikely that God would use non-Christians to understand the Bible? Well, in the first case, God was using godless nations to judge Israel for her wickedness, not to help her understand Scripture. Likewise, making advances in science is a categorically different activity than rightly

dividing the inspired Word of truth, which teaches us that ungodly men twist the Scriptures but that God has given spiritually gifted and godly men to the church to understand Scripture aright.

16. This is the dominant interpretation of [Romans 8:19–23](#) in the history of the Church, which is understandable since this is the only interpretation that really makes sense exegetically and theologically. See Moo (1996, pp. 513–514), Murray (1993, pp. 301–302) and Schreiner (1998, p. 435).
17. While I am inclined to think that [Isaiah 11:6–9](#) refers to the literal 1,000-year millennium right before the eternal state begins, I am not certain on that point. But, even if that is wrong, clearly the passage is speaking of a future state of affairs that is very different from the present, for it will be a time when righteousness will fill the earth as the water covers the seas. In that righteous world both man and the animals will be significantly changed. Surely in the eternal perfect state this change in the animals will continue. The point is that carnivorous behavior is part of the fallen world, not the period before the Fall or after the return of Christ, when righteousness will indeed fill the earth.
18. Some might object that God cursed the Garden of Eden with thorns. But this objection fails for three reasons. First, why would God curse the Garden with thorns and tell Adam about it, when Adam was going to be expelled from the Garden? Second, the ground that God cursed with thorns was the same ground outside the Garden that Adam would sweat over to provide food for himself and his family. Third, the Hebrew words for “curse” and “ground” in [Genesis 3:17](#) are the same as those used in [Genesis 5:29](#), which speaks of the cursed ground in Noah’s day.
19. It shows fossilized thorny plants (*Psilophyton crenulatum*) found in the Devonian formation, which the evolutionists date at 345–395 million years BP (before present).
20. The names and approximate evolutionary dates of the supposed five major extinction events are these: Late Ordovician (440 Million Years Ago, 100+ families of marine invertebrates perished, retrieved from, [park.org/Canada/Museum/extinction/ordmass.html](http://park.org/Canada/Museum/extinction/ordmass.html), on 11 August 2009); Late Devonian (365 MYA, 70% of marine invertebrates perished along with other marine life, retrieved from, [park.org/Canada/Museum/extinction/devmass.html](http://park.org/Canada/Museum/extinction/devmass.html), on 11 August 2009); Permian-Triassic (245 MYA, greatest mass extinction event, 90–95% of marine species extinct), Late Triassic (210 MYA, at least 50% of species extinct, retrieved from, [en.wikipedia.org/wiki/Triassic%E2%80%93Jurassic\\_extinction\\_event](http://en.wikipedia.org/wiki/Triassic%E2%80%93Jurassic_extinction_event), on 11 August 2009), Cretaceous-Tertiary (65 MYA, second largest mass extinction, 85% of all species, including all dinosaurs, retrieved from, [park.org/Canada/Museum/extinction/cretmass.html](http://park.org/Canada/Museum/extinction/cretmass.html) on 11 August 2009). The Canadian web site bases its information on Stanley(1987) who is a leading evolutionist.
21. That is, if we rule out Noah’s Flood as a global Flood—which we logically must do, if we accept millions of years. The reason is this. The same scientific establishment that dogmatically states that the geological record reflects millions of years of history also insists that there is no geological evidence of a global Flood. To accept what the secular geologists say about the first point but to reject what they say about the second point is inconsistent. But to believe in a global Flood that occurred about 4,500 years ago

and left no lasting erosional and sedimentary geological evidence while believing that the geological effects of lesser floods occurring millions of years ago survived the ravages of time and Noah's Flood until our day is most unreasonable. So we must decide. Either we believe God's Word about a global Flood or we believe in millions of years. We cannot consistently or logically believe in both.

22. I am indebted to David Fouts, whose lecture a few years ago first drew my attention to many of the points presented here. At the time he was an Old Testament professor at Bryan College in Tennessee.
23. Protozoans are microscopic animals made up of a single cell or a group of more or less identical cells and living in water or as parasites, including ciliates, flagellates, rhizopods or sporozoans.
24. Metazoans are all animals whose bodies, originating from a single cell, are composed of many differentiated cells arranged into definite organs.
25. For an explanation of this evolutionist view of history, see Miller and Levine (2010, p. 543), where the earth's 4.5-billion-year history is represented as a 24-hour clock.
26. It might be objected that animals live and die today, and it is not equated with cruelty. So, why could not that be the case in the pre-Fall world? I would reply that animal death today is not as God intended originally because it is an aspect of God's just judgment of His creation (which is now in bondage to corruption: [Romans 8:19-23](#)) because of the rebellion of His highest creation, man. But in light of God's prophecies about the future state when animals will not be carnivores or dangerous to man, it is clear that the present state of affairs is not as God wants it to remain. Also, the fossil record does not speak of animals dying of old age. It speaks of massive, catastrophic death, even burial alive, of billions of creatures (which is not happening even in today's post-Fall creation). And the problem is having all this carnage in a creation that was not cursed but called "very good."
27. It might be objected that God brought about the death and extinction of animals during the Flood, which is in the post-Fall period when God shows care for the animals. So, why could not that be the case in the pre-Fall period? The reason is that the death and extinction during the Flood was part of God's curse on the earth at the Flood ([Genesis 8:21](#)). But God never cursed His creation in the "very good" pre-Fall Creation Week.
28. Bugg was one of many orthodox clergy and scientists who opposed the old-earth geological theories and the various Christian compromises at that time. See Mortenson (2004b) for a full discussion.
29. For a historical analysis of Luther's, Calvin's, Wesley's and the nineteenth century Scriptural geologists' views on this subject in comparison to the views of old-earth proponents in the early nineteenth century, see Ury (2008, pp. 399-424). His fuller discussion is Ury (2001). Ury shows that the implied character of God arising from old-earth views is historically unorthodox.
30. I refer to the pagination of the 1985 printing of the 1983 first edition. The 1998 second (revised) edition has no substantive changes to the text in the sections where Erickson deals with creation and the age of the earth and related subjects. In 2013 Erickson

published the third edition of his theology text and the chapter on creation is still essentially unchanged since the first edition 30 years earlier; see Terry Mortenson, “Millard Erickson—Failing to Do His Homework on Creation,” *Answers in Genesis*, May 14, 2014, <https://answersingenesis.org/blogs/terry-mortenson/2014/05/14/millard-erickson-failing-to-do-his-homework-on-creation/>.

31. This is actually a particularly unique and odd young-earth view of a British nineteenth century biologist, Phillip Gosse, who sought to explain the rock layers and fossils (in an attempt to counteract the millions of years idea) by saying that God created them during Creation Week to give the appearance of age. But Erickson gives the wrong date for Gosse’s book in both his 1983 and 1998 editions. Gosse published his book in 1857, not 1957, as Erickson says.
32. But he offers no arguments. He only refers his readers in a footnote (p. 381) to an essay by Bradley and Olsen presented at the Summit on Biblical Hermeneutics in Chicago in 1982.
33. For a refutation of this idea, see Ham (2007).
34. One of many explanations of the creationist view is found in Parker (2006, pp. 95–148).
35. However, here Erickson reveals his serious lack of understanding the scientific problems with evolution, when he says that the fossil record indicates gaps only “at several points.” In fact, there are thousands upon thousands of gaps. See Gish (1995). Also, Erickson does not have an adequate understanding of young-earth creationist views about genetic variation within the original created kinds (sometimes called “micro-evolution,” though that term is problematic and no longer used by most leading creationists). See Purdom and Hodge (2008), and Hodge (2009).
36. The following young-earth creationist books were available before Erickson published his first edition in 1983, but he does not refer to any of them, Morris (1974); Morris and Parker (1982); Whitcomb (1972); Whitcomb (1973); Whitcomb and Morris (1961). His ignoring of Henry Morris’s work is all the more troubling in light of the fact that Dr. Morris was recognized as the leading creation science author, and he was an attendee at the second summit of the International Council on Biblical Inerrancy in 1982, where Morris presented a paper that responded to the essay given by Walter Bradley and Roger Olsen (which defends the day-age view and which Erickson cites on p. 381). Erickson’s second (revised and updated) edition appeared in 1998. It had no substantive changes to his text with reference to creation and the age of the earth or the age of mankind. All the previous books were still available in 1998, plus the following, Austin (1994); Morris and Morris (1983) (refuting Davis Young’s geological objections to the young-earth view); Morris (1985) (revised on science matters); Morris and Parker (1987); Morris and Morris (1989); Morris (1994); Morris and Morris (1996) (which contains three volumes, vol. 1 deals with biblical arguments, vol. 2 with scientific arguments, and vol. 3 with the social implications of evolution); Whitcomb (1986); Whitcomb (1988). Also, the video of Dr. Steve Austin’s geological research on Mount St. Helens after its eruption in 1980, which provided many

analogies of how the Flood could rapidly produce geological phenomena, traditionally attributed to the work of millions of years of gradual change (Austin n.d.).

37. Besides sources available to Erickson, current readers of Erickson could also profitably consult Woodmorrappé (1999) and DeYoung (2005). The latter documents in laymen's language the results of an eight-year creationist research project that shows that all the assumptions in the radiometric dating methods are wrong and that radioactive decay in the rocks actually confirms that the earth is only thousands of years old.
38. The book contains a forward by John C. McCampbell, then professor and head of the geology department at the University of Southwestern Louisiana, who said that although he found the arguments difficult to accept as a geologist, he commended Morris and Whitcomb for their accurate and up-to-date discussion of the geological data and their challenging and thought-provoking reinterpretation of that data. He recommended the book even to skeptics who reject the Bible. While leading Ph.D. young-earth geologists today would not agree with every reinterpretation of the geological evidence suggested in *The Genesis Flood*, they would contend that most of the arguments are still valid. Most of these geologists would also say that the book had a significant influence in their own journey from old-earth uniformitarian geology to young-earth creationism. For up-to-date, indepth geological arguments see Snelling (2009a). Snelling has a Ph.D. in geology from the University of Sydney in Australia, has done geological research on several continents, and is Director of Research for Answers in Genesis.
39. Ramm went to the University of Washington intending to major in chemistry but quickly changed to speech in preparation for ministry. See Numbers (1993, p. 185) and Ramm's own statement in an interview with the American Scientific Affiliation (a Christian group that favors theistic evolution) (Hearn and Ramm 1979).
40. On p. 480 he footnotes two books edited by Lammerts, a creationist biologist (Lammerts 1970, 1971). But without presenting any arguments, Erickson dismissed the 150 pages of scientific evidence for a recent creation (presented by scientists knowledgeable in geology and related fields) in Lammerts's 1970 book and the 80 pages discussing the age of the earth in his 1971 book.
41. A recent short overview of the creationist view of the origin of man can be found in Junker (2000). Cuozzo (1998) provides a dentist's careful analysis of the evidence for Neanderthal man. The most recent and thorough work is Lubenow (2004). For an enlightening demonstration of the unreliability of radiometric dating methods, see Lubenow's (1992, pp. 247–266) appendix to the first edition of his book (which was available to Erickson for his 1998 edition), regarding the dating of some human fossils. A summary version is also available in Lubenow (1995).
42. These attempts are (1) dualism (which abandons the idea of God's omnipotence, making evil and God equal ultimate principles in the universe), (2) Calvinistic determinism (which redefines the traditional idea of God's goodness and says that God is the cause of all things, good and evil), and (3) the rejection of the reality of evil (as does the cult of Christian Science)—evil is simply an illusion of the mind.



43. This is precisely the theodicy that William Dembski has proposed to harmonize the Bible's teaching about the cosmic impact of the Fall with the idea of millions of years of natural evil, animal death, etc. I argue that this proposal is fatally flawed in Mortenson (2009).
44. See particularly verses 14–16 and 26–27.
45. He says, "Thus, the 'big bang' theory (in a secular form in which God is excluded), or any theories that hold that matter has always existed, would be inconsistent with the teaching of Scripture . . ."
46. He refers positively to the writings of Hugh Ross and Robert Newman, both of whom are evangelical advocates of the big bang.
47. [Psalm 19:1](#), [Psalm 97:6](#), [Psalm 136:5](#), [Job 38:31–33](#), [Jeremiah 31:35–36](#) and [33:25–26](#). Someone might object that a process of creating the universe and earth over the course of millions of years could also show the carefulness of God in "setting up" the universe for life. But exploding stars and meteors and asteroids bombarding and disfiguring the earth and killing plants and animals (as all old-earth views necessarily accept) do not display much carefulness.
48. Ussher's *Annals of the World* has been retranslated from the Latin original (Pierce 2003).
49. Grudem mistakenly says Schaeffer's 6-page argument about the genealogies is in *No Final Conflict* (Schaeffer 1975). It is rather in *Genesis in Space and Time* (Schaeffer 1972, pp. 122–124, 154–156). Schaeffer was misled (as so many modern evangelical scholars have been) by the arguments in Green (1890). Freeman (1998, 2008); Jones (2005) and Pierce (2006) expose these mistaken arguments.
50. In Luke, there are 41 names between David and Jesus which amounts to an average age of 24 for a father when the named son was born. Given that fathers had daughters and the first-born was not always the son recorded in Jewish genealogies, the possibility of missing names in Luke is most unlikely. Also, most of the names in Luke 3 are unknown people. What would be Luke's purpose in leaving out names in this section of his genealogy, or in the pre-David section, especially since he was so committed to giving us the "exact truth" about Jesus ([Luke 1:4](#))?
51. Harris, Archer and Waltke (1980, vol. 1, p. 379) assert that "the word [*yālad*] does not necessarily point to the generation immediately following", but they offer no verses in support of that statement. Brown, Driver and Briggs (1996, pp. 408–409) likewise provide no scriptural support for this claim that *yālad* is used in a nonliteral way (that is, not a parent-child relationship).
52. At the beginning of the bibliography for his chapter on creation (Grudem 1994, p. 312) he tells the reader that he obtained several of the titles (he does not say how many or which ones) from a list prepared by Wayne Frair, a creationist biologist.
53. He adds here that his views on astronomy have been influenced by Newman and Eckelmann (1977). While they raise the issue of distant starlight, they do not tell their readers that evolutionary cosmologists have a very similar light travel-time problem (called the "horizon problem"). So, the problem cannot be used as an argument against the young-earth view. See Lisle (2005). In the bibliography for his creation chapter,

Grudem provides a subtle endorsement of Ross (1994), by giving the longest explanatory note of any of the notes he gives after the books in the list and calling Ross “an articulate and highly trained scientist” (p. 313). While that is certainly true, it has not kept Ross from publishing many serious biblical, historical, theological and scientific errors. See Sarfati (2004), which is a thorough exposé of Ross’s many biblical, historical, logical, theological and scientific errors. See also Mayhue (2008, pp. 105–130). Mayhue exposes Ross’ fallacious claim that nature is the “67th book of the Bible.” Craig (1999) (although the page numbering of the article cited there is incorrect) reveals other serious theological errors in Ross’s thinking.

54. How could a mere 4,500 years erase the evidence of the year-long global Flood that was designed to destroy not only all land animals, people and birds, but the surface of the earth itself ([Genesis 6:7, 13](#)) and involved global torrential rain (24 hours/day for at least 40 days and probably 150 days) and tectonic movements of the earth (fountains of the great deep bursting open) for 150 days? That is unbelievable. And yet Young (1977, pp. 172–174), believed that far more geographically and temporally limited floods or gradual processes of geological change have left thousands of feet of stratigraphic evidence that has endured for millions of years and even survived Noah’s Flood with no noticeable change! This too is unbelievable.
55. Morris and Morris (1983) refute many of Davis Young’s geological arguments. See also Snelling and Austin(1992) for another example of Young’s erroneous geological thinking about the Grand Canyon. Grudem is also influenced by the anti-creationist book by Van Till, Young and Menninga (1998). But Van Till and Menninga are also theistic evolutionists. Why does Grudem accept their scientific arguments, when he does not accept their handling of the Word of God on the topic?
56. Leading up to that conclusion and describing his “repentance,” Young explained, “The Day-Age hypothesis insisted with at least a semblance of textual plausibility that the days of creation were long periods of indeterminate length, although the immediate context implies that the term, *yom*, for ‘day’ really means ‘day.’ . . . There were some textual obstacles the Day-Agers developed an amazing agility in surmounting. . . .” After discussing some examples of contradiction in order of events between *Genesis 1* and evolution history, he continues, “This obvious point of conflict, however, failed to dissuade well-intentioned Christians, my earlier self included, from nudging the text to mean something different from what it says. In my case, I suggested that the events of the days overlapped. Having publicly repented of that textual mutilation a few years ago, I will move on without further embarrassing myself. . . .” Following an examination of other unsuccessful techniques for harmonizing *Genesis* with old-earth geology, Young confesses, “Genius as all these schemes may be, one is struck by the forced nature of them all. While the exegetical gymnastic maneuvers have displayed remarkable flexibility, I suspect that they have resulted in temporary damage to the theological musculature. Interpretation of *Genesis 1 through (11)* as factual history does not mesh with the emerging picture of the early history of the universe and of humanity that has been deciphered by scientific investigation. Dickering with the biblical text doesn’t seem to make it fit the scientific data. . . .” His conclusion now: “The Bible may be expressing history in nonfactual terms.” See Young

(1990), quoted in Lubenow (1992, pp. 232–234). I have an audio recording of Young’s lecture on file.

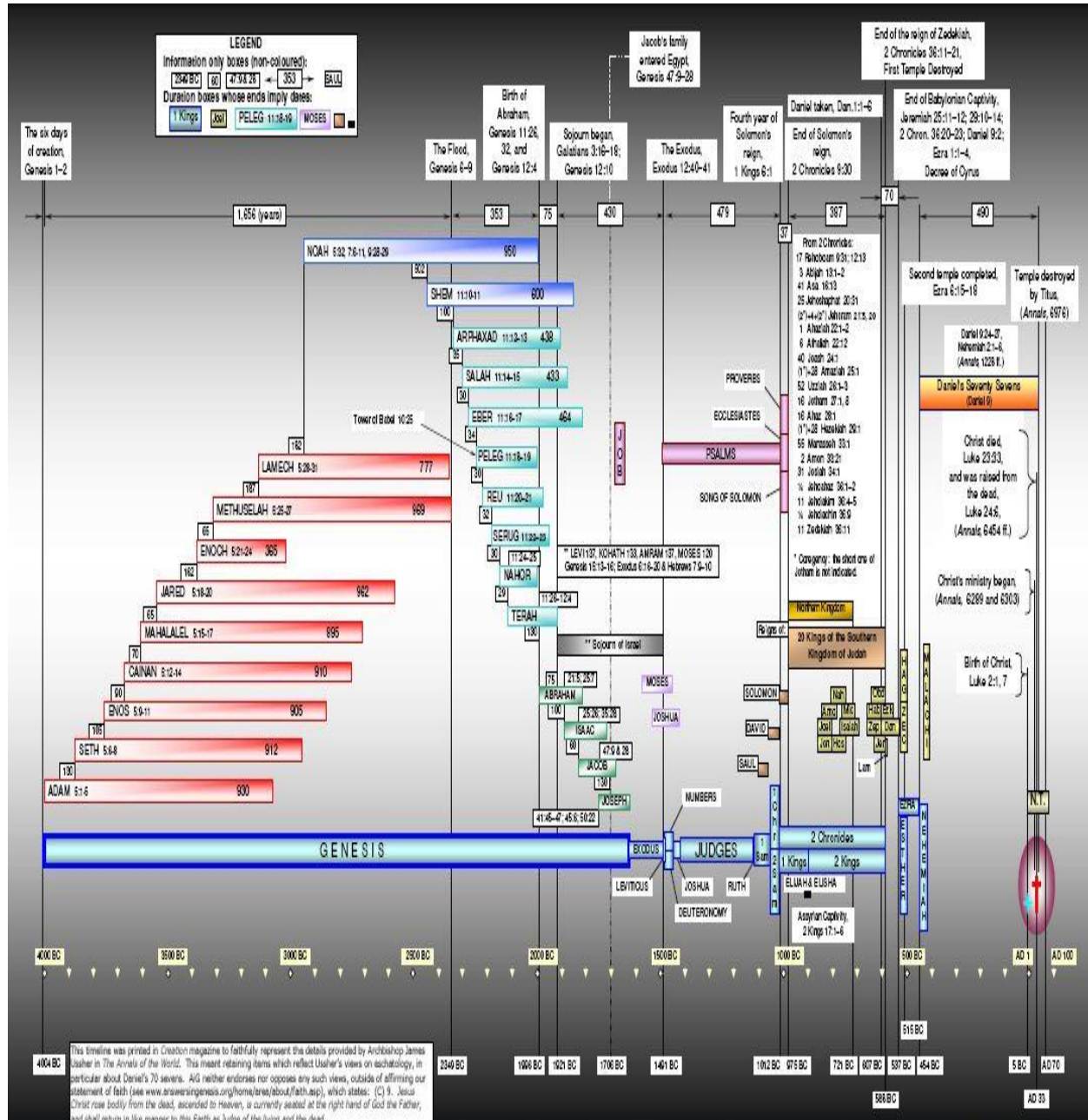
57. For example, *dôr* (דור, period, time or generation, as in [Genesis 7:1](#), [Exodus 3:15](#) and [Deuteronomy 32:7](#)) or a phrase like “thousands of ten thousands” of years (cf. [Genesis 24:60](#), [Numbers 10:36](#)) or “after many days” ([Joshua 23:11](#)). If those words were considered unsuitable, God could have borrowed some word from a neighboring language, as He did in the case of the Aramaic words used later in the Old Testament: *zeman* (זמן, season or time, as in [Nehemiah 2:6](#), [Daniel 2:16](#), [21](#), [4:36](#), [7:25](#) [Hebrew Bible: [Daniel 4:33](#)]) or *iddān* (ידע, period or time, as in [Daniel 4:16](#), [23](#), [25](#), [32](#) [Hebrew Bible: [Daniel 4:13](#), [20](#), [22](#), [29](#)]).
58. The Bible nowhere says that Adam actually did care for it for a long period of time before God gave him the task of naming the animals. Only the assignment was given on Day 6. We can assume that he started to fulfill that task of caring for the Garden. We cannot assume that he completed it before he received the assignment to name the animals. Nor does God give us the dimensions of the Garden. So we cannot make any assumptions about it being too large for Adam to tend it on the sixth literal day of creation. Archer (1982, pp. 59–60) makes the same unwarranted assumptions when he argues against literal days.
59. The Hebrew verb does not carry the time tense, as English verbs do, but the form of the Hebrew verbs here and the context certainly confirm that the English, German, Czech, and other translators of the Bible (I have personally checked German and Czech), as well as the ancient Jewish translators of the Greek Septuagint, have been correct to put the verbs in these passages in past tense in their respective languages.
60. The three volumes were published separately in 1987, 1990 and 1994 respectively. Most of their discussions related to the age of the earth are in volume 2 (published in 1990). I refer to the 3 volumes-in-1 edition published in 1996. I refer to the relevant pages of the section representing volume two.
61. They appear inclined to follow the views of Newman and Eckelmann (1977), who accept the big bang theory, hold to the gap-day-gap theory (where all God’s creative activities take place in the “gap” periods, and who surprisingly dedicate their book to (among others) Carl Sagan, the late atheist astronomer.
62. Ham and Mortenson (2009). See the critique of Archer’s argument (under the subheading “The sixth day too short?”) as it is used also by Moreland.
63. Theologians should do this. But it was the late Dr. Henry Morris, the young-earth creation scientist with no formal theological training but with an incredible investment in the private study of the Scriptures, who is the only evangelical who has thoroughly done this with regard to creation. See his 276-page discussion of every relevant verse in every book of the Bible (Morris 1993a).
64. Morris and Morris (1989) was published a year before Lewis and Demarest’s volume two, where they deal with creation and the Flood.
65. For a discussion of the three assumptions in radiometric dating methods see Morris (1994, pp. 51–66), and DeYoung (2005, p. 42).

66. Consider this statement by a university geology professor: “In general, dates in the correct ballpark are assumed to be correct and are published, but those in disagreement with other data are seldom published, nor are the discrepancies fully explained.” (Mauger, Associate Professor of Geology, East Carolina University, 1977, p. 37). See this selectivity in the dating methods in Lubenow’s book appendix cited in footnote 41. See also Woodmorrappé (1999) for evidence that different dating methods give different dates on the same rock.
67. He is Emeritus Professor of Materials Science and Electrical Engineering at Stanford University and past president of the theistic evolution oriented American Scientific Affiliation.
68. They say something similar about Flood geology, using “all” (Lewis and Demarest 1996, vol. 2, p. 23).
69. See Mortenson and Ury (2008) and other sources therein.
70. Erickson (1983, p. 382). The 1998 edition says the exact same thing. He declares his need for further study about the dating of man also (in both editions the wording is identical—see, for example, Erickson [1983, p. 487]).
71. I would highly recommend the following few books and DVDs. These resources are understandable to the nonscientist and are fully documented. Morris and Morris (1989) responds to the arguments of old-earth geologist, Davis Young. Morris (1994) is a good summary of the main geological evidences for Noah’s Flood and a recent creation. Several 60-minute DVDs explain the powerful testimony of the rocks to a young-earth and global Flood—see Snelling (2009b, 2009c, 2009d) and Austin (n.d.) (which shows what the catastrophic processes produced in hours or days, reminiscent of features in the Grand Canyon). Mortenson (2005a) looks at the history of the idea and Lisle (2006) deals with a very common objection to the young-earth view, namely, if the universe is only about 6,000 years old, how can we see galaxies that are millions of light-years away from us. Also three half-hour DVD lectures Mortenson (2005b) and Lisle (2005) are available separately or as a part of a 13-session course (Ham, Mortenson and Lisle 2005) which was designed for teens and laypeople in church and would be very suitable for seminary or Bible college classes as well. The course pack comes with a 200-page teacher’s manual and five 90-page student manuals. More student manuals can be purchased separately.
72. See, for example, the following. Archer (1985), p. 187: “From a superficial reading of *Genesis 1*, the impression would seem to be that the entire creative process took place in six twenty-four-hour days. If this was the true intent of the Hebrew author . . . this seems to run counter to modern scientific research, which indicates that the planet Earth was created several billion years ago.” Kline (1996, p. 15, footnote 47): “In this article I have advocated an interpretation of biblical cosmogony according to which Scripture is open to the current scientific view of a very old universe and, in that respect, does not discountenance the theory of the evolutionary origin of man.” Moreland (1998, pp. 219–220): “The date of creation is a difficult question, but on

exegetical grounds alone, the literal twenty-four-hour-day view is better. However, since the different progressive creationist views are plausible exegetical options on hermeneutical grounds alone, then if science seems to point to a universe of several billions of years, it seems allowable to read Genesis in this light.”

73. See Mortenson (2008b). This slippery slide into liberalism and even apostasy has happened many times at the individual level also. See Ham and Byers (2000) for the sad story of the great evangelist, Charles Templeton, who died as an atheist.
74. Sadly, the theological compromise with evolution is evidently more widespread among American seminary professors than might be expected. An August 2009 survey of seminary presidents and professors, conducted by Bruce Waltke (Old Testament professor at Reformed Theological Seminary, Orlando), revealed that less than 44% of the respondents see any biblical problems with accepting theistic evolution. See Waltke (2009).
75. In 1998 a survey was conducted of 517 of the 1,800 members of the American National Academy of Sciences (these 517 scientists are in the sections of biology, geology, astronomy and physics). The survey found that of the 50% who responded to the survey 72% were overt atheists, 21% were agnostics and only 7% believed in the existence of a personal Creator God. It is most likely that the 50% who did not respond were unbelievers, since believers would likely want to register their existence in this highest scientific body in America. See Larson and Witham (1998).
76. That the Church never believed in a flat earth (except for a very few odd individuals) is soundly established by Russell (1991). Russell, a secular university historian, shows that it was evolutionist historians who popularized this myth about ancient Christians as part of their strategy to silence Christian opposition to Darwinism.
77. But the former cause is more prominent than most people think. See Broad and Wade (1982). The dust cover states, “[The book] shows that corruption and deceit are just as common in science as in any other human undertaking. Drawing examples from astronomy, physics, biology and medicine, it reveals how the supposedly foolproof mechanisms of scientific enquiry often do fail to correct both the major and the minor frauds that have become endemic to modern science.” Broad is a reporter with the News and Comment section of *Science* (weekly journal of the American Association for the Advancement of Science) and Wade is an editorialist for *New York Times* and a former reporter with *Science* and deputy editor of *Nature*.
78. Based on a revealing national survey, the authors explain why we are losing the kids and what radical changes need to be made to stop and reverse the loss.
79. There is a need for a systematic theology text with the same depth as the ones discussed here, which will rigorously defend the young-earth view. The following are helpful in this direction, although they do not go deep enough into this major issue of our day: Ryrie (1999) and Reymond (1998).
80. For example, Morris (1994); Whitcomb (1973); Whitcomb (1972); Mortenson and Ury, eds. (2008); Snelling (2009a); Sarfati (2004), the most thorough refutation of the day-age view (as promoted by Hugh Ross) that Erickson favors.

# USSHER-LIGHTFOOT CALENDAR



# Comments on Ussher's Date of Creation

by [Dr. Danny R. Faulkner](#) on July 20, 2016

## Abstract

*Ussher's date of creation of October 23, 4004 BC appears to rely upon two questionable assumptions. One assumption concerns conformity with an expected 6000 years of history. Because we are now well into the seventh millennium after Ussher's date of creation, this assumption appears to be void.*

*The other assumption concerns the coincidence of the creation with Rosh Hashanah, which would require that the moon was at a particular phase on that date. However, there is question as to whether the moon was at the appropriate phase on that date.*

*Furthermore, it would not be possible to ascertain the date from the moon's phase on the calendar that Ussher proposed that the ancient Hebrews used.*

*Absent these two assumptions, there is no compelling reason to insist upon the precise Ussher creation date, so creationists are free to explore alternate dates of creation, within limits of biblical chronological information, if determination of the precise date is even possible.*

## Introduction

Irish archbishop James Ussher published his famous chronology in two parts, one in 1650, and the other in 1654. Originally in Latin, the two parts were combined into a single English edition in 1658. In his heavily researched tome, Ussher dated events from the creation through destruction of Jerusalem in AD 70 and shortly thereafter. Recently, Pierce & Pierce (2003) produced a revision of earlier English translation. Contrary to popular misconception, Ussher did not rely solely upon the Bible in his work, nor did he date only biblical events. Rather, he attempted to date all known historical events, both biblical and extra-biblical. Ussher used all the chronologies available to him, and secular chronologies accounted for the bulk of his resources (according to Jones [2005, iii], only about 15% of Ussher's text was from Scripture). However, secular sources dated only to the later stages of antiquity, so all earlier dates in Ussher's chronology came from his interpretation of the biblical text.

Ussher probably is best known for his conclusion that the Creation Week began on October 23, 4004 BC.<sup>1</sup> In most people's minds, this is source of the common belief among biblical creationists that the world is only about 6000 years old. However, Ussher wasn't the first, nor was he the only one, to attempt such a feat, for several contemporaries & near-contemporaries computed ancient chronologies. Attempts to date creation this way predated Ussher by at least 15 centuries. In the second century AD, Rabbi Jose ben Halafta determined that the date of creation was 3761 BC. Also in the second century AD, Julius Africanus dated the creation to 5501 BC. The large discrepancy between these creation dates mostly is due to differences between the Septuagint and Hebrew text of the Old Testament in the chronologies of *Genesis 5* and *11*. Africanus used the Septuagint, a decision that influenced many other early church chronologers, who reached similar dates for the creation.

Eventually, the Hebrew text of the Old Testament became the preferred source. In A.D. 723 the Venerable Bede determined that the creation was in 3952 BC. Martin Luther thought that the creation was in 3960 BC, while his collaborator Philip Melancton dated creation to 3963 BC. John Lightfoot's chronology often is confused with Ussher's. Lightfoot published his work in 1644, just a few years before Ussher, in which he concluded that the creation was in 3929 BC. At least 2 astronomers weighed in: Isaac Newton determined that the creation was around 4000 BC, while Johannes Kepler concluded that the creation was in 3992 BC. This is a small sample of various computations of the date of creation; Sexton (2015) recently has compiled several more sources with their various dates of creation. Jones (2005, 26) reproduced a table of dates of creation computed by various sources. One worthy of note is Joseph Justus Scaliger, who arrived at a creation date of 3949 BC. Scaliger is important, because he introduced the Julian period, a 7980 year cycle that began on Jan. 1, 4713 BC, as aid in computing chronologies.

The Julian period is the product of three shorter cycles, the Roman indiction, the Metonic cycle & the solar cycle. The Roman indiction period was a 15 year cycle of taxation in ancient Rome. This was useful in treating chronologies from the Roman period & shortly after. The Metonic cycle is a 19 year period over which lunar phases repeat on respective dates on the Julian calendar. This was useful in comparing dates on lunar or lunisolar calendars with dates on solar calendars. The solar cycle is the period of 28 years over which the days of the week repeat on the Julian calendar. This was helpful in determining which day of the week various dates fell upon. The number 19 from the Metonic period is prime, and other two cycles are multiples of nearly different prime numbers, so the three cycles will repeat only after the product of all three cycles (7980 yrs.). Scaliger arbitrarily selected the date of Sunday, January 1, 4713 BC as the starting point (treating the start point as day zero, rather than day one), because it pre-dated all historical dates, so all dates in the Julian period would be positive.



While intended as a convenient tool in comparing different calendars, the Julian period has other uses. In 1849 astronomer John Herschel proposed the starting point of the Julian period as a basis of sequential numbering of days. Julian day number permits computation of the difference in time between any two dates. Astronomers find this particularly useful, such as in work with variable stars. Ussher expressed years in terms of BC/AD, Julian period (JP), and *anno mundi* (year of the world, AM).

From the range of dates for the creation of the world from various chronologies mentioned above, we can draw two broad conclusions. First, the age of the world, as determined from the biblical texts,<sup>2</sup> is approximately 6000 years.<sup>3</sup> Thus, the conclusion that the world is approximately 6000 years old does not rely solely upon Ussher. Second, the range in the dates of creation determined by various authors demonstrates that exact precision in establishing the age of creation is not possible. The people who determined these various dates of creation used much the same data, but they reached different conclusions. This is because of differences in assumptions they made.<sup>4</sup> The elevated role of Ussher's chronology stems from its inclusion in the King James Version of the Bible by 1701. This, in turn, probably resulted from Ussher's high regard within the Anglican Church.

In some respects, the vaulted status of Ussher's chronology is an accident of history—if another chronology had been inserted into the King James Version, the date of creation of that chronology would be foremost in peoples' minds, not Ussher's. One of the differences between various chronologies is how one handles any particular specified length of time in the biblical chronologies. For instance, in the United States, the age of 21 for all intents and purposes is the age one must attain to be considered fully an adult. A man does not acquire that age until he has reached his twenty-first birthday. However, in some cultures, such as those in biblical times, a man was said to be 21 years old immediately after he reached his twentieth birthday. That is because that culture counted any portion of a year as a full year, as a man was in his twenty-first year as soon as he reached twentieth anniversary of his birth. This amounts to rounding up.

In our culture, we do not count a portion of year, so our practice amounts to rounding down, or truncating lengths of time. In other situations today, we tend to round to the nearest integer. For instance, if a man has held a particular job for a little more than nine and a half years, we might round this figure and say that he has worked at his job for ten years. We probably would not say that he has worked for eleven years until he has worked at least more than a half year longer than ten years. One must take this factor into consideration when they're handling the lengths of time recorded in the Old Testament, such as how long one lived before the birth of a named son, or the calculation of the duration of a king's reign (accession or non-accession reckoning). It is inevitable something

akin to round-off error begins to accumulate. Therefore, it is presumptuous to insist that one can precisely determine the date of creation even to the year, let alone the day, without some additional information or assumptions. This is just one difficulty in assessing biblical dates. There are others. It is not the purpose this paper to give full discussion of the complex topic of Bible chronology, or even Ussher chronology. Rather, here I will discuss Ussher's methodology with regards to date of creation, & especially what appears to be key assumptions that Ussher made in determining the date of creation.

## Ussher's Assumptions

Though Ussher did not explicitly state them in his book on chronology, there appear to be two assumptions that persuaded Ussher that he could determine the beginning of creation to the day. One assumption was that there were exactly three thousand years between the creation and the dedication of Solomon's Temple and another thousand years from the dedication of the Temple to the birth of Christ (Barr 1985). Ussher dated the birth of Jesus in 4 BC and the Temple's dedication to 1004 BC, so with this assumption, the creation must have been in 4004 BC. There is no biblical statement that requires this. Rather, this assumption probably stemmed from a common belief, dating to at least the early Middle Ages and the early Church, that there would be 6000 years of human history, in parallel with the Creation Week in light of [2 Peter 3:8](#) (which is an allusion to [Psalm 90:4](#)).<sup>5</sup> Ussher determined that Herod died in 4 BC, a date affirmed by the vast majority of historians today.<sup>6</sup> Jesus' birth must have been shortly prior to Herod's death, likely in 5 BC. More specifically, Ussher dated the birth of Jesus to late 5 BC, and the circumcision of Jesus early in 4 BC (Pierce and Pierce 2003, 779). Since these events were only eight days apart (as required by the Law; [Leviticus 12:1-3](#); [Luke 2:21](#)), Ussher apparently endorsed the traditional December 25 date of Jesus' birth. However, few scholars today believe that this was the date of Jesus' birth. According to [1 Kings 8:2](#) and [2 Chronicles 5:3](#), Solomon dedicated the Temple at the time of the feast during the month of *Ethanim*, the seventh month on the Hebrew ceremonial calendar (September or October on the Gregorian calendar). Ussher fixed the year of the dedication as 1004 BC (Pierce and Pierce 2013, 68). This means the length of time between Solomon's dedication of the Temple and the birth of Jesus was nine months short of being exactly 1000 years.<sup>7</sup> It seemed fitting to Ussher that the creation was exactly 3000 years prior to the Temple's construction, and exactly 4000 years prior to the Messiah's birth. Of course, that would anticipate end of the age in AD 1997,<sup>8</sup> exactly 2000 years after Jesus' birth & 6000 years after the creation. Since two decades have elapsed since 1997, enthusiasm for this belief has waned in recent years. Yet, steadfast belief in the earlier 3000 year and 1000 year increments remains.

Incidentally, during exactly which feast in the month of *Ethanim* was the Temple dedicated? There were 3 observances during *Ethanim*. The first day of the month was the Feast of Trumpets ([Leviticus 23:23–25](#)). The tenth day of the month was the Day of Atonement (*Yom Kippur*) ([Leviticus 23:26–32](#)). The fifteenth day of the month began the eight-day Feast of Booths (*sukkot*) ([Leviticus 23:33–43](#)). Though Ussher did not clearly identify which feast it was, most Bible scholars seem to think that the latter was the intended feast.

The second assumption that Ussher made derived from Jewish tradition. The Feast of Trumpets also is called *Rosh Hashanah*. *Tishri*, the Babylonian name by which the month of *Ethanim* is now commonly known, is the first month on the Hebrew civil calendar. *Rosh Hashanah*, which means “head of the year,” is first day of *Ethanim*, & it amounts to the Hebrew New Year. According to Jewish tradition, Rosh Hashanah was date of first day of the Creation Week. For instance, in 2015 *Rosh Hashanah* was on September 14, ushering in year 5776 since creation of the world (Jewish tradition places the creation in the year 3761 BC). This tradition of dating the age of the world allegedly goes back to Hillel II in the late fourth century. In the year 4004 BC, *Rosh Hashanah* fell on or close to October 23, Ussher’s chosen date for the beginning of creation, strongly suggesting that Ussher chose this date because of Jewish tradition. Notice that the Jewish reckoning of the date of creation is at variance with Ussher by 243 years. While Ussher apparently accepted the Hebrew tradition of the particular day of the commencement of creation was correct, he rejected the particular year, since it did not coincide with his computation from biblical records.<sup>9</sup> Ussher further reasoned that Day One of Creation Week ought to coincide with the first day of *Ethanim*, though God did not make the moon, upon which the month was to be based, until Day Four (Pierce & Pierce, 2003, 17). With this assumption, along with the assumption that there were 3000 years between creation of the world and the dedication of the Temple, Ussher arrived at the year of creation being 4004 BC. Note that if Day One of the Creation Week is commemorated with *Rosh Hashanah* and the Temple’s dedication was at the Feast the Booths, then there were not exactly 3000 years, to the day, between the two events. However, Ussher recognized that there were not exactly 1000 years to the day between the Temple’s dedication and the birth of Christ. In his preface, Ussher (Pierce and Pierce 2003, 9) commented that the Temple was completed (year before the Temple’s dedication) in the three thousandth year of the world and that Jesus was born in the four thousandth year of the world. This is an explicit acknowledgment that Ussher did not think that the correspondence needed be to the exact day.

There is one biblical constraint as to first day of creation—according to Genesis One, Day One of the Creation Week was the first day of the week, a Sunday. This automatically eliminates six-sevenths of all dates of creation in ancient past that otherwise would be within proper range of possible dates required by biblical genealogies & other historic clues. Indeed, Ussher's chosen day for the beginning of creation, Oct. 23, 4004 BC, was a Sunday. If one makes any other assumptions, those assumptions introduce additional constraints. For instance, it is commonly believed that Ussher chose the October 23, 4004 BC date for the beginning of creation, because that date fell either on or close to the autumnal equinox. In an editorial note, Pierce and Pierce (2003, 17) stated Ussher's date for the first day of creation was the first Sunday after the autumnal equinox that year. However, using the most precise length of the tropical year, I compute that the autumnal equinox was Oct. 26 that year, three days after Ussher's date for the beginning of creation. Therefore, it appears that Ussher's date of the beginning of creation neither coincided with nor shortly followed the autumnal equinox. Again, it is generally believed that Ussher assumed the coincidence of the autumnal equinox and the first day of creation, though Ussher did not explicitly state that.

As mentioned above, it is commonly believed that Ussher further assumed, in line with Jewish tradition, that the first day of creation also was *Rosh Hashanah*, that is, it must have coincided with the first day of *Ethanim*. However, Ussher did not state this. The Jewish calendar is a lunisolar calendar, which is very different from our modern solar calendar. On a lunar calendar, the months are synchronized to the moon's phases. Because the synodic month, the period over which lunar phases repeat, is approximately 29½ days, months on a lunar calendar normally alternate between 29 and 30 days. Twelve lunar months are about ten days short of a year, so a lunar calendar drifts roughly ten days earlier with respect to the seasons each year. A lunisolar calendar fixes this problem by inserting an intercalary month approximately every third year to bring the calendar back into alignment with the seasons. As with a lunar calendar, the months on a lunisolar calendar typically alternated between 29 & 30 days. For more discussion of calendars, see Faulkner (2012). Because months on the Jewish calendar average about 29½ days, within a particular year, there is about a 3% chance of coincidence of the autumnal equinox and *Rosh Hashanah*. When one further adds the biblical constraint of Day One being a Sunday, the constraint is rather tight. In an editorial note, Pierce and Pierce (2003, 17) stated that if the moon had existed at the beginning of creation on October 23, 4004, it must have been a new moon, underscoring this was Ussher's assumption. Let us check this determination of new moon.

## When Was New Moon Near the Time of the Autumnal Equinox in 4004 BC?

Astronomical new moon is defined as the moment when moon and sun have the same ecliptic longitude.<sup>10</sup> However, the moon is not visible at astronomical new moon & generally it is not visible for a day or more on either side of astronomical new moon. For calendric use, as with a lunar or lunisolar calendar, astronomical new moon is worthless, because it is not visible (even today we generally cannot observe the time of new moon, but rather we compute it). Instead, in ancient calendars new moon generally was established by last visible waning crescent moon in the morning or first visible waxing crescent in the evening. The latter was by far the more common practice, and is the basis for the start of the month on the Jewish calendar. This is particularly useful when one considers that in Hebrew reckoning, the day begins at sunset, minutes before the thin crescent first would be visible. Thus, one could determine in a matter of minutes whether the day that had just begun was first day of the new month. The first of the month was observed as a holy day ([Numbers 10:10](#); [28:11–15](#)). Some people, including Ussher, suggest that the ancient Hebrews observed a solar calendar with months that didn't coincide with the moon's phases, but this doesn't appear to be the case. Lest there be any doubt, where the first of the month sacrifice observance is mentioned elsewhere ([1 Samuel 20:5](#); [1 Chronicles 23:31](#); [2 Chronicles 2:4](#); [Ezra 3:5](#); [Psalm 81:3](#); [Isaiah 1:13–14](#); [Ezekiel 45:17](#); [46:6](#); [Hosea 2:11](#)), the term used literally means new moon.<sup>11</sup> This does not make sense if any other sort of month were used so that the new moon and the first of the month did not coincide.

We can determine with some degree of accuracy when astronomical new moon occurred in the ancient past. From the time of astronomical new moon, one may estimate the likely day when the thin crescent moon first would have been visible, marking the beginning of the month on the Jewish calendar. The moon's revolution & the earth's rotation are reasonably constant over short term, but over the long term, several long-term trends must be accounted for. Sophisticated algorithms exist to do this, but they are not readily available, particularly at the early epochs, such as the year 4004 BC. This is because this is long before any written records generally are thought to exist, so there would be no point to computation of lunar positions then. To do this, I did short-term extrapolation from a date of new moon from the Ten Millennium Canon of Eclipses –

<http://eclipse.gsfc.nasa.gov/SEcatmax/SEcatmax.html>. The earliest eclipse listed in this canon is the total solar eclipse of June 14, 4000 BC. The time of mid-eclipse was 1:59:34 Universal Time (UT). For purposes here, UT & Greenwich Mean Time (GMT) are the same. This corresponds to Julian date 260,587.583. Being the time of mid-eclipse of a total solar eclipse, this clearly was the time of astronomical new moon.

The perspective of the Creation account of Genesis 1–2 appears to be the Garden of Eden. Based upon the [Genesis 2:10–14](#) description of the four rivers that proceeded out of Eden, at the time of Ussher, nearly everyone thought that the location of the Garden of Eden was either in Israel or nearby.<sup>12</sup> Because Ussher used Israel as his reference, it's important to express time in terms of Israel's location. Israel Standard Time (IST) is two hours later than UT. That is,  $IST = UT + 2 \text{ hours}$ . Exact correction for local time is a matter of minutes; for purposes here, consideration of local time is not necessary. For computations at the time of the autumnal equinox, the sun sets at 6:00 pm (18:00 hours) IST, or 4:00 pm (16:00 hours) UT. Shortly after sunset would be the appropriate time to ascertain whether the thin crescent moon would have been visible, and hence defined the first day of the month on the Jewish calendar. The moon is extremely difficult to see if the time is less than eighteen hours after the astronomical new moon.<sup>13</sup> If the time since astronomical new moon is more than 24 hours, the moon is relatively easy to see, under good conditions. Julian day numbers begin at noon UT, so the appropriate fraction of day at 4:00 pm UTC is 0.1667. If the creation began at the previous sunset, the beginning of Sunday, October 23, 4004 BC (–4003) as Ussher maintained, then the Julian date was 259,257.1667 (October 22 16:00 UT).

This Julian date is about 45 synodic months earlier than time of new moon gleaned from the solar eclipse discussed above. Hence, subtraction of 45 synodic months from the Julian date of that solar eclipse (260,587.583) ought to produce the time of astronomical new moon in Oct., 4004 BC. This results in a new moon on Julian date 259,258.71, which is more than a day & a half later than the target of Ussher's time of creation. However, a correction for the secular change in earth's rotation must be applied. According to the canon of eclipses website, the secular correction in 4004 BC was 86,400 seconds, which is one full day. This type correction must be applied to the Julian day tabulated in the canon to determine corresponding date on the Julian calendar. However, the correction over the four years between Ussher's date of creation & the earliest tabulated solar eclipse is miniscule (and far less than the precision of the correction anyway). Therefore, the time of astronomical new moon was 13 hours after Ussher's creation time. Does this vindicate Ussher's date of creation?

The answer to that question comes down to what kind of calendar that one thinks that the ancient Hebrews used. If the ancient Hebrews used a lunisolar calendar as the Jews definitely have used for nearly 2000 years, then there is a problem. The beginning of Day Two on Ussher's chronology would have been only 11 hours after computed astronomical new moon, too young to be visible (if the moon had existed on Day Two). Hence, if the moon had existed at the beginning of creation on October 23, 4004 BC, then it would not have been visible before the beginning of Day Three. Therefore, the beginning of creation wouldn't have coincided with first of the month of *Ethanim*. Of course, since the moon did not exist until Day Four, the moon would not actually have been visible from earth before Day Four, assuming that God made the moon early on Day Four. Keep in mind that there were no creatures that could have even seen the moon until Day Five, but for the purposes of our discussion, it is necessary to extrapolate the moon's motion and visibility backward in time in a manner consistent with the calendar. The calendar would have been operable, even if the astronomical bodies on which it is based did not yet exist.

However, Ussher believed the ancient Hebrews didn't observe a lunisolar calendar but a solar calendar (Pierce and Pierce, 2003, 9). There is no evidence the ancient Hebrews used a solar calendar and then switched to a lunisolar calendar, so why does this belief persist? Some see subtle clues for a solar calendar in the Flood account; for a rebuttal of that position, see Faulkner (2013). On a solar calendar, months are not synchronized with the phases of the moon. Indeed, it is not clear what the point of a month is with a solar calendar. Our modern Gregorian (solar) calendar derived from the Julian calendar, which in turn derived from the Roman lunisolar calendar. Hence, the month is a vestige of a lunisolar or even an earlier lunar calendar. However, adoption of the month makes no sense if the primordial calendar was a solar one, as Ussher maintained. Furthermore, if the primordial calendar was solar, why would one expect it to have started with an astronomical new moon, or any other particular phase?

The Jewish tradition of *Rosh Hashanah* being the anniversary of creation relies upon the assumption of a lunisolar calendar. But if the ancient Hebrews did not observe lunisolar calendar but solar calendar, then this Jewish tradition becomes meaningless for the purposes of establishing the date of creation, because we don't know the structure of the hypothetical calendar the ancient Hebrews used, such as what its starting points were. We know that the trend of other ancient cultures was to move from lunar or lunisolar calendars to solar calendars, so why would the Hebrews have developed their calendar in the opposite direction? The Jews are fastidious about rules. Had the Jews made any serious calendar changes, such as those between a solar & lunisolar calendar, it would have resulted in protracted debate, because it would have required a tremendous change in dates when the feasts were observed. There is no evidence of this debate ever having occurred.

Some people who adhere to Noah's use of solar calendar dating also believe in a catastrophic change in the lengths of the day, month, and year at the time of the Flood. However, if the basis of time measurement so changed at the time of the Flood, the coincidence of astronomical new moon with Ussher's date of creation cannot be established. Hence, a catastrophic change in the calendar at the time of the Flood is incompatible with the October 23, 4004 BC creation date.

## Conclusion

Ussher's date for creation appears strongly to rest upon two assumptions. The first assumption of 6000 years of history in parallel to the first six days of the Creation Week is no longer tenable, because we currently are two decades past 6000 years since Ussher's date of creation. Though Ussher did not explicitly state his second assumption that first day of creation coincided with *Rosh Hashanah*, most sources suggest that Ussher indeed made this assumption, as do the precision of his date & its near coincidence with *Rosh Hashanah* that year. It may be that Ussher addressed these assumptions elsewhere in his many writings.

Other dates from later time periods that Ussher determined have been shown to be incorrect. An example of this is the destruction of the Temple. According to Ussher, this happened in 588 BC, but modern scholarship places this at 586 BC (perhaps 587 BC). Even many of Ussher's supporters today, such as Jones (2005), agree with this correction. However, Jones managed to make up those two years in the four centuries prior to the Temple's destruction, thus arriving at the same date of Temple's dedication that Ussher concluded. This flexibility ought to further underscore that point that such precision is not possible.

There is much greater uncertainty in the earlier dates, such as the creation (which is the earliest date of all). Given the questionable status of Ussher's assumption about the significance of the Oct. 23, 4004 BC date, it is unlikely that this is the correct date of creation. If one is freed of these assumptions, Ussher's approximate date of creation still is 4000 BC. Given the likelihood of sources of error, such as round-off error, this date could be off by a couple of decades either way. This is of no concern to all those committed to biblical authority, because Ussher's chronology is the result of this man's work, and is not part of Scripture. Trust in the authority of Scripture is not undermined by the failure of any extra-biblical text, such as Ussher's chronology.



There are other possible creation dates that are tenable and consistent with biblical data. I encourage biblical creationists to explore these other options. Two obvious considerations are regnal dating of monarchs & the possibility of a longer sojourn in Egypt (430 years as opposed to 215 years, as Ussher supposed). This could move creation date back to 4200 BC. Less promising, but worthy of discussion, is comparison of [Genesis 5 & 11](#) genealogies in the Masoretic text and the Septuagint (see Sexton 2015).

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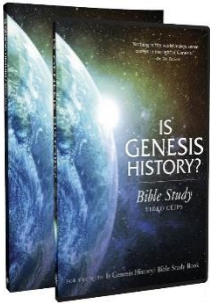
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# EDUCATIONAL ADVERSARIES



**F** HD





From the Workbook Chapter: "Adding up the Genealogies"

**Starting in the first century and continuing to the present, most interpreters examined the genealogies in the Bible and said they can be used to calculate the age of the earth.**

The first genealogy used this way is in [Genesis 5](#). It reports the age of Adam when he fathered his son Seth, then the age of Seth when he fathered his son Enosh, and so on down to Noah who is said to have been 600 at the start of the Flood. If one sees [Genesis 1](#) as a record of six normal days, and the genealogies as relationships without gaps, then it appears one can calculate the time from Creation to the Flood.

The next genealogy using the same pattern is in [Genesis 11](#). Noah's son Shem is said to have fathered Arpachshad two years after the Flood. The names and ages continue through Terah, the father of Abram, thereby providing a way to calculate the time between the Flood and Abraham's birth.

From Abraham forward, it is not as simple a process. There are no longer genealogies linear like the ones in [Genesis 5](#) and [11](#) listing the father's age at his son's birth, so one must track down references to ages at significant events, cross-compare, then calculate together. This process takes one from Abraham to David; from David through the kings of Judah to the Exile; and from the Exile to Jesus' day.

Once this Biblical timeline is established, specific people and events are seen to intersect with other calendars in the ancient world. These can then be matched to an 'absolute' astronomical calendar to determine an approximate age for the earth. For instance, the Jewish historian Josephus, writing around 94 A.D., used this process to calculate the age of the earth as approximately 5500 years from the date of his writing in the first century A.D.

Other men in the early church calculated similar ranges, with estimates provided by Cyprian, Irenaeus, Clement of Alexander, Julius Africanus, Hippolytus, Lactantius, Chrysostom, and Augustine. All of them put the creation of the world as less than 6000 years old from the date of their writing (with many approximating it at 5500 BC).

*Prior to the 19th century, almost every significant Biblical commentator thought the Bible spoke to the age of the earth in a definitive way.*

These systems of dating continued through the medieval church & persisted up to the 17th century with the well-known calculation of Archbishop Ussher in England. Like other Protestants, Ussher used the Hebrew 'Masoretic text' used by Jewish scribes, a text somewhat different than the older Greek 'Septuagint' used in the churches of the first century. This choice resulted in him shrinking the timeline of the world by 1500 years and placing the date of creation at 4004 BC.

Why the difference in age? The Hebrew text of [Genesis 5](#) and [11](#) often lists younger ages for fathers at their sons' births in comparison to the Greek text. For instance, in the Greek Septuagint Adam is 230 years old when he has Seth. In the later Hebrew Masoretic text, however, he is 130 years old. The difference in ages adds up to a variation of approximately 1500 years. But where did this difference come from?

Although a complex & controversial topic, it is thought by some that a group of Jews living during the second century A.D. in Palestine intentionally adjusted some of the numbers in [Genesis 5](#) & [11](#) in order to keep early Christians from using the age of the earth to calculate Jesus' arrival as fulfillment of a messianic prophecy. By subtracting approximately 1500 years from the history of the earth, Jesus would have been born too early to fit into the messianic window.<sup>[1]</sup>

Today, modern creation scientists and scholars are divided as to whether to accept the longer ages in the older Greek text or the shorter ages in the more recent Hebrew text. The former group places the age of the earth at 7500 years old; the latter at 6000 years old, often still relying on the work of Archbishop Ussher.

Ussher, of course, was just one of many scholars living during his day who, although disagreeing on specifics, ultimately agreed the age of the earth was less than 10,000 years old. The point is that prior to the 19th century, almost every significant Biblical commentator thought the Bible spoke to the age of the earth in a definitive way.<sup>[2]</sup>

### The Opinions of the New Geologists

In the early 19th century, however, the new sciences of geology and paleontology began to exert an influence on interpretations of Genesis.<sup>[3]</sup> James Hutton, George Cuvier, Charles Lyell, and others argued that the history of the earth was much older than 10,000 years; they based this view on their new interpretations of the rock layers and the fossils within them.<sup>[4]</sup>

It became obvious that the traditional view and the new view couldn't both be accurate since they provided two competing histories of the earth.

This is an important observation: it was not simply a matter of differences in timescale, but of differences in events happening during those timescales. Everyone understood the implications of the profound change in age. In the new view of geology, the earth had a "deep history" with a series of events occurring in it that were radically different than the events recorded in special revelation.

Although non-Christians had already assigned Genesis to the realm of myth, these differences created a major issue for Christians: how did the history in Genesis fit with the new history of the earth? And what did it mean for the doctrines of revelation and creation?

One answer was to question the geological findings themselves. This was done by a series of “scriptural geologists” with limited success, a history that Terry Mortenson documents in his book *The Great Turning Point*.

The other answer was to change one’s interpretation of Genesis.

## New Ways to Interpret an Old Text

As a result, the 19th century saw the introduction of a number of new interpretations that attempted to synthesize [Genesis 1](#) with a much longer period of time.<sup>[5]</sup> One was the ‘gap’ view which argued there was an indefinitely long period of time between [Genesis 1:1](#) and [1:2](#).

Another idea was the ‘day-age’ view which said each ‘day’ in [Genesis 1](#) was actually a long period of time. There was much discussion as to just how long a period of time, as well as which events each ‘day’ symbolized, but, in the end, this view provided a symbolic or allegorical function that could be shifted as needed to match changing scientific views.

The result of these interpretations was that, for those who held them, it no longer became possible to determine the age of the earth from the Bible. Instead, it was the role of geologists to determine the age of the earth. This meant that geologists became new historians of the earth, removing from the Bible the ultimate authority concerning the actual history of creation.

Some commentators & pastors argued this was an incorrect way of interpreting [Genesis 1](#); they said these views were neither in the history of interpretation nor in the text itself. In spite of this, it became more popular to interpret Genesis in light of the seemingly indisputable claims of many geologists that the earth was far older than 10,000 years. For some, it was an easy concession because it seemed to maintain both the historical integrity of Adam and Eve as well as the rest of the Biblical text.

The one nagging problem was the fossil record.

<sup>[2]</sup> Terry Mortenson, *The Great Turning Point* (Master Books, 2012) 44-45.

<sup>[3]</sup> Nigel M. de S. Cameron, *Evolution and the Authority of the Bible* (The Paternoster Press, 1983) 72.

<sup>[4]</sup> Martin Rudwick, *Earth’s Deep History* (The University of Chicago, 2014) 99,110.

<sup>[5]</sup> Mortenson, 33,35.

# *Creationists Contend @ Age of the Earth Reasons to Believe Vs. Answers in Genesis*



# PROGRESSIVE CREATIONISM

## (“*Old Earth Creationism*”)

Robert C. Newman

### TH331 Perspectives on Creation: Five Views on Its Meaning & Significance

## 1. OVERALL POSITION

### Personal Position on the Creation-Evolution Controversy

My position on the creation-evolution controversy is that I am an old earth creationist. As an *old earth* creationist I understand that the earth and the universe were created far more than just a few thousand years ago as has been the traditional belief among Christians. Rather I think the earth is some four or five billion years old and the universe some ten to twenty billion years old.

As an old earth *creationist* I believe that unguided evolution is not capable of producing the features we see in our universe—not the universe itself, life, its actual variety, not humankind. Nor do I think that God-guided evolution is the way God chose to create, at least not to produce the large-scale differences between the various plants and animals, nor to make humans. Presumably God is capable of creating everything we see either by means of miracles in just a few days (even no time at all!) or by guiding purely natural processes over a long period of time. But I don’t think the biblical or scientific evidence we have suggests that he used either of these means exclusively. Instead, it seems to me that God used some combination of supernatural intervention and providential guidance to construct the universe. Perhaps he did this so that the universe would be of such a sort as to display design and structure far surpassing its own innate capabilities, thus sending us a message about the existence and character of our Creator (Ps 19:1–4; Rom 1:19–20).

This old earth position is also sometimes called “progressive creationism.” This is not because we think ourselves to be progressive while young earth creationists are “reactionary.” (We ought never to look down on people for trying to hold firmly to what they understand God has said.) Rather it’s because we think God’s activity in creation occurred in a *progression*—a number of steps over a long period of time in which God established and perfected each level of the environment before he added a higher level that rests (so to speak) upon the preceding levels.

There are a number of varieties of old earth creationism, just as there are varieties of young earth creationism and theistic evolution. A sort of intermediate position between young earth and old earth is the “gap theory,” which sees God’s original creation of the universe and earth (taking ages) mentioned in Genesis 1:1 (“in the beginning God created the heavens and the earth”), followed by the destruction of the earth’s habitat (perhaps due to Satan’s rebellion) in Genesis 1:2 (“the earth was [or possibly ‘became’] formless and empty”). The rest of the Genesis account then describes the restoration of the earth just a few thousand years ago in six literal days. In this view, popularized in the old *Scofield Reference Bible*, geologists are looking at the original creation and Genesis is looking at the restoration.

Most varieties of old earth creationism, however, see the Genesis account and the data of cosmology and geology as referring to the same events—the creation of the universe, earth, and their contents. Variations within this position commonly concern how the days of Genesis are to be understood: Are they long periods of time (day-age view), literal days separated by long periods



(intermittent-day view), or are the days a literary device rather than an actual chronological sequence (framework hypothesis)? Each of these views in turn has subvarieties with different correlations between features in the biblical text and phenomena in nature, including the question of the antiquity and unity of the human race.

Some proponents of one or the other of these old earth creation schemes include theologians Charles Hodge, Bernard Ramm, and Wayne Grudem; lawyers William Jennings Bryan and Phillip Johnson; geologists Davis Young and Daniel Wonderly; biologist Pattle Pun; chemist Russell Maatman; physicist Alan Hayward; astronomers E. W. Maunder and Hugh Ross; and Old Testament scholars William Henry Green and Gleason Archer, to name a few.

My own view is a variety of the intermittent-day type. After God formed the heavens and the body of the earth in the beginning, each successive day opens a new creative period—day 1 starts the formation of atmosphere and ocean; day 2, the formation of dry land and vegetation; day 3, the oxygenation and clearing of the atmosphere; day 4, the formation of air and sea animals; day 5, the land animals and human beings; and day 6, the formation of redeemed humanity. The seventh day (still future) will open God’s eternal sabbath rest, with his people enjoying the new heavens and new earth.

In this sort of scheme, we can get a very nice correlation between the creation account in Genesis and a reasonable model for the earth’s origin as commonly proposed by astronomy and geology. Apparently, the narrative is presented so that we readers are observing the events of creation as they unfold around us, as though we are at ground level (once the planet has been formed), rather than imagining we are watching everything from some vantage point out in space. The story goes like this: The earth (with the sun and other planets) was once a shapeless, empty gas cloud. As it contracted under its own gravity, it became dark within (and so to the reader, dark everywhere around). Then the whole cloud began to glow (the observer sees light everywhere). The planetary material was pushed out of the cloud and formed up into a rotating planet, with day on the sun side and night on the other side (the observer sees light separated from darkness, the light called “day” and the darkness “night”). The earth’s atmosphere was produced from within the planet, separating its waters into surface and atmospheric; the plates making up the crust moved about to open up ocean basins and provide dry land. Plant life appeared and removed carbon dioxide from the atmosphere, lowering earth’s temperature, providing oxygen for animal life, and clearing the sky so that the sun, moon, and stars became visible to an observer on the earth’s surface. The various forms of animal life appeared on the earth. Finally, human beings were created.

This match between Bible and science would really be quite surprising if the Bible were merely ancient guesswork or made-up stories. But the fit between them is just the sort of thing we might expect if the God who created the universe was also behind the Bible.

Details of this particular exposition aside, why do I think some sort of old earth creation is a better model of origins than atheistic evolution, theistic evolution, or young earth creation? My answers follow below.

Over against young earth creationism, numerous strong scientific evidences (and a few biblical hints) indicate that the earth and universe are very old. For example, take light. As we look out into the sky at night, we can see objects that give every appearance of being many light-years away from us, so that their light began to travel from them to us many years ago. The bright star Sirius, for example, is about twelve light-years away, and the light we now see from it is twelve years old. The Andromeda galaxy appears to be some two million light-years away, so its light would

have left it two million years ago. The most distant galaxies and quasars we can see seem to be over ten billion light-years away, which suggests that the universe is at least that old.

Young earth creationists have taken several different tacks to avoid this conclusion. Some think the universe is really quite small, so that only a few years are necessary for light to cross it. Others claim the speed of light was much faster shortly after creation than it is now, so that light from distant objects got here right away. Still others claim that the light we see from distant objects was created on the way, so that we have never actually seen light that left objects more than about ten thousand light-years away.

All these responses seem to face overwhelming problems. If the universe were really quite small physically, then the very dim stars and galaxies we see in our telescopes would also be quite small—too small for gravity to hold them together at their high temperatures. If, instead, the speed of light was nearly infinite at creation, and hundreds to thousands of times faster when Abraham was alive than it is now—then by Einstein’s famous formula for the equivalence of mass and energy ( $E=mc^2$ ), the term  $c^2$  (the speed of light times itself) would have been tens of thousands to millions of times larger—so that the sun, in converting a little of its mass to energy, would have fried everyone living on the earth; alternatively, if we make the energy (E) constant, then masses (m) back in Abraham’s time would have been so small that the earth’s gravity would not have been able to hold on to its atmosphere or even its people!

The most common young earth response is the third alternative mentioned above, namely, that the light from the distant stars was created already on its way to us, so that we could see the stars immediately after they were created, even though there had not been enough time for light to come all the way from them to us. But notice the problem that this produces: when we look at the star Sirius we see what it was doing twelve years ago; when we look at the Andromeda galaxy, we see what it would have been doing two million years ago if it had existed then, but it didn’t, so we are really seeing a continuous stream of events that never occurred—fictitious history! As most of the universe is more than ten thousand light-years away, most of the events revealed by light coming from space would be fictional. Since the Bible tells us that God cannot lie, I prefer to interpret nature so as to avoid having God give us fictitious information.

Limitations of space permit me only to briefly mention a few other evidences for an old earth and universe. Some comes to us by calculating the ages of both earthbound, lunar (and perhaps martian) rocks using various radioactive decay processes; these give ages for various events in the history of these rocks ranging back to a few billion years. Besides this, we have numerous large rock formations on earth that give every evidence of having once been molten but that would not have had time to cool to their present temperatures if the earth were only some thousands of years old. Similarly, calculations of how stars grow old show that some of them are relatively young, but most are a few to many billions of years old. The planets of our solar system have numerous craters in various stages of erosion, sometimes overlapping one another, which testify to a period of several billion years in which the planets were bombarded by meteors. All of this points to an earth and universe far older than a few thousand years.

Although the Bible does not explicitly tell us that the earth is either old or young, a number of biblical hints suggest that it is more than a few thousand years old and that it is much older than the human race. For instance, apart from the Pentateuch, Psalm 90 is the only passage that tells us it is written by Moses. And this is the very psalm that says that God views a thousand years as we would view a day or even a few hours of the night (Ps. 90:4). The apostle John tells us that already in the first century A.D. the “last hour” had come (1 John 2:18), yet that last hour has now lasted

nearly two thousand years! What sort of timescale are Moses, John, and God using? Something that allows for ages of earth history?

In the book of Revelation, the apostle tells us that the end of the age will feature an earthquake worse than any that has occurred “since man has been on earth” (Rev. 16:18), which sounds like there might have been bigger quakes before humans were around; this is what geology says, too. Psalm 102:25–26 tells us the heavens will “wear out like a garment,” suggesting that they have lasted long enough to age noticeably, a feature more characteristic of billions of years than of thousands, given what we know about stellar-aging processes. None of this gives us numbers for the age of the earth, or even *proves* it is old. But it should make us cautious about climbing out on the limb that it is only a few thousand years old, especially in the face of the scientific data.

Christians all too easily have tended to “overinterpret” Bible passages when other data are lacking, and that sometimes in spite of contrary data. Consider, for instance, the belief that three wise men visited the baby Jesus, when the Bible gives no such number, or that Methuselah was the oldest man who ever lived, when the Bible merely records his age at death and says nothing about whether anyone else ever lived longer.

Speaking of death, young earth creationists maintain that there was no death of any sort (or at least no animal death) before the sin of Adam and Eve. Since the fossil record clearly contains multitudes of dead animals, these must have died sometime after Adam sinned, perhaps during the Flood. Old earth creationists respond that denying any sort of animal death before the Fall is another example of “overinterpreting” the biblical account. Nothing is said one way or the other about animal death in the Genesis account. And the claim that Romans 5 teaches death entered the world through sin is correct, but the context is clearly referring to human death, not animal death. One of the watershed issues dividing young earth and old earth creationists is when animal death first occurred.

Related to this, there are serious problems with the usual young earth explanation for the geologic record—that it was nearly all laid down in the one-year flood during Noah’s time. On the contrary, there are many layers in the midst of the geologic record that apparently took much longer than this to form.

For one thing, there are more fossils than this model can explain. If we imagine that nearly all the fossils known to exist were laid down in the Flood, then the plants and animals they represent must all have been alive at the same time; there are so many of them that they must have been crawling over each other many feet deep on its surface! There are also numerous deeply buried layers of rock containing potholes and caverns, showing that the rock from which they were carved was already solid enough to be eroded into vertical (and even undercut) slopes before the new sediment (which fills them) was laid down. The presence of very fragile (but uncrushed) fossils also shows that the sediment containing them was solidified into rock before thick layers of additional sediment were laid on top. Some layered deposits give every evidence of being annual layers, whether by a sequence of salts precipitated from seawater in a tropical bay by evaporation, or by sand and mud laid down seasonally in a freshwater lake by rain and melting snow. Many of these deposits have hundreds of thousands of layers, and some have millions.

Old earth creationists differ among themselves on the extent of Noah’s flood. Some, such as James Montgomery Boice and Daniel Wonderly, believe that the water covered the entire earth, but that it did not lay down any large fraction of the geologic strata. Others, such as Frederick Filby and I, favor a flood of limited but very large extent, perhaps filling one of the basins surrounding Eastern Turkey, the traditional site of the mountains of Ararat, such as the

Mediterranean, Black Sea, or Caspian basins. Still others favor a Mesopotamian river flood, though it is hard to see how the floodwaters could take so long to recede on this last view.

One of the most striking features of earth's geology is continental drift—a slow movement of the large plates that make up its crust. Today this motion can be measured directly using space-age technology, and is typically an inch or so per year. This rate of motion gives the same ages for the separation of the various continents as do radioactive decay dates for when their geologic strata started to diverge. It also agrees with the dating of magnetic reversals in the new rock formed by magma seeping up where the plates are breaking apart. Likewise, it agrees with the depth and radioactive ages of the ocean-floor ooze deposited on the new crust as it moves away from its place of origin. Here we have the convergent testimony of several diverse witnesses agreeing on an old earth. Young earth creationists try to explain these away by several ad hoc hypotheses, namely, that continental drift right after the Flood was very fast, but it has since slowed down enormously; that the earth's magnetic field oscillated rapidly only *during* the year of the Flood but not since, and so forth. So if we don't try to dismiss the geologic record as fictitious history, it is telling us that the earth is very old.

Yet admitting an old earth does not deliver us into the hands of atheistic evolution. Far from it!

The growing body of evidence from cosmology points steadily to a universe that had a definite beginning, in spite of strenuous attempts to avoid this over the past century by postulating static universes, recycling universes, and currently an infinite universe in which our universe is only a small bubble. As new data have continued to come in, the spins that some scientists have put on it to avoid belief in a Creator have been successively more and more quirky.

In recent years, it has become apparent that our whole universe is very “finely tuned”—that many of its features need to have just the values they do in order for life to exist. Slight changes in the strength of any of the four basic forces, the expansion speed of the universe, or the character of specific atomic elements would render the universe lifeless. Because of the unlikelihood that all these things could be just right by chance, atheists have finally had to resort to the assumption that there are countless other universes in existence in order to make it look plausible that there should be even a single one such as ours if there is no Designer.

Besides this evidence of the fine tuning in the universe as a whole, Hugh Ross has recently assembled from the scientific literature a very impressive list of features for our earth, its sun, moon, and other environment that are so finely tuned as to suggest we should not expect even one planet capable of advanced life in our universe unless a Designer has put it there.

In addition to the unlikelihood (if there is no Creator) of a universe or planet existing that is hospitable to life, the origin of life itself is an enormous stumbling block to atheism. Even the simplest living cells are very complex mechanisms for which a hundred million pages of instructions would scarcely suffice to provide the specifications necessary to construct one. Yet these are supposed to have arisen (by chance) very quickly and early in earth's history when the planet had barely cooled off enough so as not to cook meat. Both the complexity of living things and their sudden appearance on earth suggest the work of a Designer, not the “blind watchmaker” chance. Throughout the whole history of life, a solution to the problem of the origin of complex, functional information in living things seems to be far beyond the resources of a universe in which only chance and survival are at work.

Theistic evolution avoids some of these problems. With an all-powerful and supremely intelligent God overseeing everything that happens, it is not hard to imagine that he could engineer

combinations of events occurring that, while not strictly miraculous, would otherwise not be expected to happen in a universe only a few billions of years old.

Theistic evolution need not do so badly in interpreting Genesis 1 either. Terms like “let the water teem” or “let the land produce” might well be understood to mean that God was providentially guiding natural processes, as we think he is when the Bible speaks of God causing the sun to rise and the rain to fall (e.g., Matt. 5:45). Even the phrase “after their kind” (KJV) does not necessarily mean that God separately created each category of plant and animal from scratch and that one kind could never evolve into another. Although the phrase has traditionally been understood to refer to plants and animals “breeding true,” the word “after” is a rendering in the King James Version of the Hebrew preposition *l*, which means “according to,” and the phrase in its various contexts seems to refer to classification rather than reproduction. The point of the narrative seems to be that God made the various kinds of plants and animals, without explicit comment on how he did it. All this is to say that Genesis 1 does not necessarily rule out some kind of theistic macroevolution.

The biblical problems for theistic evolution, as I see them, arise in Genesis 2. Here, many theistic evolutionists resort to claiming that these accounts are parables or allegories (fictitious history), because otherwise we have a narration that includes explicitly miraculous intervention in both the creation of Adam and of Eve. According to an evolutionary scenario in which God does not miraculously intervene, humans must have developed gradually from the apes, and thus at any time there would be a whole population of such creatures, and thus no historical Adam and Eve. So the boundary between human and ape would presumably be a fuzzy one, like the boundary between the colors red and orange. This approach introduces the concept of fictitious history into the biblical narrative, which (as I mentioned earlier) seems to me to be a serious mistake. I would like to avoid introducing fictitious history either into nature or Scripture if at all possible, for unless the data we are using is reliable, how can we possibly have any assurance that our interpretations are worthwhile?

Other theistic evolutionists, however, believe that Genesis 2 gives us a literal, historical account of the origin of the human race. They see the Bible as narrating two miraculous interventions at this point. In one, Adam is a miraculous creation (rather than a providential development), perhaps directly from the dust of the earth, perhaps indirectly from dust by remodeling an existing ape. The second intervention is the creation of Eve miraculously from Adam’s side. This proposal seems much more satisfactory to me than the version of theistic evolution discussed in the last paragraph. It handles the details of Genesis 2 in a more straightforward way. It fits the biblical references to an actual fall of humans into sin, which is everywhere pictured as a real action of two individuals in history. The main problem I see with the remodeled ape version of this view is that the Genesis account indicates that “man *became* a living being” (Gen. 2:7) when God breathed into him, rather than already being alive and now acquiring humanity, as would be the case with a remodeled ape.

But there are scientific troubles with theistic evolution, too. As with atheistic evolution, it has difficulty explaining the origin of *irreducible complexity*, which is so common in living things. Michael Behe has sketched a number of these in his recent book *Darwin’s Black Box*. Where an organ or chemical process requires a large number of parts to be just right or the thing doesn’t function at all, it doesn’t look like the organ or process could have been constructed by a long sequence of small changes over many generations, since the thing would be useless until complete. Instead, it looks more like we have an entire organ or process made from scratch, or the DNA for its construction suddenly turned on, or a large number of coordinated mutations happened at just

the right time and place. Though I don't want to get hung up in squabbles over terminology, I would call any of these old earth creation rather than theistic evolution.

Besides this, the fossil record seems to have too few transitions between major biological categories to fit what I would have expected from theistic (or atheistic) evolution. Rather, new types of plants and animals regularly seem to show up without any record of close predecessors. This is especially true of the so-called "Cambrian explosion," where all the major body plans (phyla) of the animals appear in just five or ten million years (more than five hundred million years ago), with nothing comparable having happened before or since. The phenomena look more like Gordon Mills' proposal that somehow God has added new information to the genes, or perhaps Robert DeHaan's suggestion that new genetic programs were turned on. It is possible that most living things are descended from one or a few common ancestors, but if so, the transitions look too abrupt to be purely natural phenomena.

In addition to these gaps in the fossil record, the "shape" of the record seems to be all wrong for the various versions of evolution—both atheistic and theistic—that I am familiar with. Evolution predicts that the diversity in living things will expand from the simple, most primitive life in a cone shape rather as the limbs diverge from the trunk of an elm tree. First, the original life will diverge into various species, and these will eventually become distinct enough to be grouped into several genera. These will subsequently diverge to form families, then orders, classes, and so forth, with the basic body plans—phyla—formed last. Thus, according to evolution, the "tree of life" should be formed from the bottom up (speaking in terms of the hierarchy of categories in the biological classification system). But in fact, the phyla appear suddenly at the Cambrian explosion, and then these subsequently are subdivided into the various lower order categories, so that from the Cambrian explosion onward, the biological classification system was formed from the top downward!

These are the sorts of things that convince me that some variety of old earth creationism is preferable to atheistic evolution, theistic evolution, or young earth creationism.

### **The Integration of Science and Theology**

As far as my view of the integration of science and theology is concerned, I have a few comments to make. Initially, I like the phrase "science and theology." It is common in these discussions to talk instead of "science and the Bible," and while our concern in this book is that our theology be truly biblical, the terms "science" and "Bible" are not parallel. Science can be understood as a method, an institution, or a body of knowledge. In this it is parallel to "theology" rather than to "Bible." Science is a method or institution that investigates nature, and it is also the body of knowledge that results from this study. Theology (at least, biblical or exegetical theology) is a method or institution that investigates the Bible, and also the resultant body of knowledge. Theology studies God's *special* revelation in Scripture, while science studies God's *general* revelation in nature. If biblical Christianity is true (as I believe), then the God who cannot lie has revealed himself both in nature and in Scripture. Thus, both science and theology should provide input to an accurate view of reality, and we may expect them to overlap in many areas.

Of course, science and theology could be *defined* so they don't overlap. Perhaps science could be understood as the study of purely material things (e.g., matter, energy, etc.) and theology of purely spiritual things. Or maybe science could be thought of as the study of natural phenomena and theology of supernatural. But even if this were done, we would have to make an additional assumption to prevent overlap, namely, that there is no interaction between the physical and spiritual or between natural and supernatural—an assumption directly contradicted by the Bible

and the Christian worldview. Besides this, I doubt that anyone on earth knows just what matter, spirit, or energy really are and what distinguishes them from one another. Even with the biblical accounts of miracles, it is not always easy to sort out what is miraculous intervention and what is providential oversight. Thus we should expect to see overlap.

Certainly the way we earlier defined science and theology would suggest there is overlap. Both science and theology will be interested in origins—of the world, of plants, of animals, of humans. Even of sin! Why shouldn't scientific anthropology and psychology be able to investigate whether something is dysfunctional about humanity, what it involves, and how it may have started? Of course, if science is conducted in such a way as to rule out the spiritual and supernatural, it might not be able to discover any answer that adequately handles the data.

Both science and theology will also study the continuing operation (or governance) of things in this world. And while the Bible mostly deals with God's oversight and ultimate control of nature and history, it is not totally silent about intermediate causes. Perhaps the various problems facing atheistic evolution are an indication that science should not be so tightly wed to the idea that intelligent causation of natural phenomena is out-of-bounds.

### **The Role of My View of Integration in the Controversy**

My personal view on the integration of science and theology doesn't *have* to be peculiar to old earth creationists, and therefore it is not determinative of the position I hold. Some young earth creationists and theistic evolutionists share in this basic approach, feeling that the data of Scripture and the data of nature are fully trustworthy, and that some sort of harmonization exists between the proper interpretation of each. We just disagree on what that harmonization looks like and the relative weight to give to various scientific, theological, and philosophical considerations.

I am concerned, though, about the tendency I see among many influential theistic evolutionists to forbid the Bible to speak on scientific matters—they claim the Bible only answers the religious “who” and “why” questions, and science only the scientific “how” and “when” questions. On the contrary, it seems to me that both science and theology (or nature and the Bible) can provide input on all four of these questions, though one source may have more to say about one question and less about another. We need to be careful about making decisions on principles of interpretation that effectively rule out the consideration of significant data.

On the young earth side, I see a tendency to forbid science to have any input even on the “how” or “when” questions so far as *origins* is concerned. This usually takes the form of an objection that science is only competent to investigate hands-on, repeatable, presently occurring phenomena. But this is not so. Some sciences, indeed, concentrate on these sorts of phenomena (physics, chemistry); other branches of science (astronomy, geology, biology) are frequently historical, seeking to use surviving data to reconstruct the past. Obviously the level of certainty available to a science goes down if the phenomena it studies are outside the laboratory, unrepeatable, or occur only in the past, but it need not go to zero. All too often we Bible-believers seem to forget that similar problems exist for Bible study, too. Our knowledge of the text of the Bible depends on the surviving data of ancient manuscripts or quotations. Its interpretation depends on our modern reconstructions of the grammar and vocabulary of languages for which no one alive is a native speaker, and of cultures that have no living representatives. In spite of this, I think we are right in believing that God has arranged things so that the information we have is enough to understand the Bible adequately, though by no means exhaustively. Why should he not have also done something similar for the information we have from nature?

With these qualifications in mind, I find a real problem with the common young earth position that much of the data of modern science relative to origins is merely an appearance of age or, in the case of light from distant objects, fictitious history. Similarly, regarding many theistic evolutionists, I have a problem with their assumption that the events of Genesis 2–3 are also fictitious history. If possible, I would like to construct an integration between science and theology in the area of origins that avoids fictitious history either in nature or Scripture. This seems to me to be more consistent with the idea that nature and Scripture are both revelations from the God who cannot lie.<sup>1</sup>

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<sup>1</sup> Newman, R. C. (1999). [Progressive Creationism \(“Old Earth Creationism”\)](#). In S. N. Gundry, J. P. Moreland, & J. M. Reynolds (Eds.), *Three Views on Creation and Evolution* (pp. 103–119). Grand Rapids, MI: Zondervan.



# RTB: Creation Model Approach

One of the hallmarks of Reasons to Believe is our testable creation model in approach to integrating science and the Christian faith. We realize, however, that the term creation model can be confusing. So please allow us to clarify a few important points. People without a background in science frequently wonder whether we have put together a physical model of creation, something along the lines of a model airplane, an object that can be seen and studied. But this is not the case.

Some scientists use the term model in a mathematical sense, to refer to a set of equations, for example. Other times they use the word to refer to a series of empirical observations (as a sequence of chemistry experiments) or physical processes (such as the formation of the Grand Canyon). Simply put, a scientific model is conceptual framework that offers a simplified view of a large, complex reality. Models help researchers organize vast amounts of information into a conceptual structure so as to better understand and interpret the data, ask good questions, and identify anomalies. Famous scientific models include Einstein's theory of relativity and the neo-Darwinian theory of evolution.

In science, the term "model" refers to the schematic description of a system (or set of phenomena) that accounts for its observed and inferred features as well as its origin and history. A model is much more than a mere idea, inference, method, hypothesis, or rudimentary theory. It's a scenario that offers reasonable explanations for the entire scope (origin to ending) of a particular system, as well as for its relationship to other natural phenomena.

Using a model approach supplies researchers with enough detail to assist in a further study. It offers explanations for how, when, where & why the phenomena (or system) occurs. It anticipates, or "predicts," discoveries that could either verify or falsify the model's explanation(s). The best models yield specific suggestions for how near-future research may help improve understanding of the systems or phenomena they attempt to explain.

Reasons to Believe uses the term model in reference to our effort to summarize physical (observational) and biblical data relevant to creation into a coherent explanatory framework. The following foundational beliefs help shape how we interpret the data.

1. The Bible (including Genesis 1–11) is the error-free word of God.
2. The creation account of Genesis 1 follows a basic chronology.
3. The record of nature is also a reliable revelation from God.
4. The message of nature will agree with what the Bible says.
5. The Bible contains a selective summary description of God's creation activity (e.g., no mention of dinosaurs, bipedal primates, quantum mechanics, or the existence of other solar system planets).
6. God gives humans the privilege to fill in the details, carefully, through patient, ongoing exploration and increased understanding of the natural realm.

We build our model by collating all that the Bible says about God's creative work and integrating the individual accounts into a coherent picture. We then present interpretation in the form of a scientific model, one that anticipates, or "predicts," future findings. We can then evaluate its accuracy in light of scientific advances.

We believe God's two revelations (Scripture and nature) will agree when properly interpreted. When apparent contradictions arise, we reexamine the data — both biblical and scientific — recognizing that our understanding is incomplete. Sometimes the scientific data seems an unclear or awkward fit with the biblical data. But we see such instances as an opportunity to study both of God's revelations more deeply.

# How Humans Differ from Animals

BY - DECEMBER 31, 2005

For many people the distinction between human beings and animals has become increasingly blurred.

Exposure to the secular, naturalistic worldview -- especially in academia -- can leave one wondering whether the differences are simply a matter of degree. In this view, mankind leaped to the top of the evolutionary heap by chance events.

However, philosophers have identified many ways in which human beings differ dramatically from animals. Unique human qualities and traits set man apart from the animals by *kind*, not just *degree*. From a Christian worldview perspective, and specifically in light of the *imago Dei* (see sidebar), one would expect profound differences, including the few that follow.<sup>1</sup>

## *Inherent Spirituality*

Human beings have an inherent spiritual and religious nature. The vast majority of people on Earth pursue some form of spiritual or religious truth. Most human beings have deep-seated religious beliefs and engage in intricate religious ritual. Pursuit of God or the transcendental is a defining characteristic of mankind and is evidenced in such common practices as prayer and worship--so much so that some have designated humans as *homo religiosus*--"religious man." By contrast, formal atheism is largely inconsistent with the overall history of human nature & practice. Even nonbelievers (atheists, and skeptics) pursue questions concerning life's ultimate meaning and purpose and are drawn to whatever they consider to be of ultimate importance and value. Philosopher Harold H. Titus has said that even agnostics and atheists "tend to replace a personal god with an impersonal one--the state, race, some process in nature, or devotion to the search for truth or some other ideal."<sup>2</sup>

Man, of all Earth's creatures, is uniquely cognizant of his imminent death. This recognition brings him personal angst and contemplation of God and the possibility of immortality. The ancient Greek philosopher Socrates (470-399 B.C.) stated, "The unexamined life is not worth living." It is left for man alone to contemplate what philosophers call "the big questions of life." Animals, on the other hand, can be very intelligent but show no sign of spirituality or concern with ultimate issues.

## *Sophisticated Communication*

Human beings possess unique intellectual, cultural, and communicative abilities. Humans are thinkers, uniquely capable of abstract reasoning, and able to apply the foundational logical principle of noncontradiction (A cannot equal A & equal non-A). Human minds alone develop propositions, formulate arguments, draw inferences, recognize universal principles, and value logical validity, coherence, and truth. Only human beings wonder why the physical universe corresponds to abstract mathematical theorems.

## **What is the *imago Dei*?**

Entire books have been written on the subject, but briefly, historical Christian theology has affirmed that mankind was made in the *imago Dei* (Latin for image of God) according to Genesis 1:26-27. As the crown of God's creation humanity uniquely displays the image of God by his rational capacities, moral volition, relational distinctives, spiritual qualities, and dominion over nature. Humans reflect the splendor of their Maker, yet in finite expression. As image-bearers humans possess inherent dignity and moral worth and should be treated with respect regardless of race, sex, class, or beliefs. Man's fall into sin severely tarnished this image.

Humans communicate their conceptual apprehension of truth using complex symbols (language). This language is complex and flexible (verbal or written). Language serves to network humanity and establishes human culture & societal institutions. Humans have a deep need to communicate with each other and they accomplish it through a sophisticated intellectual process. In contrast, animals also communicate (and possess many other amazing abilities) but they do not work with abstractions or ask philosophical questions.

## ***Time and Truth Consciousness***

Human beings are conscious of time, reality, and truth. They study the past, recognize the present, and anticipate the future. People live their entire lives aware of the constraints of time. Yet human beings also desire to transcend time: they think about living forever. Reflective people wonder whether their perception of reality matches with reality itself. Human beings uniquely pursue truth, leading to founding & development of philosophy, science, mathematics, logic, the arts, & religious worldviews. What is real (metaphysics), what is true (epistemology), and what is rational (logic) are paramount questions, but again, only for man.

Although animals can have a keen intuitive sense of concrete time even surpassing that of man (animals are more attuned to the changes of seasons), they lack any capacity for abstractions about time. Likewise, animals do seem aware of concrete reality but do not inquire into any metaphysical, epistemological, and logical questions.

These differences between human beings and animals (more will be discussed in the next issue of *Connections*) may seem obvious, but people who do not identify with a Christian worldview continue to challenge a biblical view of creation. Much is at stake. The ongoing dispute over the status of the human fetus & debate on embryonic stem cell research represent just two examples of great divides in worldviews. Good reasoning can help bring clarity to such significant issues.

❖ “We are tempted to try to equate ‘humanity’ with the ‘animal,’ but we are in error to speak of one who acts immorally, that is one who harms or degrades another or himself, as being, ‘merely human.’ The phrase is almost always associated with the more base, degenerate, animal like behavior. In addition to this deterioration, unknown to him he has ultimately become victim of the ‘law of mortigression’ - Natures law of momentum, applied to human behavior states: *A personality in the process of deterioration will tend to continue in the process unless acted upon by an outside force.*”

- **William Justice, Jr.**

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## EVIDENCE OFFERED AGAINST AN OLD EARTH

### ***Exhibit A: The continents erode too quickly for Earth to be old.***

Erosion measurements show that the continents are lowered by wind, rain, hail, waves, and living creatures' activities at a rate of about 0.05 millimeters per year. At this rate, the continents, which average about 800 meters in elevation, would have disappeared in 16 million years. Since continents still have considerable elevation, Earth must be much younger than 16 million years.

**Reply:** This challenge focuses on one side of the equation only. It fails to acknowledge that lava flows, delta and continental shelf buildup (from eroded material), coral reef buildup, and uplift from colliding tectonic plates occur at rates roughly equivalent to, and in some cases far exceeding, the erosion rate. The Himalayas, for example, rise by about 15 millimeters per year from tectonic uplift. The San Gabriel Mountains north of Los Angeles rise at an average rate of 9 millimeters per year. Lava flows have increased Hawaii's land area by several square miles since the state's admission into the Union in 1959.

The scientific record and Scripture agree that early Earth's surface was more fully covered by water (thus, was smoother) than at present.<sup>4</sup> Through divinely orchestrated volcanic activity, plate tectonics, and other continent-building phenomena, Earth's surface changed from 100 percent oceans and 0 percent continents to about 70 percent oceans and 30 percent continents. Today, this ratio of continents to oceans increases at a much slower rate. Continental land area increases less rapidly today because the continents are being eroded at nearly the same rate as volcanoes, plate tectonics, and other phenomena are building them up.

Volcanic and tectonic activity does not depend on total continental land area, but erosion does. Therefore, continental land area has continued to increase until the erosion rate almost equals the buildup rate. Continental buildup from 0 percent of the global surface area to 30 percent requires more than 3 billion years. (If God were to supernaturally accelerate buildup by a factor of a million, all life would perish.) Thus, continental erosion is an argument for an old rather than a young earth.

### ***Exhibit B: Lunar dust accumulates too quickly to allow for an old earth.***

In the 1950s, before satellites were available, geophysicist Hans Pettersson estimated how much material meteorites deposit on Earth. He did so by measuring quantity of nickel passing through dust filters on top of Hawaii's Mount Mauna Loa. Since nickel is rarer in Earth's dust than in meteorites, he assumed *all* the nickel he collected came from space. Since nickel accounts for 2.5 percent of meteoritic material, he used the amount of nickel collected to extrapolate the amount of space dust that settles on Earth every year, coming up with a figure of 14 million tons. Given the Moon's gravitational pull and surface area, he then calculated that a 4-billion-year-old Moon would be covered with a layer of space dust 35 feet deep. However, different regions on the Moon's surface have between one-eighth of an inch and three inches of loose surface dust. This lack of dust implies a lunar age of only a few million years. But Pettersson's error bars were so large that by using the edge of each error limit most favorable to a young lunar age, some young-earth advocates whittled the few million years down to about 10,000 years.

**Reply:** This challenge draws on crude estimates & questionable assumptions, and it ignores subsequent precise measurements made without those assumptions. Pettersson acknowledged that his ground-based instrument measured not only the dust falling from outer space but also Earth material in the atmosphere stirred up by wind erosion and volcanic eruptions. A decade after Pettersson published his estimates, scientists made direct satellite measurements of cosmic dust inflow. Instead of a 14-million-ton annual accumulation on Earth, only 23,000 tons were indicated (1,700 tons per year for the Moon).

The most accurate measurements of meteorite dust influx to date were performed in 1993. These showed 40,000 tons annual accumulation for Earth and 3,000 tons for the Moon. This tonnage translates into 1.2 inches of surface dust for a 4.5-billion-year-old Moon. When other sources of inflow and outflow (decomposition from ultraviolet radiation, other erosion sources, compactification of older dust, inflow from larger meteorites and comets, and outflow from asteroid & meteorite impacts large enough to expel debris beyond (pull of the Moon's gravity) are considered, the measured one-eighth to three inches of lunar dust adds up to a lunar surface age of about 4.5 billion years. Erosion of lunar craters, the abundance of argon in the lunar atmosphere and rocks, and radiometric dating of lunar rocks all agree with this age estimate.<sup>10</sup>

Some young-earth creationist leaders now admit that the lack of deep lunar dust isn't a good argument for a young solar system. In the 1990s, both the Institute for Creation Research (ICR) and Answers in Genesis (AiG) made this admission publicly. Since then these organizations have raised an alternative challenge to the Moon's age. They hypothesize a tremendous bombardment of the Moon by asteroids & dust during the Genesis Flood and/or at the time of Adam and Eve's sin as a way to account for shallow layer of dust on the Moon today. They suggest that recent catastrophe of enormous scope would adequately explain the extensive lunar cratering and the observed erosion of lunar craters.

This explanation, however, contains several irreconcilable flaws. Because of Earth's greater mass and larger diameter, whatever widespread extraterrestrial impact catastrophes might befall the Moon, even larger catastrophes—roughly 30 times larger—would occur simultaneously on Earth. Such disasters would turn all Earth's surface water to steam, melt its crust & exterminate all life. Neither the Bible nor nature records any such event in human history. (Human beings and other forms of life have obviously survived.) Nor does such a disaster explain the argon in the Moon's atmosphere or the radiometric dates of lunar rocks.

***Exhibit C: Earth's magnetic field decays too rapidly to allow for an old Earth.***

Earth's magnetic field has decreased steadily since measurements were first taken less than 200 years ago. Based on the magnetic field strength of a typical magnetic star (which exceeds any conceivable value for Earth's) and on the observed rate of weakening, some creationists have calculated that the weakening process began on Earth no more than 20,000 years ago. Thus, Earth's age cannot be greater than 20,000 years.

**Reply:** The Earth's magnetic field does not undergo steady weakening but rather a variable alteration (following semiperiodic "sinusoidal" pattern). The field weakens, builds up, weakens, builds up, and so on. Proof for this pattern lies in geologic strata found throughout the world. Rocks reveal that Earth's magnetic field often reverses its polarity, sometimes as rapidly as once every 5,000 years, sometimes as slowly as every 1.2 million years. (The actual reversal event takes about 1 percent of the cycle time to complete.)<sup>15</sup> The last peak in Earth's magnetic field strength occurred roughly 2,700 years ago.

A few young-earth creationist leaders acknowledge magnetic reversals indeed have occurred. They claim, however, that the old-earth model (based on a dynamo operating in Earth's core) "requires that such reversals occur over thousands of years and at intervals of many thousands of years, [while] the young earth model assumes that the reversals occurred rapidly, within weeks or days." They then use evidence for rapid changes in the direction of magnetic north within cooling volcanic lava flows<sup>18</sup> as "proof" that the young-earth model has triumphed over the old-earth model.

No such triumph has occurred. Only a few of Earth's past magnetic reversals were rapid. Furthermore, those they cite were not global reversals but partial ones, specifically a 50° or less change in direction for magnetic north in rapidly moving material. To claim that dynamo model cannot account for swift reversals and rapid shifts (by tens of degrees) is simply incorrect. A German research team showed that "random fluctuations of the dynamo alpha-effect cause occasional rapid magnetic reversals" such as those observed. In a few reversal episodes, "non-dipolar components have become dominant for short periods and provoked a rapid change of local field directions."<sup>20</sup> In essence, Earth's magnetic field is better described as a global, stable, long-lasting oscillation interrupted by rapid, local directional and amplitude changes.

Three-dimensional dynamo simulations now reliably portray the past 80,000 years of Earth's magnetic field history, including its dipolar & nondipolar structures. More detailed simulations probing deeper into Earth's past are on the way. Meanwhile, geophysicists Paul Roberts & Gary Glatzmaier say the past difficulties of geodynamo models "have now been largely overcome, while alternative models have been found to be untenable."<sup>22</sup>

### **MAGNETIC REVERSALS AND THE GENESIS FLOOD**

Young-earth creationist leaders who acknowledge the reality of magnetic reversals make other indefensible claims about Earth's geomagnetic history. They assert that except for rapid large oscillations during the 13 months of the Genesis Flood, Earth's magnetic field has constantly, exponentially declined since the creation of Earth. Specifically they claim that "strong flows of the fluid in Earth's core could produce rapid reversals of the field during and after the Genesis flood."<sup>24</sup> While such strong, rapid flows would be required if virtually all of Earth's mountain building, continental drift, and volcanic and plate tectonic activity had taken place during the Genesis Flood, it would have been impossible for Noah's ark and its inhabitants to have survived such enormous and sudden energy (seismic, magnetic, and heat) releases.

#### ***Exhibit D: The Sun burns by gravitational contraction, so it must not be billions of years old.***

Before the discovery of nuclear energy, astronomers knew of only one explanation for the Sun's huge energy output: gravitational contraction. If the Sun were indeed generating energy only by this process, its current diameter and energy release would indicate an age of about 100 million years *or less*. Later, when some measurements seemed to confirm a slight decrease in the solar diameter, young-earth creationist leaders claimed this as proof that the Sun is young. This burning-by-contraction conclusion gained even more support among young-earth creationists when astronomers noted a lack of neutrinos in the Sun's radiation. (Burning by nuclear fusion predicts abundant neutrino emission.) Thus, young-earth leaders claimed solid evidence for a Sun younger than 100 million years old.



**Reply:** This argument overlooks significant data. First, if a Sun-sized body were to experience gravitational contraction, its core temperature and pressure would be so great as to ignite nuclear fusion. Furthermore, various measured characteristics of the Sun—including its effective temperature, luminosity, spectra, radius, outflow of neutrinos (even at a low level), and mass—all establish that the Sun is burning by nuclear fusion and that this fusion has been proceeding for 4.5 billion years. Additional experimental verification comes from several dozen exploded hydrogen bombs and from hundreds of experiments performed in the world's plasma physics laboratories.

As for the observed decrease in the Sun's diameter, the measurements cited were based on photographs taken through ground-based telescopes. The supposed decrease, measuring about one arcsecond per century (the Sun's angular diameter is about 1,800 arcseconds), actually falls within the range of the observations' error bars and was contradicted by other ground-based measurements. The claimed decrease has since been invalidated by results from the Michelson Doppler Imager (MDI) on board the Solar and Heliospheric Observatory satellite. This amazing instrument supersedes the precision of ground-based telescopes by several hundred times. It can measure the solar diameter to an accuracy of better than one milliarcsecond (better than 1 part in 1.8 million).

Astronomers had hoped that MDI-SOHO would find a tiny oscillation in the Sun's diameter that would correlate with the 11-year sunspot cycle. In contrast, the young-earth model demands a steady decrease, not oscillation. Two research teams found what they presumed might be the expected oscillation at a level of about 20 milliarcseconds. A recent research effort, however, establishes that variations in the solar diameter must be less than five milliarcseconds.<sup>29</sup> This upper limit falls considerably short of the decrease required for young-earth models.

Recent scientific research also explains the observed shortage of neutrinos. For 3 decades, astronomers puzzled over why they detected only a third of neutrinos nuclear burning should produce. (They never doubted that the Sun's primary energy source was nuclear burning.) Production of any neutrinos at all was proof that significant nuclear burning was occurring. Physicists knew all along that neutrinos come in three "flavors." They also knew that nuclear burning produces only one of the neutrino flavors. Thus, initially, solar neutrino detectors were tuned to just that one neutrino flavor. Recently, though, physicists discovered that neutrinos can oscillate from one flavor to another. This finding has led to the building of a new generation of detectors for solar neutrino telescopes designed to detect all three neutrino flavors.

In 2001 physicists at the Sudbury Neutrino Observatory in Canada & at Super-Kamiokande Detector in Japan found enough solar neutrinos to confirm that nuclear burning accounts for all or virtually all of the Sun's energy output.

The solar neutrino output and the observed radical oscillations establish that the Sun is currently in an extremely stable state. Its light emission has remained exceptionally steady over the past 50,000 years and will continue to remain exceptionally steady for the next 50,000 years. Given the observed structure of the Sun, this circumstance (essential for human life) is physically impossible unless the Sun is "middle-aged," that is, unless it has experienced nuclear burning for the past 4.5 billion years.

It bears repeating that all the young stars observed by astronomers burn erratically. All stars of approximately the same mass as the Sun manifest unstable luminosities for their first 50 million years and intense x-ray radiation for their first few hundred million years.

***Exhibit E: Galaxy clusters would be more widely dispersed if the universe were old.***

A cluster of heavenly bodies will remain together (contained) only if the system's gravity is sufficient to overcome the velocities of the individual bodies within the cluster. Armed with measurements of velocities and masses for all the bodies in a cluster, astronomers can calculate either (a) dispersal time (the time it takes for all the bodies to leave the cluster) for clusters with too little mass for gravitational containment, or (b) the relaxation time (time required for the bodies to assume randomized velocities) for clusters with sufficient total mass for gravitational containment. Some creationists point out that when these calculations are applied to galaxy clusters, they show (by the lack of dispersal) ages much younger than a billion years.

***Reply:*** This argument rests on an incorrect assumption. It assumes that all the mass within galaxy clusters is luminous. Recent findings show that *most* of the mass is nonluminous (not "shining" by light radiation). In fact, only one-seventh of the universe's total mass is made up of protons, neutrons, and electrons. Astrophysicists call the remaining six-sevenths "exotic matter." (See "Finding the Missing Mass," below.)

**FINDING THE MISSING MASS**

Six different measurements allow astronomers to determine the proportion of luminous matter relative to total matter: (1) angular sizes of the hot and cold spots in the cosmic background radiation, (2) velocities of distant galaxies relative to cosmic expansion, (3) extended rotation curves of galaxies, (4) x-ray gas fraction of mass for clusters of galaxies, (5) relative velocities for pairs of galaxies, and (6) degree of gravitational lensing exhibited by cosmic sources. These measurements show that dark ordinary matter (burnt-out stars, brown dwarfs, planets, asteroids, and rocks) is two or three times greater than the luminous mass, and the total mass (exotic plus ordinary matter) of a galaxy or galaxy cluster is 15 to 20 times greater than the luminous mass. This extra mass greatly lengthens galaxy cluster dispersal times. Thus, the dispersals astronomers see in galaxy clusters indicate that those clusters are 10 to 13 billion years old.

Second, this argument rests on a misapplication of the math. Galaxies cannot be treated as mathematical points. Typical diameters for galaxies are only about 10 times smaller than the average distances between them within galaxy clusters. Therefore, dispersal time calculations (which assume galaxies can be treated as mathematical points) fail to yield precise results.

By comparison, however, essentially all the mass within star clusters is visible & the stars within the clusters can be treated as mathematical points. The average distances between them are at least seven orders of magnitude greater (that is, about 10 million times greater) than their average diameters. When dispersal, relaxation time, and core collapse time-scale calculations are applied to star clusters, the math shows several open clusters to be older than 1 billion years and all globular clusters to be older than 2 billion years.

***Exhibit F: The crystal halos that arise from radioactive Polonium (218Po) decay indicate that the earth is young.***

Polonium-218 is a radioactive isotope with a half-life of only three minutes. Yet granite crystal "halos" (ring-shaped configurations in the crystals) apparently produced by polonium-218 decay show up in what seem to be "basement," or primordial, rock deposits. If these halos arise from primordial polonium decay, how did the surrounding rocks crystallize so rapidly?

Young-earth creationist Robert Gentry, among others, claims geologists are wrong in their understanding of the processes shaping Earth's crust shortly after its formation. He proposes that God imposed Earth's geological structures instantaneously. If He did this for all structures, then perhaps geological measurements do *not* prove Earth is old.

**Reply:** If the granite crystal halo evidence proves reliable, it simply indicates rapid formation of *certain* rocks, not the entire planet. Old-earth proponents freely acknowledge that some geological processes occur rapidly. Asteroid collisions, volcanic eruptions, and extraterrestrial radiation bursts, for example, cause sudden geologic effects, and these events occurred much more frequently in Earth's past than they do today.

Gentry remains vague about where he obtained his granite crystal samples. However, phone conversations with Gentry helped geologist Jeffrey Wakefield pinpoint each of the sample sites. Wakefield then visited each location, accompanied by Gentry at one site. Wakefield discovered that Gentry's samples came not from primordial granite, as claimed, but rather young "dikes" (igneous rock infusions into vertical fissures) that crosscut older igneous and sedimentary rocks. These dikes would have formed much more rapidly (though probably not rapidly enough to explain polonium-218 halos) than the primordial granite.

Even if Gentry's granite crystal halos do result from polonium-218 decay (a possibility most geologists question), Gentry has merely exposed a phenomenon that requires further study, a phenomenon that geologists' current understanding does not explain. He has *not* proven that polonium-218 decay in rocks is a "miracle," a phenomenon outside the laws of physics. Further, Gentry focuses on only one kind of halo. As young-earth creationists admit, polonium-218 halos in rocks occur very rarely. Far more common are uranium-238 and thorium-232 halos. These halos require long time periods to form (over 100 million years) since both have radiometric half-lives in the billions of years.

Some young-earth creationist leaders admit that data on uranium-238 and thorium-232 halos really does appear to establish an old earth. They suggest, however, that radiometric decay rates may have been greatly accelerated during the 13-month Genesis Flood.<sup>45</sup> The problem with this hypothesis is that such an acceleration would have destroyed all life on Earth and devastated both Earth and the universe. (See "Could Radiometric Decay Have Been Greatly Accelerated During the Flood?," below.)

### **COULD RADIOMETRIC DECAY HAVE BEEN GREATLY ACCELERATED DURING THE FLOOD?**

Squeezing several billion years' worth of radiometric decay into the 13-month duration of the Genesis Flood would have generated a pulse of energy intense enough to destroy the ark and all its passengers. Either all of Earth's water would have turned to steam and its rocks into a molten mass and/or Earth's crustal plates would have been subjected to sudden movements many hundreds of miles in extent. No life would have survived. Not even a hint of such an event appears in Genesis.

Astronomers see no evidence of this event. As they look back in time at the light from stars thousands of light-years away, they see no discontinuity in radiometric isotope abundances. Further, the hypothesis cannot explain why radiometric decay measurements show Earth to be only one-third the age of the universe. If God miraculously accelerated radiometric decay during the Genesis Flood, the same number of billions of years would have been added to the apparent age of all bodies in the universe. If, then, Earth and the universe are only thousands of years old, and hyperaccelerated radiometric decay took place during the Genesis Flood, no object in the universe would measure as significantly older than Earth.

***Exhibit G: Rapid sedimentation and peat deposition following the 1980 Mount St. Helens eruption demonstrate that geological processes are rapid, not gradual. So Earth could be young.***

Within a brief time period (a few months to few years) following the Mount St. Helens eruption, peat layers and sedimentary rock formed in the volcano's vicinity. Many young-earth creationist leaders claimed these phenomena as proof *against* the theory that geologic layers are deposited according to gradual uniformitarian processes over millions and hundreds of millions of years. They also declared these findings as proof *for* the geologic viability of a young-earth scenario. They concluded that geological processes provide evidences for a young earth, not for an old earth.

***Reply:*** The problem lies in what rhetoricians call the “either-or” fallacy — the assumption that *all* geological processes take place either gradually (at relatively uniform constant rates) or rapidly (rates pulsed by major catastrophes). The young-earth versus old-earth debate is pictured in this context as a battle between principles of uniformitarianism & principles of catastrophism, with one significant difference. Catastrophism, as defined by geologists, refers to the formation of geologic structures through a variety of catastrophes occurring at different times. Young-earth creationists define catastrophism as the formation of *all* Earth's major geologic structures by a single catastrophic event, namely the Genesis Flood, a relatively brief event roughly 5,000 to 15,000 years ago.

As geology and geophysics textbooks explain, both slow and rapid processes contributed to the formation of Earth's crust. Some geological features can be explained only by gradual processes occurring at relatively fixed rates over many millions of years, and others can be explained only by rapid processes. Examples of gradually formed features include coral atolls (islands), layers of ice and rock sediments, varves (two-toned sediment layers that mark the passing of seasons), anthracite coal, and certain conglomerate and metamorphic deposits.

In the case of coral atolls, scientists can measure the daily accumulation of bandlike deposits over millions of years. From these deposits they can make many determinations, including the rate at which Earth's rotation has slowed over the years. Such deposits show that Earth's rotation period has been declining at the same gradual rate for the last 400 million years.

Other geological formations can be explained *only* by rapid processes punctuating uniform processes. Examples include lava flows, avalanche scars, asteroid and meteorite impact craters, polar ice cap shifts, and geologic intrusions. Abundant evidence exists for repeated “disasters” such as these over the last few billion years. Astronomers can calculate, for example, the rate of asteroid and meteorite impacts and compare their findings with the numbers of craters and the degree of weathering observed at crater sites on Earth, Mercury, Venus, Mars, the Moon, and the moons of Jupiter and Saturn. The numbers and the weathering show that the craters did not result from one catastrophe but rather from many catastrophes throughout the last few billion years.

Many more geological formations clearly combine both gradual and rapid processes. The Grand Canyon, for example, reveals intrusions penetrating through several sedimentary layers. Evidence of rapid geological processes, such as those resulting from the Mount St. Helens eruption, fail to support the notion every structure in Earth's crust formed quickly and simultaneously. It simply illustrates that geology is a complex science.

***Exhibit H: Computer models of galaxy structures show that spirals tend to collapse after two or three rotations, so spiral galaxies must be relatively young.***

Isaac Newton's laws of motion enable astronomers to calculate with precision the dynamics of large rotating systems of stars. More than 30 years ago, Kevin Prendergast discovered that large systems of stars take on a spiral structure in only a few rotations and, after two or three more, collapse into spherical or ellipsoidal systems. Given that galaxies take only a few hundred million years to rotate, the observed existence of numerous spiral galaxies (if they behave as Prendergast's computer simulations show) says that galaxies must be considerably younger than the 9 to 13 billion years astronomers claim. In fact, they must be less than 2 billion years old. And if they are less than 2 billion years old, astronomers cannot be trusted in their age calculations. So perhaps the universe really is only some thousands of years old.

***Reply:*** This argument overlooks ongoing research by Prendergast & others. Following his initial computer modeling efforts, Prendergast discovered star formation stabilizes a galaxy's spiral structure. He demonstrated that as long as new stars continue to form at significant rate within a galaxy, the spiral structure remains intact. But when star formation ceases, the spiral structure rotates two or three more times, then collapses.

This discovery dovetails with other observations of galaxies. In spherical and ellipsoidal galaxies, astronomers see no evidence of major ongoing star formation, but in spiral galaxies star formation seems prolific. The farther away astronomers look (that is, the further back in time), the more spiral galaxies they observe. In those earlier eras, star formation abounded and fewer spirals had yet collapsed.

In the vicinity of the Milky Way galaxy, only six percent of the galaxies are spirals; at a distance of some 4 billion light-years (4 billion years ago), 30% of observed galaxies were spirals; and at 10 billion light-years distance (10 billion years ago), about half the galaxies were spirals. This pattern exactly matches what astronomers would expect in a universe 14 billion years old. In such a universe, the galaxies form at approximately the same time and, as the galaxies age, more and more of their gas and dust would have condensed into stars. Eventually the galaxy's gas & dust is consumed, star formation ceases, and spiral structure collapses. Thus, as the universe gets older, fewer galaxies retain their spiral structure. Since some spiral galaxies still exist, the universe cannot be older than about 25 billion years. Since only 6 percent of the galaxies near our own are spirals, the universe cannot be younger than about 12 billion years. (See "New and Improved Galaxy Models," page 199.)

***Exhibit I: Trails of human footprints beside or crossing over dinosaur prints prove that dinosaurs were contemporaneous with humans, not millions of years old.***

Some young-earth creationist leaders have widely publicized the supposed discovery of human footprints alongside prints clearly made by dinosaurs. If dinosaurs thrived as recently as a few thousand years ago, the geological strata in which the prints were found could not have been deposited tens of millions of years ago, as geologists claim. They would have been laid down just a few thousand years ago. Neither dinosaurs nor Earth's strata can be used as arguments for an ancient earth.

**Reply:** The dinosaur prints at the discovery sites have been identified as belonging to tridactyls, three-toed carnivorous dinosaurs. Due to the mud's viscosity and composition, the dinosaurs' weight & gait, and the lack of erosion, most of the tridactyl prints are well preserved and relatively easy to identify. But not all. Given some areas of deep, soft, low-viscosity mud, some prints would be much smaller than the animal's foot and the print poorly defined. Such variations in mud are common. Thus, the dinosaur prints in question could easily be small enough and unclear enough to resemble human footprints.

### **NEW AND IMPROVED GALAXY MODELS**

Kevin Prendergast's galaxy models were good, but today even better models are available: three-dimensional models that consider magnetic effects and take into account the fact that most of a galaxy's mass resides in its halo. A number of research teams discovered that spiral structure, even in the absence of robust star formation, can be stabilized for many billions of years, provided that the spiral disk is embedded in a halo at least as massive as the disk. One team's three-dimensional simulations showed that while a massive halo definitely stabilizes a galaxy's spiral structure, such stability also can be achieved with a medium-sized bulge at the galaxy's core.<sup>54</sup> With such a bulge, the team demonstrated that a galaxy "exhibits a quasi-stationary bisymmetric spiral structure" for at least 4 billion years (their simulation ended at 4 billion years), whereas without such a bulge, a strong bar instability develops in less than 300 million years.

Some level of ongoing star formation is critical to sustaining a medium-sized bulge. Critical for ongoing star formation is a balance between the quantity of gas streaming into a galaxy and the quantity of gas streaming out.<sup>57</sup> A high ratio of dark matter to visible matter within a galaxy also greatly extends the duration of that galaxy's spiral structure. Additionally, even a modest galactic magnetic field considerably enhances the stability of the galactic arm structure.<sup>59</sup> As one research team discovered, "magnetic tension forces oppose the Coriolis forces [a gravitational effect] that would otherwise prevent the coalescence of matter along spiral arms."

Now that astronomers understand many more details of galaxy dynamics, they can easily explain why spiral galaxies still exist in a universe that measures 14 billion years old. In fact, the observed abundance of spiral galaxies near us (6 percent of total) and the observed abundances seen at great distances (30-50 percent of the total) yield age estimates for the universe consistent with 14 billion years.

Many other markers have led paleontologists — Christians among them — to conclude that these "human" footprints were made by dinosaurs:

- The footprints are too far apart to be made by humans. They fit well, however, with the length of the dinosaurs' stride.
- Most of the "human" prints are too large & undefined to have been made by humans.
- Some of the "human" prints show dinosaur features - claw marks, anterior V-shaped splaying, fissure patterns, and drag or swish marks from a tail or snout.
- The line of supposed "human" prints often blends into a line of near-perfect tridactyl prints.
- Almost all of the "human" prints have indentation patterns and colorations uniquely indicative of tridactyl dinosaurs.
- Many prints that were claimed to be "human" turned out to be mere erosion patterns.

For these reasons and more, both secular and Christian scholars see insufficient basis for claiming that any of the footprints in question are human and abundant evidence to say they are not. To their credit, many young-earth creationist leaders have ceased from making the claim and have removed books and films about it from circulation.<sup>62</sup>

***Exhibit J: Since a comet's average life span is only a few thousand years and the supply of new comets is limited, the existence of comets today proves the solar system cannot be more than several thousand years old.***

Comets (such as Halley's) orbiting the solar system reportedly disintegrate an average of about 2,000 years. Every time a comet swings close by the Sun, the Sun's heat and light boil away a significant portion of the comet's mass. After a couple dozen revolutions, none of the comet remains. Since comets are still orbiting the Sun, and since no obvious source for replenishing these comets exists, the solar system must be only a few thousand years old.

***Reply:*** Estimates of comets' average disintegration time date back to the 1970s. At that time, no space-based studies of comets were available. Calculations were based on easy-to-see comets, and the easiest comets to see are those that pass closest to the Sun, thus suffering the most rapid disintegration. So estimates of average comet longevity made prior to 1980 leaned heavily to the low side.

In 1986 five spacecraft visited Halley's comet and made the first accurate measurements of both its mass and disintegration rate. Data showed the comet massive enough to survive at least another 500 revolutions around the Sun. Observations going back to 240 B.C. establish Halley orbits the Sun every 76 years. Thus, Halley's life span must be at least 40,000 years.

Halley's comet has a relatively short orbital period. Comets such as Kohoutek, which orbits the Sun every 80,000 years, or Pons-Brooks & Griggs-Mellish, which orbit every three million years, are much more typical. Best estimates of these comets' life spans would come in at about 40 million and 1.5 billion years, respectively.

Comets not only last much longer but they are also vastly more abundant than young-earth proponents presume. While distant comets are difficult to see, they become visible when some planet, asteroid, star, or molecular cloud perturbs their orbit, pushing or pulling them into a near-Sun orbital path. Astronomers can now detect enough distant comets to sustain the current frequency of near-Sun comets over a 5-billion-year history. (See "Evidences for an Abundance of Distant Comets," page 202.)

Comets and other Kuiper Belt objects observed by astronomers show multiple signs of age, at least a few billion years' worth. These signs run the gamut from loss of the most volatile ices due to radioactive heating, to dust production from collision events, to crater statistics of the solar system's planets, moons, and asteroids, to dynamical studies of the solar system's past planetary migrations and stellar encounters.

In particular, galactic cosmic rays continuously sputter the surfaces of comets and break chemical bonds so as to reorder the surface ice matrix. The most observable impact of such radiation is a darkening of the comet's surface.<sup>68</sup> Since Kuiper Belt comets are close enough to the Sun to be shielded by the heliosphere, they are significantly less darkened by galactic cosmic rays. On the other hand, collisions between Kuiper Belt comets occur a million times more frequently than they do for Oort Cloud comets. Consequently, Kuiper Belt comets are smaller and much more collisional dust resides in the Kuiper Belt.

The Oort Cloud environment is exceptionally cold, just five or six°C above absolute zero. Over the course of the past four billion years, however, Oort Cloud comets would have been exposed to a few close encounters with highly luminous supergiant stars and several (about 30) more distant supernovae.<sup>71</sup> Exposure to such supergiant stars and supernovae would have temporarily heated the Oort Cloud to 30 to 50°C above absolute zero. Such heating would gradually remove volatiles like molecular oxygen and nitrogen, helium, argon, neon, carbon monoxide, and methane. Since the Kuiper Belt environment normally is thirty to sixty degrees above absolute zero, the comets there experience significantly less thermal and chemical alteration from encounters with supergiant stars and supernovae.

### **EVIDENCES FOR AN ABUNDANCE OF DISTANT COMETS**

Comets are essentially clumps of interstellar and/or interplanetary gas & dust (though some lack hydrogen because of their low mass and/or proximity to the Sun's warmth.) Comets' chemical composition (except for the occasional lack of hydrogen) is identical to that of the interstellar & interplanetary gas and dust. In fact, comets are simply concentrations of the interstellar and/or interplanetary media. Given the total mass of available media in the Sun's vicinity, astronomers reasonably conclude that comets must be very abundant.<sup>74</sup>

For several decades, astronomers predicted (based on the statistics and orbits of observed comets) that vast reservoirs of solar system comets were concentrated in two distant regions—the Kuiper Belt and the Oort Cloud. The technology of the time did not permit direct observation of such faint objects. Several young-universe creationist leaders seized this lack of observational evidence as an opportunity to ridicule astronomers. They claimed such reservoirs do not exist and that astronomers were deliberately suppressing what could be evidence for a young universe—a lack of distant comets.

Their charges proved unjustified when the detection limit was broken, first in 1993 and to a greater extent in 1998. New imaging technology enabled astronomers to find hundreds of asteroids and comets in a region called the Kuiper Belt that extends from the orbit of Neptune to a billion and a half miles beyond, perhaps farther.<sup>77</sup> Based on their observations thus far, astronomers calculate the Kuiper Belt contains some 78,000 objects larger than 100 kilometers in diameter. Collision events and comet formation dynamics dictate that the number of Kuiper Belt objects smaller than 50 kilometers in diameter (typical of the inner solar system comets that astronomers observe) must be far greater yet.<sup>79</sup> Confirming evidence comes from interplanetary dust detected by the Pioneer 10 and 11 and Ulysses spacecrafts. That dust contains the dynamical signature of dust generated by collisions of Kuiper Belt objects.

In the orbits and mass distribution of comets within 3 billion miles of the Sun, astronomers have found the signature of longer-period comets, visitors from a more distant and even larger cloud of comets, the Oort Cloud. (Astronomers have found this same signature in the dynamics of Kuiper Belt objects as well as in interplanetary dust.) Calculations reveal not only the existence of this Oort Cloud but also its structure. The Oort Cloud consists of a spherically symmetric and relatively uniform outer cloud and a disklike massive inner cloud.<sup>82</sup> An independent study based on the formation of Jupiter, Saturn, Uranus, and Neptune confirms that Oort Cloud comets are at least 20 times more numerous than Kuiper Belt comets.

Furthermore, the Oort Cloud grows with time. As the solar system ages, tidal forces exerted by our galaxy and by encounters with passing stars and molecular clouds tug comets away from both the Kuiper Belt and the vicinity of the outer planets and preserves them in the Oort Cloud.



The Oort Cloud is not unique to the Earth's solar system. Astronomers have detected such a comet cloud orbiting the star epsilon Eridani. They also have seen copious amounts of cometary dust in debris disks orbiting several other nearby stars.<sup>86</sup> As these stars pass by one another, astronomers note they trade some of their comets with one another. Consequently, astronomers can explain the existence of solar system comets for the past 4.6 billion years and look forward to observing comets of all types for a long, long time (another 10 billion years, if Earth were to last that long).

Even the supply of short-period comets can be accounted for. A small percentage of long-period comets will be sufficiently tugged by the planets' gravitation to change their orbits from very large elliptical orbits to small elliptical paths about the Sun. Multiplying this (small) percent by the total number of long-period comets yields a number big enough to explain *all* the short-period comets, both those presently observed and those that have existed in the past 4.6-billion-year history of our solar system.

Galactic cosmic rays, collisions & stellar encounters age distant comets different ways, and each of them ages Oort Cloud comets in a distinctly different manner from Kuiper Belt comets. These three factors independently establish the existence of a large number of Oort Cloud comets. They also establish that solar system comets have orbited the sun for about 4 billion years.

***Exhibit K: The lack of greatly expanded supernova remnants proves that such remnants have been expanding for no more than (probably less than) a few tens of thousands of years.***

When a massive star nearly runs out of fuel, it blows off its outer layers. As a consequence of this explosion, remnants of the star's material expand outward. Since force of the explosion is powerful enough to sustain the expansion for hundreds of thousands of years, astronomers' inability to observe widely expanded supernova remnants (SNRs) suggests to young-earth advocates our Milky Way galaxy has existed for less than several hundred thousand years.

***Reply:*** The mere existence of SNRs says that our galaxy and other galaxies are old. Supernova explosions occur only when a massive star has burned nearly all its nuclear fuel, and this burning process takes several million years — even longer for less massive stars.

Observational difficulties, rather than an actual deficiency of SNRs, lies at the core of this cosmic age challenge. Throughout all galaxies, powerful tidal forces rip apart & disperse SNRs. Also, the ripped remains of previous generations of SNRs lay scattered here and there. The older the galaxy, the more difficult for astronomers to distinguish one widely expanded supernova remnant from the background remains of earlier supernova events.

Another problem astronomers face in attempting to detect widely expanded SNRs comes from older SNRs' resemblance to the image profiles of x-ray binaries and ionized hydrogen clouds. The older the SNR and the denser and older its home galaxy, the more difficult its detection.

Our Milky Way galaxy is so littered with the scattered remains of SNRs, x-ray binaries, and ionized hydrogen clouds that it took astronomers years to find a widely expanded one they could clearly identify. But that breakthrough finally came in 2002 when they discovered an extended supernova remnant right in our own solar system's neighborhood. This remnant, centered on the constellation Antlia Pneumatica, is vastly expanded (subtending an angular diameter of 24°), and astronomers have calculated its age to be at least 1.1 million years.

An even older SNR, identified as GSH 138-01-94, was detected in the far outer edge of our galaxy. Astronomers J. M. Stil and Judith Irwin measured its age as 4.3 million years. Stil and Irwin further noted that old SNRs can be seen only “in low density, low metallicity environments such as the outer Galaxy, dwarf galaxies, and low surface brightness galaxies.”<sup>91</sup> More recently, astronomer Rosa Williams discovered some old (million-year plus) SNRs in the two Magellanic Clouds, dwarf galaxies that orbit our Milky Way galaxy. Williams and her colleagues anticipate that many more old SNRs will be found in dwarf galaxies since such galaxies lack the obscuration that is present in larger galaxies.<sup>93</sup>

***Exhibit L: Backward-rotating planets and backward-revolving moons in the solar system demonstrate that the solar system cannot be very old.***

If all the planets and moons in the solar system condensed out of the same primordial nebula, they should all rotate and revolve in the same direction. But they do not. Uranus rotates on its side, while Mercury, Venus, and several of the moons of Jupiter, Saturn, Uranus, and Neptune revolve in a direction opposite to that of all the other planets and moons in the solar system. It would seem, then, that the solar system did not form out of some primordial nebula through a long process of condensation but rather that Earth was created first, then the Sun and the rest of the solar system bodies, perhaps in a matter of hours.

***Reply:*** The standard model for our solar system’s formation does *not* really predict, as this challenge assumes, that all the solar system bodies will rotate and revolve in the same direction as the Sun. Planets as close to the Sun as Mercury and Venus are impacted dramatically by the Sun’s tidal torques over the course of a few billion years. Such forces slow down these planets’ rotation periods till they’re as slow as or even slower than their revolution rates. Thus, Mercury may appear to be, but actually is not, exhibiting angular momentum opposite to the rest of the planets. Any planet that rotates more slowly than it revolves merely *seems* to rotate backward (unlike planets that rotate more rapidly than they revolve).

Young-earth proponents’ assumptions about planets’ rotation axis are also incorrect. Among all the solar system’s planets, only Earth maintains a stable rotation axis tilt. This stability exists because Earth is unique — a small planet orbited by a single large moon. The rest of the solar system’s planets experience some gradual change in their axial tilt. Thus, if the solar system is several billion years old, one would not be surprised to find Uranus’s rotation axis tilted 98° relative to the plane of the solar system, Venus’s by 177°, and Pluto’s by 122°. Any planet that has its rotation axis tilted by more than 90° will appear to rotate backward - though it begins by rotating frontward.

Backward-revolving moons can also be explained in the context of great age. Not all the solar system’s moons are indigenous to their planets. A few of the smaller ones were captured. The probability of a planet’s capturing an interplanetary body (for example, an asteroid), and thus making it one of its moons, depends on that planet’s mass and distance from the Sun. All four of the solar system’s gas giants, then, would be expected to capture interplanetary bodies over the course of a few billion years. Since the direction of capture is random, captured bodies will manifest a 50 percent probability of revolving in the direction opposite that of the planet’s rotation and to the revolution of the planet’s indigenous moons.

The processes involved in moon capture, in radical tilting of a planet's rotation axis, and in significant slowing of a planet's rotation rate take millions of years to work their effects. They speak of age, not youth.

Similarly, arguments that the Moon is spiraling away from Earth at too rapid a pace, that Earth's rotation rate is slowing down too quickly, and that the Sun is consuming interplanetary dust at too rapid a rate for the earth, Moon, and solar system to be as old as a few billion years are all invalid. Once critical omissions and miscalculations are explained and corrected, these arguments for a young solar system transform into arguments for an old solar system.<sup>2</sup>

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<sup>2</sup> Ross, H. (2004). [\*A matter of days: resolving a creation controversy\*](#) (pp. 186–206). Colorado Springs, CO: NavPress.

The young-earth interpretation of Genesis 1 also dictates a sequence of life's appearance on Earth that contradicts basic principles of ecology (interspecies relationships). It suggests that sea mammals predate all land mammals and that insects showed up just before human beings.

## HOW DID ADAM DO SO MUCH?

The simplest and most straightforward reading of Genesis 2 implies that Adam completed a considerable amount of work before God created Eve (all on the sixth day, according to Genesis 1). To limit Adam's working and taking care of the Garden of Eden to just an hour or two would imply that Eden was tiny. Such an implication seems to contradict God's having made a place where all kinds of trees grew and a river divided into four headstreams, two of which are major rivers today.

Similarly, for Adam to have named all of Eden's animals within a few hours would seem to shrink not just the size but also the bounty of Eden. Adam presumably observed and identified the various characteristics of the animals before naming them—a task requiring and deserving both time and care.

Seeing the need to speed up or abbreviate Adam's animal-naming task, some young-earth creationist leaders have claimed that God did not create all Eden's species and genera in the beginning. They propose that God created only one animal type for each family. They appeal to subsequent rapid natural evolution to explain how the one type in each family split up into all genera and species to fill all the niches in Eden's ecosystem. They make the same appeal to hyperfast, hyperefficient biological evolution to explain how herbivores became carnivores immediately after Adam rebelled against God. Nowhere does Scripture (or the record of nature) hint at these rapid and dramatic changes in God's created kinds. Neither does it suggest the alternative notion that Adam's mind and body worked at hyperspeeds to complete his work in a miniscule amount of time.

## LOOKING UP

What naturalists & young-earth creationists see as the futility of attempting to integrate Genesis with the scientific record arises from a subtle error in applying a basic interpretive principle, a rule to which Galileo referred: "Begin by establishing [not assuming] the point of view." Many Bible commentaries and commentators automatically—and understandably—fix the passage's point of view out in the heavens looking down on Earth. (After all, the revelation comes from God, who looks on "from above.") The result: a scientifically implausible order of creation events.

However, the Genesis 1 text itself includes the key to plausibility. It places the point of view for the creation narrative as somewhere over the surface but under the heavens: "Darkness was over the surface of the deep, and the Spirit of God was hovering over the waters" (verse 2).

The view from the Spirit's position just over Earth's waters—looking upward and around—makes a crucial difference in how a reader pictures the sequence of creation events (see figure 21.1, page 233). If He had been describing events from a perspective far out in the heavens, Earth would have been created before light. The creation of the Sun, Moon, and stars would appear to follow that of plant life and establishment of the water cycle. Instead, God gave us a vantage point from the planet's surface looking up, so we could see His miracles as they took place in the atmosphere as well as on Earth's surface.

With the Genesis One point of view shifted from the universe (verse 1) to Earth's surface (verse 2), the text says that light was created “in the beginning” when it couldn't be seen from Earth's surface. But later, during creation day one, light visibly broke through to Earth's surface for the first time. This dawning required the miraculous transformation of the atmosphere (plus the interplanetary medium). The heavens went from opaque to translucent, from densely dark to overcast. Job 38:8–9 affirms that Earth's primordial waters were enshrouded by an opaque cloud cover:

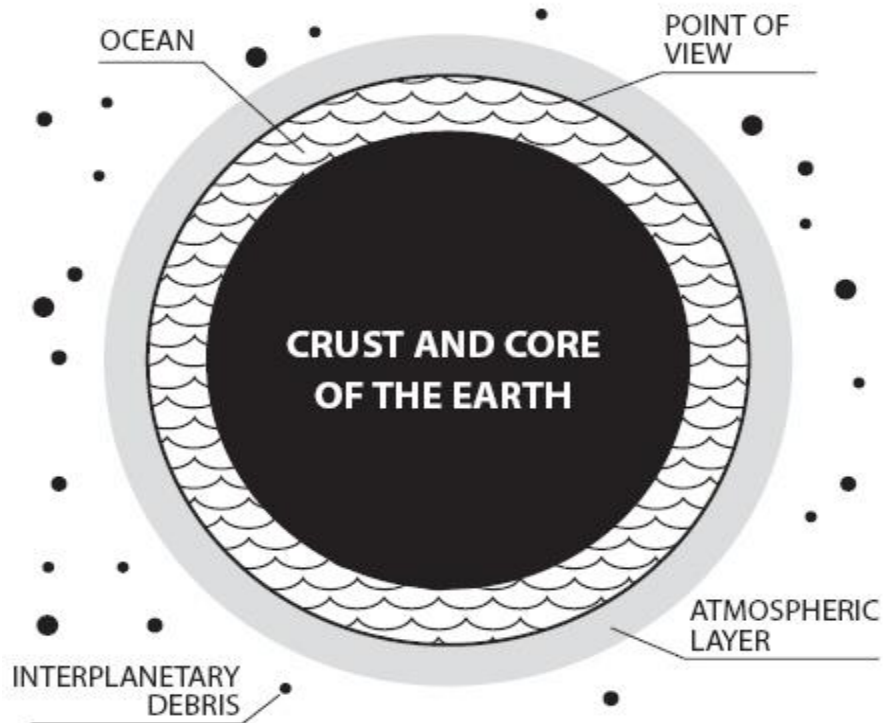
Who shut up the sea behind doors  
when it burst forth from the womb,  
when I made the clouds its garment  
and wrapped it in thick darkness?

On the fourth creation day another dramatic atmospheric transformation occurred. The skies changed from translucent to transparent, from overcast to clear. Through that miraculous transformation, the Sun, Moon, and stars became distinctly visible from Earth's surface. God did not make (or create) these heavenly bodies during the fourth day. Rather, on that day He made them visible and distinguishable for the first time to an observer (the Spirit) near Earth's surface.

Verse 16 says, “God made two great lights.... He also made the stars.” This sentence *follows* the fourth creation day's opening statement, “Let there be lights in the expanse of the sky” (verse 14). To interpret it as a parenthetical note indicating the Sun, Moon, and stars were formed sometime in the past fits adequately within the boundaries of reasonable interpretation.

## THIS MAKES SENSE

In the Hebrew language, only three verb forms exist. They are roughly analogous to these verb tenses of the English language: (a) a form for action completed at some time in the past, (b) a form to express present commands, and (c) a form for action not yet complete. The verb *'āśâ*, translated “made” in verse 16, is in the verb form denoting completed action. Thus, the Sun, Moon, and stars had already been made. Because the heavens and Earth (*hashamayim we ha'eret*s) of verse 1 include the entire physical universe of galaxies, stars, planets, and so forth, the making of the Sun, Moon, and stars “in the beginning” before the six creation days makes sense.



The point of view from which Genesis 1 describes creation events is the surface of the ocean, underneath the cloud layer, as verse 2 indicates. In the context of verse 2, light in the heavens cannot yet penetrate through the interplanetary debris and atmospheric layer. In verse 3, it can and it does.

**Fig. 21.1. The Point of View for Genesis 1**

With the point of view fixed on Earth’s surface, description of Earth’s “dark,” “formless,” & “empty” initial conditions makes sense. Earth’s primordial atmosphere & the solar system’s primordial interplanetary debris prevented the light of the Sun, Moon, and stars from reaching the surface of Earth. Earth’s surface was empty of life and unfit for it because life requires sunlight.

This interpretation of the text — its viewpoint (looking up) and initial conditions and perspective on the prior existence of the Sun, Moon, and stars (becoming visible on the fourth creation day though created before the six days)—dates back to the era before modern science, at least back to the 1600s. Old Testament scholar and Hebrew linguist Gleason Archer offered this perspective in 1955.<sup>8</sup> Robert Newman, John Snow, Herman Eckelmann, William Henry Green, and Daniel Wonderly (all with advanced degrees in science, or theology) published a similar interpretation of Genesis 1 in 1977. It is neither new nor novel. And it makes sense.

## FOSSIL RECORD CONSISTENCY

With the point of view & initial conditions correctly identified, the sequence of Genesis creation events harmonizes beautifully with the record of astronomy, paleontology, geology, and biology. A few purported conflicts between the Bible and the fossil record have arisen, but they seem to stem from difficulty (or oversight) in translating some of the Hebrew nouns for various plant and animal species.

For example, both young-earth creationist leaders and many non-Christian scientists have criticized attempts to harmonize the Genesis creation account with the scientifically accepted history of life on Earth. They point to the incongruity that Genesis 1 insects appear late in the record of life on Earth, *after* the birds and sea mammals and just before humans. They suppose insects are the creatures “that creepeth upon the earth” (Genesis 1:25–26, KJV). The Hebrew noun in question is *remeś*. Its broad definition encompasses rapidly moving vertebrates, such as rodents, hares, and lizards. *Remeś* in verse 24 may have a more restricted usage, since the creatures under discussion are the *nepesh* (verses 20–25)—“soulish” creatures with a capacity to relate to humans. In other words, they are creatures manifesting (to some degree) mind, will, & emotion, such as birds & mammals. The *remeś* of verse 24 cannot be insects or even reptiles. More likely they are short-legged land mammals such as rodents and hares.

Another point of contention is the mention of land mammals (Genesis 1:25) on the sixth creation day, while sea mammals (v. 21) seem to show up earlier, on the fifth day. The fossil record shows that the first sea mammals came on the scene *after* the first land mammals. The solution to this problem lies in identifying the kinds of creatures (the *ḥayyâ*, the *b<sup>e</sup>hēmâ*, and the *remeś*) the text associates with the sixth creation day (verse 25). The words refer to three specific classes of land mammals, *not* to all land mammals:

- long-legged quadrupeds typically considered “wild”
- long-legged quadrupeds that are easily tamed
- short-legged quadrupeds

Apparently, God planned for these particular land mammals (all three types) to coexist with human beings. The fossil record confirms that such animals showed up *after* the initial appearance of birds and sea mammals.

Events of the third creation day have also been challenged by young-earth leaders & some secular scientists. The Hebrew phrase translated as “seeds, trees, and fruit” (Genesis 1:11–12) has been taken by some as a reference to deciduous vegetation. However, the respective Hebrew nouns—*zera*’, *’ēṣ*, and *p<sup>e</sup>rî*—are generic terms applicable to plant species as primitive as those that appeared at the beginning of the Cambrian era (543 million years ago). Their early mention in the Genesis creation account poses no scientific problem.

Scientific evidence for ocean life’s predating land life poses no threat either. The Spirit of God “brooded” over the face of the waters (Genesis 1:2). Such brooding makes sense as a reference to God’s creating and incubating primitive life (microorganisms) in the oceans even before the events of the six creation days.

## IN ORDER

A careful study of the Hebrew words enhances comparison of the Genesis creation account with nature’s record. A detailed analysis of the words and their contexts yields the Genesis creation list of events seen in table 21.1 (page 236). The list is sequential. The Genesis 1 creation events overlap only in the sense that God, according to Psalm 104, recreates. For example, while God did not create sea mammals or birds previous to creation day five, He did replace fifth-day sea mammals and birds that went extinct with new species of sea mammals and birds on the sixth day. This study leads not to a scientific impasse but rather to powerful evidence for scientific soundness of the Bible. Such soundness cannot be considered a mere coincidence.

No author writing more than 3,400 years ago could have accurately described these events & their sequence, plus the initial conditions, without divine inspiration. If God guided the words of Moses to scientific & historical precision in this complex report of divine activity, we've reason to believe that we can trust God to communicate with perfection through all the other Bible writers as well.

### Order of Genesis 1 Events

1. God created, by fiat miracle, the entire physical universe (ten spacetime dimensions, matter, energy, galaxies, stars, planets, etc.).  
*Note:* Earth is empty of life and unfit for life. Earth's atmosphere and interplanetary debris prevent the light of the Sun, Moon, and stars from reaching the surface of Earth's ocean. The ocean covers the whole surface of Earth.
2. God cleared away most interplanetary debris and partially transformed Earth's atmosphere (making it translucent) so that light from the heavenly bodies could penetrate to surface of Earth's ocean.
3. God formed the troposphere with just-right conditions to establish an adequate abundant and stable water cycle.
4. God formed ocean basins and continental land masses.
5. God produced plants on the continental land masses.
6. God transformed the atmosphere from translucent to (occasionally) transparent.
7. God produced swarms of small sea animals.
8. God created, by fiat miracle, birds and sea mammals.
9. God created, by fiat miracle, land mammals capable of interacting with the (future) human race.
10. God created, by fiat miracle, the human species (specifically Adam and Eve).



**Table 21.1. Order of Genesis 1 Events**

## OF ONE MIND

These other writers add much detail to Genesis's brief narrative. Other major creation accounts also address various aspects of God's creative activity. From all these passages, a consistent and unified position on how God created can be developed:

The God of the Bible created the universe transcendentally, that is, from beyond the limits of matter and energy and from outside the space-time dimensions associated with matter and energy. He personally designed and built the universe and our solar system so that life can flourish on Earth. Though the Bible doesn't identify the specific means by which God produced the lower life-forms, it does state that by His command He created birds, mammals, and human beings. From the time these animal kinds were created by God thru miraculous means, they have been subject to minor changes (as color adaptation) in accordance with the laws of nature that God established. However, the Bible clearly denies that any of these advanced creatures directly descended (via natural reproduction) from lower forms of life. Human beings were specially created, distinct from all other animals (including the nonhuman bipedal primates that preceded them (see box below), and humans alone possess body, soul, and spirit.

### **WHY DID GOD CREATE BIPEDAL PRIMATES PRIOR TO ADAM AND EVE?**

When God created humanity (Adam and Eve), more than 20,000 species of birds and 8,000 species of mammals existed. Today, Earth carries fewer than 10,000 bird species & only 4,000 mammal species. It seems reasonable that God anticipated the negative impact of (post-Fall) human activity on birds and mammals. One possible scenario is that in the time period prior to Adam and Eve's creation God made a sequence of bipedal primate species, each more skillful at hunting than the one before. Birds and mammals would then have developed better behavioral defenses against the future onslaught of humanity. God may have had other reasons as well for creating bipedal primates, reasons scientists are as yet incapable of discerning.

This mindful interpretation of Genesis 1 and 2 is consistent with the rest of the Bible and with nature's record. This interpretation is also consistent with the clear observations made by an Arkansas grandma and a Canadian scientist as they read the creation story. No contradictions exist between the established record of nature and a plain reading of the biblical creation texts.

This position on creation greatly strengthens & simplifies the proclamation of an inspired, inerrant Bible. People throughout all ages & across educational backgrounds can comprehend the Bible's creation message—a message that reveals God's beauty, power, and care in His creation designs. This position also moves in the calm direction of reconciliation and peace pursued by a first-century council and its modern-day counterparts—the topic of the next chapter.<sup>3</sup>

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<sup>3</sup> Ross, H. (2004). [\*A matter of days: resolving a creation controversy\*](#) (pp. 230–238). Colorado Springs, CO: NavPress.

# Anthropic Principle: A Precise Plan for Humanity

BY HUGH ROSS - DECEMBER 31, 2001

Human beings climb. Always have, always will. First hills, then mountains, then pinnacles so high they're called "death zones." That's as high as legs could carry them, but not high enough. So people invented balloons, blimps, airplanes, and spacecraft, the higher the better—to a point.

At first, scaling heights made people feel big and powerful. Then they began to feel small, utterly insignificant even, in the hugeness of the cosmos. Today, ironically, the same forces that once shrank humanity's perception of himself now magnify him beyond the wildest imagination, yet with no basis for pride and every reason for humility. Those forces, insatiable curiosity, and capacity for inquiry have lifted humans to a vista, an insight called the anthropic principle, that carries their gaze to the edge of the universe and beyond.

The anthropic principle says that the universe appears "designed" for the sake of human life. More than a century of astronomy and physics research yields this unexpected observation: the emergence of humans and human civilization requires physical constants, laws, and properties that fall within certain narrow ranges—and this truth applies not only to the cosmos as a whole but also to the galaxy, planetary system, and planet humans occupy. To state the principle more dramatically, a preponderance of physical evidence points to humanity as the central theme of the cosmos.

Support for the anthropic principle comes from an unwavering and unmistakable trend line within the data: the more astronomers learn about the universe and the requirements of human existence, the more severe the limitations they find governing the structure and development of the universe to accommodate those requirements. In other words, additional discoveries are leading to more indicators of large-scale and small-scale fine-tuning.

In 1961, astronomers acknowledged just two characteristics of the universe as "fine-tuned" to make physical life possible.<sup>1</sup> The more obvious one was the ratio of the gravitational force constant to the electromagnetic force constant. It cannot differ from its value by any more than one part in  $10^{40}$  (one part in ten thousand trillion to the third power) without eliminating the possibility for life. Today, the number of known cosmic characteristics recognized as fine-tuned for life—any conceivable kind of physical life—stands at thirty-eight.<sup>2</sup> Of these, the most sensitive is the space energy density (the self-stretching property of the universe). Its value cannot vary by more than one part in  $10^{120}$  and still allow for the kinds of stars and planets physical life requires.<sup>3</sup>

Evidence of specific preparation for human existence shows up in the characteristics of the solar system, as well. In the early 1960s astronomers could identify just a few solar system characteristics that required fine-tuning for human life to be possible. By the end of 2001,

astronomers had identified more than 150 finely-tuned characteristics.<sup>4</sup> In the 1960s odds that any given planet in the universe would possess the necessary conditions to support intelligent physical life were shown to be less than one in ten thousand.<sup>5</sup> In 2001 those odds shrank to less than one in a number so large it might as well be infinity ( $10^{173}$ ).<sup>6</sup>

An account of scientific evidence in support of the anthropic principle fills several books.<sup>7</sup> The authors' religious beliefs run the gamut from agnosticism to deism to theism, but virtually every research astronomer alive today agrees that the universe manifests exquisite fine-tuning for life.<sup>8</sup>

## The Revolt Against a Revolution

This view of humanity as the focal point of the cosmos represents the historic overthrow of an idea rooted in an ancient revolution, the Copernican revolution. For the first fifteen centuries of the Christian era, Western science assumed that Earth's inhabitants, humans in particular, occupied the central position in the universe. When Nicolaus Copernicus revived the ancient Greek proof that the Sun, rather than the Earth, holds the central position in Earth's system of planets, a new scientific perspective took root.<sup>9</sup> From this perspective, the Copernican principle, emerged the philosophical notion that humans occupy no privileged or exceptional position in the universe. For the past four hundred years, this principle has been the reigning paradigm of science and society. And, during the past forty years, an extension of it, the mediocrity principle, has grown increasingly prevalent. The mediocrity principle asserts that humanity is not special in any way and that human origin and development have likely been duplicated on billions of other sites throughout the cosmos.

The anthropic principle, emerging simultaneously with the mediocrity principle, emphatically contradicts it, exposing a distortion of Copernican thinking. The anthropic principle makes this obvious and crucial distinction: while humanity's place in the universe is not *spatially* central, it does not necessarily follow that humanity's place is not central, or special, in *any* way.

Few people yet realize current cosmological research demonstrates a physical universe with no spatial center. All the matter and energy of the universe reside on the three-dimensional surface of the expanding four-dimensional universe. Just as all Earth's cities reside on the planet's two-dimensional surface and none can be identified as geographically central to all others, likewise none of the galaxies, stars, and planets hold the center position on the cosmic 3-D surface.

In one sense, the anthropic principle is possible because Copernicus was right. What makes humanity's location in the cosmos unique, or special, is that Earth resides away from the center of any astronomical system, such as Earth's galaxy. Humanity lives in a unique location—and moment—in cosmic space-time that allows not only for the possibility of human existence but also for the opportunity to discover that human existence represents a miracle, a special case.

Earth's particular location gives humans a special window to the solar system, the Milky Way galaxy, and the universe itself. In virtually any other galaxy or at any other location in Earth's galaxy and at every other time in cosmic history, the view to the surrounding area would be so unstable and/or so occluded that the form, structure, size, and other characteristics of the galaxy and universe would remain obscure to any sentient observers.<sup>10</sup> Earth's creatures enjoy a special view to the splendors of the cosmos. Nowhere else and at no other time in the universe would such glory be visible.<sup>11</sup>

The importance of the anthropic principle can hardly be overstated. It returns legitimacy and respectability to the human species as a worthy, even *primary*, subject of scientific research. Further, the anthropic principle has the potential to bring about a paradigm shift arguably as profound as any shift in human remembrance.

## Cosmic Anticipation

As early as the 1980s, physicist Paul Davies concluded that the physical evidence for design of the universe and of Earth for human life could rightly be described as overwhelming.<sup>12</sup> Today, no physicist or astronomer who has researched the question denies that the universe, the Milky Way galaxy, and the solar system possess compelling hallmarks of intentional design for human life. Many researchers have commented over the past twenty years that it seems the universe "knew" humans were coming.

Brandon Carter, the British mathematician who coined the term "anthropic principle" (1974),<sup>13</sup> noted the strange inequity of a universe that spends about fifteen billion years "preparing" for the existence of a creature that has the potential to survive no more than 10 million years (optimistically).<sup>14</sup> Carter formalized this enormous imbalance between the time required to produce the possibility for human life and the brevity of the species' (potential) survival as the "anthropic principle inequality."<sup>15</sup>

In response, some researchers speculated that the human species might represent an anomaly, an exception to the rule (e.g., a late bloomer or a more fragile species) among many possible intelligent life forms elsewhere in the cosmos. However, Carter and (later) astrophysicists John Barrow and Frank Tipler demonstrated that the inequality exists for virtually any conceivable intelligent species under any conceivable life-support conditions.<sup>16</sup> Roughly 15 billion years represents a minimum preparation time for advanced life: 11 billion toward formation of a stable planetary system, one with the right chemical and physical conditions for primitive life, and four billion more years toward preparation of a planet within that system, one richly layered with the biodeposits necessary for civilized intelligent life. Even this long time and convergence of "just right" conditions reflect miraculous efficiency.

Moreover the physical and biological conditions necessary to support an intelligent civilized species do not last indefinitely. They are subject to continuous change: the Sun continues to brighten, Earth's rotation period lengthens, Earth's plate tectonic activity declines, and Earth's atmospheric composition varies.

In just ten million years or less, Earth will lose its ability to sustain human life. In fact, this estimate of the human habitability time window may be grossly optimistic. In all likelihood, a nearby supernova eruption, a climatic perturbation, a social or environmental upheaval, or the genetic accumulation of negative mutations will doom the species to extinction sometime sooner than twenty thousand years from now.<sup>17</sup>

These figures demonstrate the inequality is extreme. The survival time for advanced intelligent physical life is only a millionth as long as the time required to produce the conditions necessary for its survival.

Another British mathematical physicist, Roger Penrose, was among the first to give voice to a philosophical conclusion: the extremely high level of fine-tuning astronomers and physicists discern powerfully suggests a purpose behind the universe.<sup>18</sup> That the design is so focused on providing a home for humanity implies that a significant, even central, part of the purpose for the universe is anthropic. Specifically, the universe was created for the express benefit of humanity.

Given the awesome capacities necessary to create and design the universe, the purpose for humanity must be significant indeed. Further, given that human survivability is cosmically brief means that humanity's purpose can & must be fulfilled quickly. The rapid fulfillment of a profoundly significant purpose for humanity—that's the message of the Bible. No other "revelation" makes such perfect sense of everything humanity observes and experiences.

## Purpose, Destiny, and Hope

Distinguished astrophysicists Lawrence Krauss and Glenn Starkman recently analyzed the ultimate consequences of measured self-stretching property of the universe.<sup>19</sup> They deduced the universe from now on will expand at a faster and faster rate. This exponentially increasing cosmic expansion means that astronomers will see less and less of the universe as time goes on. Thus, knowledge of the universe will decrease with time. Eventually, the cosmic expansion will be so rapid that intelligent beings will lose the capacity to draw adequate energy for work from heat flow of the universe. All forms of knowledge, then, will necessarily decrease. Inevitably, heat flow will be so tiny that all metabolic reactions will cease, and with their ceasing, all possibility for physical life will end. "Consciousness is eventually lost."<sup>20</sup>

Krauss and Starkman's response — an expression of despair — betrays their presumption that humanity's destiny must lie within this universe. An important aspect of the biblical message is that God has an existence and a plan for humanity *beyond* the confines of the cosmos. His plan involves the cosmos but does not end there. Throughout Old & New Testaments, God reveals His plan to prepare those humans for a paradise vastly superior to anything Earth can offer, a new creation completely beyond the physics and dimensions of the universe.

Therefore, the biblical basis for purpose, destiny, and hope supersedes the limitations, even predicts the limitations & cessation, of the universe. The anthropic principle becomes personal, however, with the commonsense observation that human beings universally and uniquely yearn for a sense of destiny and purpose. Human beings stay alive not just by the powerful instinct to survive possessed by all living creatures, but by a unique and universal awareness that they exist for a reason beyond mere physical survival.

## The Christ Connection

Those who need hard data to affirm their sense of destiny can find it. Space-time theorems of general relativity prove that an *Entity* transcending matter, energy, space & time is the *cause* of the universe which humanity lives.<sup>21</sup> Of all the gods, forces, or principles that people have proposed throughout human history to explain the existence and operation of the universe, only the God of the Bible is consistent with characteristics of the *cause* established in these space-time theorems.<sup>22</sup> Only the Bible predicts and explains the anthropic principle.

True to their inquisitive and skeptical nature, some scientists and philosophers have challenged the validity of the anthropic principle & certainly of its implications for the Christian worldview and faith. Stephen Hawking and Carl Sagan argued the design of such a vast cosmos for such an infinitesimal creature seems wasteful, thus inconsistent with the character of the Christian's all-wise, all-powerful God.<sup>23</sup> Such a God, they imply, would have fulfilled His purpose of providing humanity a home by creating just one planet in one planetary system in a relatively tiny and short-lived cosmos.

This argument fails to consider, however, that purpose governs what a person (or God) *does* as opposed to what he *can* do. Given the physics of the universe, the laws and properties for which the Bible reveals a specific divine purpose (see "The Physics of Sin," page 00), the universe is the necessary size and age. A universe either slightly less massive or more massive than what researchers observe would be unsuitable for human life.<sup>24</sup> In a human frame of reference, God's provision of such an enormous universe so carefully "machined" for billions of years for human benefit makes a compelling statement about His care for humanity—and His purposefulness.

Some skeptics have attempted to trivialize the anthropic principle with the assertion humans simply would not be here to observe the universe unless the extremely unlikely did somehow happen to take place. British philosopher Richard Swinburne responded to this notion with a simple illustration.<sup>25</sup> He points out the survivor of a firing squad execution would not attribute his or her survival to a lucky accident. Rather, the survivor would conclude that either the rifles were loaded with blanks or that each of the executioners missed on purpose. The measured fine-tuning of the universe tells us *someone* purposed for humans to exist for a certain period of time.

Another argument claims that there is nothing remarkable about fine-tuning of the universe *if* an infinitude of universes exist, each with a different set of characteristics. In this case, chance could dictate that at least one would manifest the characteristics necessary for human life.

The fallacy in this appeal represents a form of the gambler's fallacy. A gambler might conclude that an ordinary coin could land on heads a hundred thousand consecutive times if he rationalizes that  $2^{100,000}$  coins exist each being flipped 100,000 times by  $2^{100,000}$  coin flippers. Statistically, one of these coins could come up heads 100,000 times. Such thinking is considered to be fallacious, however, because the gambler has no evidence for the existence of the other coins, coin flippers, or distinct results. With a sample size of one, the only rational conclusion to draw is someone "fixed" the coin to land on heads. In the case of the universe, no evidence can be found for the existence of other universes. In fact, the principles of relativity dictate the space-time envelope of a universe that contains observers can never overlap that of any other universe(s). Thus, the sample size for human observers is one & always will be one, and the conclusion that *someone* purposed, or fixed, the universe for human existence remains compelling.

## Testing the Conclusion

The anthropic principle invites testing. A skeptic not yet persuaded fine-tuning of the universe reflects more than that a lucky coin toss can choose to examine the universe, the "coin," more closely. If the anthropic principle and its implications for transcendent design are false - research will discover declining evidence for finetuning & existing evidence will be erased by new data. If, on the other hand, the anthropic principle and its implications are true, then the research will yield an increase in both the number of fine-tuned characteristics and the degree of fine-tuning. Based on accumulating evidence, taking a bet based on the anthropic principle seems safer than taking another breath. **The anthropic principle energizes humanity's climb on the pinnacles of Truth.**

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# Diseases Follow Human Origin and Spread

BY – HUGH ROSS

Perception doesn't always match reality. Such is the case when it comes to the question of human origins.

Some Christians perceive that scientific advance affirms evolution and negates biblical creation. But in reality, scientists investigating humanity's origin have made no discoveries that challenge a biblical understanding of origins. In fact, recent advances in genetics provide compelling support for that perspective.

Geneticists have new ways to characterize humanity's origins & expansion by studying human disease. These techniques rely upon the genetic analyses of pathological microbes. Intimate association with humans allows these microbes to function as surrogate indicators of their hosts' origin and migrations.

A team from the National Institutes of Health (NIH) recently dated the origin of the malaria parasite (*Plasmodium falciparum*) to coincide with the origin of humanity.<sup>1</sup> In a separate study, an international research team showed that the genetic fingerprints of *Helicobacter pylori*, a bacteria implicated in the gastric cancer & peptic ulcers, affirms the migration of humans from east Asia into the Americas about 11,000 years ago.<sup>2</sup> This finding dovetails with prior study based on the genetic profile of the human JC virus. The virus work demonstrated that humans migrated from east Asia to the Americas and the Pacific Islands & dates the origin of the JC virus between 50,000 and 100,000 years ago.<sup>3</sup>

A new study by an international research team discovered that the *Helicobacter pylori* clusters into 7 subpopulations based on genetic makeup that correspond to distinct geographical locations for humans. The *Helicobacter pylori* population patterns find explanation in the view humanity arose from a single geographical location and then spread globally. Early humans probably established ancestral groups in Africa and central and east Asia, followed by subsequent migrations to Polynesia, the Americas, Europe, and Africa (the Bantu expansion into the sub-Saharan regions of the continent).<sup>4</sup>

These studies of human pathologies together with other genetic studies add weight to evidence for a biblical origins account. Genetic diversity, mitochondrial DNA, Y-chromosomal DNA, and linkage disequilibrium (the movement of genes relative to one another) in modern human population groups all combine to indicate recent origin (in the neighborhood of 50,000 years ago), in a single location, from a small population of men & women. These studies also demonstrate that humanity spread from the Middle East to populate the rest of the world. While this description fits awkwardly within the evolutionary framework, it fits comfortably with the biblical description of humanity's origin.

Scientists derive satisfaction and a sense of certainty when disparate methods, based on different assumptions, converge to yield the same conclusions. Both genetic characterization of indigenous human parasites & direct genetic analyses of human population groups agree and at the same time corroborate the Bible's account of humanity's origin.

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# The Second Law of Thermodynamics and the Curse

by [Dr. Danny R. Faulkner](#) on November 13, 2013

## Abstract

Many recent creationists believe that the second law of thermodynamics came into being as a result of the Fall or the curse. I argue that this is not supported by Scripture, nor is it a defensible position from a scientific viewpoint. Instituting the second law of thermodynamics at the Fall needlessly causes problems for theology & science. Rather, I propose that the second law of thermodynamics came into the picture during the Creation Week as part of the created order ([Nehemiah 9:6](#); [Colossians 1:16](#)).

## Introduction to Laws of Thermodynamics

Thermodynamics is concerned with systems that utilize energy, work, and heat, as well as their respective relationships. Physicists define 3 thermodynamic type systems: isolated, closed, and open. An isolated system exchanges neither matter nor energy with its surroundings. A truly isolated system does not exist as a subset of the universe, but we can approximate an isolated system very closely. A closed system can exchange energy but not matter with its surroundings. An open system may exchange both matter & energy with its surroundings. There are four laws of thermodynamics, called the zeroth (0th) law, the first (1st) law, the second (2nd) law (sometimes denoted as the “law of entropy”), and the third (3rd) law. Each law is briefly defined below:

Zeroth: If system A is in thermal equilibrium with system B and system B is in thermal equilibrium with system C, then systems A and C are in thermal equilibrium.

First: Energy can neither be created nor destroyed.

Second: The entropy change of an isolated system can never be negative.<sup>1</sup>

Third: The entropy of a perfect crystal at absolute zero temperature is equal to zero.

It may seem strange that there is a zeroth law, but that law was formulated after some of the other laws were developed. After some other laws were recognized, physicists realized that the principle of the zeroth law was more basic than the others, and so they inserted it before the others.

The first law is the familiar conservation of energy principle. Since the discovery in the early twentieth century that mass and energy are equivalent, the first law has been generalized to allow for conservation of mass-energy, but only in situations where mass-energy conversion is relevant. Unlike the straightforward statements of the zeroth & first laws of thermodynamics, there are many different statements and formulations of the second and third laws.

All such laws work well within a biblical framework, but the second law seems to stand out among recent creationists. For example, in the universe (seen as isolated system), where did order come from in the first place, if not from God? On the other hand, atheistic believers in big bang must posit the universe came into existence in a very low-entropy state. But its appeal and discussion has led some creationists to propose the idea that the second law was not part of the original created order, but instead was enacted at the fall of mankind. A deeper discussion needs to be given to this issue.

## Introduction to Creationist Views of the 2<sup>nd</sup> Law

It is a common belief among recent creationists the second law of thermodynamics came into existence at the time of the curse. That is, one can equate the second law of thermodynamics with the curse. This idea appears to have originated with Henry M. Morris<sup>2</sup> where he stated,

Creation (or what biologists imply by “evolution”) actually has been accomplished by means of creative processes, which are now replaced by the deteriorative processes implicit in the second law. The latter are probably a part of the “curse” placed upon the earth as a result of the entrance of sin ([Genesis 3:17](#)), the “bondage of decay” to which it has been “subjected” by God for the present age ([Romans 8:20–22](#)). (Whitcomb and Morris 1961, pp. 224–225)

Two years later Morris expanded his thoughts. He stated,

The universal validity of the second law of thermodynamics is demonstrated, but no one knows why it is true. It is strictly an empirical law, which has always been found to be true wherever it could be tested, but for which there is no known natural explanation. But the biblical explanation is that it is involved in the curse of God upon this world & its whole system, because of Adam’s sin. Therefore, we conclude that the Bible teaches that, originally, there was no disorder, no decay, no aging process, no suffering, and above all, no death, in the world when the creation was completed. All was “very good.” (Morris 1963, p. 37)

He continues:

The second great revealed fact of earth history is of the fall of man, followed by God's divine curse on the whole creation. The effects of the curse, manifested particularly in the universal tendency toward decay and disorder and death in the world, have been discussed somewhat already. The second law of thermodynamics has been seen to approximate a scientific statement of the effects of the curse. (Morris 1963, p. 58)

Elsewhere Morris reiterated this position with:

This, then, is the true origin of the strange law of disorder and decay, the universally applicable, all-important Second Law of Thermodynamics. Herein is the secret of all that's wrong with the world. Man is a sinner and has brought God's curse on the earth. (Morris 1976, p. 127)

Barnes apparently disagreed with Morris's opinion, for he wrote,

The Second Law of Thermodynamics began after the existence of a fully wound-up system with Living Maturity. (Barnes 1966, p. 7)

In context, Barnes thought that the second law of thermodynamics was in effect by the end of the Creation Week. However, this appears to have been a minority view for some time among recent creationists. Williams elaborated on what Morris had written:

Dr. H. M. Morris has suggested that the principle entropy increase is a direct result of the curse God placed on the creation as a result of Adam's sin ([Genesis 3:17-19](#)). The creation process would be of course directly opposite to the entropy principle of present scientific processes. In looking over His newly-finished creation the Lord saw that it was very good ([Genesis 1:31](#)).

If the perfect holy God created; then creation would be perfect. Here would be perfection in nature, perfection in the universe, and as for the solid state, perfect crystals. However, today we find very little, if any, perfection in nature & this change from order to disorder must have occurred by divine edict later than [Genesis 1:31](#). He spoke all nature into being, and then He cursed His perfect creation because of man's sin. Thus, the perfectly ordered crystalline materials that God had created have degenerated into atomically disordered materials because of the operation of the second law of thermodynamics. The crystalline lattices in solids no longer exhibit order but are filled with defects that interrupt order & cause disorder. (Williams 1966, p. 23)

Three years later Williams returned to this theme, writing,

Morris suggests that the second law of thermodynamics originated when God cursed the creation because of Adam's sin. At that point death entered the physical universe. Disordering and decay processes began in all natural operations ([Romans 8:20, 22](#)). (Williams 1969, p. 146)

And in his conclusion Williams explicitly stated,

The universal trend toward disorder & decay was invoked when God cursed the creation because of Adam's sin. (Williams 1969, p. 146)

The following year Williams, quoting from *Romans 8*, wrote,

For the whole creation was made subject to vanity . . . ([Romans 8:20](#)). For we know that the whole creation groaneth and travaileth in pain together until now ([Romans 8:22](#)). These are essentially scriptural statements of the second law of thermodynamics. Thus it is obvious that the universe is subject to the second law. (Williams 1970, p. 49)

While this last statement doesn't explicitly endorse equating the Fall with entropy, in the context of his previous writings, it is clear that Williams continued to equate the curse with invocation of the second law of thermodynamics. It appears while Morris may have conceived the idea that the second law of thermodynamics went into effect at the time of the Fall or the curse, Williams may be more responsible for developing and then disseminating that view among creationists.

During this time, there were some creationists who objected to the equation of the second law of thermodynamics with the curse, though nothing seems to have been committed to print. Some of these objections probably had an effect on Morris, because he later softened or modified his position a bit, for he wrote,

In the primeval creation, however, even though what we might call "decay" processes certainly existed (e.g. digestion, friction, water erosion, wave attenuation, etc.), they must all have balanced precisely with "growth" processes elsewhere either within the individual system or, perhaps more commonly, in an adjacent system, so that the entropy of the world as a whole would stay constant. The entropy of the universe now is increasing, but ideally it should be conserved along with energy. Every process & machine would then have 100% efficiency, with all input energies being converted completely into useful work. Even the heat energy employed in the processes necessitating the force of friction for their operation would be completely productive, with no energy being "lost." No parts would wear out, no organism would "age" past the point of maximum vigor and productivity, and everyone could easily design and build perpetual motion machines! The above is obviously imaginative, and no doubt imprecise, and incomplete, but it could not be too far off. Everything was designed by an omniscient, omnipotent God to be "very good." The first law would have stated, as at present, the conservation of mass/energy in all systems, and the second law the conservation of entropy in all systems. But there has been a drastic amendment to the second law! No death of sentient life, either animal or human, was intended in God's original creation . . . But now everything is proceeding back again to the dust, according to the second law of thermodynamics. "For we know that the whole creation groaneth and travaileth in pain together until now" ([Romans 8:22](#)) . . . The formal announcement of the second law in its post-Fall form is found in [Genesis 3:17-20](#): "Cursed is the ground for thy sake: in sorrow shalt thou eat of it all the days of thy life; thorns also and thistles shall it bring to thee, and thou shalt eat the herb of the field; In the sweat of thy face shalt thou eat bread, till thou return unto the ground; for out of it wast thou taken; for dust thou art, and unto dust shalt thou return." The curse extended in like form to all of man's dominion. Man had brought spiritual disorder unto his own dominion; God appropriately imposed a principle of physical disorder on that dominion as befitting its spiritual condition. (Morris 1981, p. 120)

Here Morris appears to begrudgingly allow for the second law of thermodynamics in the original creation, but he speculated that its full affects were ameliorated by some other, unspecified sustaining process that was removed at the Fall. Later, Morris (1984, pp. 195-196; 2002, pp. 180-181) repeated this last statement word-for-word, indicating that he did not modify his view further. The things that Morris

mentioned here, digestion, friction (required for walking), water erosion, and wave attenuation, are examples of dissipative processes, and hence are manifestations of the second law of thermodynamics. Some of these actions are mentioned or implied in the pre-Fall creation. Digestion would follow from the statements concerning eating food ([Genesis 1:29–30](#); [2:9, 16–17](#)). Walking is implied by the job of tending to the Garden ([Genesis 2:15](#)) and by the bringing of animals to Adam ([Genesis 2:19](#)). Erosion is implied by the river in the Garden that split into four ([Genesis 2:10–14](#)). Critics of Morris’s position apparently had made him aware of these considerations, but rather than abandon his thesis about the second law of the thermodynamics, he chose to modify it with conjecture and some fanciful musings (for example, perpetual motion machines). This position has taken root among many recent creationists. For instance, Stambaugh has written,

There is neither scientific warrant nor biblical warrant to think that aging, as a decay process, was part of the original creation. So, the second law was certainly functioning before the Fall. But that does not mean there was decay and physical death among the living creatures (man or sea and land animals, and birds—the *nephesh chayyah*) before the Fall. (Stambaugh, p. 382)

While in his brief discussion Stambaugh doesn’t invoke the loss of some sustaining law at the Fall, he does imply that possibility, but, more importantly, he separates death and decay of living things as simply result of the 2<sup>nd</sup> law of thermodynamics. Wise more explicitly agreed with Morris’s later view:

So it appears that what caused the large-scale effects of the curse was not the introduction of a new law (the Second Law of Thermodynamics) but the suspension of some other law. It is interesting that something designed for good (the Second Law) in the original creation could—with as “small” a change as the suspension of another law—cause what is generally perceived as huge negative effects. This is consistent with the idea that the original creation was created by God in such a way that it could exist (at least temporarily) in a fallen state. (Wise 2002, p. 160)

With the admission that manifestations of the second law must have existed prior to the Fall, one ought to question the initial conjecture, that the second law of thermodynamics is to be equated with the Fall. This is important once one separates death from the second law as Stambaugh did. Unfortunately, the most common response is to retain the original conjecture in essence by hypothesizing a conjecture about some other law that originally canceled more onerous implications of the second law but ceased to exist at the Fall. In discussion with other creation scientists, it is clear that many of them reject Morris’s position, subscribing instead to a position closer to that taken by Barnes. That is, the second law of thermodynamics was in force at least by the end of the Creation Week. It is a bit odd that few of these people have committed their opinion to print.<sup>3</sup> In this paper, I attempt to address this deficiency.



## Does “Very Good” Equate with Perfection?

There are several issues that we must tackle. First, many have concluded from the fact that God is perfect that His creation must also be perfect. This is an assertion rather than a conclusion. Those who argue thus use a few biblical passages to make their case. One is [Deuteronomy 32:4](#), which states that “His (God’s) work is perfect . . . ,” inferring that the work intended here is the creation. But is it? And does the use here imply perfection as some people take the meaning of the word? In context, this psalm of Moses in *Deuteronomy 32* is about the rebelliousness of the people of Israel. Verse 6 explicitly states that God made Israel, so obviously this work of God is far from perfect, if this is the intended meaning.

However, the key passage probably is the “very good” of [Genesis 1:31](#) some take to mean “perfect,” but is this supported by the Hebrew words here? Prior to verse 31 the Hebrew word for “good” is used in positive sense six times to describe various parts of creation (light, division of land & sea, plants, astronomical bodies, fish and fowl, land animals). Interestingly, this description appears twice in the Day Three account, but not at all in the Day Two account.<sup>4</sup>

Furthermore, in the creation account this word is used once in the negative sense, in [Genesis 2:18](#) when God stated that it wasn’t good that man was alone. What is the good that is referred to in these usages? There are at least two possible meanings of the Hebrew word for “good” here & they reflect two of our meanings of the English word “good,” so this is a good translation. One possible meaning refers to morality. Since sin and the taint and consequences of sin had not yet entered the world, this would be appropriate. However, the word can convey the meaning of completeness or purpose. Certainly, that’s the intended meaning in [Genesis 2:18](#) in that Adam was incomplete without Eve.

Each of the six uses of just the word “good” in the first chapter of Genesis probably refers to the completeness of what God had made, because He had accomplished what He had intended for each of His creative acts. Since they were complete, they fulfilled their intended purposes. At the end of Creation Week, it was appropriate that God then pronounced all “very good,” for He had finished what He had set out to do. That is, each of God’s creative acts were good when finished as far as they went, but it wasn’t until all were finished was it best to sum up with the pronouncement of “very good.” See the more complete companion paper by Anderson (2013) on this topic.

Still, can we equate this “very good” with perfection? Since the taint of sin hadn’t yet entered the world, certainly. But then there is a problem with equivocation, for we often use the word “perfect” in several ways. To be morally perfect means to be without sin. We also describe something as perfect if it is without blemish or fault. But a blemish or fault doesn’t have to have a moral component. For instance, a perfect attendance record means that one has not missed a meeting, but there is nothing immoral about missing a meeting for illness or bereavement. A perfect test paper has no wrong answers, but there is nothing immoral about not knowing the correct answer to a question. A perfect solution to a problem solves the problem without introducing new problems. In the physical realm, we frequently speak of faults or defects, even though there is no moral component involved. In offering a Passover sacrifice, the lamb had to be spotless (perfect), but that did not preclude any genetic defects being present. Indeed, we understand today all lambs carry a few genetic mutations, but that those mutations do not manifest themselves in a “perfect” lamb. Most solids consist of a crystalline array of particles, the particles being atoms, ions, or molecules. A crystal normally has an alternating pattern of particles, so once one knows the pattern, one can predict the location and identity of a particular particle anywhere in the crystal. But all crystals have deviations from the pattern. These deviations are defects in the sense that they fall short of the simple ideal of the pattern. There is absolutely no sin or immorality involved, yet Williams (1966) argued that such a situation violated the perfection of initial creation & hence concluded that all crystals originally were perfect (no defects). Again, this is equivocation, for the word perfect is used in two different senses.

To illustrate the absurdity of this position, consider a diamond, which is a crystal. Diamond has a high index of refraction, so the light is bent and dispersed within a diamond. This is what gives a diamond its rich & vibrant color. Many facets greatly increase this illusion, and hence many facets improve the appearance of a diamond. On the other hand, the presence of defects in the crystal can interfere with passage of light in the diamond and hence detract from the appearance. Thus, the number of defects in a diamond largely determines the value of the stone — the fewer defects that diamond has for a given size, the more attractive, and hence more valuable, the diamond will be.

To improve the appearance, diamond cutters shape stones to maximize the number of facets. Diamond is essentially the hardest substance, and so we cannot easily cut diamonds with saws. Rather, diamond cutters frequently take advantage of the naturally occurring weaknesses between planes in the crystal to cleave, or break, diamonds to produce these facets. However, these weaknesses between planes are deviations from the ideal crystal and hence amount to defects in the crystal. That is, a “perfect” diamond (one without flaws) couldn’t be cut. We couldn’t improve upon its appearance, so unless this “perfect” diamond has a large number of facets, it

wouldn't be pretty as possible. This introduces a catch-22: this "perfect" diamond would not be as pretty as it could, thus it isn't perfect. Even here, I've equivocated with the word "perfect," for I have used the word to refer to a diamond with no defects and to refer to a diamond with exquisite appearance. Of course, one could argue that if diamonds existed in the original creation that all had the maximum number of facets and no defects. This is not how we find diamonds today, so this amounts to a new assertion, and results in piling conjecture upon conjecture to salvage a teaching that is not required by biblical texts.

## Entropy

The second law of thermodynamics probably is one of the slipperiest things in science. One reason for this is that the second law has many manifestations and hence many different statements. I will not even attempt to describe the second law in great detail. In its most basic form, the second law describes the direction in which heat flows spontaneously, from hotter to cooler regions. To express this, we define a quantity called entropy. Entropy is the heat flow ratio to temperature, so entropy has units of heat flow divided by temperature. In physics, the standard unit of heat is the Joule, while the standard unit of temperature is Kelvin, so the standard unit of entropy is Joule/Kelvin, abbreviated J/K. Consider two objects, one hotter and one cooler. If we place the two objects next to one another so that heat can flow between them (we say they are in thermal contact), we will find that heat will flow from the hotter to the cooler object til their temperatures equalize (when we say that they've reached thermal equilibrium). To compute the entropy change of either object, we divide the heat flow of either object by its temperature. The temperature changes continuously during the heat flow, so this is not a simple calculation, but we can carefully consider the situation to reach some conclusions. Since the hotter object loses heat, its heat flow will be negative. But the heat flow of the cooler object will be positive, because it gains heat. If the heat flow involved is between the two objects, then the total heat flow will be zero, because the gain of one is at the expense of the other. If this criterion is met, we say that the system (the two objects together) is thermally isolated. This insures the heat flows of the two objects are equal and opposite.

But what of the entropy change of either object? It is important that we express temperature on an absolute scale, such as K, because then there are no negative temperatures. Dividing heat flow by positive temperature insures that entropy change always has the same sign as heat flow. Therefore, entropy changes of the two objects will be opposite in sign. However, they won't be equal in magnitude.

This is because we divide opposite but equal heat flows by different temperatures. Temperature of the hotter object always will be greater than or equal to the cooler object's temperature (but the heat flow becomes zero when they reach the same temperature). So, in computing the entropy change of the hotter object, we will always divide its heat flow by a larger number than we do computing the entropy change of the cooler object. Therefore, the absolute value of the entropy change of the hotter object always is less than the entropy change of the cooler object. When we add a positive number to a negative number that has lesser absolute value than the positive number, we get a positive number. So, we find that in this experiment of heat exchange total change in entropy is positive. I haven't given specific values in this example, so it suffices for the general case. Therefore, we can state the 2<sup>nd</sup> law of thermodynamics regarding heat flow between objects in an isolated system as "The entropy must always increase." Indeed, entropy is defined in such a way as to guarantee this general result.

Note that this works only in an isolated system. If we were to consider the entropy change of the hotter object alone, its entropy change would be negative. Obviously, the second law of thermodynamics cannot apply in this case, because we have not properly formulated the system, for the system consisting of only the hotter object is not thermally isolated. However, this does not mean that the object cannot cool, for it will. To resolve this, we must expand the system to include whatever other objects the object is losing heat to, in this case the cooler object. The situation is complication in the system consisting of the two objects technically isn't thermally isolated, for no matter how hard we try to insulate the two objects from the rest of the universe, there will be some leakage of heat into or out of the system. If we do a particularly bad job of insulating the system, it's possible that the entropy change of the system could be negative. This isn't violating the 2<sup>nd</sup> law of thermodynamics, but rather indicative that the system is losing significant heat to its surroundings. We could expand the size of the system to include immediate surroundings, but no matter how well we do this, there will be some leakage of heat into or out of the system. However, all is not lost, because our systems often can approximate the idealized isolated system. In physics we often approximate idealized systems with real ones. An example would be a well-lubricated apparatus approximating a frictionless situation.

Even then, as previously mentioned in a footnote, Sommerfeld formulated the second law in differential form. Sommerfeld commented,

The statement in integral form, namely that the entropy in an isolated system cannot decrease, can be replaced by its corollary in the differential form which asserts that the quantity of entropy generated locally cannot be negative irrespective of whether the system is isolated or not, and irrespective of whether the process under consideration is irreversible or not. (Sommerfeld 1956, p. 155)

What does this have to do with creation? Entropy appears contrived. At least it's not as obvious or tangible as other quantities that we use in physics, such as time, mass, length, and electrical charge. This peculiar characteristic prompted physicists to cast about for some idea of what entropy is. One consequence of the second law of thermodynamics is that if there is a temperature difference within a system, we can exploit that difference to drive an engine to obtain work. This is the principle behind a heat engine, such as a steam engine or internal combustion engine. High temperature gas in one portion of the system can push against a piston or turbine en route to a region of lower temperature, thus producing work. This can't happen if no temperature differential exists. Furthermore, the flow of heat from hotter to cooler is the direction in which the system will naturally change, but it is possible to derive useable work only if we employ some sort of device or machinery to tap the energy.

Other statements of the second law of thermodynamics describe the manner and limits of the possibility of obtaining useful work in this way. Because the natural tendency is for heat to flow so that temperature differences are eliminated (this is the second law), we can say the original configuration of a temperature difference within the system is more ordered (in which we can extract work) than the final state of thermal equilibrium (which we can't extract work). If this is correct, then entropy appears to be some sort of measure of how much order is present in the system. More specifically, since the second law of thermodynamics demands that entropy within an isolated system must increase, and at the same time the system moves toward less order, entropy would appear to measure how much disorder is in the system. This, too, is a bit odd, because we are measuring something by how much it is absent.

The identification of entropy with the amount of disorder present in a system is consistent with other approaches to the second law of thermodynamics, such as that coming from microscopic behavior of particles in a gas (statistical mechanics). Difficulty begins when people take the disorder interpretation (considering it a mandate of decay) of entropy with little regard for the origins of the definition of entropy. Many times creationists use "order" & "complexity" interchangeably, but they aren't the same thing. A crystal is an ordered system, for the particles involved follow a regular pattern. This pattern is very simple, so a crystal is not a complex system. On the other hand, a hurricane does appear to be the epitome of disorder, but it is a very complex system, evidenced by our difficulty in modeling hurricanes. Living organisms appear to be both complex and ordered. The argument put forth by some creationists is that the second law would seem to require that order and complexity diminish with time.

Related to order and complexity is information, something that living organisms contain in the form of DNA. Just as systems do not spontaneously generate order & complexity, it would seem systems cannot spontaneously generate information either. That is, the genetic code and the machinery of living organisms could not have arisen naturally, but rather their existence requires a Creator (Gitt 2006).

While this approach has merit, some difficulties subtly creep in. One problem is difficulty in quantifying the entropy involved in order, complexity, or information. Entropy is easily quantified in the case of heat flow and in the order present in statistical mechanics in terms of the number of microstates. Lack of quantitative analysis of entropy when discussing order, complexity, or information leaves us with subjective means of assessment. With no objective measure, entropy, like beauty, may be in the eye of the beholder. An example of this occurred in a debate between a recent creationist and a long-age astronomer a number of years ago.

Arguing from assumption of the big bang, where the universe began with mostly hydrogen & a little helium, leaving the heavier elements to be synthesized in stars, the astronomer opined that hydrogen is less entropic than the other elements. The recent creationist scoffed at that, asking what one could make out of hydrogen. He reasoned elements heavier than hydrogen, such as carbon, were required to build complex molecules & hence the heavier elements must be less entropic. The recent creationist was relying upon a subjective analysis of what was possible chemically. However, hydrogen fusion is the most energetic nuclear reaction & the hydrogen nucleus is not tightly bound compared to other nuclei. The fact that we can obtain energy from hydrogen nuclei indicates that they are far from the most entropic state. Nuclear reactions amount to a heat engine. Carbon is more tightly bound than hydrogen and carbon can be a product of nuclear reactions that begin with hydrogen. For the record, the iron nucleus is the most entropic state. That is, if nuclear reactions were taken to ultimate conclusion to liberate maximum energy, all the nuclei in the universe would be iron. Therefore, the subjective judgment of entropy in this case was wrong. Such subjective assessments of the entropy ought never to trump the quantitative measurements of entropy.

Some of the recent creationists argue that focusing on computational entropy is too restrictive. They insist that the second law of thermodynamics, with which physicists concern themselves, is a particular manifestation of a much broader principle. That principle is one of decay. This may be true, but until this principle is explicitly defined, different people will reach different conclusions. This indicates that this is not an exact science. It strikes me as improper that many creationists would dismiss a well-formulated and quantitative expression of the second law of thermodynamics in favor of some as of yet unframed, nebulous description of some hypothetical broader principle.

Returning to living organisms, evolutionists point out that living things are open systems, and hence the second law of thermodynamics does not apply. It is true that living organisms are open systems, particularly when we view organisms as heat engines. Living and growing things take in energy, either in the form of solar radiation used in photosynthesis or in the form of food. Organisms take in & give off matter as well. This is the definition of open system. However, as mentioned, there is a form of the second law in open systems, and places restrictions on the maximum efficiency that a living organism may have.

In terms of entropy, one may expand the system to include the environment that the organism is exchanging matter & energy with to see that entropy actually does increase, albeit at the expense of the environment surrounding the organism. If there is a general tendency to decay, organisms at some points appear to violate this. Multicellular organisms begin as single cells that rapidly increase in number and construct the various tissues, organs, and systems that make them up. This would amount to an increase in complexity. For many organisms, such as birds & mammals, this growth and development ceases at maturity. Eventually organisms become old and die, and many recent creationists attribute this to the supposed second law of thermodynamics generalized with regards to universal decay. But is it? Organisms have repair mechanisms that fix damage as it occurs. The repair mechanism can fix the damage due to aging, thus counteracting the aging process. This doesn't violate the second law of thermodynamics, because living organisms clearly are open systems, and so they can import the energy and material to make this happen.

However, in today's world the repair mechanism eventually begins to fail & this leads to aging. The repair mechanism ought to be able to repair itself, so there is no a priori reason why aging can't be counteracted. Indeed, cells can repair some genetic errors made in copying. But it appears that all the repair mechanisms are programmed to fail at some point. Evolutionists posit that this is required to make room for descendants so that evolution can function. Creationists believe that this is required by the necessity of death as the penalty for sin. The imposition of this reality didn't require the invocation of the second law of thermodynamics, nor will the reversal of this reality require the removal of the second law. From a physical standpoint, all that death requires is the designed failure of the repair mechanism, & all that's required for eternal life is the restoration of the original repair mechanism. That is, immortality can exist in a world where the second law operates, as long as the organism takes in energy and matter and can repair itself.

There are several implied features of the finished but pre-Fall world that require the 2<sup>nd</sup> law of thermodynamics to operate. We know from [Genesis 1:29–30](#) that before the Fall Adam & Eve ate, as did the animals. Digestion follows consumption of food, and digestion is an excellent example of the second law of thermodynamics in what amounts to a heat engine. Digestion removes nutrients & energy from the consumed food, but this process isn't 100% efficient. If it were, human and animal waste would not be suitable fertilizer, nor would dry manure burn. If the digestion process were 100% efficient, there would be a question of whether elimination of waste would be necessary. Walking is implied for both Adam & animals. However, walking requires friction & friction dissipates energy, usually in the form of heat. This is energy that cannot be recovered and hence is unavailable for work. Hence, energy is no longer useful for work, in accordance with the 2<sup>nd</sup> law of thermodynamics. Even seeing the sun & stars depends upon the second law of thermodynamics, because the surfaces of the sun and stars are hot, and the second law insures that heat flows via radiation from the hotter locations to cooler locations.

How do proponents of the invocation of the 2<sup>nd</sup> law of thermodynamics at the Fall respond to these criticisms? Generally, they respond as Morris did in his previously mentioned modification. They generally claim that some form of the second law of thermodynamics indeed existed at the beginning, but that it wasn't fully manifested until the Fall. At time of the Fall the second law of thermodynamics was amended to the way it is today. Of course, there is no biblical or physical evidence for this, but it merely is piling more conjecture upon what was already a questionable conjecture. No clarity is offered, asserting instead how wonderful the pre-Fall world was, so wonderful that we can't even contemplate how the second law might have operated back then.

Proponents of invocation of the 2<sup>nd</sup> law of thermodynamics at the Fall frequently combine effects of the Fall & the curse. It is clear from [Genesis 2:16–17](#) and [Genesis 3:7](#) that death as the penalty of sin was immediate. Spiritual death was immediate, but, though they didn't physically die that instant, Adam and Eve were placed on the inexorable path to physical death at that time. The curse(s) came later, because at the very least it took time for Adam & Eve to envision and construct the fig leaf clothing. The serpent was cursed as were the other animals ([Genesis 3:14](#)), and the ground was cursed ([Genesis 3:17–19](#)). Many treatments of the second law of thermodynamics in this context merge the effects of death and the cursing of the ground, but this is sloppy hermeneutics, for they were not imposed at the same time. The appearance of thorns & thistles doesn't require sudden change in thermodynamics. Rather, thorns could have appeared as a result of a change in the genetic structure of certain plants. Nor does the introduction of death require a change in physics, but rather a change in the biology of repair mechanisms that still operate today, but not as well as they could. Either of these effects of sin is explained easily by means other than radical changes in the physics that appear to govern the world. Insistence of



the beginning of the 2<sup>nd</sup> law of thermodynamics at the Fall is merely an assertion. Upholding the universe in perfect harmony is not the same as having the universe without the second law. It is true that we have essentially been given a “taste” of what life is like without God as of the Fall but this has little, if anything, to do with the second law.

The subjective nature of what is “ordered” or “perfect” results in another problem: the supporters of the invocation of the second law of thermodynamics at the Fall become the arbiters of what is perfect or ordered. There are numerous examples of conclusions some recent creationists have reached based upon this questionable notion. Craters couldn’t exist in this perfect world, so all craters must be post-Fall. Supernovae fall short of this ideal of perfection, so they must be post-Fall too. The original perfect earth had to have a perfect tilt, which is zero degrees, so original earth had no axial tilt. The current calendar arrangement of days, months & years is less than perfect, so originally there were 30 days per month, and the year had 360 days (I’ve previously critiqued this idea—see Faulkner [2012]). But why stop there? Irrational numbers strike me as less than perfect, but I seriously doubt that the value of  $\pi$  changed at the Fall.

Those who subscribe to the notion of the perfection of the original creation that I’m critiquing here will reject any possibility of craters existing before the Fall. The surfaces of the moon, the planets, and the satellites of the planets had to have some appearance prior to the Fall. What was that likely appearance? Were there hills and valleys? If so, what caused those? Uplift and erosion? Don’t those processes imply imperfection? If this belief about perfection is carried to its logical conclusion, one must surmise that astronomical bodies originally had perfectly spherical surfaces. But this hardly is a Christian idea. The ancient pagan Greeks thought there were two realms — the terrestrial and the celestial. The celestial realm was perfect, but the terrestrial realm was marred by imperfection (this not tied to sin). This led to the division between the sacred (heavenly) and secular (worldly) that permeated thinking during the dominance of the Roman Catholic Church.<sup>5</sup> It also stifled science. The ancient Greeks reasoned that since the heavenly realm was perfect the heavenly bodies must follow perfect motion. They further reasoned that the circle was the perfect shape & that uniform motion was the perfect motion. Therefore, the ancient Greeks concluded that heavenly bodies must follow uniform circular motion. This led to the Ptolemaic model. The Ptolemaic model was the most successful theory in history — it was widely believed for fifteen centuries. It is no coincidence that it was rejected four centuries ago at the same time that science as we know it began to develop. This path through perceived perfection seemed as reasonable to people at the time, but now we recognize the folly of this position & how it held back scientific advancement. I fear a similar thing is happening now.

## Conclusion

It is a common notion among recent creationists the second law of thermodynamics came into being at the time of the Fall. This is not something that is clearly taught in Scripture, but rather stems from a particular view of the Fall & the nature of the curse. This idea goes beyond what the Bible actually tells us, and so ought to be viewed with some suspicion. There were numerous processes present in the original creation that today we easily recognize involved the second law of thermodynamics. To account for this fact, supporters of this position suggest some form of the second law of thermodynamics existed from creation but that it was amended at the time of the Fall to full implementation that we have today. Alternately, some other process in force was withdrawn at time of the Fall. Unfortunately, these ideas have not been developed to explain how it might have worked. Absent this development, this idea is just another further conjecture to salvage what was conjecture to begin with. It would be most helpful if supporters of this approach would develop this further.

Many years ago, Barnes proposed the 2<sup>nd</sup> law of thermodynamics existed during Creation Week or at very least came into existence late that week. However, this idea received scant attention & almost no published support. This idea has merit, and it ought to be further developed. I hope that my effort here will spur further discussion of this important topic.

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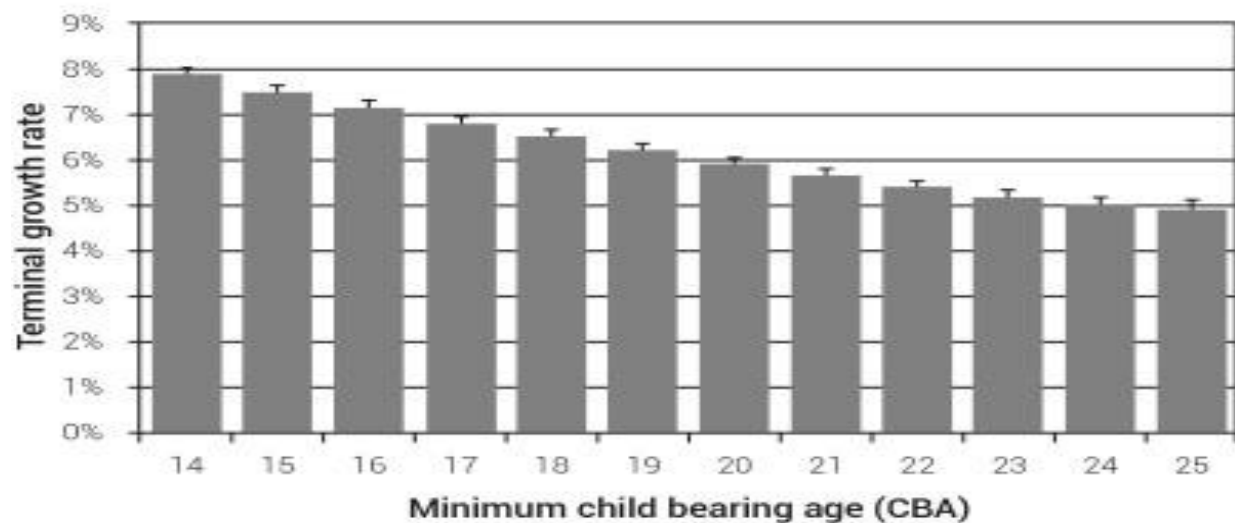
## Footnotes

1. This is the normal formulation of the second law. Sommerfeld (1956) formulated a differential form of the second law applicable to situations of whether the system is isolated or not.
2. I assume that since this passage comes from the chapter on “A Scriptural Framework for Historical Geology” that it primarily was written by Morris, not Whitcomb.
3. There are some brief discussions on the web, such as that of Sarfati retrieved from <http://creation.com/the-second-law-of-thermodynamicsanswers-to-critics>.
4. Some may surmise that this may be because things declared “good” are visible; the major thing made on Day Two was the *raqia* (expanse) that apparently is not visible.
5. The Roman Catholic Church uncritically accepted many pagan ancient Greek ideas.

# Modelling biblical human population growth

by [Robert Carter](#) and [Chris Hardy](#)

The Bible presents several historical scenarios in which the human population grew from very small numbers. These include the initial populating of the world starting with Adam & Eve & the repopulating of the earth from three founding couples after Noah's Flood. There were also multiple small-scale duplications of these events within the many post-Babel populations, including the growth of the Hebrew nation from Jacob & his twelve sons. Most modern commentators on the subject of biblical demographics have assumed a smooth increase in the population over time, but small populations do not tend to grow in an algebraic manner. We wanted to analyze different biblical scenarios, so we created a modelling program in the C# programming language that could handle multiple variables like age of maturation, minimum child spacing & age of menopause, as well as probabilities like polygamy, twinning rates, and a variable risk of death according to age. We were able to demonstrate that the current world population and the size of the Exodus population are easy to account for under most parameter settings. The size of the antediluvian & Babel populations, however, remain unknown.



**Figure 1.** Terminal growth rate vs minimum CBA (childbearing ages) for a population starting with three founding couples and allowed to reproduce to at least 10,000 individuals. Minimum child spacing was set to 1 year. Maximum CBA was set to 45. Results are the average of 1,000 model runs for each parameter setting. Error bars are 1 S.D. [Click](#) for larger view.

Multiple authors have written briefly about the mathematical feasibility of demographic claims in the Bible. Most have concluded there is no biblical paradox but most have only cursorily dealt with the issues involved. Despite occasional claims from skeptics,<sup>1</sup> it is entirely possible to obtain significant numbers of people in short amounts of time.<sup>2</sup>

This includes reaching a world population of over 7 billion people in only ~4,500 years since the Great Flood.<sup>3</sup> Morris was the earliest reference we could find for someone who attempted an algebraic solution.<sup>4</sup> He attempted to account for generation time, family size, and longevity in his calculations but this was prior to the invention of the personal computer and he simply could not track as many variables as is possible today. Later commentators have tended to use a simple algebraic approach (see the exponential growth formula below) to answer these questions as well.

Population growth depends on a combination of birth rate & death rate and is affected by the carrying capacity of the environment. Humans, unlike other species, have the ability and intelligence to grow well beyond what would otherwise be the environmental carrying capacity, witnessed by the dramatic growth of the world population in recent decades.

While we do not know what environmental challenges the antediluvian and immediate post-diluvian populations faced, human populations have the ability to grow quickly. Based on numerous examples from recent history, we expect the early post-Creation and post-Flood generations would have experienced a rapid population increase, under a wide range of potential conditions, but what rate of growth is reasonable?

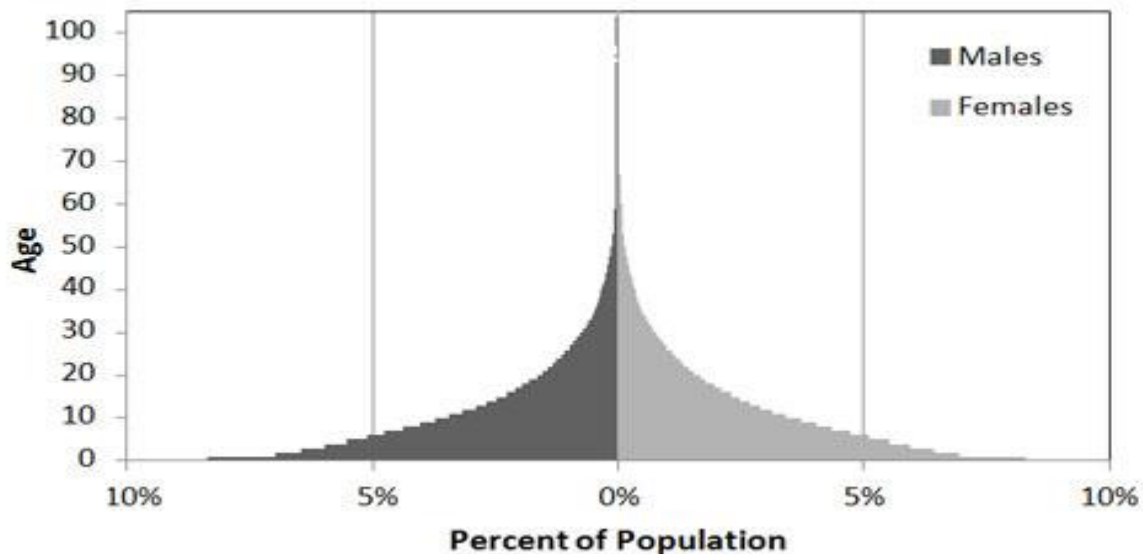
The standard exponential model of population growth is as follows:

$$N = N_0 e^{kt}$$

where  $N$  = the population size at time  $t$ ,  $N_0$  is the population size at time 0, and  $k$  = the growth rate. Importantly, this formula should only be applied to large populations. While it is true that the human population only needed to average a 0.464% growth rate ( $k$ ) to go from 6 ( $N_0$ ) to 7 billion ( $N$ ) people in the c. 4,500 years ( $t$ ) since the Flood, the growth of small populations is stochastic by nature. One reason for this is the fact that random births and deaths have a much greater effect in a population of, 10 individuals than they do in a population of 10,000 individuals.

Another reason is the unpredictable availability of members of the opposite sex in very small populations. Consider a biblical model starting with Adam & Eve. The population size at 100 years could be drastically different if they had children in the order boy-girl-boy-girl-boy-girl versus a scenario where they had a series of boys (or a series of girls) in the early years. Thus, it is impossible to predict or accurately model the growth of small populations with the exponential growth formula.

Modern genetic data indicate the human population has exploded over the past several thousand years.<sup>5</sup> But that is only considering the size of the population. In fact, excess population has had a significant factor throughout much of world history. For example, various Greek colonies were founded across the Mediterranean and Black Sea regions by young people looking for space.



**Figure 2.** Population structure with a minimum CBA of 14, a maximum CBA of 45, and a minimum child spacing of 1 year (average of 1,000 model runs that ended when  $n \geq 10,000$  individuals; error bars omitted). [Click](#) for larger view.

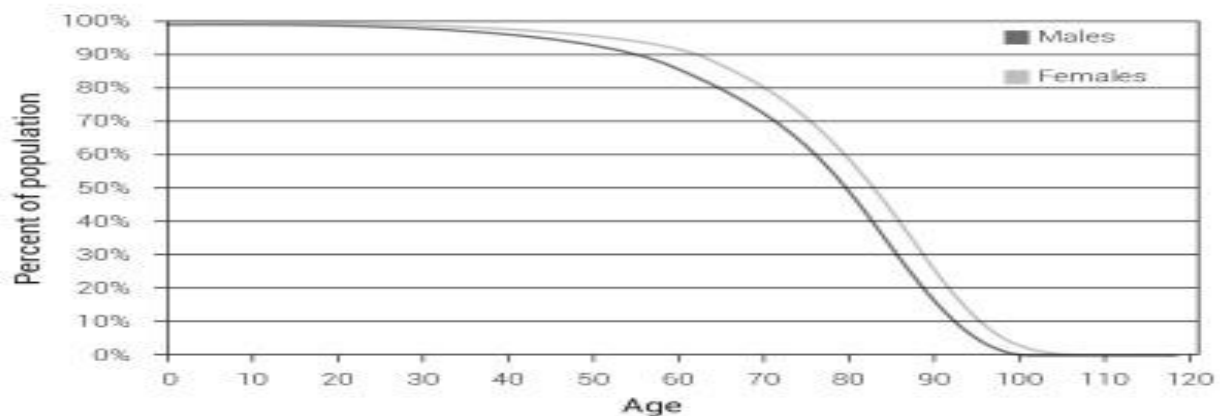
Likewise, the invasions of the Germanic tribes into Roman Europe in the waning years of that empire were driven in part by population expansion. And the Viking invasions across Europe several centuries later were propelled by that population's ability to raise more children than the culture could provide space for.<sup>6</sup> Throughout recorded human history, the rate of population growth has often been great enough to put extreme pressure on land ownership and the control of resources, sometimes leading to mass migration, and often sparking wars.

One might ask, “Given the high reproductive capacity of people, why has population grown so slowly?” The answer is probably that most people ever born probably died of warfare (often fuelled by population excess), starvation (due to war or weather), or disease before they reached their full reproductive potential. These factors are very much dependent on population density, however, and so should have less impact when a population is small and growing.

Biblically, the entire human race descends from just 2 people, Adam & Eve. Growing to unknown numbers over the first one and a half millennia, the population then went through an extreme but short bottleneck when only eight people survived Noah’s Flood. From the three sons of Noah & their three wives, population grew again to unknown numbers before being subdivided at the Tower of Babel, whereupon each resulting subpopulation followed an independent, and complex, growth trajectory.

Those three demographic expansion events need to be addressed mathematically to see if they comport to reality. An additional population expansion mentioned in the Bible is that of the Israelites. Only a few centuries after Jacob, his twelve sons & their children moved to Egypt,<sup>7</sup> several million Hebrews left at the Exodus. Some argue for a ‘short’ sojourn of 215 years, while others argue for a ‘long’ sojourn of 430 years. This is a long-standing textual debate that also influences the date of creation.<sup>8</sup>

The large size of the Israelite population at the Exodus has been used as a critique of the short sojourn hypothesis.<sup>9</sup> Is this a valid critique? Can 12 adult couples produce several million people in just 215 years?



**Figure 3.** Percent survivorship curve with a minimum CBA of 14 and a minimum child spacing of 1 year (average of 1,000 model runs that ended when  $n \geq 10,000$  individuals; error bars omitted). These data closely parallel the 2009 US actuarial tables that were used to estimate death rates at each age. [Click](#) for larger view.



We understand that it is possible to get a large population in a short amount of time, but do all scenarios lead to such population growth? And how likely is it that the sparse biblical data actually match the historical record? We wanted to demographic explore the possibilities within each of these major biblical scenarios. To that end, we wrote a computer program that tracked as many factors as possible, including maturation age, minimum child spacing, age of menopause, rates of polygamy, twinning rates, and a death probability based on actuarial tables.

We also wanted our model to be flexible enough to examine post-Creation, post-Flood, and both the long and short Egyptian sojourn scenarios. Historically, most population models use discrete cohorts, where each generation is treated as a discrete set and removed from the population model after reproducing. This is sufficient for species with an annual life-death cycle & works well enough for long-lived species with large population sizes, but it is not sufficient for the biblical scenarios we wanted to model. Instead, we tracked individuals separately & used probability distributions to determine their survival, marriage, and number of children.

This allows for realistic scenarios where members of different generations may mate.

## Methods

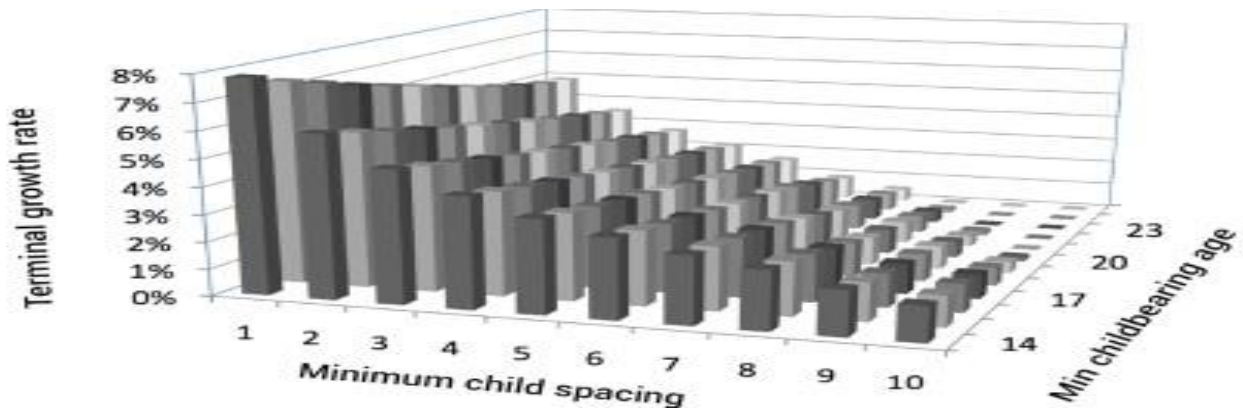
We constructed a population tracking program in the C# programming language that can be used for a wide range of scenarios, including both large and small populations (up to the limits of available computer memory).<sup>10</sup> For each scenario modelled, we set minimum childbearing ages (CBA) for females and males. This was the age at which children were entered into the marriage pool. We also set a maximum CBA for females.

We set the probability of a man getting married after passing the minimum CBA at 50% per year (6.7% per 1/10 year) if at least one lady was available. Once married, we assigned an initial annual pregnancy probability of 0.88. Children were born to each married couple with a minimum child spacing until the female reached the maximum childbearing age.

In order to approximate the risk of death, we incorporated the 2009 US actuarial tables<sup>11</sup> into our model. This should be sufficient for asking how the modern human population could grow from three founding couples but we modified the curve in some model runs to better reflect biblical data. For example, since modern life expectancy of

75-80 years is approximately 1/12th the typical lifespan of 900 years before the Flood, we multiplied the age for death probabilities at each stage by 12 while modelling the antediluvian population. The Maximum Age parameter sets the age at which probability of dying that year reaches 1. Due to the exponentially increasing probability of death as age increases, only a tiny fraction of the population came to within 5% of set maximum in any model run, as with real human populations. The actuarial table we used for our model (with a maximum age of 120) is based on modern populations, in which typically the oldest person known to be alive anywhere on earth is 114 or 115. Although people in ancient populations probably suffered more early death due to disease & injury, while the elderly who avoided those risks lived longer than modern humans (at least through the Exodus), we are assuming the probability of death curve was similar then to now. In all post-Flood models reported here, we set the maximum age to 120, unless otherwise specified.

On top of standard mortality tables, we added an extra factor to account for increased risk of maternal mortality prior to the advent of modern medicine. Since childbirth has historically been the greatest mortality risk for women of childbearing age, we allowed a set risk of maternal mortality for each birth (double for twins), and we could modify the value as needed. We assumed that the child also died if the mother died. This parameter has some overlap with both the minimum child spacing setting and the actuarial tables, but it allowed us increased flexibility to explore various scenarios.



**Figure 4.** Terminal growth rate vs minimum child spacing and minimum CBA. Results are for 1,000 model runs at each parameter setting (error bars omitted). Each run was terminated when the population size exceeded 10,000 individuals and the growth rates were calculated from the final order of magnitude change in population size (approximately the final 20% of the data). In almost all situations, the calculated growth rate was greater than the 0.464% required to go from the three post-Flood founding couples to the current world population of 7 billion people, but note that it was entirely possible for the population to go extinct under certain parameter settings. [Click](#) for larger view.

Since we are dealing with ancient societies, we included ability to model the effects of polygamy (more specifically, polygyny). There exist quite a large number of possibilities, so we settled on what seemed a reasonable scenario & built flexibility into the program so we could explore alternate scenarios if necessary.

When the most generic model of polygamy was enabled, 1% of men with one wife were allowed first pick of the available females in the population. Men with two or more wives had a 5% probability of adding more. We set the maximum number of wives to 5. The remaining females were allowed to marry the remaining males at random. As always, any unmarried individuals were held over for the next round. Females who passed the maximum CBA while available were moved to the “widows” list.

When people were born into the population, they were assigned a birth date in tenths of years.<sup>12</sup> This was done as a compromise. Annual increments led to stochastic outputs or strong ‘cohort’ effects where multiple children were reaching maturation and marrying at the same time, creating distinct pulses of population growth thru childbirth, especially in early years of population growth. On the other hand, dividing years into 365 increments was computational overkill.

## Model assumptions

Even though we attempted to be as comprehensive as possible, there were several areas where we simply had to make assumptions. For example, we assume a rate of twinning of 1 in 89 births. This ratio changes over time and across cultures<sup>13</sup> but since it is less than 2% of all births, it should have but a small effect on population growth.

Likewise, there is no available data for ancient maternal mortality when carrying twins, and ancient mortality rates should be higher than today, so we simply doubled the set maternal mortality rate for twins. We did not even consider triplets, for they are several orders of magnitude more rare & the maternal death rates in these cases were extreme for times more than 100 years ago.

We allowed for remarriage after the death of a spouse, but only as long as the living partner was below the CBA cutoff. Even though males could father children if they were above their CBA, we simplified things by not allowing them to remarry if older than that. Once married, couples stayed married until death.

See [table 1](#) for the adjustable parameter list.

## Results

*Model validation*— Figures 1, 2 and 3 show summary results of a simple model of population growth. Minimum child spacing was set to 1 year. Minimum CBA ranged between 14 and 25. Maximum CBA was set to 45. Maximum age was set to 120, but this parameter had little effect on the final results because very few people lived to anywhere near the maximum age. Results are the average of 1,000 model runs for each setting of CBA. Figure 1 shows the terminal growth rates (the slope of the line from each graph of population size versus time), calculated from the final order of magnitude of population growth (approximately the final 20%) of each model run.

Parameter	Range
Minimum childbearing age	15–30
Maximum childbearing age	30–600
Maximum individual lifespan	30–1200
Probability of maternal death	0.01–0.05
Min. years between children	1–60
Probability of twins	0.011
Probability of male child	0.51
Rate of polygyny	0–0.1

**Table 1.** Modelled parameter list and the ranges used in various model runs.

Figure 2 shows the population structure of a model run with minimum CBA set to 14. The thin, tall peak in the chart is due to a high maximum potential age (a very few people simply lived a long time). The shape of the distribution is similar to that of a ‘young’ population like that of modern Nigeria.<sup>14</sup>

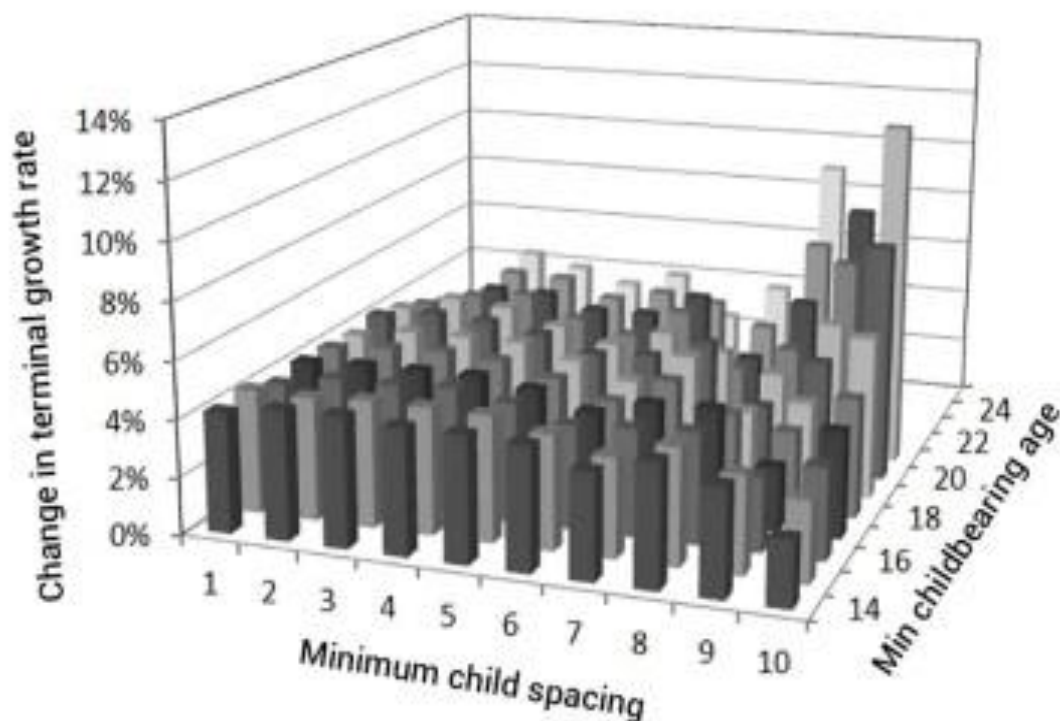
When minimum CBA increases, there are proportionally fewer young individuals in the population & the pyramid has a narrower base (data not shown). When minimum CBA is set to very high values, we noticed ‘cohort’ effect, where delay in reproduction produced waves of population growth as multiple individuals reach reproductive age simultaneously.<sup>15</sup> This is similar to the ‘baby boom’ that occurred in Western countries after World War II. These waves were due to the fact that we started with  $N$  couples already at reproductive age but without children. All modelled populations took several decades to settle down into a regular, algebraic growth phase. Most of the variability occurred when population size was less than 100 individuals and almost all variability was evened out by the time 1,000 individuals were alive.

Figure 3 shows the percent survivorship curve for a modelled population with minimum CBA set to 14.

## From the Flood to the modern population

Figure 4 displays the results of a multi-parameter model run (minimum child spacing versus minimum CBA), using modern (USA 2009) actuarial data and a post-Flood-like scenario with three founding couples. We allowed the minimum child spacing to range from 1 to 10 years and the minimum childbearing age to range from 14 to 25 years. In almost all scenarios where the population did not go extinct, the critical level of 0.464% (the rate required by the exponential model of population growth to reach seven billion people in 4,500 years from three founding couples, see above) increase per year was reached. In other words, it is trivial to obtain the current world population from three founding couples in four and a half millennia.

## Impact of polygamy



**Figure 5.** Effects of polygamy (polygyny) compared to the baseline (figure 4). Results are the average of 1,000 model runs at each parameter setting (error bars omitted). The impact of polygamy was noticeable but not very strong. Most model runs experienced a boost of approximately 4% over baseline (i.e. 104% the growth rate of a non-polygamous population with the same parameter settings). Near the edge of population survivability (i.e. with high CBA and large gaps between children) polygyny enabled some populations to experience more growth, on average, due to the fact that unwed women were more rare.

In [Figure 5](#) we show the effect of polygamy (polygyny). A small percentage of men were allowed up to a maximum of five wives (details in Methods). On average, most model runs experienced a boost of approximately 4% over baseline (i.e. they were growing at 104% the rate of a non-polygamous model with the same parameter settings). Near the edge of population survivability, polygyny enabled some populations to experience more growth, on average, due to the fact that unwed women were more rare. In other model runs (not shown) we increased the polygamy rate up to 10%. At these extreme values, there was a much stronger effect at the margins of survivability, but this levelled off at higher growth rates. For most parameter settings, the net effect was not more than an additional 1% increase over baseline.

## The impact of very old people having children

By varying the maximum age of childbearing, it is possible to illustrate the potential impact of very old women having children. [Figure 6](#) shows the terminal growth rates of multiple model runs. Each has a minimum CBA of 20. Maximum CBA varied from 40 to 100 in 5-year increments and the minimum spacing between children varied between 1, 2, or 3 years. Children born into smaller populations have a greater percentage impact on the future population than children born into larger populations. Therefore, impact of increasing the years of childbearing has a diminishing effect. Here, children born when a woman was one hundred years old entered a population 59, 27, and 17 times larger, respectively, for the three values of minimum child spacing, than a child born when that same woman was 40.

## From the Flood to the Tower of Babel

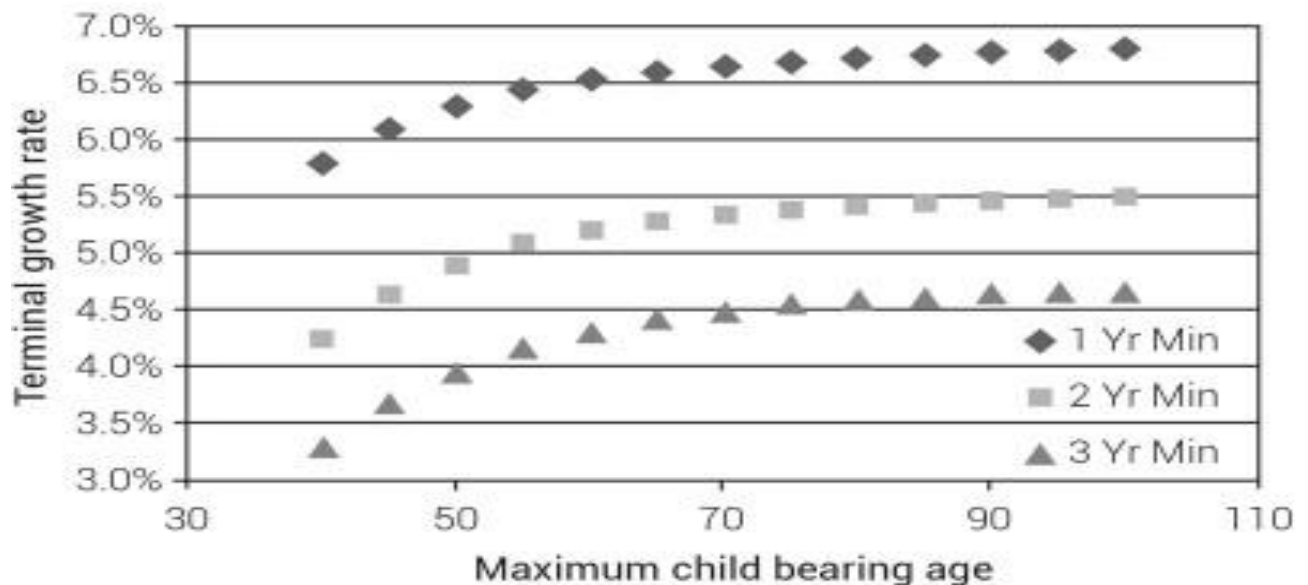
The date of the Tower of Babel event is unknown. From context, it appears the timing has something to do with a man named Peleg, whose name means 'division' ([Genesis 10:25](#)).<sup>16</sup> He was born c. 101 years after the Flood and lived until c. 340 years after the Flood ([Gen 11](#)).<sup>17</sup>

If the division of people occurred only 100 years after the Flood, there would not be many people in the world. However, data behind the growth rates calculated in [figure 4](#) indicate that under some scenarios it is possible to obtain a population size greater than 1,000 individuals in that much time. This occurred at all settings of minimum CBA with a minimum child spacing of one year, or with small minimum CBA and a minimum child spacing of 2 or 3 years.

It is also possible to arrive at over 10,000 individuals with a minimum child spacing of 1 year and a minimum CBA  $\leq 17$ , and up to 40,000 individuals with a minimum CBA of 14, although these are not likely scenarios. After 340 years, it is trivial to have one thousand individuals in the population & most parameter settings produce population sizes many orders of magnitude greater than that. How many people were in existence when the population was divided? Sadly, one cannot determine the number from numerical analyses like these.

## The Sojourn

According to [Exodus 12:37-38](#), there were 600 thousand Hebrew men in the Exodus population. [Numbers 1:46](#) gives a more precise 603,550 men aged 20 and up. There are several ways to estimate the Exodus population size. If one assumes an equal number of females & more children than adults at the Exodus, a figure of 2.7 million is a good approximation. Starting with 12 founding couples, it was possible to reach 2.7 million people within the 215-year 'short' sojourn model, but only under certain, favourable parameter settings ([figure 7](#)).



**Figure 6.** Terminal growth rate vs maximum childbearing age for three levels of minimum child spacing. In all cases, the minimum CBA was set to 20, meaning the span of childbearing ranged from 20 to X years. Increasing the range of childbearing by allowing older women to have children has a diminishing effect on the population growth rate, as expected. Therefore, if the biblical Patriarchs (and their wives) lived to very old age, and had children at a great age, this would have little impact on the growth rate of the population. [Click](#) for larger view.

In the 430-year 'long' sojourn model, reaching population size of 2.7 million was trivial ([figure 8](#)). Of course, the final population sizes we are reporting here are unrealistic. Environmental restraints would take over long before these extreme population sizes were reached.

## The antediluvian population size

We modelled various scenarios that started with a single founding couple. As before, it was simple to obtain significant numbers in a short amount of time. However, we know little about the age of maturation (minimum CBA), minimum or average child spacing, etc., of antediluvian women.

Therefore, there are too many unknown variables and there is no way to estimate the antediluvian population size. It could have been in the billions. Or it could have been a few thousand. We cannot know.

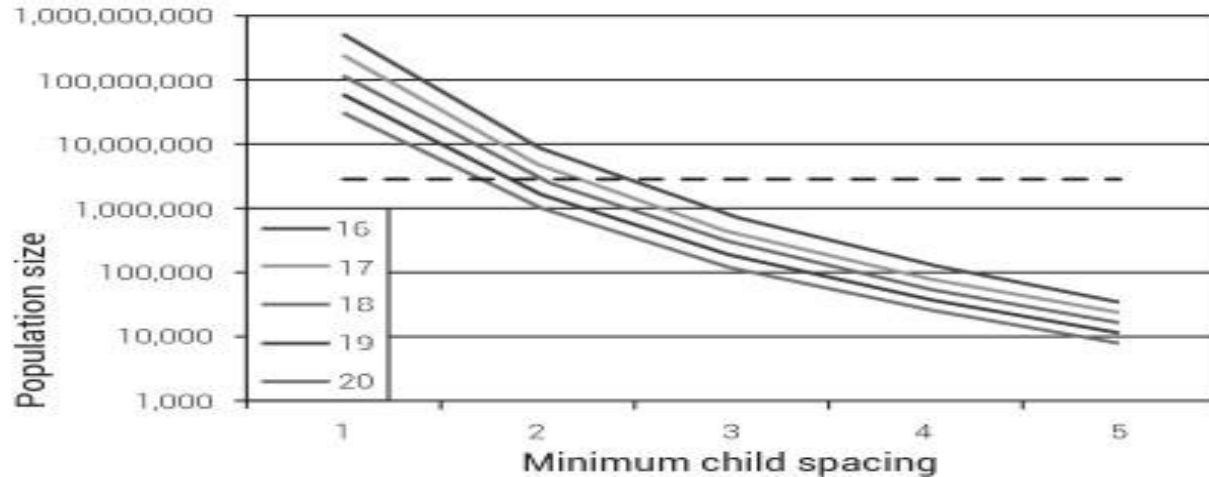
## Discussion

Using realistic demographic parameters, all modelled populations experienced rapid growth, on average. It was entirely possible to drive a population to extinction, however. As the average number of children per female approached 'replacement value', more simulation samples resulted in extinction. When the minimum CBA and child spacing was such that women could have more than two children only by bearing twins, all samples went extinct.

The exact replacement value depends on many factors. Essentially, it is the number of children each female must have in order to guarantee that at least one female child reaches adulthood, on average. The number is often cited as '2.1', but it is less than that in Western cultures & often much greater than that in developing countries.<sup>18</sup> We included parameter settings that led to extinction in [figures 4](#) and [5](#) to illustrate this.

There are two main factors that influence population growth the most: minimum CBA & minimum child spacing. This makes sense in that a population will grow most quickly when people marry young and have children close together. This also means, however, the maximum CBA is far less relevant. Furthermore, since the people who reproduce earliest will have a higher percent representation in future population, genetics should be driving all populations towards faster reproduction, by default.





**Figure 7.** Population size vs minimum child spacing for five settings of minimum CBA (legend) in the short sojourn model. Starting with 12 founding couples, it was possible to reach the required estimate of 2.7 million Hebrews in 215 years (any place where graphed lines are higher than the 2.7 million cutoff line), but only under certain favourable parameter settings (minimum child spacing had to be < 3 in all cases and < 2 in some cases). Note that environmental limitations would have prevented the population from reaching the largest projected sizes. [Click](#) for larger view.

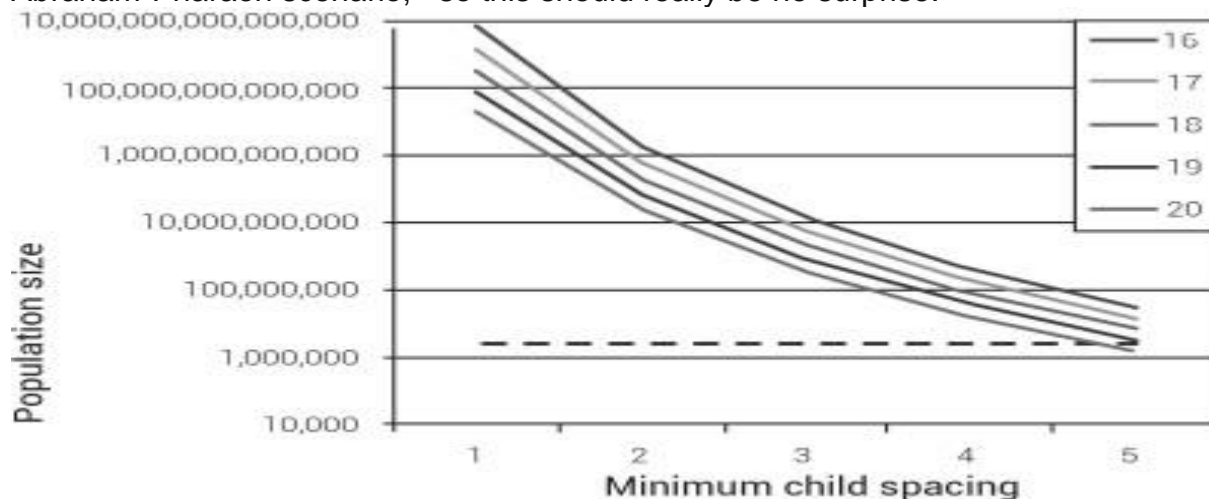
Early maturation is thus a mathematical certainty, given a population with individuals that have a range of maturation ages. This alone could explain the population-wide drop-off in lifespan after the Flood. While it is true that individual mutation count should increase over time, contributing to a decline in lifespan,<sup>19</sup> it is also true that ones who reproduce the fastest will outnumber those who do not. In the end, maximum lifespan does not matter. This comes into sharp focus when considering modern cultures. For many reasons, people in wealthier 'First World' nations are tending to have the fewer children, farther apart, and with a delayed start of childbearing. And, while China and India have huge populations, their growth is levelling off, while the population of Africa is still increasing rapidly. Life expectancy is generally higher in the slowest-growing populations. It is not necessary to model the great ages of the biblical Patriarchs, or the fact that their ages decreased over time, because children born to these people late in life are almost irrelevant as far as their impact on future population growth is concerned. Future impact on the population size caused by the birth of any specific individual is simply the inverse of the population size at that time. In fact, the relative individual impact on the future population size of any two people is simply the ratio of inverse population sizes when each person was born, which can be reduced to simple ratio of the relative times when they were born:

$$(1/N_0 e^{-kt_1}) / (1/N_0 e^{-kt_2}) = t_2/t_1$$

The only caveat is that people who lived a long time may not have matured as young as modern people, so the minimum CBA might come into play to a greater degree than we illustrate here. The average generation span for the first seven generations born after the Flood is 31.4 years, and there is no reason to suspect these are all of the oldest children.<sup>20</sup> Interestingly, the modern average human generation time is approximately 30 years.<sup>21</sup>

This brings up another interesting point; royal kingship has historically been conferred on the eldest sons. Thus, one might expect a long line of kings to experience more - in terms of - generations on average per century than the rest of the population.

Thus, when Jacob met Pharaoh, he asked him how old he was, as if he was surprised to have met such an old man ([Gen 47:8](#)). Jacob was but 12 generations removed from Noah and was the grandson of Abraham, who had met another Pharaoh approximately 200 years earlier. How many generations after the Flood was the Pharaoh of Jacob's day, and how many generations was he removed from the Pharaoh who knew Abraham two centuries prior? The subject of how many generations removed were the modelled people from the starting ancestors is fascinating. We included this calculation for the sake of curiosity. In each run, there were always people with very long lines going back to the founding couple (essentially equal to the length of run/minimum CBA) and at the same time people with very short lines in their family tree (due to the fact that very old men could still father children with younger wives). There are modern analogues to the Abraham-Pharaoh scenario,<sup>22</sup> so this should really be no surprise.



**Figure 8.** Population size vs minimum child spacing for five settings of minimum CBA (legend) in the long sojourn model. Starting with 12 founding couples, it was possible to reach the required estimate of 2.7 million Hebrews in 430 years under almost all parameter settings, but note that environmental limitations would have prevented the population from reaching the majority of these projected sizes. [Click](#) for larger view.

Concerning the Egyptian sojourn, we started with 12 couples with no children, but [Gen 46:27](#) indicates that Jacob's sons had already started reproducing *before* he moved to Egypt. In other words, the clock started before they arrived in Egypt and the 215-year sojourn is a minimum figure. Adding more individuals to starting population size makes it easier to arrive at the required Exodus population size than we report here. Also, Jacob brought household servants with him to Egypt ([Genesis 12:16](#), [Genesis 14:14](#), and *cf* [Gen 46:1](#) "all that he had"), who might have occasionally married into the family. This is especially true of women, but male servants were also circumcised ([Gen 17:13](#)), meaning that they were tangentially part of the Covenant. Could long-standing, multi-generational, faithful, God-fearing, male family servants have married into the family as time progressed? This is likely, especially since many of them would have Jacob as an ancestor, for obvious reasons.

In conclusion, it is relatively easy to explain the modern world population, starting with the six Flood survivors, in c. 4,500 years. The number of people alive at the Tower of Babel event is more difficult to determine, but could easily have been in the thousands, or even tens of thousands, under certain conditions.

The long/short sojourn debate cannot be answered with demographic data, but there is no reason to reject the short sojourn from numerical data alone. And, it is impossible to estimate the number of people alive at the Flood, for we simply do not have the necessary demographic data.

# A Review of Hugh Ross' Latest Book, *Navigating Genesis*

by [Dr. Danny R. Faulkner](#) on April 15, 2015

## Abstract

*I review scientific and biblical problems with the teachings of Hugh Ross, based upon his most recently published book. As I showed in a previous study of his earlier works, Ross poorly handles both scientific facts and biblical texts. While many Christians support Ross' broad conclusions, few would agree with details of Ross' argument.*

## Introduction

This most recent book by Hugh Ross appears to be his tenth book as a single author. I say appears, because after reading this book, I realized that it really is a revision of an earlier book, *The Genesis Question*, (Ross 1998) that has already been through a second edition. However, there is nothing in this new book that clearly suggests that it is a new edition of *The Genesis Question*, and this book even carries a different title. Many chapter titles, as well as the text, are the same in these 2 books, though there has been some editing and some rearrangement of the material in the latter book, which is consistent with a new edition rather than a new book.

I previously offered an evaluation of Ross' apologetics (Faulkner 1999). Though that article included material from *The Genesis Question*, I have endeavored not to repeat that discussion here. Rather, I focus here on issues that I did not previously raise. As I demonstrated earlier, Ross badly handles both biblical texts and current scientific thinking. In *Navigating Genesis*, Hugh Ross gives more specific information about his model of a local flood. My analysis of that model is more in-depth than other topics that I treat here, so I have published my critique of Ross' local flood model separately (Faulkner 2015a).

## A Supernova as the Cause of Reduction of Human Lifetimes as Recorded in Genesis

There are some differences between the earlier and later books. For instance, on pp. 117–121 of *The Genesis Question*, Ross concluded that a supernova explosion thousands of years ago produced cosmic rays that in turn played a significant role in diminishing human lifetimes after the Flood. He even concluded the supernova that created the Vela pulsar was “the only supernova eruption that could possibly be implicated in the shortening of human life spans.” On pp. 125–128 of *Navigating Genesis*, Ross repeated this, except this time he discounted the Vela supernova and claimed the culprit actually was the supernova that created pulsar PSR B0656+14. So Ross’ earlier absolute statement that the supernova that created Vela pulsar was “. . . the only supernova eruption that could possibly be implicated in the shortening of human life spans . . .” is not true. The case for either supernova was based upon the supposed distance, age, and other characteristics of the respective supernova events. One must question whether in the future Hugh Ross will distance himself from yet another supernova event.

## Early Planetary Atmospheres

As in *The Genesis Question*, in *Navigating Genesis* Hugh Ross discussed the supposed early evolution of planetary atmospheres. As before, Ross claimed that early in its history Earth had an opaque atmosphere. This is in concordance with his manner in interpreting the sun, moon, and stars appearing on Day Four of the Creation Week. In Ross’ view, rather than God making astronomical bodies on Day Four, God made astronomical bodies earlier and they became visible on Earth’s surface Day Four as the earth’s atmosphere cleared. However, this is an old idea, as planetary scientists abandoned that theory decades ago in favor of a terrestrial atmosphere that was transparent very early (Kasting and Catling 2013). Therefore, Ross’ theory about Earth’s early atmosphere is out of date from what most planetary scientists think, though most readers probably would not know this. In his new book, Hugh Ross wrote (2014, p. 34):

They’ve learned that Planets as massive as Earth and as distant from their host star (their “sun”) typically start with a thick, opaque (light-blocking) atmosphere. The smallest of the extrasolar (outside our solar system) planets for which astronomers have a measurement of the planets’ atmospheric mass is 6.5 times more massive than Earth and has an atmosphere at least 4,000 times “heavier” than Earth’s atmosphere today.

There are at least two things wrong with this statement. First, the reference that Ross gave for this (Miller-Ricci and Fortney 2010) did not measure the atmosphere of the planet in question (GJ 1214b). Rather, they offered a range of possible model atmospheres for this planet based upon the planet's observed mass & radius. Both the mass and radius of the planet have uncertainties, so the actual structure of its atmosphere is unknown. Second, Ross used this reference in evidence of his claim that planets of this type "typically start with a thick, opaque . . . atmosphere."

However, not many astronomers would suggest that GJ 1214b is a young planet. The inferred metallicity of the host star GJ 1214 is similar to the sun's metallicity (Rojas-Ayala et al. 2012), suggesting a comparable age. Current models of planet formation (which Ross endorses) suggest that planets have ages similar to their host stars. Thus, the extrasolar planet GJ 1214b is conventionally dated as being several billion years old, and so cannot be used to support Ross' contention that planets begin with thick, opaque atmospheres. Also, it is not clear where Ross got his figure of an atmosphere that is "at least 4 thousand times 'heavier' than Earth's atmosphere today."

Ross continued his discussion of early planetary atmospheres and stated that (2014, p. 34):

Thus, astronomers estimate that the Earth's primordial atmosphere was a least 200 times more massive than our current atmosphere.

There is no reference given for this, probably because astronomers do not estimate this. Apparently, this estimate is Hugh Ross', and is based upon his discussion of the atmosphere of Venus. Ross correctly pointed out that Venus' atmosphere is 91 times greater than Earth's atmosphere, and then he reasoned that Venus' weaker gravity and closer proximity to the sun would have caused Venus to lose more atmosphere into space. There are several problems with this. Is Dr. Ross suggesting that Earth's atmosphere is more evolved so that Venus' atmosphere is more primitive? If so, this is a very old idea that was long ago discarded by planetary scientists. For some time, planetary scientists have viewed Venus' atmosphere mature, but the atmospheres of Earth and Venus took decidedly different evolutionary paths. Venus' atmosphere is dominated by CO<sub>2</sub>, so the question arises why the Earth does not have a CO<sub>2</sub> based atmosphere. The answer is that much of Earth's CO<sub>2</sub> is bound up in carbonate rocks. Planetary scientists have a theory, the runaway greenhouse effect, to explain why Venus has much of its CO<sub>2</sub> in its atmosphere. Furthermore, Ross' reasoning here does not make sense. He stated he would expect that Venus would have dissipated more of its atmosphere into space, but then he argues that the Earth lost far more—a reduction from 200 greater than current atmosphere to the current atmosphere is a 99.5% reduction.

## The Early Earth

On p. 36, Ross stated that:

Earth's rotation rate has decreased by a factor of three or more over the past four billion years as a result of tidal interactions among Earth, the Sun, and the Moon.

Since the Earth now rotates with a period of about 24 hours, a three-fold decrease in the day's length would have required the day have been eight hours, or even less when one considers Ross' claim that the change was "a factor of three or more." However, this rotation period for the early Earth is far too short. Hansen (2010) ran several models and found a range of 12–18 hours for the Earth's rotation period 4.5 billion years ago.

On pp. 34–36 Ross described the early Earth as being covered by a deep ocean with no land reaching above the ocean, all allegedly in concordance with the use of "the deep" in [Genesis 1:2](#). The Hebrew word translated "the deep" is better rendered "watery abyss," but the early Earth being covered by water is best indicated by the context. One infers from the absence of mention of any removal of this water until [Genesis 1:9](#) that this water continually covered the Earth until dry land appeared on Day Three. In Ross' view, this fact from Genesis 1 had been proved by modern science, but has it? The question of how deep the water on Earth's surface billions of years ago has been debated for some time among evolutionary scientists. For a while, most scientists thought if the Earth initially had any bodies of water, they were removed and later replaced with water brought to Planet Earth by impacts of asteroids & comets, but recent studies of crystals that must form in water have suggested that liquid water existed very early in Earth's history. However, the mere presence of liquid water on the Earth's surface does not imply that the Earth was deeply covered by water. Most scientists today probably would disagree with Ross' assessment that water deeply covered the early Earth.

A few pages later (pp. 39–41), in discussing the origin of the moon, Ross described the current grazing impact theory of lunar origin. He observed that the impact that formed the moon would have blasted most of Earth's original opaque atmosphere into space & allowed a translucent replacement atmosphere. Ross dates this event to Day One, when God commanded that there be light and He separated the light and dark. That is, light on the surface of the Earth (the perspective of the creation account) became possible when the atmosphere was sufficiently cleared by the impact that formed the moon. Thus, Dr. Ross dates Day One very early, close to 4.5 billion years ago. However, the supposed impact that formed the moon probably would have removed the Earth's ocean as well as most of the atmosphere.

Indeed, no one has dated liquid water on Earth prior to 4.4 billion years ago, 100 million years after the impact. Therefore, there is a problem with Ross' insistence that water completely covered the Earth prior to Day One.

## The Light for the First Three Days

On page 55, Ross attempted to dismiss the suggestion of many recent creationists that God was the source of light for the first three days, or, more specifically, that the light present was God's *Shekinah* glory.<sup>1</sup> Ross refers to exegetical problems for this suggestion, though he did not discuss those. Rather, he concentrated on a "wall of scientific implausibility" that this suggestion supposedly runs into. For instance, the first problem that he listed was that the light needed exactly to match the sun's light in spectral response & effective temperature. This betrays materialist thinking on Hugh Ross' part in that it amounts to a denial of God's ability to act miraculously to match the sun's spectrum. It may be more accurate to say that God on Day Four made the sun so that its spectrum matched the original light that He created on Day One. This underscores a serious problem underlying Ross' creation apologetic—he fails to acknowledge the tremendous role that the miraculous played in the creation. Creation by its very nature is miraculous. One may just as well throw up scientific objections to the miracles of the virgin birth and Christ's resurrection. Furthermore, underlying this objection is assumption of millions of years. Of course, plants could not long survive without the light of the sun or something that closely matched the sun's light, but not if the time involved is at best a day, for plants easily survive such lapses of sunlight.

## Behemoth and Leviathan

On p. 65, Ross stated that dinosaurs probably were created and existed on Day Five. These were the largest land animals that ever lived, yet Ross insists that they were not made on the day that God made land animals. Continuing on this page, Dr. Ross stated,

Some Christians assert that the Bible *does* speak of dinosaurs. They claim the "behemoth" and "leviathan" of Job 40 and 41 must be references to *Triceratops*, *Tyrannosaurus rex*, or some other dinosaur species.

This is a misrepresentation of the recent creationist position, for these are not the creatures that recent creationists generally identify with behemoth and leviathan. Rather, behemoth is identified as some sort of sauropod and leviathan as possibly a plesiosaur. Ross might claim that his phrase "or some other dinosaur species" would suffice, but this hardly would describe plesiosaurs, since most scientists believe that



plesiosaurs were not dinosaurs. There may be some recent creationist who has made the identifications that Ross suggests, though I am not aware of anyone who does. Even if someone did make this identification, it hardly is representative of the recent creationist position. On the next page (p. 66), Ross discusses what he thinks that the behemoth and leviathan were. He noted that the singular form of behemoth, *behema*,<sup>2</sup> appears in Genesis One, where he says that it is “part of the description of certain land mammals created on the 6<sup>th</sup> creation day.” However, there is no reason why *behema* must refer only to land mammals (excluding reptiles or other classes that dinosaurs likely belonged to). Rather, *behema* refers to large land animals. The only reason why Ross insists that *behema* must refer to land mammals is his belief that God made dinosaurs on Day Five rather than Day Six.

## The Sabbath and the Day-Age Theory

On page 86, Ross linked Sabbath rest of farmland with pest control. However, pest control is best handled with the related practice of crop rotation, not allowing land to be fallow. Probably more important for the Sabbath rest of farmland is recovery of soil with regards to nutrients and fertilizer.

In arguing for the day-age theory, on p. 88 Ross enlisted [Psalm 95:7–11](#), [John 5:16–18](#), & [Hebrews 4:1–11](#), as well as [Revelation 21](#) in support of his claim the seventh day of creation is continuing today. However, none of these passages supports this position. Written by David, Psalm 95 warned Israel not to harden their hearts as their forbears had done in the wilderness. That generation spent 40 years in the wilderness (verse 10), and the LORD swore in His wrath that they would not enter His rest (verse 11). The seventh day, the Sabbath Day, isn’t mentioned in Psalm 95. Rather, the context is the denial of that generation entering the Promised Land. The Promised Land offered peace, prosperity, and security, amounting to a form of rest when compared to the wilderness wondering. David’s warning implied the people of Israel, because of their unbelief, still had not yet fully entered that state of rest. Therefore, Psalm 95 is not about the Sabbath Day, and the claim that it some way supports the notion that Day Seven of the Creation Week is ongoing is false.

Hebrews 4 quotes liberally from Psalm 95. Verse 1 encourages believers to enter God’s rest, in some sense a rest comparable to that of the rest promised to those who would enter the Promised Land. [Hebrews 4:3](#) assures us those who believe will enter that rest, and it quotes a portion of [Psalm 95:11](#). [Hebrews 4:7](#) implies a warning to us today not to harden our hearts in its quotation of a portion of [Psalm 95:7–8](#). However, the rest spoken of in Hebrews 4 is comparison to rest promised to ancient Israel, not equivalence, as any commentary of Hebrews will concur. For instance, consider the words of Hewitt (1960, pp. 85–86):

Unbelieving Israelites who perished did not nullify the promise that some would enter into God's rest, nor was the promise fulfilled when their children entered the promised land. The rest that these enjoyed was only a type of God's rest and, therefore incomplete. The promise of God that some should enter His rest still remains, but in the light of what happened to those who left Egypt an exhortation to fear is given readers. This exhortation carries with it a suggestion that each reader should examine himself lest he be still not in the way which leads to that rest.

Hebrews 4 speaks of a rest that is eternal. It draws upon Psalm 95 in order to make a thematic connection. Psalm 95 speaks of rest in the land (of Israel) which is only *reflective* of the rest in Genesis 2 (and imperfectly so, at that). Hebrews 4 picks up on this intertextual connection & traces out the implications; that is, showing how these verses *anticipated* a greater future rest. But this is a thematic expansion or development, **not** equivocation demanding that Genesis 2 speaks of ongoing rest. Incidentally, *Revelation 21–22* shows the attainment of the anticipated rest. Ross has identified correctly the thematic connection between these texts, but has read into the earlier texts a meaning that is not present in them. [Hebrews 4:8](#) states that if Joshua had given Israel rest upon entering the Promised Land, then King David (writing in *Psalm 95*) would not have spoken of some other day of rest. [Hebrews 4:4](#) compares this rest to the seventh day rest in quoting [Genesis 2:2](#) God rested from creating on the seventh day. However, this is not to be confused with the 4<sup>th</sup> Commandment, which is a mere picture of God's rest. The only connection to the Fourth Commandment in Hebrews 4 is in [verse 9](#). Up to this point, the writer of Hebrews used the Greek word *katapausis* for rest, but in [verse 9](#) he used the word *sabbatismos*, meaning Sabbath rest. This is only time that this word appears in the New Testament, and the writer may have coined the word when he used it. Most commentators believe that this term was used in only a spiritual sense. The final encouragement for us to enter that rest in verses 10–11 certainly reinforces that interpretation.

Obviously, the rest, even the Sabbath rest mentioned in Hebrews 4 is a type, and to take from this passage support for day-age theory is to miss the entire point of this passage. Perhaps it is the use of the word "today" in [Hebrews 4:7](#) and [Psalm 95:7–8](#) that has confused Ross into thinking that "today" here refers to an ongoing seventh day of the creation. However, the "today" here refers to the moment and to the urgency in making a decision (this is reminiscent of [2 Corinthians 6:2](#), which in turn is quotation from [Isaiah 49:8](#)).

As for [John 5:16–18](#), it is a bit bizarre to suggest this passage teaches the ongoing nature of the seventh day of creation. The context of this passage is that Jesus had healed a man who couldn't walk. Some of the Jews sought to kill Jesus, because He had done this on the Sabbath. Jesus replied that as His Father worked still, so did He, which caused the Jews to want to kill him even more. It is a complete mystery how this passage supports the belief that the seventh day of the Creation Week has not ended and hence is continuing today.

Ross further stated that (p. 88)

*Revelation 21* tells us that the seventh day will eventually end for us, when God's purposes for this cosmos have been fulfilled and God unveils an entirely new heaven and earth for us, a new creation with new physical laws, appropriate, as always, to the fulfillment of His divine purposes and plans for life beyond cosmic time.

Revelation 21 does describe a new heaven & new earth, as well as a New Jerusalem. However, there is no hint of the closing of the seventh day here, nor new physical laws. Ross has conjectured these and attempts to use Revelation 21 to support his teachings on this, but the chapter does not teach these things. His claims on this at best grossly misrepresent the text.

Hugh Ross went on to make his case for day-age theory by appealing to differences between English & Hebrew, blaming the supposed misunderstanding of the Creation Week on the part of recent creationists as being seven normal days upon their lack of appreciation of differences between the two languages. On pp. 88–89 he correctly pointed out that our English word *day* carries several different meanings, and even gave examples of one meaning, referring to a period of time. He also pointed out that a reader has no problem figuring out which meaning is intended, presumably from context. Furthermore, Ross went on to note that the Hebrew word for day, *yom*, has at least four distinct possible meanings too, and he listed those.<sup>3</sup> Ross must not have compared his lists of meanings for the English word *day* and the Hebrew word *yom*, for if he had, he would have realized that the lists are virtually identical. That is, the two words in two very different languages have the same possible meanings. Ross argued that Hebrew has a more limited vocabulary than English, I suppose based upon the count of Hebrew words in Bible concordances. Hebrew may have fewer words than English, but primarily because English is far too rich in synonyms. This oversimplifies much, because Hebrew has subtleties that don't exist in English. For instance, Hebrew is rich in verbs, and has a well-developed array of nouns related to specific subjects. Although total vocabulary in the Old Testament does not equate to that exhibited in English dictionaries, the fact remains that the English vocabulary is comprised mostly of dead or unused words. Also, whereas English words are each given independent entries in the dictionary (even if two or more lexemes are closely related), this is not so with Hebrew words. For instance, all verb forms are listed in lexicons by root rather than according to individual lexemes. However, a number of common Hebrew verbs can occur in as many as seven distinct stems, and in several distinct forms, with each form having a distinctive meaning. Dr. Ross' appeal to the differences between English and Hebrew and the smaller vocabulary of Hebrew as compared to English is an attempt to hoodwink the reader. Apparently, Ross thinks that it is not possible to discern the intended meaning of the word *yom* from context in Hebrew as we can in English.

As with any language, context is the key in understanding, and there are ample contextual reasons for concluding that the clear meaning of *yom* in Genesis 1 is a normal day.

Ross further stated on p. 89 that “. . . the Bible contains dozens of lengthy biblical texts on various themes relevant to creation . . .,” and that “an integrative analysis of these passages leads to the conclusion that *yom* refers to a long, but finite, time period.” However, Ross has yet to produce this integrative analysis, preferring instead to assert that such an analysis produces this conclusion. This has been a tactic of Ross for some time, for the list of passages that he offers as evidence here (Table 9 on p. 90), as well as similar lists and expanded lists of supposed creation passages, exist elsewhere in his publications. However, close examination of these lists show that these passages do not support his claim that the passages teach the day-age theory. For instance, I recently examined a much longer list that Ross had published & found Ross’ claim baseless (Faulkner 2015b). Indeed, they identified several alleged creation passages on the list that did not pertain to creation at all.

## The Early Church on the Age of Creation

To further his case, Ross once again repeated claims the early church taught that the creation was long ago. On p. 91 he wrote:

Ante-Nicene scholars (those prior to AD 325) devoted some two thousand pages of commentary to the “hexameron,” the portion of Genesis 1 describing the six creation days. No other section of Scripture received more of their attention. Yet in all their pages of commentary, only about two address the meaning of “day” or the time frame for creation. Their comments on the subject remained tentative, with some favoring the day-age (typically a thousand-year period) interpretation & their studies preceded the influence of science. No one explicitly endorsed the 24-hour-day interpretation.

Hugh Ross frequently makes these sorts of statements, and he does so with such conviction, such certainty, and seemingly with much authority. While some of what Ross says here is technically correct, his conclusion is far from correct. Ross offered no examples here, but instead he referenced something he had previously written (Ross 2004, pp. 41–49). In his earlier work, Ross did discuss a few examples, and he is correct the early church writers rarely discussed length of the creation days. Obviously, the lack of discussion of the length of the creation days indicates that, unlike today, in the early Christian era there wasn’t much question about length of those days. For a good refutation of Ross & others in their claims that the early church fathers believed in the day-age theory, please see the excellent review by Mook (2008). Ross also is correct that some early church writers tentatively put forth the possibility that the days could be thought of in terms of a thousand years. They used Psalm 90 and Peter’s quotation of [Psalm 90:4](#) in [2 Peter 3:8](#) for their suggestion. However, this often was driven by a belief that there would be 6000 years of history in parallel to the six days of creation, a belief that is still popular

today. In the early church era, there also arose the thought that the creation was instantaneous and that God expanded the creation into days in an allegorical sense so that we could better understand. This idea later influenced Augustine. None of this is a ringing endorsement of the day-age theory.

Why did Hugh Ross consider only the period up to AD 325? The year AD 325 is the standard date for the end of the early church as the Nicene Council that year is the recognized dividing line. However, Basil, the most influential person on the days of creation in the early church, wrote shortly after AD 325. Ross rarely mentions Basil. Unlike the sources that Ross cites, Basil very clearly and unequivocally taught that the days of the Creation Week were normal days, not periods of time. Consider this quote from Basil:

And the evening and the morning were one day. Why does Scripture say ‘one day the first day’? Before speaking to us of the second, the third, and the fourth days, would it not have been more natural to call that one the first which began the series? If it therefore says ‘one day,’ it is from a wish to determine the measure of day and night, and to combine the time that they contain. Now twenty-four hours fill up the space of one day — we mean of a day and of a night; and if, at the time of the solstices, they have not both an equal length, the time marked by Scripture does not the less circumscribe their duration. It is as though it said: 24 hours measure the space of a day, or that, in reality a day is the time the heavens starting from one point take to return there. Thus, every time that, in the revolution of the sun, evening and morning occupy the world, their periodical succession never exceeds the space of one day. (Basil [1895] 1994, p. 64)

After Basil, nearly every church authority who discussed creation took the position that the days of the Creation Week were normal days. Ross claims that belief in six normal day creation is a recent development in Christianity, arising from supposed misunderstanding of the English translation and in a reaction to the introduction of evolution and deep time by modern science in the past two centuries. However, this clearly is not the case, for Basil largely influenced the church 1500 years earlier.

## The Four Rivers of Eden

On p. 99 Ross stated that [Genesis 2:10–14](#) “tells us that four rivers met together in Eden: the Pishon, Gihon, Tigris, and Euphrates.” Ross could not be any more wrong about this, for the text clearly states the four rivers parted<sup>4</sup> from a single source in Eden, not that the four rivers flowed together in the Garden of Eden. Here Ross has freely reversed the statement of [Genesis 2:10](#) to fit his selection for Eden’s location being in the Persian Gulf, described on pp. 97–100. Of course, this location is not tenable, given the Ross’ description of the four rivers is completely wrong.

Amazingly, Ross confidently made this statement with not even a hint of how much this contradicts the clear statement of [Genesis 2:10](#). On p. 107, using [Genesis 2:12](#) as a reference, Ross claims Eden contained “gold, aromatic resin, and onyx.” However, this verse refers to the Havilah treasures, which even Ross seems to think distinct from Eden (see Figure 10.2 on p. 99).

## Mishandling of Various Biblical Passages

On page 103 Hugh Ross seems to endorse a vegetarian diet for birds and mammals originally based upon [Genesis 1:30](#). However, there is no reason to exclude reptiles here. On page 113 Ross makes a distinction between herbivorous and carnivorous mammals in [Genesis 1:24–25](#), though it would seem the clear statement of [Genesis 1:30](#) ought to trump Ross’ musings there.

There are other examples of the careless manner in which Ross handles Scripture that do not directly relate to creation. For instance, on p. 139, Ross included assault and murder with adultery and fornication as sins against the body. Ross also used the phrase, “and so on,” so it is unclear what other sins Hugh might include as being against the body. His text for support of this statement is [1 Cor. 6:12 – 20](#). The only sin that the Apostle Paul mentioned there as being against the body is fornication. The meaning here is sexual sin, which would include adultery as well, but there is no basis for including assault and murder as sins that are against the body. In this passage, the Apostle Paul placed sexual sin into a special category. [First Corinthians 6:16](#) makes a direct connection to the “one flesh” of [Genesis 2:24](#). Believers’ bodies are members of Christ ([1 Corinthians 6:15](#)), but sexual sin by a believer amounts to being a member with a harlot too. This is offensive to God. Therefore, the careless manner in which Ross handles this teaching alters what the Apostle Paul taught. In discussing the dangers of reprobation on p. 141, Ross conjoined [Romans 1:18–32](#) and [2 Peter 2:14, 18–19](#). However, Ross did not quote all of [2 Peter 2:14, 18–19](#), nor did he place the words in context. The context of [2 Peter 2](#) is a warning against apostate teachers. While the small portion of [2 Peter 2](#) Ross quoted may correctly describe reprobation as Ross intended, within its context, those words have a different meaning.

## Conclusion

In my previous critique of Hugh Ross' teachings, I gave numerous examples of both scientific and exegetical/theological mistakes that Ross makes. In the intervening years, the situation has not changed much, for Hugh Ross has retracted few, if any, of those previous errors, and I have demonstrated more examples here. I have found that many theologians and other influential leaders enthusiastically endorse Ross' message, mostly because they concur with his view that the world is billions of years old and it gives them good cover for a scientist to make the case. However, Ross does not make the case well. Furthermore, it is doubtful that many of those Christian leaders would support many of the specifics of Dr. Ross' argument where Ross is simply wrong. Ross says and writes so many things with such confidence that many of his followers apparently have no idea how poorly reasoned and supported many of his positions are. My early accusations & those here against Ross are damning. I call upon leaders & others who support Ross to investigate my claims.

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# Critical Analysis of Hugh Ross' Progressive Day-Age Creationism Through the Framework of Young-Earth Creationism

by [David Mcgee](#) on February 13, 2019

## Abstract

*Since the early 1800s, the evangelical community has sought to harmonize the scientific interpretations of long periods of time and the early chapters of Genesis to determine the appropriate age of the universe. There are primarily two groups—those who believe the universe is billions of years old & those who believe the universe is only thousands of years old. One view within the former group is called Progressive Day-Age Creationism. This view is taught by Dr. Hugh Ross & popular within the evangelical community. This article analyzes primarily writings of Ross & the implications that his view may have towards understanding the early chapters of Genesis, the trustworthiness of the Bible, and the Gospel.*

## Introduction

When it comes to the topic of origins, the evangelical community agrees that God is the creator of the universe. Where this agreement usually ends, however, is on the question how and when did God create. Did God begin the creation process billions of years ago or thousands of years ago? Did He create ex nihilo (out of nothing), through the evolutionary process of natural selection, or combination thereof? Whereas some evangelicals are convinced of an older earth (billions of years old) and debate the means by which God created, others maintain that the earth is younger (thousands of years old) & affirm a literal meaning of Genesis 1.

Ernst Mayr, an evolutionary biologist, opined that Christianity's biblical account of creation as told in the book of Genesis, chapters 1 & 2 "was virtually unanimously accepted not only by laypeople but also by scientists & philosophers. This changed overnight, so to speak, in 1859 with publication of Charles Darwin's *On the Origin of Species*" (Mayr 2001, 12). However, prior to Darwin, James Hutton published *Theory of the Earth* in 1795 & Charles Lyell published the volumes *Principles of Geology* in the 1830s. They sought to dethrone the catastrophism of Noah's Flood & replace it with uniformitarianism, the belief that the present is the key to the past. Darwin's book popularized their theories, arguing that the God of the Bible wasn't necessary to explain the origin of the universe. And the creation event in Genesis One, which would indicate the universe is thousands of years old, wasn't correct interpretation. The interpretation of Genesis 1 that creation is a recent event can trace its roots to the church fathers (Mook 2012, 29–32), and was the prevailing view of Hebrew scholars before the 1860s (Sexton 2018, 5). This view was challenged by Hutton, Lyell, and Darwin to suggest western society should discard the Genesis story and replace it with their scientific view that sought to remove the necessity of a creator. The evangelical community, primarily because of Darwin's popularization of the philosophical theory of evolution, has sought to harmonize science interpretations of long periods of time with early chapters of Genesis to determine the appropriate age of the universe.

Because of the influence of Darwin's book, two groups have emerged from this topic of reconciling Genesis with the prevailing scientific hypotheses and interpretations. One group are old-earth proponents, who believe the universe and earth are billions of years old, and other group are young-earth proponents, who believe the universe and earth are thousands of years old. There are a few proposals within the old-earth group. Proposal #One is the Gap Theory, which believes the universe was created as recorded [Genesis 1:1](#), then there was a long period (a time gap) of billions of years. Subsequently, in [Genesis 1:2](#), God recreated the billion-year-old earth in six 24-hour periods of time. Proposal #Two is Theistic Evolution, which affirms that the earth is billions of years old but asserts that God used the mechanism Darwin discovered, natural selection, to evolve the flora, fauna, and human beings that are present on the earth. Proposal #Three is The Framework Hypothesis, which seeks to reclassify Genesis as poetic literature rather than historical narrative literature, thus allowing the possibility of billions of years (or whatever the prevailing scientific view of the day) to be inserted into Genesis 1 without doing hermeneutical harm. Proposal #4 is Progressive Day-Age Creationism, which believes the earth is billions of years old & that each creation day represents many millions of years of time, but God didn't use the Darwinian process to evolve the flora, fauna, and human beings. The effect of proposal #Four, Progressive Day-Age Creationism (PDAC), chiefly reinforced by Hugh Ross, is prominent within the evangelical community.

For example, Douglas Groothuis, professor of philosophy at Denver Seminary, references Ross' book *Creation and Time* in his footnotes before opining "there is overwhelming evidence the universe is 13–15 billion years old and that the earth is ancient as well" (2011, 274). Norman Geisler, who taught at Dallas Theological Seminary, Trinity Evangelical Divinity School, and founded Southern Evangelical Seminary and Veritas Evangelical Seminary is quite open to Progressive Day-Age Creationism. He writes, "Not only is it possible there are time gaps in Genesis One, but there is also evidence that the 'days' of Genesis are not 6 successive 24-hour days" (Geisler 2014). Immediately after writing his theological assertions, he refers his readers to *Creation and Time* by Ross. Geisler adds, "It seems plausible the universe is billions of years old . . . there is no demonstrated conflict between Genesis 1–2 and scientific fact . . . a literal interpretation of Genesis is consistent with a universe that is billions of years old" (Geisler 2003, 650). Wayne Grudem, who taught at Trinity Evangelical Seminary, and is currently teaching at Phoenix Seminary and the author of *Systematic Theology*, has affirmed that Progressive Day-Age Creationism is valid "option for Christians who believe the Bible today" (Grudem 2000, 297–300).<sup>1</sup> J. P. Moreland from Biola University, who is open to the possibility of Progressive Day-Age Creationism, but not committed,<sup>2</sup> remarks "My own views about the creation-evolution controversy are divided between old and young earth creationism. While I lean heavily toward old earth views, I do not see the issue as cut-and-dried" (Moreland and Reynolds 1999, 142). Add that when Ross published *Creation & Time*, his book received the endorsements from Walter Kaiser of Gordon-Conwell Seminary, Earl Radmacher of Western Seminary, Stan Oakes & Ted Martin from Campus Crusade, and Jim Berney with Intervarsity. Buttressed PDAC is prominent within the evangelical community is that none of the larger denominational seminaries, such as, the Southern Baptist, Methodist, and Reformed, or the non-denominational seminaries, such as Dallas Theological, Denver, or Trinity Evangelical, affirm a young-earth position, which is an indication that old-earth theology is permitted.<sup>3</sup>

Thus, given the influence of old-earth views in general & the PDAC in particular within the evangelical community, the purpose of this paper is to (1) analyze Proposal #4, PDAC, and (2) the implications that the PDAC view may impart to Christians seeking to understand the early chapters of Genesis.<sup>4</sup> In addition to analyzing PDAC, the young-earth view of Genesis—the Six Day Creation Theory (SDC)—will be presented to allow the reader to contrast or compare each view. This will be accomplished by (1) describing the central tenets of each view, (2) describing a critical analysis of each view, and (3) summarizing the theological & practical implications for each view. What this paper will not address in great detail is the Gap Theory, Theistic Evolution, Framework Hypothesis, and the genealogical debate of Genesis 5 and 11.

The goal after reading this article will be the reader will be able to compare and contrast PDAC and SDC view, recognize hermeneutical dangers the PDAC view presents when interpreting the Bible and properly crown the Bible to a magisterial role & science to a ministerial role when interpreting the creation account.

## Central Tenets of the Progressive Day-Age Creationism

The most vocal proponent of PDAC is Hugh Ross and those connected with the ministry Reasons To Believe (RTB).<sup>5</sup> Ross earned his Doctor of Philosophy in Astronomy from the University of Toronto and founded RTB in 1986.<sup>6</sup> He has written dozens of books and articles on this topic and most recently, in 2017, was one of four contributors to the book *Four Views on Creation, Evolution, and Intelligent Design*. He has made many appearances on media outlets & written numerous news articles. He best represents PDAC, which affirms that “evidence of a cosmic beginning in the finite past—only 13.8 billion years ago” agrees with Genesis 1 (Ross 2014, 15). This means the days of creation in Genesis 1 must be long definite periods of time (Ross 1994, 36).

### PDAC: Two Sources of Revelation

The foundational premise of PDAC is its view of two sources of revelation. Ross affirms PDAC is biblically justified by two inerrant sources. Those two sources are nature and the Bible.

Some readers might fear<sup>7</sup> that I am implying that God’s revelation through nature is somehow on an equal footing with His revelation through the words of the Bible. Let me simply state that truth, by definition, is information that is free from contradiction and error. Just as it is absurd to speak of some entity as more perfect than another, so also one revelation of God’s truth cannot be held as inferior or superior to another. (Ross 1994, 57)

Ross likens nature as the sixty-seventh book of the Bible (1994, 56). He appeals to [Psalms 19:1-4](#) which states

The heavens are telling of the glory of God; And their expanse is declaring the work of His hands. Day to day pours forth speech, And night to night reveals knowledge. There is no speech, nor are there words; Their voice is not heard. Their line has gone out thru all the earth, And their utterances to end of the world. In them He has placed a tent for the sun.

He adds that [Job 12:7](#) declares that air, birds, and fish teach about God's creation, & [Psalm 85:11](#) affirms that truth springs from creation. Ross adds "that in addition to the words of the Bible being 'God-breathed'" as stated in [2 Timothy 3:16](#) that "so also are the words of God spoken through work of his hands. In other words, the Bible teaches a dual, reliably consistent revelation" (1994, pg. 56). This would seem to mean that nature can accurately communicate the mind of God from the past, present & future scientific observations. Rana and Ross add that even though creation is a transcendent miracle (God acting outside of matter, energy, space & time), "the creation event is a testable idea that can fall within the science domain" (Rana and Ross 2004, 36 and 208). Thus, PDACs can know what God intended to communicate during creation event by reading the Bible and by "reading" nature. PDACs "anticipate God's 'two books' will prove consistent internally, externally & mutually. One provides detail on the redemptive story, the other more detail on the creation story, but they speak in perfect harmony. Neither negates or undermines the other" (Ross 2017, 71).

## PDAC: Definition of *Yôm* (Day)

Ross believes that *yôm* (the Hebrew word for *day*) does not mean a 24-hour day in Genesis 1. He writes that *yôm* has a range of meanings. One, the period of light as contrasted with the period of darkness. Two, a general non-descriptive time. Third, a point in time. Four, a year in the plural. Five, a 24-hour period of time, which he believes is not found in Genesis 1 (Ross 2006, 25). He cites from William Wilson in his book *Old Testament Word Studies*, who argues *yôm* is frequently interpreted as a long period of time (Ross 1994, 46; 2006, 25). Ross adds that even when cardinal (one, two, three) or ordinal (first, second, three) numbers are attached to *yôm* such as in [Genesis 1:3](#) (first day), 1:8 (second day), 1:13 (third day), etc. that there is "no grammatical rule [that] requires a numbered *yôm*, especially in reference to divine activity, be a twenty-four-hour period of time" (2017, 81). He provides the example of [Hosea 6:2](#) which states "He will revive us after two days; He will raise us up on the 3<sup>rd</sup> day, That we may live before Him" where Bible commentators "have noted the 'days' in this passage (where the ordinal is used) refer to year, years, thousands of years, or maybe more" (1994, 47). Ross adds "If Moses wanted to communicate a creation story consisting of six eons, he would have no other option but to use the word *yôm* to describe those eras" (Ross 2014, page 35). Ross also rejects the idea that the Hebrew words *ereb* translated *evening* and *boqer* translated *morning* when added to *yôm* must be interpreted as an indication that a 24-hour cycle had elapsed.

*Ereb* can mean “sunset” and “end of the day” and *boqer* can mean “sunrise” and “beginning of the day”, thus “Genesis 1 may well refer to the ending of one time period & the beginning of another, regardless of the length of that period” (Ross 2017, 82). For example, Ross opines that the phrase “‘in my grandfather’s day’ refers to my grandfather’s lifetime, thus the morning & evening of his day would be his youth and old age” (Ross 1994, 46). For Ross, the addition of cardinal and ordinal adjectives & nouns *ereb* & *boqer* have limited bearing on understanding the definition of *yôm*. Thus, Ross’ position can be summarized as, when *yôm* is connected to *ereb* & *boqer* and a cardinal or ordinal adjective that *yôm* does not need to be understood as a 24-hour period of time, particularly in Genesis 1.

## PDAC: Understanding of the Seventh Day

Another argument that Ross makes to defend billions of years in Genesis 1 & 2 is the belief that the seventh day of the creation event has not ended. He argues that for Days 1 through 6 the verses end with the phrase “there was evening & morning”, while for Day 7 the verse ends by stating that God “rested on the seventh day from all His work which He had done.” According to Ross, the seventh day has not ended. And Ross adds that Psalm 95 and Hebrews 4 affirm that God’s seventh day of rest is ongoing which should bring clarity that the seventh day hasn’t ended. “The seventh day of the creation week carries on through centuries, from Adam and Eve, through Israel’s national development, through the time of Christ’s earthly ministry, through the early days of the church & on into future years” (Ross 1994, 49). He concludes from these passages a minimum of several thousands of years have passed, most likely billions of years have elapsed. “Given strong parallel structure of the passage, if the seventh day represents a lengthy time period, it seems reasonable that the other days could be lengthy periods as well” (Ross 1994, 49; 2006, 27; 2017, 80). Ross eliminates any ambivalence by declaring “an integrative analysis of all these passages leads to the conclusion that *yôm* refers to a long, but finite, time period. This understanding of ‘day’ yields a consistent reading of all the Bible’s creation texts” (Ross 2014, 89).

## PDAC: Creation Death Before Adam’s Sin

Ross believes that death and decay have always been part of God’s creation. He rejects the interpretation that [Romans 5:12](#) affirms that death entered the world because of Adam’s disobedience. Ross replies, “Paul [[Romans 5:12](#)] clarifies that Adam’s sin inaugurated death among humans. Neither here nor anywhere else in Holy Scripture does God’s word say that Adam’s offense brought death to all *life* (emphasis Ross)” (2017, 86). Furthermore, death has been from the beginning of

time. Plants died when the first animals ingested them, and animals also have experienced death for millions of years. "[Romans 5:12](#) addresses neither this physical death or soulish death. It addresses spiritual death. [The man Adam] died spiritually [when] he broke harmonious fellowship with God & introduced the inclination to place one's own way above God's" (Ross 1994, 61). Death has always existed since God created the heavens and the earth since "he nurtured seeds of Earth's first life, perhaps re-creating these seeds each time they were destroyed" (Rana & Ross 2004, 43). During early events of the earth, although hostile, God ensured life would persist, albeit at times by divine intervention (a miracle). Ross bases this belief upon the second law of thermodynamics which states that heat will flow from hot bodies to cold bodies.

A consequence of this direction of heat flow is that, as time proceeds, the universe becomes progressively more mixed or disordered. This increasing disorder, with time, is the principle of decay, also termed 'entropy'. (Ross 1994, 66)

The law of decay makes possible photosynthesis and all the food photosynthesis provides. It allows us to digest our food. It allowed Adam and Eve, before and after the fall, to perform work. The law of decay brings many more good things, but it also produces inevitable pain, suffering, and death. (Ross 2014, 92)

The bondage that creation has endured that the Apostle Paul addresses in [Romans 8:20-22](#) is not the result of Adam's sin. This is the natural order that God created, for "without decay, work (at least the universe God designed) would be impossible. Without work, physical life would be impossible, for work is essential to breathing, circulating blood, contracting muscles, digesting food—virtually all life-sustaining processes" (Ross 1994, 65-66). The death that Paul speaks of is the spiritual and physical death that humans experience because of Adam's sin: "Paul clarifies that Adam's sin inaugurated death among humans" (Ross 2017, 86). Since life began, at least, on the third day of creation & Adam was working on the sixth day, therefore, Adam's sin could not have inaugurated decay of, at least, plants, which is a form of death. Hence, the "process of [death] has been in effect since the universe was created" (Ross 1994, 67).

## Summary of the PDAC View

The PDAC view insists that there are sound reasons and reliable evidence that the universe is billions of years old. First, there are two inerrant sources of revelation—the Bible and nature. Both are reliable and will not contradict each other. Second, the Hebrew word *yôm* (translated as *day*) can mean a definite, long period of time and the nouns *ereb* (translated as *sunset*) and *boqer* (translated as *sunrise*) have a limited bearing upon understanding the definition of *yôm*. *Day* in Genesis 1 doesn't

mean a 24-hour period of time. Third, the seventh day in Genesis does not end with the same “evening and morning phrase” as Day 1 through Day 6 do, thus there is the possibility the unending aspect of Day 7 could apply to Days 1 through 6. Fourth, the second law of thermodynamics requires the decay & death of plants (Adam and Eve ate plant-based food), which would mean [Romans 5:12](#) only addresses the spiritual death of humans. These reasons (and more) lead Hugh Ross to conclude that he is warranted to claim the universe is certainly not thousands of years old, but billions of years old.

## Central Tenants of the Six-Day Creation Theory

Young-earth creationists reject the conclusions of any old-earth theory that seeks to set the upper limits of the age of the universe & earth much beyond 10,000 years old.<sup>9</sup> They would also reject any interpretation of Genesis that would allow for a Darwinian-type evolutionary model that allows for billions of years of a decay and death cycle prior to Genesis Chapter One. Young-earth creationists embrace Six-Day Creation Theory as the only view which can accurately describe the Genesis creation account. The theory asserts that God created the universe and the earth throughout the duration of six 24-hour periods of time. And based upon other textual markers in Genesis, the universe is thousands of years old. Six-Day SDC has been influenced by numerous individuals, most recently by Ken Ham, founder of Answers in Genesis; Henry Morris from the Institute for Creation Research & Carl Wieland from Creation Ministries International. All three ministries were influenced by John Whitcomb and Morris, who are considered fathers of the modern creation movement (Mortenson and Ury 2008, 8). The SDC affirms that the traditional understanding of the Genesis creation account is “the Bible is very clear the days of the creation week in [Genesis 1:1–2:3](#) are literal, twenty-four-hour days, just like our days today” (Catchpoole and Harwood 2014, 235–260; Ham 2017, 20; Jordan 1999, 22; McGee 2012, 1; Morris 1976, 54; Whitcomb and Morris 1961, iv).

## SDC: One Primary Source of Revelation

The SDC affirms that there are two sources of revelation — nature and the Bible — but the Bible is the primary source of God’s revelation and should be deferred to principally. Nature is a secondary source, because raw nature is not composed of propositional statements that can be evaluated as either true or false. Unlike Ross, they would argue that it is simply inaccurate to classify nature as the sixty-seventh book of the Bible. “God’s creation speaks to us nonverbally” while “Scripture speaks to us verbally & truthfully about so much more creation is cursed, whereas Scripture (the written Word) is not” (Ham 2017, 19). Of the two sources, only the Bible can



reveal propositional revelation, while raw nature “must be formulated from the observations by *interpreting* them in a framework or *paradigm* (emphasis in original)” (Sarfati 2004, 41). Nature does not blurt out “this is what I am saying, or this is what I mean.” Rather, scientists bring their presuppositions with them that often influence their interpretations. Thus, an old-earth and a young-earth scientist will often interpret the scientific discoveries of nature differently, based upon their assumptions. Thus, there must be arbitrator who can determine which view point is correct. Only the Bible as a revelation from God can fulfill that role.

These presuppositions, likewise, can influence the interpretations of the Bible (or any text). The difference is that the Bible (or any text) can be interpreted correctly based upon the laws of logic (which originate from God). For example, the law of noncontradiction which affirms that A cannot be A & non-A at the same time and in the same relationship. That is, people assume that communication is occurring through writing, if what the author is expressing is not the opposite of what he intended to communicate. Authors of the Bible (divine and human) crafted their thoughts through the means of writing, in such a way they could be understood.

Nature, on the other hand, is not expressing itself through writing, the observer of nature must interpret through his presuppositions. This means nature is mediated through the observer’s interpretative grid, while Scripture is mediated through the written language, which claims to be without error (in the original writings) rather than the observer’s interpretative grid. There are more steps to interpret nature than there are steps to interpret Scripture, thus a greater likelihood of an incorrect interpretation. Added to this debate is that the Bible is not corrupted (and the same applies to the ancient copies to the degree that they align with the original), while nature is corrupted by the effects of the curse described Genesis 3. SDCs start with the supremacy of the revelation of the Bible, while PDACs start with the supremacy of the revelation of the Bible & nature. The SDC starts with an inerrant source, the Scriptures, while the PDAC starts with nature, which has been corrupted, and the Scriptures, which they interpret upon their observations of corrupted nature.

Moreover, for SDCs, built into this framework of the supremacy of the Bible is the recognition that humanity cannot know everything, particularly the origins of the universe. Hence “if we start with the someone who knows everything, who does not lie, and who has revealed to us what we need to know” (Ham 2013, 50) then we have the ability to know what happened at the beginning time when humanity wasn’t present. The SDC view places high confidence upon accurately interpreting the meaning of the Bible than accurately interpreting the meaning of the scientific discoveries of nature. Given the human mind is corrupted & in need of divine help, the SDC view does not view nature as the sixty-seventh book of the Bible.

## SDC: Definition of *Yôm*

According to SDCs *yôm* can have 5 meanings: (1) the period of light (as contrasted with the period of darkness); (2) the period of twenty-four hours; (3) a general vague “time;” (4) a point of time & (5) a year (Chaffey & Lisle 2008, 25; Coppes 1999, 370; Koehler 1994–2000, 399). To accurately discern the correct meaning of *yôm* requires an understanding of context. In this case, the context is Genesis 1.

SDCs assert: (1) *yôm* always refers to a normal literal day when used as a singular noun; (2) in [Genesis 1:1–2:3](#) *yôm* is used 13 times in the singular and once in the plural;<sup>10</sup> (3) when *yôm* is used with *ereb* “evening or sunset” and *boqer* “morning or sunrise” it means a literal day; (4) *ereb* and *boqer* are used together with *yôm* six times within [Genesis 1:1–2:3](#) & 19 times outside of [Genesis 1:1–2:3](#); (5) when *ereb* & *boqer* are used without *yôm* (38 times), the meaning of *yôm* is still a literal day; and (6) when *yôm* is qualified with a cardinal & ordinal number, the meaning is a literal day (McCabe 2008, 225–228). All these points are designed to state that the author of Genesis intended to communicate in clear terms each day of [Genesis 1:1–2:3](#) was a literal day.<sup>11</sup>

SDCs emphasize that Moses, the presumed author-complier of the first book of the Bible, was trying to communicate a particular understanding of *yôm* in [Genesis 1:1–2:3](#). He used temporal markers such as “first,” “second,” etc., with *yôm* and bounded contextually *yôm* to the words “evening” and “morning.” Moses used those words to communicate that each creation day was literal day. SDCs conclude that assigning a meaning to *yôm* other than a literal twenty-four-hour period of time is impossible contextually. Had Moses intended to communicate that God created the earth in six 24-hour periods of time, what words and/or phrases would he choose to use? SDCs unabashedly answer that the exact choice of words are located in [Genesis 1:1–2:4](#).

## SDC: Understanding of the Seventh Day

According to SDCs, the seventh day of creation has ended, thus it has not continued for the last 6,000+ years as PDACs proposit (Geisler 2003, 643). SDCs provide four arguments for their defense. One, “the text [of [Hebrews 4:3–5](#)] does not say that the seventh day of the creation week is continuing to the present day. It merely reveals that God entered His rest on the seventh day” (Chaffey & Lisle 2008, 51). The author of Hebrews is not stating in this section somehow God’s sabbath rest has continued until the present, rather he links “God’s Sabbath-rest at the time of Creation with the rest that the Israelites missed in the desert” (Hodges 1985, 788).

There is a future rest that the original audience could miss, but that rest is not a continuation of the seventh day rest. Two, they affirmed that the seventh day must be a literal day “because Adam and Eve lived through it before God drove them out of the Garden. Surely, he would not have cursed the earth during the seventh day which he blessed and sanctified” (Whitcomb 1973, 68). Three, the rest in Hebrews Four is a literal rest in the literal kingdom of Jesus’ reign on earth for the millennial period in the land of Canaan. Griffith argues that since Joshua was able to offer that same rest, but it was not realized due to Israel’s rebellion, then the rest that awaits the Hebrew readers must be similar. “Certainly [Joshua] couldn’t have offered them [Israelites] salvation (spiritual peace) or eternal life (heaven) . . . what he did offer was access to the land [Canaan]” (Griffith 1990, 298). The key point from this view is that a literal interpretation is the best option to understand the word “rest,” not a spiritual, indefinite understanding. Four, if [Hebrews 4:3–5](#) is affirming as PDACs state the seventh day must be a long period of time because the phrase “evening & morning” are not included, then if the exclusion of the phrase “allows the seventh day to be longer then this is really an unintentional admission that the first six days were literal twenty-four-hour days” (Chaffey and Lisle 2008, 52). In other words, by the interpretative method of PDAC, if the omission of the phrase “evening and morning” for the seventh day of the Creation Week is evidence to suggest that the seventh day can be indefinite, then inclusion of that phrase “evening and morning,” which is bounded to the Days 1–6 of the Creation Week should also be evidence to suggest that those days are definite. Davidson (2015, 78) remarks “the references to ‘evening’ & ‘morning’ together, outside Genesis 1, invariably, without exception in the Old Testament (fifty-seven times total—nineteen times with *yôm*, or ‘day’, and thirty-eight without *yôm*) indicate a literal solar day.” So, at best, according to the PDACs, if their interpretation is correct (and contextually this view cannot be correct), Day 7 could be indefinite, while Days 1–6 are literal 24-hour days. This would undermine their purpose of transferring the “indefiniteness” of Day Seven to Days 1–6.

## SDC: Death after Adam’s Sin

Prior to the end of the sixth day of creation God had declared multiple times what He had created was good, but at the end of the sixth day of creation God declared that all that he had created was *very* good. The Hebrew word רָאָה translated *very* carries with it the idea of “greatly, utterly, i.e., pertaining to a high point on a scale of extent” (Swanson 1997). God’s creation pinnacle was the end of the sixth day. Those who espouse SDC theory believe Scriptures clearly communicate that prior to the sin of Adam and Eve, there was no death or disease. It would seem odd for God to declare His creation on Days 1–5 good and then to highlight Day 6 as very good while death, bloodshed, and disease had been occurring for millions of years.

Genesis 3 asserts that the ground was not cursed until Adam & Eve sinned. Verses 17 & 18 affirm creation was not subject to death, bloodshed, or disease: “Cursed is the ground because of you; in toil you will eat of it all of your life. Both thorns and thistles it shall grow for you.” Paul’s commentary in Romans (8:20) about the Fall supports the teaching that the curse came after sin and the only place in Scripture that designates what could be described as historical global-scale curse is Genesis 3.<sup>12</sup> Death, bloodshed, and disease were not part of the original creation event.

## Critical Analysis of the PDAC Theory

Each theory has arrived at a divergent view as to age of the universe, interpreting the Bible, and interpreting historical science.<sup>13</sup> The two theories of the origin of the universe are not compatible. Either the PDAC theory is correct and the universe is billions<sup>14</sup> of years old or the SDC theory is correct and the universe is thousands of years old. To state another way, either the PDAC theory is wrong or the SDC theory is wrong. There is no way to combine both views to create a third view. To assert the universe is thousands of years old or to assert the universe is billions of years old are two disparate views.

Yet some readers may challenge the two options I presented as a false dichotomy by insisting that there are other options that could explain the how to combine the origin of the universe with the Genesis account. However, the other options, at the core, share a similar conclusion. Proposal #1 is the Gap Theory, which believes the universe and earth were created as recorded in [Genesis 1:1](#), then there was a long period of time (a gap) of billions of years & then in [Genesis 1:2](#) God recreated the billion-year-old earth in six 24-hour period days. Proposal #2 is Theistic Evolution which assumes the earth is billions of years old, but that God used the mechanism that Darwin discovered, natural selection, to evolve the flora, fauna, and human beings that are present on the earth.

Proposal #3 is The Framework Hypothesis, which seeks to reclassify Genesis One as poetic literature rather than historical narrative literature, thus allowing for the possibility of billions of years (or whatever the prevailing scientific view of the day) to be inserted into Genesis 1 without doing hermeneutical harm.

Each one of these proposals has something in common — they seek to reconcile what they already believe to be settled—that the universe is billions of years old. My point was not to suggest that there are the only two options to reconcile the age of the universe with scientific discoveries of nature and the creation account in Genesis, but to demonstrate that Proposals #1, #2 & #3 all end with the same time frame—a universe that is billions of years old.

To reject PDAC or any one of the old-earth proposals shifts the options to SDC, the view that the universe is thousands of years old. Hence, I would suggest that the PDAC view, though not identical to proposals #1, #2 & #3, is a similar enough variation of the core view shared by all that the universe is billions of years old. SDC view is in stark contrast to PDAC view & the other proposals. It maintains the universe is thousands of years old. To put it bluntly, there are only 2 main views: The view the universe is billions of years old or the universe is thousands of years old. These are not compatible views.

The PDAC and SDC views, at their core, have different philosophical assumptions that affect their interpretation of the observations of nature and of the Bible. The PDAC theory emphasizes that knowledge primarily proceeds from observations of natural revelation via scientific discoveries, which will enlighten the interpretation of the Scriptures. Scripture is subject to collective human observations of science for its interpretation, unless what occurs is a miracle (which applies to the virgin birth, resurrection of Jesus, but not the creation account), then Scripture speaks accurately, and the reader can interpret the text properly. On the other side, the SDC theory believes before observing natural revelation via scientific discoveries, that the Bible is accurate in what it says & thus enlightens scientific interpretation of the observations. They presuppose that the Bible is final authority, unlike the PDAC view that espouses the equality of the Scriptures & human observations of nature. For the SDC view, when scientific observations contradict plain meaning of the Bible (the creation account, virgin birth, or resurrection of Jesus), then they will side with the Bible. This does not mean that SDCs ignore the observations of nature; on the contrary, the scientific discoveries of nature complement the Bible interpretations, especially when the Bible does not explicitly speak on an issue (i.e., what happened to the dinosaurs after Noah's Flood?)

## **PDAC: Distant Star Light and the Age of the Universe**

Ross' philosophical assumption that dictates how he interprets Genesis 1–11, specifically, and any passage in the Bible he deems is related to Genesis 1–11, generally, is that natural revelation supersedes special revelation because the creation event is testable. (Rana and Ross 2004, 36). He contends that there is “evidence of a cosmic beginning in the finite past—only 13.8 billion years ago” (Ross 2014, 15). One primary reason Ross believes the age of the universe is ~ 13.8 billion years old is because of the distant starlight problem<sup>15</sup> (Ross 1994, 92–95; 2014, 161–164). The distant starlight problem is one of the most difficult rebuttals for the SDCs to answer & one that seems to give the strongest evidence the universe billions of years old. This would seem to subsequently indicate that PDAC is the more accurate view.

Distant starlight, as a concept, seems to negate the SDC view. The stars are far away, and their light is too far away to reach earth in 6,000 to 10,000 years as a SDC view claims. Therefore, the universe must be older than thousands of years, and the SDC view cannot be correct. Described in more detail, the distance from the farthest of observed stars to earth is billions of light years. A light year is not a unit of time, but the distance light can travel in one year, which is 5.88 trillion miles (Faulkner 2013, 279). The distance from the farthest stars is calculable, and the rate of the speed of light is constant at approximately 186,000 miles per second. And to determine how long it would take, in years, for light to travel from the farthest stars is to take the distance from those stars to earth and to divide the distance by one light year. For example, Alpha Centauri, the next nearest star system to our Solar System, is ~4.3 light years away from earth (25 trillion miles/5.88 trillion miles) (Vardiman and Humphreys 2011b). According to PDACs, light from the most distant stars (galaxy MACSO647-JD) requires 13.3 billion light-years to reach earth. If the PDAC view is correct, the most distant observed stars are billions of years old, because it took light that long to travel, hence the universe is billions of years old. To state another way, SDCs place an upper limit of the age of the universe at approximately 10,000 years, but if that is correct, then how can we see the light from these stars that are billions of light years away? This creates a problem for SDCs. How can light arrive to planet earth in such a short time?

## **SDC: Distant Starlight and the Age of the Universe**

First, SDCs do affirm the distance from the farthest galaxies is accurate (Lisle 2012, 30). Second, they've proposed several views that can answer the distant star light problem.<sup>16</sup> Third, the SDC view has continued to critique itself by explaining the advantages and disadvantages of each solution. Of the various solutions proposed by SDC, two of the popular views espoused are Humphreys' White Hole Cosmology view and Lisle's Anisotropic Synchrony Convention view.

In 1994, Humphreys proposed a view that during the Creation Week, the earth was inside a large gravity well called a white hole. A term more familiar to the public is a black hole. A black hole is region in space that has a gravitational force that is "so strong that light rays can't escape" instead the light rays "bend back on themselves" (Humphreys 1994, 23). A black hole is a place where "time is massively distorted" (1994, 23). Humphreys suggests at the creation event earth was in a white hole — "a black hole running in reverse"—where "matter & light rays would have to move out of the white hole, but couldn't go back in" (1994, 24). The analogy Humphreys uses is that a black hole is like a fat man gorging himself, always increasing in size,

while a white hole is like a fat man on a strict diet with no input, only output. A black hole at the creation event would never allow light to leave & eventually the universe would collapse, but there is evidence that the universe is expanding (1994, 23–24). Thus, Humphreys hypothesizes at the creation event an effect of general relativity that in a white hole both mass & light stream outward which provides explanation for the expanse of the universe (1994, 26). Faulkner summarizes the proposal of Humphreys by declaring

relativistic time dilation near the event horizon of the white hole [would allow] for great periods of time to pass elsewhere in much of the universe while only days elapsed on and near the earth. The much greater time elsewhere would allow light from the most distance portions of the universe to reach the earth in just days. (2013, 279)

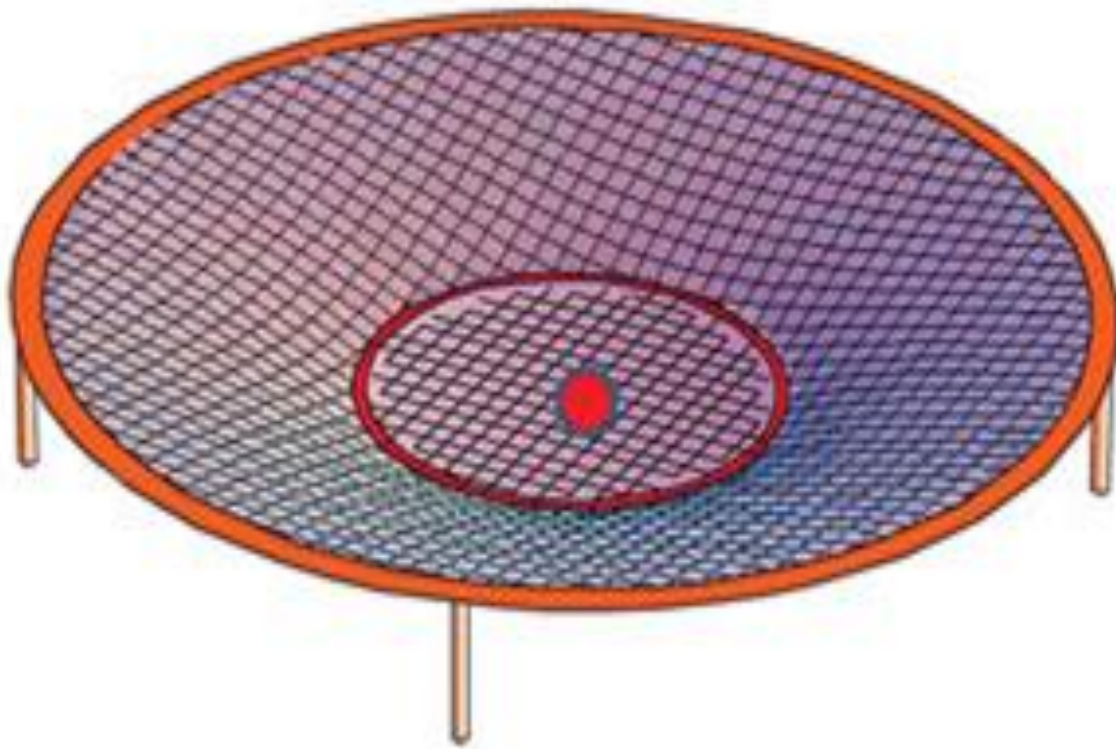
To put it another way, at the creation event, the clocks on the earth were ticking a different rate compared to the clocks of the distance cosmos. This was because earth was near the gravitational well which would have affected the frame of reference of time. If one could have been an outside observer looking at the entire creation event and observed the clocks on earth and the clocks on distance cosmos, then one would have seen the clock's hands on distance cosmos fly like fans, while the clock's hands on planet earth would have been almost imperceptibly slow. Thus,

as the fourth day proceeds on earth, the more distant stars age billions of years, while their light also has the same billions of years to travel to earth. While the light is on its way, space continues to expand, relativistically stretching out the light waves and shifting the wavelengths towards the red side<sup>17</sup> of the spectrum (Humphreys 1994, 37–38).

Ultimately, light reaches earth on Day Four as described by Genesis within a 24-hr period of time, while from the perspective of the distant cosmos, light took billions of years to traverse space to earth. If Humphreys' view is correct, then the distant starlight problem is not a problem. Light can arrive instantaneously on Day Four according to earth's frame of reference for time (a real 24 hours), while light can travel over billions of years from the most distant parts of the universe to earth from their frame of reference.

In 2008, Humphreys modified his white hole cosmology viewpoint with a new time dilation model which he calls achronicity, or "timelessness" (Humphreys 2008, 84). He did this because he did not believe his previous view provided a solution to allow enough time dilation for nearby stars and galaxies and his metric was too complex to analyze fully (Vardiman & Humphreys 2010). The thesis of the modified view is that in the beginning of the creation event "the deep" of [Genesis 1:2](#) would have created a dent in space such that conditions near the dent would have caused time and all physical processes to stop.

Humphreys suggests that “the deep” would have had a mass “in the order of twenty times that of all galaxies within the viewing range of the Hubble space telescope [and] would have been in the shape of a ball a few light years diameter” (2010).



**Fig. 1.** Red ball represents “the deep” and the trampoline represents space at the beginning of Creation.

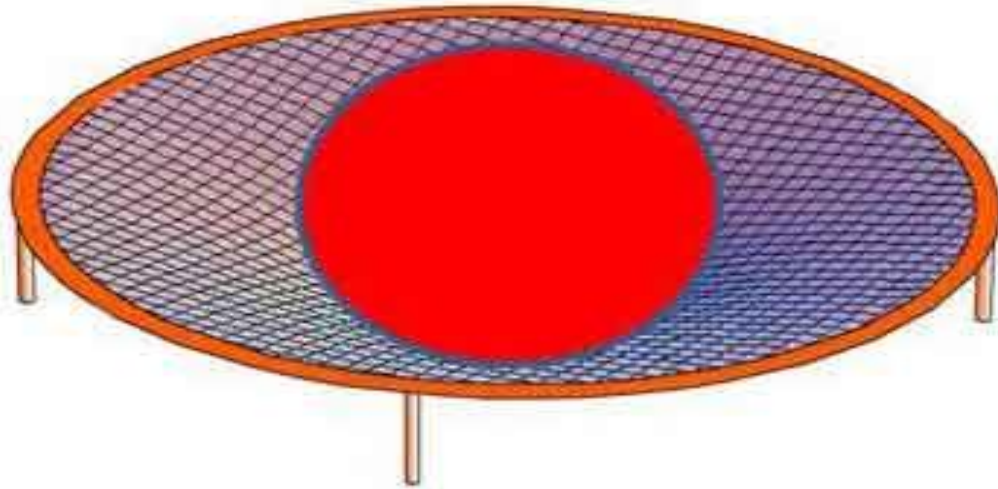
Adapted from Vardiman and Humphreys (2010).

Humphreys opines that during the second day of creation God separates “the deep” with a material in Hebrew called *raqia*. At the center of “the deep” is a marked body of spherical water called earth. The remaining water matters were separated by a substance called *raqia* translated “the firmament” or “the expanse.”

The *raqia* spreads out spherically, thus at the end edge of the universe there are ice particles surrounding the universe. Think of a helium balloon with a marble fixed at the center (or near center). The rubber material and marble represent “the deep” and earth and the helium represents the *raqia*. In other words, during the second day of creation, God created and expanded the universe with the material *raqia* (similar to the material we call space) & places earth (a watery spherical mass at this time) at the center or near center of the universe.



As an illustration, he imagines space representing a trampoline and the universe representing a heavy metal ring (the edge is the ice particles of “the waters above” including the *raqia*) creating a spherical indentation and laying at the center (or near the center) of the metal ring is a pebble representing earth.



**Fig. 2.** The space, universe, *raqia*, and earth illustration. Adapted from Vardiman and Humphreys (2011a).

Humphreys suggests the mass of “the deep,” now spread out with the *raqia* and having an edge (represented by the metal ring) affects time. He declares “the distribution of mass controls the fabric of space, the fabric of space controls the speed of light, and the speed of light controls time. Time is speeded up or slowed down throughout space according to the distribution of mass” (Vardiman and Humphreys 2011a). According to Humphreys, on Day Four, as God was stretching the *raqia*, the gravitational pull was very strong because of the mass of “the deep.” This gravitational pull stopped time, thus while God was creating the stars and galaxies, which were inside the ring, light was arriving instantaneously to earth. Time was standing still. As God stretched the fabric of space, light trajectory was also stretching & this would account for the redshifting of the light waves (2011a). Humphreys also purports a second time dilation event during the Genesis Flood because of which if Noah could have seen the night sky (too many clouds from the monumental flood rains) “he would have seen galaxies grow older by about 500 million years” (Vardiman & Humphreys 2011b). Thus, Humphreys suggests there were two gravitational time dilations that could have occurred—at Creation & at the Flood — that can explain how light traveled from distant stars to earth. This, he believes, can provide a reasonable response to the distant starlight problem that Ross purports is insurmountable.

In 2001, Lisle proposed a view, under a pseudo name Robert Newton, (Newton 2001) that there two conventions of time — observed time and calculated time. Observed time is when we see an event & calculated time “is calculated subtracting the light travel time (distance to the event divided by the speed of light) from the observed time” (2001, 80). He purports that Genesis One describes the creation of the sun, moon, and stars on Day 4 from observed time. Lisle is quick to point out that calculated time would seem to imply that God created the sun, moon & stars billions of years before the light would reach earth on Day Four. This implication would contradict a literal interpretation of Genesis 1. Lisle’s solution is to remind the readers that based upon Einstein’s theory of Special Relativity “the motion of the observer affects the measurement of time” (81). This means at calculated time, light travels at a constant speed of approximately 186,000 miles per second, but at observed time, light travels at various speeds dependent upon the location of the observer. There “does not appear to be any way to empirically test unidirectional speed of light” (85). So, which “time” is correct? Lisle argues that both times are correct.<sup>18</sup> Both are useful conventions of time. An analogy would be the English and metric system of measurement. Both are conventions of measurement and neither can be tested to be “correct” (Lisle 2010, 206).

Lisle adds that the Bible uses observed time because calculated time couldn’t have been known by Moses. Moses did not know the speed of light or the distances of the farthest stars. Thus, when Moses recorded the creation account, he described observed time of the stars. To state another way, if Moses were present on Day 4 he would have seen the stars instantaneously as God created them. Lisle is aware that this view might seem similar to PDAC. He remarks “the only similarity — this idea of ‘billions of years’—merely comes from the way in which we have chosen to define time, and does not reflect duration of any actual process” (Newton 2001, 84).

In 2010, Lisle augmented his view<sup>19</sup> that the creation event can be understood from two time conventions. Convention one is the time from the perspective of Day Four on earth during the creation event and convention two is the time from perspective of distant stars during the creation event (Lisle 2010, 193). Lisle also affirms that the speed of light is constant, based upon a round trip. That is, light is bounced off a mirror and returns to its source location, to measure the constant speed of light (2010, 199). But what is unique to Lisle’s augmented view is the concept that the one-way speed of light is not known. He pronounces, “however, the speed of light in any one direction is not necessarily constant. As counter-intuitive as it may seem, the one-way speed of light is not a constant of nature, but is a matter of convention” (2010, 199). This means, according to Lisle, light could travel on Day Four from the most distant stars and arrive on earth instantaneously, as [Genesis 1:14–15](#) seems to indicate.

Lisle comments “it is well-established that clocks tick slower as they approach the speed of light, and would stop completely if they could attain the speed of light. So, from light’s point of view (imagine that we could travel alongside the light) every trip is instantaneous anyway” (2010, 202). If Lisle’s view is correct, then the distant starlight problem disappears, because light leaves the newly created stars on Day Four at the speed of light and arrives essentially instantaneously to earth on the same day.

In summary, Humphreys’ and Lisle’s views provide a possible solution to combat the distant star light problem that PDACs present. These are not the only solutions, but a sample of more popular science-based views. Not all SDCs believe Humphreys’ or Lisle’s proposals are the best solutions to explain the distant starlight problem, but all SDCs believe that there is a solution to explain the distant starlight problem that, when discovered, will be consistent with the creation account that places an *upper limit of the universe at approximately 10,000 years old*.

## Supremacy of Special Revelation or Natural Revelation

Ross argues that “if all of creation were completed in six twenty-four-hour days, the most sophisticated measuring techniques available, or foreseeably available, would be totally incapable of discerning the sequence of the events. Thus, a major use of the chronology would be thwarted” (Ross 1994, 48). In other words, Ross is arguing the SDC view, if correct, could not be understood by the current (or future) model of scientific observation, therefore, age of the universe would be unknowable, hence the SDC model should be rejected. But this is a false analogy, because the SDC view claims that one can know the approximate age of the universe based the textual clues left within Genesis 1–11.

Ross proclaims the interpretations of nature by scientists have been proven beyond a reasonable doubt to be accurate regarding age of the universe & interpretations of Scripture by theologians must be adjusted. “God’s revelation isn’t limited exclusively to the Bible’s words. The facts of nature may be likened to a sixty-seventh book of the Bible” (Ross 1994, 56). This means nature is an inerrant revelation from God to be relied upon like any book of the Bible. Although I agree with the PDAC view, up to a point, that God teaches us things through nature, I cannot accept the conclusion that nature is equivalent to the sixty-seventh book of the Bible. My primary reason is that nature has been affected by the curse, as described in Genesis Three. Nature, as the Apostle Paul describes in [Romans 8:20–22](#), was subjected by God to a form of emptiness; it was enslaved & laments to be set free. Although this is a literary device of personification, the Apostle Paul points to a real change that has happened to nature after God pronounced judgment upon Adam, Eve, the serpent, and nature.

Thus, if nature has been distorted, at times the observations of nature will be distorted. Secondly, humanity's mind has been affected by the curse as described in Genesis 3. The human mind, as the apostle Paul describes in [Romans 1:18-32](#), suppresses the truth, is foolish, and promotes atheism, thus God gives humanity over to what they desire, which is contrary to Him and will lead to destruction. The result of God giving humanity what they want is that they worship creatures rather than Him, embrace sexual behavior that is contrary to biology, and revel in every form of wicked behavior possible. Consequently, since nature & the human mind have been affected by the Genesis curse, it would seem the combination of a defective nature and defective human mind would produce faulty observations and faulty interpretations. Historically, believers have struggled periodically to interpret Scripture accurately; however, they have had the standard to test their interpretations — the very words of God — Scripture. SDC proponents, recognize that they can error, at times, but they can always return to the Scriptures to test their views. Correct interpretation of the creation account is located in Genesis. The PDAC view has a more difficult task. They will observe nature and interpret with their minds, which both have been affected by the Genesis 3 curse, to draw their conclusions. They purport - in theory - to give supremacy to the Scriptures (the standard), but in practice nature is equal to Scripture and, at times, seems to be superior to Scripture. Nature isn't perfect like Scripture, thus not the standard. This would mean nature is incapable of being the sixty-seventh book of the Bible & instead ministerial to the Bible. Hence, Ross, if he were consistent, would need to submit to Scripture (the 66 books of the Bible) when in conflict with scientists who make interpretations of their nature observations intended as to undermine the Genesis creation account. This does not seem to be the theological method that Ross applies to Genesis 1-11.

To further understand Ross' view of special and general revelation, one needs to understand his view of miracles. According to him, there're two kinds of miracles in the Bible—testable and nontestable (Ross 2014, 15). Testable miracles are the events of Genesis 1-11 while non-testable miracles are examples like the virgin birth, resurrections, and turning water into wine. Ross later describes miracles as transcendent, transformational, and sustaining (Ross 2017, 74). Transcendent miracles are acts of God creating space-time & physical laws, which are primarily described in [Genesis 1:1](#). Transformational miracles are the acts of God working with preexisting materials to fashion life on earth & breathing life into humanity, which are primarily described in [Genesis 1:2-2:3](#). Sustaining miracles are the acts of God to ensure life continues through harsh conditions for millions & billions of years. The difficulty with the last category of miracles, as declared by Ross, is that the Genesis account nowhere indicates harsh conditions. In fact, Genesis describes everything that God completes on each day as the opposite of harsh: it was good. It would seem that Ross has borrowed his creation account from the writings of

Darwin (Darwin 1859, 60) more than from writings of Moses. Based upon these various labels, non-testable and transcendent miracles would seem to be identical classes; testable and transformational miracles are another class, and sustaining miracles would be in a class by itself.<sup>20</sup> Therefore, according to Ross, the miracles in Genesis 1, minus [Genesis 1:1](#), are testable & within bounds of scientific inquiry. This seems problematic because of the doctrine of ex nihilo, which describes God creating from nothing. Ross has concluded, based upon scientific discoveries, with certainty, that the earth is not thousands of years old. Therefore, whatever Genesis 1–11 communicates has been or will be discovered by the scientific method.

Ross has redefined the term *miracle* with all his categories (testable, transcendent, sustainable, etc.) to a definition that is unrecognizable. A consensus understanding of miracle is “an event in which God temporarily makes an exception to the natural order of things, to show that God is acting” (Craig 2008, 253; Purtil 1997, 62–63). Miracles are extraordinary, unlikely, and irregular (Frame 2015, 145–147). Geisler adds

it is not enough to define a miracle as an exception to the general pattern of events. This characteristic merely indicates that the event is a nonnatural one; [and] there are other possibilities within the category of nonnatural or unusual events: anomalies, magic, alien beings, demonic activity & even providential activity. The characteristics of a true miracle are unusualness, immediateness, purposefulness, and moral goodness. (2013, 319)

The understanding of a miracle, which normally implies a supernatural event, thus beginning with power beyond nature, has been modified to not include the Genesis creative account of [Genesis 1:2–Genesis 2:4](#). Ross has taken the pericope of [Genesis 1:2–Genesis 2:4](#), in which God has declared that He has created supernaturally (soil doesn't produce animals & the sea doesn't produce marine animals), and redefined the supernatural creative event to a category that seems to conveniently affirm his position of PDAC. Ross' hermeneutic becomes the literal,<sup>21</sup> historical, grammatical, & canonical *supervised-by-scientific observations* method. The PDAC theory will only produce interpretations from Scripture that affirm that the earth is billions of years old. In the end, Ross becomes final arbitrator of the origin debate. His interpretation of the Bible is supported by theologians<sup>22</sup> who share his similar viewpoint that the universe is billions of years old, and his interpretations of observational science are confirmed with like-minded scientists.

## PDAC: Divergent Hermeneutics

Concluding that Hugh Ross interprets Genesis 1–11 with a different hermeneutic, his interpretations will be vastly different than the hermeneutics of SDC. Ross lists possible literal meanings for the word *yôm* when attached to adjectives *one*, *second*, *third*, etc., and the nouns *evening and morning*, but then finds, what he thinks, is an exception to that literal meaning Hosea. [Hosea 6:2](#) says “He will revive us after two days; He will raise us up on the third day, that we may live before Him.” Dr. Ross comments, “for centuries Bible expositors have noted that ‘days’ referred to in this passage (where cardinal and ordinal numbers are connected with *yôm*) represent years, perhaps as many as a thousand or more” (2017, 81). And at first glance, Ross has made an argument in favor of an interpretation of *yôm* with both a cardinal and ordinal that could be interpreted longer than a 24-hour period of time.

Understanding the context of [Hosea 6:2](#) should demonstrate that Ross has not. Contextually, the book of Hosea focuses upon the coming judgment of the nation of Israel, the northern tribes, by the hands of the Assyrians in 722 BC (Hindson and Yates 2012, 369–370). Israel was guilty of blatant disobedience of Yahweh’s law by worshipping false gods in the form of idols and displaying injustice to the poor. Yahweh commands Hosea, the prophet, to marry a harlot. The harlot will represent unfaithful Israel, while Hosea will represent Yahweh. As unfaithful as Hosea’s harlot wife is to him, so has Israel been unfaithful to Yahweh. Towards the end of [Hosea 4:1–6:3](#), after Hosea charged that Israel was guilty of prostituting themselves with surrounding nations by worshipping their gods instead of Him, Hosea prophesies the nation of Israel would return to Yahweh in repentance. And after repenting, Yahweh would heal them. Within the context of [Hosea 6:2–3](#), Yahweh promises to quickly restore them within two, no more than three days. The literal interpretation of *yôm* with the cardinal and ordinal number does not go unnoticed. Lange remarks, “two and three days are very short periods of time; and the linking of two numbers following the one upon the other, expresses the certainty of what is to take place within the period named” (2008, 61). Wolff affirms, “the ancient song in vv. 1–3 [of Hosea 6] merely voices the expectation that a sickly nation will be put on the road to recovery by Yahweh, and in the shortest possible time. The set length of time, ‘after two days, on the third’” (1974, 118). Chisholm emphasizes the future of this prophecy declaring, “these verses record the words the penitent generation of the future will declare as they seek the LORD” and the “equivalent expressions, after two days and on the third day, refer to a short period of time” (1985, 1393). All three commentaries affirm the expression as a literal time period of 2 or 3 days (very short period of time) not be used as textual evidence the universe is billions of years old.

The text does not allow *yôm* in [Hosea 6:1-3](#) to be interpreted as thousands, millions, or billions of years. “The promise only makes sense when we take the days literally and take the phrases as meaning ‘quickly’” (Ham 2017, 21). Ross is attempting to take the lack of fulfillment of [Hosea 6:1-3](#) (Israel has yet to repent as a nation) and show that the use of *yôm* in this passage with cardinal and ordinal numbers plus the length of time since this passage (approximately 2,700 years & counting) gives him justification to pronounce that all the uses of *yôm* in [Genesis 1:1-2:4](#) could be long periods of time extending into billions of years of time. However, for the sake of the argument, even if Hugh Ross could establish this prophetic passage uses *yôm* in a non-literal sense (i.e. not 24-hours and I do not think there is evidence to suggest that), this passage would not overrule how the term *yôm* is understood in Genesis One or other of historical narrative where *yôm* is used with a number, particularly when that term is also used with the phrase evening and morning. In other words, *yôm* (and any word) is determined by its surrounding context. Thus, *yôm* should be defined by the context of [Hosea 6:1-3](#). And that context seems to define *yôm* as 24-hour days or a short period of time. Applying the very same rules of interpreting Scripture, *yôm* in the creation account is determined by how it is used within the context of [Genesis 1:1-2:4](#).

## SDC: Congruent Hermeneutics

In a previous article, I expressed the following about Six-Day SDC hermeneutics:

Based upon the Chicago Statement on Biblical Inerrancy, SDCs affirm that the Scriptures should be...

interpreted by grammatico-historical exegesis, taking account of its literary forms and devices, and that Scripture is to interpret Scripture. [They] deny the legitimacy of any treatment of the text or quest for [original] sources that leads to relativizing, dehistoricizing, or discounting its teaching, or rejecting its claims to authorship. (Sproul 1996, 52)

The Bible is understood based upon grammar, word order, historical context as defined by the literary context, canonical theology, and the author’s intended meaning. E. D. Hirsch Jr. has influenced evangelical hermeneutics in the area of textual meaning and states that meaning “is represented by a text; it is what the author meant by use of a particular sign sequence; it’s what the signs represent” (Hirsch 1967). Arp conveys that authorial intent is understood “by studying the text in which he (author) expressed that meaning” (2000, 36). So, what exactly is meaning? Meaning is that which has “relation to other words and to other sentences which form its context” (Osborne 1991, 76).

Meaning is not found exclusively in the word, for the word carries with it a range of meaning that has been assigned based upon the cultural and literary context. Meaning is found in the text of the passage (Arp 2000, 40) as it is placed there by the author.

Within the Bible, there are two authors—human and divine—and SDCs affirm the duality of both. The meaning is discovered by understanding the author's words in the context of the entire Bible. The affirmation of divine authorship precludes the possibility that the co-human author did not communicate the intended meaning that God desired. God, who worked through his human agent and communicated his intended meaning without violating the will of the human author, ensured that his meaning could be understood. The author of Genesis (assumed to be Moses) meant to communicate a precise meaning with his choice of words (Archer 2007) This meaning cannot be found outside of the original author, but rather discovered through his intended meaning based upon the meaning assigned to the words in a selective context. Stallard & Johnson suggest that this approach is analogous to the method that Ezra used when he read the writings of Moses. Israel heard the law of God based upon the plain or normal sense of the word & came to understanding of that meaning (Johnson 1990, 9; Stallard 2000, 15).

SDC advocates that to interpret the Book of Genesis with their hermeneutic of literal-plain-historical-grammatical-canonical will account for the various types of literature found in the Bible & uses appropriate principles for each respective genre. They agree with Ross the primary witnesses from God are His creation & and His word.<sup>23</sup> Where they disagree with Ross is the ranking of each witness.

Men must convert [tangible physical] evidence into words for it to be accessible and coherent, and then added to the body of knowledge. But the latter [His word] is already in words, positioned to test the conclusions men draw from the physical evidence. The witnesses are innately unequal in value: the Bible trumps science, not the other way around, as is customarily thought. (Boyd 2008, 173)

SDC is affirming the magisterial role of the Holy Scriptures accompanied by the ministerial role of scientific observation (nature), not the co-regent view that PDAC purports of Scripture and nature on equal footing.

SDC also views Genesis as a book of beginnings. Within the book is the account of the beginning of the world, mankind, origin of sin, first death, genealogies from Adam to the sons of Jacob & the establishment of the nation of Israel. The various texts were not haphazardly thrown together; the author had a clear idea of how the various written texts should fit together (Sailhamer 2009). The Genesis author mainly composed this book in the genre of narrative (Ross 1997, 57). There are certainly other genres, such as genealogy (Genesis 4 and 5), poetry ([Genesis 2:23](#)), and commentary ([Genesis 2:24](#)), but the main portion of Genesis is narrative.



Boyd focused upon [Genesis 1:1-2:4](#) for the very purpose of ascertaining if the passage is narrative literature or poetic and he concluded it was (is) narrative literature & not poetic for three reasons. One, “it’s statistically indefensible to argue this text is poetry” (2008, 176). Two, he lists ten proofs demonstrating that the authors of biblical narratives considered their narratives to be real events (176–184). Three, the words were written for 15th century BC hearers, therefore, the words would have meant what “the original readers would have thought them to mean” (185) & what “Israelite[s] would have understood them to mean in any other narrative, with the referents and events corresponding to the words” (2008, 191). Jud Davis adds (2012, 67), “top Hebrew scholars all agree that the writer of Genesis intended the word [yôm] to mean 24 hours.” He also quotes James Barr from Oxford.

So far as I know, there is no professor of Hebrew or Old Testament at any world-class university who does not believe that the writer(s) of [Gen. 1-11](#) intended to convey to their readers the ideas that (a) [the] creation [event] took place in a series of six days which were the same as the days of 24 hours we now experience. (Davis, 2012, 68)

Davidson (2015, 74) augments that the literary genre of Genesis 1–11 “points to the literal & historical nature of the creation account” and asserts that the creation account is not parable genre or vision genre. Bediako (2011) adds that [Genesis 1:1-2:4](#) exhibits text-linguistic characteristics such as the following: one, verb forms unique to narrative literature; two, a lack of future orientation in the text, which is a marker of narrative literature; and three, *wayqtl* verbal forms that are typical of narrative literature, but not of poetic literature. To summarize, there are good reasons to conclude the creation event is not poetic literature. On the contrary, it is historical narrative literature and it should be interpreted according to the plain meaning of the text.

Evidence of historical narrative literature continues in Genesis. As prior stated, Genesis One narrates the creation events. In addition, Genesis 2–3 narrates the beginnings of Adam, Eve & their descendants. Genesis 6–9 narrates the account of Noah and the global Flood. Genesis 11–25 narrates the life of Abraham; and Genesis 26–50 narrates the lives of Isaac, Jacob, and his 12 sons. Within those sections is the overarching theme of [Genesis 3:15](#) — the seed of the woman. Who will be the obedient one promised in [Genesis 3:15](#) that will one day crush the head of the seed of the Evil One? Genesis reveals in chapters 5 and 11 which family genealogy will carry the obedient seed line. And chapters 12–50 discuss which son of the patriarch will carry this seed line. The author of Genesis reveals early on that the obedient seed line originates with Adam, then to Seth, to Noah, to Shem, to Abraham, which is authenticated by the direct link of the genealogies of Genesis 5 and 11 (Ross 1997, 250), and then to Isaac, to Jacob, and ends with a promise to Judah’s family ([Genesis 49:10](#)).

Thus, the narrative movement by the author of Genesis is not primarily interested in determining the age of the universe. This would appear to be secondary or even tertiary in importance. I would agree that the primary or even secondary focus of Genesis is not necessarily to determine the age of the universe; however, within the greater body of evangelicalism there is an erroneous teaching from those who espouse PDAC the universe is billions of years old. This belief is not based upon the plain interpretation of Genesis as narrative literature; rather it is exclusively interpreted by the latest scientific theory that has its roots in the pre-Darwinian hypothesis that the earth is much older than 6,000 years. The literature is argued to be poetic literature, which allows PDAC to change the plain meaning of words to a new meaning that the author of Genesis never intended to communicate.

To state in another way, the Bible is being reinterpreted, not by studying the text primarily, but rather through elevating the scientific method to a magisterial role, co-equal with Scripture, rather than ministerial. And when the scientific method is elevated above the plain & normal reading of Genesis 1–11, the interpretation leads believers to conclude that the universe is billions of years old.

Thus, when this happens, a shift occurs from biblical theology (studying the text primarily) to apologetics (are there any textual clues in Genesis or in the Bible that could counter PDAC?). SDC believes that there are textual clues, and that the divine and human authors of Genesis and the Bible have left the reader those clues which will indicate that the approximate age of the universe can be determined. SDC also affirms that there are limits on the upper range of the age of the universe, which if exceeded would “do violence to the chronological framework of all subsequent Bible history & prophecy” (Whitcomb & Morris 1961, 485). Given this summary of SDC hermeneutics — has the author left the reader textual clues to determine the upper limits of the age of the universe? SDCs affirm that he has.

## **SDC Interpretation towards the Age of the Universe and Earth**

SDCs affirm the magisterial role of the Bible and the ministerial role of scientific discoveries of nature. Nature is not the sixty-seventh book of the Bible, due to the affects of sin upon nature and upon the human mind. They maintain the genre of the creation account is historical narrative & to be interpreted with a plain-literal-historical-grammatical-canonical meaning. Meaning is found in text of the passage & placed there by the author. The text that accurately describes the creation event is [Genesis 1:1–2:4](#).

SDCs reject the belief that there is a big gap of billions of years between [Genesis 1:1](#) and [Genesis 1:2](#). Although the scope of this paper is not about the Gap Theory, the reader should know that SDCs reject Gap Theory for many reasons that this space will not allow. However, so that the reader is equipped to provide answer, I will provide one reason.<sup>24</sup> Grammatically, for there to be a gap between [Genesis 1:1](#) & [1:2](#), the conjunction would have to be consecutive *waw*. A *waw* is a Hebrew letter (ו) which is often placed at the beginning of a sentence (remember Hebrew language reads from right to left) & is used as a conjunction that can be translated as “and,” “but,” “now,” “then,” & several other words, depending upon the context & type of *waw* involved. A consecutive *waw* is sequential conjunction that continues the narrative. A problem for the Gap Theorists is that [Genesis 1:2](#) does not begin with sequential conjunction, but with a disjunctive *waw*.

A disjunctive *waw* is explanatory conjunction that breaks the narrative sequence. The narrative does not continue, rather the author stops the narrative to explain something. Grammatically, [Genesis 1:3](#) is continuation from [Genesis 1:1](#) of the historical narrative because it begins with the word *waw* (sequential conjunction), while [Genesis 1:2](#) is a break in the historical narrative because it begins with the disjunctive *waw* (explanatory conjunction). To put this all another way, [Genesis 1:1](#) begins the historical narrative and [Genesis 1:2](#) stops the historical narrative to describe the form of the earth immediately after God created it. There is no time gap between [Genesis 1:1](#) and [Genesis 1:2](#), only an explanation. [Genesis 1:3](#) then continues the historical narrative to describe what He did on the first day (Day 1).

The diagram below describes how [Genesis 1:1–3](#) should be read in English by a way of an analogy.

<p>Raul went to the store. 2 <b>Yet</b> the store was closed because it was a holiday. 3 <b>Then</b> he went to the beach.</p>	<p>In the beginning God created the heavens and the earth. 2 <b>Yet</b> the earth was formless and void, . . . 3 God said, “Let there be light”; and there was light.</p>
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After revealing that SDCs have a good reason to reject the Gap Theory, SDCs assert that the [Genesis 1:3–Genesis 2:4](#) pericope describes each day of the creation event as a 24-hour day. There is internal evidence, such as specific temporal terms, found within the pericope that leads the reader to conclude the creation account should be taken literally. For example, “evening and morning” together, appears at the end of each of the six days. “The references to ‘evening’ and ‘morning’ together, outside of Genesis 1, invariably, without exception in the Old Testament (fifty-seven times total — nineteen times with *yôm*, or ‘day’, and thirty-eight without *yôm*) indicate a literal solar day” (Davidson 2015, 78). The six creation days are connected with an ordinal or cardinal number (one, second, third) & “a comparison with occurrences of the term elsewhere in the Scripture reveals such usages always refer to literal days” (2015, 78).

Walton, who embraces some form of evolutionary biology (2009, 163), agrees with SDC's assessment of *yôm*. He opines, "it's extremely difficult to conclude that anything other than a twenty-four-hour day was intended. It is not the text that causes people to think otherwise, only the demands of trying to harmonize with modern science" (2001, 81). And he underscores eight years later, "[SDC] reading of the word 'day' (*yôm*) as a twenty-four-hour day is accurate" (Walton 2009, 105). To summarize the SDC view, they maintain, based upon the following: one, there is insufficient textual evidence to conclude the universe is billions of years old, two, the magisterial role of Scripture over nature, three, the historical narrative genre in the creation account and the grammatical markers in [Genesis 1:1-2:4](#), five, the lack of a gap between [Genesis 1:1](#) & [1:2](#), six, the internal markers such as "evening and morning," day one, second day, third day, etc. and seven, the fact that outside of Genesis, those markers connect to *yôm* and consistently render a meaning of a solar day.

## Theological and Practical Implications: Differing Creation Account

The SDCs interpret the days of creation in a narrative-historical-linear way. [Gen. 1:1-2:4](#) describe each week day with the divine creative acts (light, atmosphere, land, vegetation, sun, birds, sea and land animals, humans, and a day of rest). The PDACs interpret days of creation in a poetic-metaphorical-linear way, which, as described previously, diverges from the Genesis account and the evolutionary creation story (still with billions of years). I would suggest Ross has invented his own creation story. For Hugh Ross, Day 1 represents the first epoch in which God creates the earth, sun, moon, & stars billions of years ago. Day 2, the second epoch, has rain falling upon the earth, perhaps for a few billion years. Day 3, third epoch, emergence of land over a four-billion-year process & some primitive plant species. Day 4, the fourth epoch, the sun's light on earth is visible from perspective of an observer on earth. Day 5, fifth epoch, is the creation of marine creatures, including sea dinosaurs. Day 6, the sixth epoch, is creation of land animals, including land dinosaurs. Millions of years later, ~ 60,000 to 100,000 years ago (Ross 2014, 75) Adam & Eve were divinely created.<sup>25</sup> The Day 7 epoch is still lasting, culminating at the creation of the new heavens and earth in Revelation.

## Theological and Practical Implications: Different Noah's Flood Narrative & Context for the Gospel

The SDCs interpret the Flood event with the same hermeneutic — understanding there was a worldwide flood whereby the entire planet was covered with water. The animals that survived were some marine creatures and those land-dwelling, airbreathing animals that God brought to Ark. There were only eight humans that survived the deluge: Noah, his wife, his three sons, and his three daughters-in-law. The Flood lasted a little over one year, before those inside the Ark were free to repopulate the earth (Sarfati 2004, 216; Snelling 2009, 20).

PDACs interpret the flood as worldwide but not global. “Worldwide with respect to people & the animals associated with them, which is not to say global” (Ross 2017, 85). The flood was not global but covering “the settlements in Mesopotamia and the Persian Gulf Oasis” (Ross 2014, 149). There is a “lack of direct geological evidences” (2014, 156) for this flood because a flood of this limited size could not account for “all of Earth’s major geological features, [as this] contradicts the physical evidence” (2014, 155). The flood during Noah’s lifetime was approximately 40,000 years ago (2014, 156–157).[26](#)

The most serious difference is theological. The PDAC theory has death, bloodshed, & disease part of God’s original creation. “The entire creation has been ‘groaning,’ right up to the present, as a consequence of its ‘bondage to decay’” (Ross 2017, 75) due to the second law of thermodynamics that God created on Day One. **The death of nonhuman life for billions of years “blessed humanity with a treasure chest of more than seventy-six quadrillion tons of bio-deposits from which to build a global civilization and facilitate fulfillment of the Great Commission in mere thousands, rather than millions, of years...” (2017, 86–87).** Human suffering, although tragic, was minimized through the billions and millions of years of death, decay, and disease of plant, animal & hominid life (Ross 2014, 75–76). Only through this process could the gospel be facilitated to reach the maximum number of people to enter into the new heavens and earth that will be free of disease, bloodshed, and death.[27](#)

The SDCs assert that bloodshed, disease, and death were not part of the original creation that God saw as very good. Plant “death” is a red herring,[28](#) designed to divert believers into thinking that death was present before the Fall, when it was not. God created animals & humans as vegetarians thus, the eating of plants isn’t death because plants are not alive, in the way the Bible defines life. On the other hand, the shedding of blood to cover Adam and Eve’s sin was death. After the Fall,

God cursed the ground & serpent ([Genesis 3:14-19](#)).<sup>29</sup> Ham captures theological difference between SDCs and PDACs succinctly, “Ross does not have an orthodox view of the Fall or [Romans 8:19-23](#)” (Ham 2017, 102). Believing in death before the Fall is not a salvation issue, but teaching that death began before the Fall does undermine the consistency of the gospel. If Adam’s sin didn’t bring physical death into the world, then the solution to Adam’s sin — the physical death of God’s Son & His subsequent physical resurrection from the dead—is inexplicable. The PDAC view also undercuts the trustworthiness of the Bible. “It sends a message to others that you can pick and choose which parts of the Bible to believe” (Ham 2017, 44) and makes human reason the final arbitrator in determining what the text meant, rather than letting the author (human and divine) determine meaning. “The whole philosophy of the Atonement is undermined by teaching that there were millions of years of bloodshed before sin” (Sarfati 2004, 216). It is a poisonous example of biblical hermeneutics.

Probably the most disturbing theological reflection made by Ross regarding age of the universe & the gospel is his view that SDC is analogous to the circumcision debate that the early church dealt with in Acts 15. “As circumcision distorted the gospel & hampered evangelism, so, too, does young-universe creationism” (Ross 1994, 162). Ross is equating SDC to a belief rejected by apostles at the “Jerusalem Council” & reiterated by Paul when he demanded that the Galatians expunge their belief that circumcision was necessary to be right with God. Ross’ analogy would seem to indicate that PDAC and SDC is not a healthy family debate but is instead a theological war where only one side can be orthodox.

## Summary

The division between PDAC and SDC is vast. The debate is about more than just interpreting scientific evidence. In fact, the most important part of the debate is about the presuppositions of each group and their biblical hermeneutics. The PDAC view affirms the equality of general & special revelation in theory, in practice they elevate their understanding of general (natural) revelation above special revelation, which means prevailing scientific discovery will be preferred to the theological teachings of the Bible. They believe Scripture is consistent with the prevailing (secular) view that the universe is billions of years old. The creation event did not happen over six twenty-four-hour periods of time, rather over billions of years. Genesis isn't read consistently as historical narrative and is often influenced & then interpreted according to the consensus of the scientists whose worldview conflicts with the biblical worldview.

The SDC view affirms supremacy of special revelation over general revelation, which means Scripture is viewed as authoritative when it comes to origins of the universe, and interpretations of scientific discoveries will not contradict the Bible. Genesis is primarily read as historical narrative & since God was present when the universe began and cannot lie, His explanation on its origins is final.

SDC's affirm the universe was created over six twenty-four-hour days. This means there is disparity between PDAC and SDC views. The theological significance of each view does indeed affect the story of the gospel and the perception of Bible trustworthiness.

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# Time Dilation Cosmological Models: Exegetical and Theological Considerations

by [Lee Anderson, Jr.](#) on September 6, 2017

## Abstract

*In conjunction with efforts to resolve the light travel time problem, creationists have in the recent decades proposed a variety of new cosmological models. Some of these models are contingent on the concept of time dilation, proposing that there was a relatively rapid passage of time—on the order of several billion years—in distant reaches of the universe while only 6 days of time elapsed on earth during the Creation Week. This purportedly can account for how starlight from galaxies billions of light years from earth could have reached earth between time of creation of cosmic bodies on Day Four & the creation of man on Day Six. The purpose of this paper is to evaluate such cosmological models from biblical (exegetical and theological) perspective, seeking to determine if they're to be held consistent with Scripture. The specific interpretive claims of these models will be well examined, as well as their overarching implications concerning the principal focus of the Book of Genesis creation narrative and the intent of the biblical author in light of his understanding of the text's original readers. This paper concludes these cosmological models are dependent on strained exegesis & they introduce interpretations dependent on modern science that would have been foreign to the original readers.*

## Creationist Solutions to the Light Travel Time Problem and the Age of the Universe

Among cosmologists who reject the biblical view of recent creation, there exists one prevailing theory of cosmological origins: the big bang model. Creationists countering the mainstream view of cosmological origins have proposed a variety of alternative theories. Besides attempting to defend the miraculous origin of the universe by the creative work of a sovereign, unopposed, personal God — these theories - commonly attempt also to explain the light travel time problem. The light travel time problem concerns the question of how light, traveling at a finite speed, could have traveled the vast distances from extreme reaches of the universe in a timescale that reconciles with the biblical creation record—that is, the record of a creation event occurring on the order of thousands, not billions, of years ago. Understanding that a light year is, by default, a measure of the distance light can travel in one year, the light travel time problem is presented as the challenge of how starlight from distances more than thousands of light years is earth visible in the present day. However, an analysis of the biblical text indicates the challenge is considerably greater. The heavenly bodies (including the stars) were created to serve man as markers “for signs and for seasons [i.e., appointed times], and for days and years” ([Genesis 1:14](#)). If their light was not visible on the earth shortly after their creation—ostensibly by Day Six with the creation of man (cf. [Genesis 1:26–31](#))—they would not be able to fulfill the God given purpose for which they were created.<sup>1</sup> So the real question is how starlight, in some cases coming from 13 billion-plus light years away, arrived on earth in a matter of days.

Creationist cosmologies attempt to answer this question in a variety of ways, invoking such ideas as starlight having been created in transit, a progressively deteriorating speed of light, and the alternate synchrony conventions.<sup>2</sup> Also, multiple *relativistic* or *time-dilation* solutions have been proposed. These type relativistic cosmologies center on Einstein’s theory of general relativity, which maintains that time is not an absolute. One’s position relative to gravitational fields may alter the passage of time, with time passing slower for one near a massive object than for one further away from that object. This is called time dilation, and has been demonstrated by rigorous scientific experimentation. Some creationists have appealed to the concept of time dilation, theorizing certain cosmological models may allow for a relatively rapid passage of time (on the order of several billion years) in the distant reaches of the universe while only six days of time elapsed *on earth* during the Creation Week. This, they claim, can account for how starlight from galaxies billions of light years away could have reached earth between the time of the creation of the cosmic bodies on Day Four and the creation of man on Day Six.

Physicists Russell Humphreys and John Hartnett have each proposed cosmologies that capitalize on time dilation. While not desiring to gloss over the distinctions between their models, it is fair to observe that they do share similarities, with the key similarity being that both cosmological models permit for passage of billions of years of actual time elsewhere in the universe during the Creation Week, but hold that only six normal days transpire on earth in the same period. The purpose of the discussion here will be to present a cursory overview of each of the models currently propounded in the creationist literature, and then assess each model in light of the biblical text. Why do this? First, while it is surely a productive goal to endeavor to explain the light travel time problem without artificially stretching the chronological constraints of the creation narrative, if such an explanation is itself out of sync with teaching of Scripture, then it must be discarded. Second, while the Bible is not a science textbook, it is authoritative where it speaks to matters of science & foundational to a properly formulated worldview. Scripture, therefore, must direct & constrain the Christian's development of scientific models. If a model clashes with Scripture, then it needs to be amended or discarded.

## Contemporary Young-Earth Creationist Models that Tacitly Affirm an Old Universe

The first creationist cosmological model to appeal to time dilation as solution to the light travel time problem was that of D. Russell Humphreys in 1994. His two papers published in that year's *Proceedings of the Third International Conference on Creationism* (Humphreys 1994a, 1994b) laid the groundwork for presentation of his perspective in *Starlight and Time: Solving the Puzzle of Distant Starlight in a Young Universe* (Humphreys 1994c).<sup>3</sup> Humphreys' original model, often referred to as "White Hole Cosmology," asserts that "while God makes the universe in six days *in the earth's reference frame* ('Earth Standard Time'), light [originating in distant galaxies] has ample time *in the extra-terrestrial reference frame* to travel the required distance" (Humphreys 1994c). Starting with the ostensibly viable assumption of a bounded universe, Humphreys reasoned the entire universe was once inside the event horizon of a white hole (see Humphreys 1994c, 24–27).<sup>4</sup> In relation to the biblical account of creation, Humphreys proposed that on Day One of the Creation Week, God created a large three-dimensional space and, within it, a "ball of water" ("the deep"; *Hebrew תְּהוֹם*) in excess of 2 light years in diameter (Humphreys 1994a, 1994b, 1994c). God's creative pronouncement, "Let there be light," marked the beginning of thermonuclear fusion reactions that unleashed tremendous energy, including visible light (Humphreys 1994a, 264; 1994c, 32).

Humphreys maintains that on Day Two God began stretching out space, causing the water ball to expand rapidly (at a rate not limited by the speed of light). This was the creation of the “expanse” (Hebrew *רָקִיעַ*), the region between the “waters above” & the “waters below”—a region that Humphreys equated with interstellar space (Humphreys 1994a, 264–265). This expansion of space, Humphreys argued, continued until at least the end of Day Four (Humphreys 1994a, 265; 1994c, 36). As matter & energy expanded outward from the central ball of water (which had now become the earth, with a solid surface, seas & vegetation), the event horizon of the white hole gradually shrank. Gravity caused atoms of hydrogen, helium and other elements left behind by the earlier episode of expansion of primordial waters outward to coalesce into stars & other cosmic bodies (Humphreys 1994a, 265). As more & more of the visible universe emerged from the white hole, time began to progress at a rapidly increased pace, with billions of years transpiring outside of the event horizon while only hours (during Day Four) pass on earth (Humphreys 1994a, 265; 1994b, 283–284; 1994c, 37–38). As the earth (located at the center of the universe) finally emerged from the evaporating white hole at end of Day Four, light from distant galaxies would have already arrived, having traversed the universe at normal rate during the billions of years that transpired beyond the white hole’s event horizon...all while only hours had elapsed on earth within the event horizon, thus allowing man to see the stars from the time of his creation on Day Six of the Creation Week (Humphreys 1994a, 265; 1994b, 284; 1994c, 37–38). As stars and galaxies formed outside of the event horizon on Day Four, the universe, Humphreys argues, must have continued to expand, with the distant reaches of space having experienced most expansion. This phenomenon would account for observed redshifts. Humphreys explains: “While light from the most distant galaxy we have seen was traveling to us, the universe expanded by about a factor of five, stretching the light’s wavelength by the same factor and giving it a redshift parameter of about four” (Humphreys 1994b, 284). Herein rests the model’s explanatory power.

Humphreys, when he developed his original model, asserted that it rested on a straightforward understanding of Scripture (Humphreys 1994a, 256–257). Of particular importance to his model is that the “expanse” described in Genesis Chapter 1 is interstellar space, not merely the earth’s atmosphere (cf. [Gen. 1:7–8, 14–17](#)).<sup>5</sup> Furthermore, the expanse is bordered on its outermost extremity by the “waters above” ([Gen. 1:7](#)), strongly suggesting that the universe is bounded (Humphreys 1994a, 257–260).<sup>6</sup> Arguably most central to Humphreys’ model, is the connection that he draws between the Bible’s description of God stretching out the heavens & the expansion of the very fabric of space, a mechanism needed for cosmological red shift (Humphreys 1994a, 260ff). (Here Humphreys appeals

to [Job 9:8](#), [Ps. 104:2](#), [Isa. 40:22](#), [Jer. 10:12](#), and [Zech. 12:1](#); he also notes [2 Sam. 22:10](#), [Job 26:7](#), [37:18](#), [Ps. 18:9](#), [144:5](#), [Isa. 42:5](#), [44:24](#), [45:12](#), [48:13](#), [51:13](#), [Jer. 51:15](#), and [Ezek. 1:22.7](#)) Also of critical importance to his model is Humphreys' contention, on the basis of [2 Peter 3:5](#), the material substance of the primordial water ball mentioned in [Genesis 1:2](#) is what God used to fashion all the heavenly bodies (Humphreys 1994a, 262–263).<sup>8</sup> Finally, Humphreys' model depends on his assertion that the days of Genesis One refer specifically to the passage of time as it would have been measured *on planet earth* (cf. [Exod. 20:11](#); [31:17](#)). Drawing on [Genesis 1:5](#), [14–15](#), Humphreys (1994a, 263; 1994c, 29) concludes that the creation narrative's perspective is that of a hypothetical observer on earth, and the descriptions of the narrative related to the passing of time are not binding on the whole universe.<sup>9</sup>

Humphreys' time dilation cosmology met with criticism of its scientific assertions soon after its publication. Conner & Page (1995) averred that the new cosmology was unable to truly resolve the light travel time problem. They concluded, in accordance with their presupposed commitment to naturalistic cosmology, "The alternative cosmological model proposed by Docotr Humphreys, and any plausible generalization of it to inhomogeneous models, in fact leads to the same conclusions about the age of the universe as given by the standard Big Bang scenario, namely that the observed expansion of the universe, taken at face value, implies that the universe had its beginning on the order of ten to twenty billion years ago" (Conner and Page 1995, 16). To this Humphreys responded with a scientific defense of his perspective, along with a challenge for his detractors to stop their attempting to accommodate Big Bang cosmology, which depends on atheistic tenets, and instead develop a model that accords with the many verses of Holy Scripture that indicate a young universe (especially, as he notes, [Exod. 20:11](#) and [Mark 10:6](#); Humphreys 1995a, 19).<sup>10</sup> The considerable disagreements with Humphreys' model raised by Connor & Page were more fully developed in their later paper in which they argued, "An accurate treatment of the physics indicates that [Humphreys'] model is actually a trivial variant of the standard Big Bang model, with its attendant implication for the age of the Universe and the Earth time required for light to travel from distant galaxies to the Earth" (Conner and Page 1998, 174). In particular, their paper struck at the central tenet of Humphreys' model, that movement beyond the event horizon of a white hole could've led to the profound time distortion required by Humphreys to allow light from distant galaxies to reach the earth in the amount of "earth time" afforded by his model, as indicated by Genesis 1 (Conner and Page 1998, 188–190). Humphreys subsequently responded to these criticisms, asserting that Conner and Page's criticisms were based on an incorrect metric & were therefore invalid (and biblically misguided; see Humphreys 1998).



As this exchange concerned the scientific merit of Humphreys' time dilation model, and not its exegetical and theological rigor, it is not centrally relevant to this paper's critique — it is important historically as it concerns the continuing refinement of Humphreys' cosmology. More integral to this discussion is Phillips' criticism of the Humphreys' model on hermeneutical grounds, wherein he evaluates Humphreys' "Timothy test," the "interpretive key" to his understanding of the biblical text in the construction of his model (Phillips 1997). The "Timothy test" refers to application of certain hermeneutical principles relevant to interpretation of Scripture within its proper historical context; in brief, it suggests Scripture must be understood today the way it was understood by its original readers—whom Humphreys characterizes (using Timothy as an example) as individuals who had solid grasp of prior scriptural revelation & who were fluent in language of the text, but who had no real familiarity with the mode of scientific thought in their day (and no awareness of contemporary scientific ideas; Humphreys 1994a). Phillips' disagreement with the "Timothy test" is two-fold: First, he claims that it *assumes* to know how the original readers would have understood the text. Second, it discounts everything that Christian interpreters have learned since the time the biblical text was inspired (Phillips 1997, 190).

Somewhat oddly, direct response to Phillips' criticism of Humphreys' hermeneutical principles came not from Humphreys, but from J. Sarfati, who sought to defend the doctrine of the sufficiency of Scripture (appealing to [2 Tim. 3:15-17](#)), and then went on to respond to Phillips' list of specific biblical texts where Phillips claimed that the "Timothy test" would mislead the interpreter (Sarfati 1997).<sup>11</sup> Humphreys himself opted instead to respond on the level of principle, considering where Phillips' own hermeneutical approach would lead if applied consistently (Humphreys 1997, 201). Subsequent writings by Humphreys concerned further defense of his model; they also provided clarifications and discrete refinements in his model. Humphreys also considered a corollary hypothesis suggested by his theory (allegedly corroborated by "quantized" red shifts)—that the Milky Way Galaxy is situated approximately at the center of the universe (Humphreys 2002b).<sup>12</sup>

In 2007, Humphreys began to introduce substantial changes to his time dilation cosmology (see Humphreys 2007), with the result being what arguably may be regarded as a sufficiently distinct & genuinely new model. In further articulating his new view, Dr. Humphreys gave consideration to "an apparent small Sunward anomalous acceleration of the Pioneer 10 & 11 spacecraft." In his interpretation of the data, he concluded that the universe has a center of mass, with all the matter of the universe surrounded by a large volume of empty space in a "deep gravitational 'well.'" As the universe expands, according to general relativity, gradually decreasing depth of the well continuously shortens "radar" distances within the well, and so causing the observed apparent acceleration. Accordingly, Humphreys argued that the Pioneer effect supports the idea of recent time dilation (Humphreys 2007, 61,

64–65). In this new view, Humphreys contended that the “waters above” (cf. [Ps. 148:4](#)) exist as a “shell” of liquid water (or perhaps ice particles) that encompasses all of the matter of the universe and which is gradually expanding outward into empty space (Humphreys 2008).<sup>13</sup> On Day Two of Creation Week, the Lord created the spherical “expanse” (astronomical space) that is bordered all around by the “waters above” ([Gen. 1:7–8](#)) (Vardiman and Humphreys 2010, 15). According to the new metric developed by Humphreys to explain the relationship among mass, space, & time (Humphreys 2007, see especially 65–69), “The distribution of mass controls the fabric of space, the fabric of space controls the speed of light & speed of light controls time,” & “Time is speeded up or slowed down throughout space according to the distribution of mass” (Vardiman and Humphreys 2011a, 13). How does this cosmological model attempt to solve the light travel time problem?

The answer to this question is fairly complex. Humphreys proposes that in the Lord’s creative workings prior to Day Four, space had been expanded such that the shell of the “waters above” had moved out to a radius of about one billion light years (with earth at the center). This leaves the earth and the nearly-flat fabric of space within the sphere of the waters just above level of *critical potential* (beneath which exists the “achronous region,” in which the passage of time ceases). On the fourth day of creation, the newly created star masses would have created “linearly-dented perturbation in the otherwise flat potential fabric of space,” consequently causing the fabric of space to drop beneath critical potential into achronous region. “For slow-moving objects in that region [including any hypothetical observers on earth] time would be stopped” (Humphreys 2008). Once creation of the celestial bodies on Day Four had ended, Humphreys contends that God increased tension in the fabric of space & simultaneously movement of the line of critical potential, with the achronous region (the zone wherein the earth was situated and no time passed) decreasing in size. Humphreys describes what would have then happened assuming that God set the values of the relevant factors to give a contraction of the boundary of the achronous region at the speed of light: “As each galaxy emerged from the receding timeless region, it resumed emitting light. Some of the emitted light would have gone inward toward the center. Since the timeless sphere was moving inward at the speed of light, the inbound light would follow right behind as the sphere shrank.” Accordingly, he notes, “When the sphere of timelessness reached zero radius and disappeared, the earth [in this model at the center of the achronous region] emerged & immediately the light that had been following the sphere reached earth, even light that had started billions of light years away. The stretching of the fabric of space had been occurring continuously along the light trajectory, thus red-shifting light wavelengths” (Vardiman & Humphreys 2011a, 14; cf. Humphreys 2008, 89–90). Once again, in this model, eons of time pass in the distant reaches of the universe — all during the space of a single day (Day Four of Creation Week) as measured on planet earth.

The hermeneutical defenses related to Humphreys' earlier model still apply. He contends, based on indicators in the creation narrative (note [Gen. 1:5, 14–15](#)) that the days of Genesis One refer specifically to the passage of time *as it would have been measured on planet earth* (cf. [Exod. 20:11; 31:17](#)), and that time is not measured according to some universal clock.<sup>14</sup>

Sometime after development of Humphreys' original model, John Hartnett sought to offer corroboratory evidences for certain elements of Humphreys' cosmology (see, for example, his discussion of quantized redshifts in Hartnett 2002c), while also seeking to point out aspects of Humphreys' cosmology which he considered problematic (such as the observation of apparently "old" stellar objects such as white dwarf stars in the halos of galaxies relatively near the Milky Way, the *near-field problem*; see Hartnett 2002b). Hartnett's enthusiasm for Humphreys' appeal to time dilation was soon thereafter followed by Hartnett's introduction of his own cosmological model (Hartnett 2003b) as well as a new solution to the light travel time problem based on that model (Hartnett 2003c).

The cosmology John Hartnett proposed relied heavily on the process of expanding ("stretching out") the heavens, resulting in a time differential between the solar system and the region beyond (Williams and Hartnett 2005, 181), with maximum time dilation occurring in the solar system. "On earth, time was passing according to the rotation of the earth, that is, one day per 24 hours, but because the rest of the universe was stretched out from small to vast size in single earth day, this resulted in physical transformations occurring at rates far exceeding what would have been measured by clocks here on earth" (see Williams & Hartnett 2005, 181; cf. Hartnett 2003b, 73–78). In his model, Hartnett places the "waters above" not at the edge of the universe, but just beyond the outer reaches of the solar system, reasoning that the placing of the lights in the expanse ([Gen. 1:14–17](#)) concerns only the Sun, Moon, and planets — not the stars (Hartnett 2003b, 77).<sup>15</sup> The "waters above" Hartnett associates with ice bodies of the Kuiper Belt, which he believes may have supplied the solar system's comets, and also supplied impacting bodies to trigger the onset of the Genesis Flood (Williams and Hartnett 2005, 180). Also, Hartnett argues, this halo of water and/or ice would have served to protect the earth from the excessive radiation that would ostensibly have been experienced during the episode of rapid cosmic expansion occurring on Day Four (Hartnett 2006, 97–98).

In what ways does Hartnett's model, originally conceived, differ from Humphreys'? Hartnett lists the following concerning the distinctiveness of his view: "Time after end of Day 4 is linear in the whole universe and may be understood in the normal commonsense way. Time during Creation Week up to Day 4 is highly non-linear but only on earth (and possibly the surrounding solar system), and nowhere else throughout the cosmos."

Also, “The general matter distribution of the stars and galaxies in the universe is the universal frame of all reference clocks. Generally, these *astronomical* clocks have ticked at the same rate. Clocks on Earth since Day 4 also have ticked at the same rate as these universal clocks. Only clocks on Earth up to the close of Day 4 ticked much slower compared to the universal reference clocks.” Additionally, in this model, Hartnett asserts, there is no dependence on any general relativistic effects, which is a key to understanding Humphreys’ model (Hartnett 2003c, 100, emphasis his). However, this is not necessarily a problem, even for a scientific proposal, as Hartnett rightly observes, “*The Creation Week period, by definition, is not expected to be a period where natural law explanations apply*” (Hartnett 2003c, 101, emphasis his). These are meaningful distinctions. However, at its core, the model developed by Hartnett is fundamentally the *type* of model as Humphreys’, in that it depends on the stretching of the fabric of space to induce a time-dilation episode, in which the progress of time on earth (and possibly in the solar system) proceeds at a much slower rate than the progress of time in intergalactic space—thus allowing sufficient time for light from distant stars to have reached earth by the end of Day Four, even though that day, as measured on earth, was a normal 24-hour day (Williams and Hartnett 2005, 181).

There have been many subsequent refinements and many revisions in Hartnett’s cosmological model. Hartnett’s interaction with Halton Arp’s work concerning observations of quasars and red shifts led him to offer certain proposals about the *mechanism* of God’s creative work on Day 4 — namely that there is evidence of the creation of galaxies from the active nuclei of other galaxies, an indicator of a grand cascading creative process (Hartnett 2003a, 97; 2005d, 6). In summary, on Day Four, Hartnett argues, God “created the Milky Way Galaxy and other large elliptical & spiral galaxies from the hot plasma he had created on Day 1” (Hartnett 2005a, 98).<sup>16</sup> Then, “God stretched out space, by some enormous factor,<sup>17</sup> and spread out parent galaxies that He then caused to eject more galaxies as quasars in ongoing creative episodes during course of Day Four” (Hartnett 2005a, 98). The time necessary for this progressive cascade of creation events was afforded by the time dilation caused by the continuous stretching out of the fabric of space during Day 4. Also, because of time dilation, Hartnett maintains that observed instances of matter being ejected from galaxy nuclei may be the window into God’s creative processes, as the things presently seen in distant intergalactic space actually took place (through the potentially billions of years of local time) during the 24 hours of Day Four as time was measured from the perspective of planet earth (Hartnett 2003a, 97). Notably, God’s unique creative activity need not be bound, Hartnett insists, by all the laws of physics in operation today; some of these laws would have been suspended during Creation Week (Hartnett 2004, 112).

Beginning in 2005, Hartnett's cosmology began to be influenced increasingly by physics of Moshe Carmeli (Hartnett 2005a, 2005b, 2005c). Carmeli's approach to physics is characterized by four spatial dimensions (plus the 5<sup>th</sup> time dimension), and assumes the Hubble Law as a fundamental axiom of the universe (Hartnett 2005b, 77). The implications of Carmeli's metric, as they were incorporated into Hartnett's fully developed solution to the light travel time problem, were published subsequently (Hartnett 2008, 2010), though introduction of the new metric did nothing to affect the *exegetical* aspects of Hartnett's view. His defense of cosmic expansion during Creation Week remained centered on a handful of biblical texts ([Ps. 104:2](#); [Isa. 40:22](#); [42:5](#); [44:24](#)), and the "waters above" (cf. [Gen. 1:7-8](#)) were still situated at the outer edge of the solar system. All activity related the creation of celestial bodies was relegated to Day Four and, consequently, Hartnett's model (as with Humphreys' model) remained dependent on time dilation (albeit in a five-dimensional universe) caused by the cosmic expansion taking place on Day Four (Hartnett 2010, 85-88). Hartnett's verdict therefore remained: "The time it took light to travel from the most distant sources to Earth was a matter of only one day, in local time units," and, "In cosmic time, 'billions of years' is available for the light to travel. In effect, although the two-way measured speed of light remains constant, the one-way speed of light to Earth has been dramatically increased by expansion, enabling light to reach Earth within a short (terrestrial) time" (Hartnett 2010, 109, 111).<sup>18</sup> Indeed, it seems that the main driving factor behind Hartnett's adoption of Carmeli's perspective on physics was not to serve in refining Hartnett's solution to the light travel time problem, but rather to provide a means by which to dispense with any need to appeal to dark matter & dark energy (Hartnett 2005c; 2010, 31).

Subsequently Hartnett began moving away from the relativistic cosmology which he had developed. Having concluded the scriptural text does not actually indicate an expanding universe (Hartnett 2011b; cf. 2011c),<sup>19</sup> he then began to investigate scientific evidence for expansion of the universe. As a result of this investigation, Hartnett maintained, "It is impossible to conclude either way whether the universe is expanding or static. The evidence is equivocal" (Hartnett 2011d, 120; cf. 2014, 453, 456). Assuming a static universe, explanation other than time dilation must be sought to explain the light travel time problem. Indeed, Hartnett now finds the evidence for time dilation lacking (Hartnett 2011c, 111-114). Beginning in 2011, Hartnett had begun interacting with the Anisotropic Synchrony Convention (as developed by Jason Lisle; Newton 2001<sup>20</sup>; Lisle 2010) as a viable solution to the light travel time problem (Hartnett 2011a; 2011e).<sup>21</sup> Apparently, he regarded Lisle's proposed convention as more readily compatible with his developing idea of a static universe (Hartnett 2011a, 58). Despite some earlier concerns about the compatibility of Lisle's Anisotropic Synchrony Convention with the biblical text (especially [Exod. 20:9-11](#)), Hartnett later came to fully embrace the position,

regarding his model as an extension, adaption, or refinement of Lisle's perspective. He writes:

Under the assumption of the Einstein Synchrony Convention (ESC) . . . the travel time of light at constant  $c$  (the canonical two-way speed of light) may be up to many billions of years, but all light originally arrived at the earth *for the first time on Day 4 of Creation Week*. Under the alternative assumption of the Asynchronous Synchrony Convention (ASC) the one-way speed of light towards us may be assumed to be infinite, that is, there is no travel time. Thus we see events in the cosmos as they are happening, or, they are time-stamped by the moment the light arrives at the earth. But this is a choice of convention.<sup>[22]</sup> Since the one-way speed of light has no physical meaning in the universe, under the ASC this means we are free to choose our timing convention. (Hartnett 2015b, 81; cf. page 82)

Hartnett also stated, "What I propose here is essentially Lisle's ASC model but with additional refinements & a mechanism for cosmological redshifts, but not resulting from expansion of the universe. The universe in this model can be *static*, but more likely *temporally static*, with the potential to collapse, because all we can see in this model is six thousand years of history measured by earth clocks. The evidence for expansion is equivocal . . . and hence this model does not rely on that expansion for a relativistic time dilation effect to solve the light travel time problem" (2015a, 17–18; see also his conclusions on page 19).

In this new model, redshifts are cause by "tired light," the exponential decay of photons' energy. Appealing to [Isaiah 51:6](#), [Psalm 102:25–26](#), and [Hebrews 1:10–12](#) as scriptural support for this phenomenon, Hartnett offers this conclusion,

"The universe was created by God in an inherently unstable condition. It was only the sustaining power of God that could hold it in place. But since the curse that power has been withdrawn, and the whole universe is headed for destruction and collapse. God had foreknowledge of the choices man would make anyway." And, "The universe is ruled by the inexorable laws of thermodynamics. It has a finite energy content and is trending to follow the path that those laws (God's creation) set. As part of that wearing out ('waxing old') process (second law of thermodynamics; [Hebrews 1:11](#)) photons began losing energy from their creation about 6000 years ago" (Hartnett 2015b, 79).

Hartnett's assertions here are contingent on particular exegetical and theological assumptions that he does not develop (particularly, that the Lord's foreknowledge of man's sin would lead Him to create an inherently unstable universe, an idea that clashes with God's categorical judgment of the state of His creation in [Genesis 1:31](#), that it was "very good"). But a full evaluation of the biblical support for Hartnett's current model is far afield of the purpose of this paper, to review the exegetical and theological support for *relativistic, time dilation models* proposed by creationists.

In any case, though Hartnett has now rejected a cosmological model dependent on gravitational time dilation, the fact remains the influence of his earlier time dilation model looms large in the creationist community. Humphreys' models (both original version and the updated view) likewise remain quite popular. Directly or indirectly, to a lesser or greater extent, several recent creationists' publications are indebted to the principles & arguments advanced in Humphreys' and Hartnett's writings on the role of gravitational time dilation in a creationist cosmology (DeRemer & Amunrud, & Dobberpuhl 2007; Pace 2016; Samec 2016; Samec & Figg 2012; and Sarfati 2015). Having now overviewed the arguments which have been advanced for relativistic, time dilation cosmological models, it is necessary now to give consideration to the various objections that may be raised against assumptions and arguments of these cosmological models, especially where those assumptions and arguments intersect with exegesis and theology.

## **Biblical and Logical Problems with Models Affirming a Young-Earth and Old Universe**

The relativistic time dilation cosmological models advanced (both currently and previously) by Humphreys and Hartnett are complex, but they each depend on certain fundamental assumptions & basic lines of argumentation. Many of these assumptions & arguments—at least as far as what will be addressed in this paper—are shared between the cosmological models which have been proposed to date, though there are some distinctive elements of particular models that will also be singled out for discussion. For ease of organization, this paper breaks down the claims of these cosmological models that're markedly relevant to biblical exegesis & theology into five principle categories for critique: (1) the extent of the “expanse” (רָקִיעַ) and, relatedly, the position and composition of the “waters above”; (2) the intended meaning of biblical statements about the “stretching” of the heavens; (3) the earth as the alleged temporal frame of reference for the text's description of events during Creation Week; (4) the relationship of the biblical author's intent to the understanding of the original readers in light of the historical context; and (5) the claimed possibility of episodes of time dilation subsequent to Creation Week (during the Genesis Flood). The first three discussion categories are exegetical in nature, while the fourth and fifth categories concern questions of method within the broader task of biblical interpretation and theological construction. In addition to these points, brief consideration will also be given to questions about the *logical viability* of time dilation cosmological models.

Both Humphreys' and Hartnett's cosmological models make assertions about the extent of the "expanse," first described in [Genesis 1:6](#), and the location of the "waters above" ([Gen. 1:7](#)). Humphreys—in both his original and revised models—considered the expanse to be of interstellar space. Furthermore, the expanse is bordered all around by a shell of water— "waters above" (see Humphreys 1994a, 258–260; 1994c, 34–36; 2008, 84).<sup>23</sup> Hartnett, by contrast, in his original model, argued that the expanse is only the space of the solar system & that the "waters above" exist at the edge of the solar system within the Kuiper Belt (see Hartnett 2003b, 77; Williams & Hartnett 2005, 180). Despite Hartnett's contention that the "waters above," being located closer to earth in his model, are more relevant as far as are concerned earth's inhabitants (Williams & Hartnett 2005, 180), *the fact remains that the textual evidence favors Humphrey's view, that the expanse is outer space, devoid of qualifiers.* God's pronouncement that equates the expanse with "heaven" (thus setting עֲרֻכְיָע parallel to שָׁמַיִם; [Gen. 1:8](#)) very forcefully suggests that the expanse is to be equated with the entire domain as defined by the term "heaven."<sup>24</sup> Further evidence for this is found in the Genesis creation account's repeated use of עֲרֻכְיָע ("expanse") in construct with שָׁמַיִם ("heaven"; [Genesis 1:14, 15, 17, 20](#)), which suggests that the two are to be understood equivalent within that literary context. Elsewhere in the Old Testament, "expanse" is used as a closely related term for "heaven" (note especially the parallelism in [Psalm 19:1](#) equating עֲרֻכְיָע and שָׁמַיִם).

Additionally, [Genesis 1:14–17](#) associates the expanse with the realm of the sun, moon & stars. Hartnett's contention that the Scriptures are not clear on this point, & that the sun and the moon exist within the expanse, while the stars exist beyond the "waters above" certainly misrepresents the Hebrew syntax. The antecedent of אֹתָם ("them") in [Genesis 1:17](#) (wherein Scripture indicates the celestial bodies were placed in the "expanse of heaven") is all objects of the Lord's creative work in [verse 16](#). In [verse 16](#), "the stars" (הַכּוֹכָבִים) are linked to the verb (עָשָׂה) by means of direct object marker (אֶת) just as are "the sun" and "the moon." The intervening description of the function of the two major lights does not negate this association in the Hebrew (though the point may be obscured in some English translations). Accordingly, the Hebrew text demands that the stars were placed "in the expanse of heaven" just as the sun and moon. If the "expanse" doesn't extend much beyond the edge of the solar system, this is impossible. *Thus, Hartnett's model violates the plain sense of the text and must be regarded as invalid on this point.* Understanding, therefore, the "expanse" encompasses the vast extent of the astronomical heavens, it may be concluded that the "waters above" exist at the edge of the universe.



The present composition of the “waters above” is another question discussed in relativistic time dilation cosmological models. While both Humphreys & Hartnett would agree that the waters were simply that — water — at the time God formed the expanse on the second day of the Creation Week, both have speculated that the “waters above” separated from the deep described in [Genesis 1:2](#) now exist as ice (Hartnett 2003b, 77; Vardiman & Humphreys 2011a, 15). However, as has already been observed by Humphreys, [Psalm 148:4](#) indicates that the “waters above” were there in David’s time (Hartnett has previously suggested the “waters above,” in the form of icy comets contributed to supply of water during the Genesis Flood, though he apparently agrees that the waters are mostly still there; see Hartnett 2006, 93.) [Psalm 148:4](#) speaks of the water as simply that — water (*Hebrew* מַיִם).

Although מַיִם may on rare occasion be used for liquids besides water, it by far most commonly means water, and invariably refers to a liquid. Had the author of Psalm 148 wanted to indicate the presence of cosmic ice bodies far beyond the earth, the Hebrew word שֶׁלֶג (“snow,” in [Psalm 147:16](#)) or the word קָרָח (“ice,” appearing in [Psalm 147:17](#) and elsewhere) would have been more appropriate. This concern may sound like a quibble, but it is nevertheless relevant to the question of whether or not the cosmological models proposed by Humphreys and Hartnett are properly grounded in the biblical text.<sup>25</sup>

(2) Likewise, intensely relevant to time dilation cosmological models is the claimed biblical support for the expansion of space. Indeed, the expansion of space is the *mechanism* argued to cause gravitational time dilation. Humphreys has claimed 17 verses which he argues speak of the expansion of the cosmos: [2 Samuel 22:10](#); [Job 9:8](#); [26:7](#); [37:18](#); [Psalm 18:9](#); [104:2](#); [144:5](#); [Isaiah 40:22](#); [42:5](#); [44:24](#); [45:12](#); [48:13](#); [51:13](#); [Jeremiah 10:12](#); [51:15](#); [Ezekiel 1:22](#); and [Zechariah 12:1](#) (Humphreys 1994a; 2008; Vardiman & Humphreys 2011a, 14).

Hartnett has incorporated such verses into arguments for the cosmology he had previously maintained (at least as late as 2010; see Hartnett 2005a, 98; 2010, 86). Notably, both Humphreys and Hartnett in their models require an episode of cosmic expansion on Day Four of the Creation Week, accompanying formation of the stars, in order to bring light from distant reaches of the universe to earth in the time of a normal 24-hour earth day. However, it is highly questionable if these verses actually have in view the expansion of cosmos associated with God’s work during the week of Creation. First, it should be noted that a number of the claimed verses do not even speak of God “stretching out” the heavens in the sense of creating or fashioning or expanding them (see especially [2 Samuel 22:10](#); [Psalm 18:9](#); [144:5](#)). Rather, these verses employ vivid theophonic language in the context of imagery-laden poetry to describe God’s act of bowing the heavens in order to personally come to the aid of

His anointed & to fight against the enemies of Israel.<sup>26</sup> Another verse ([Job 37:18](#)) concerns not the stretching out of the astronomical heavens, but is confined to God's mighty acts in controlling the weather within the atmospheric heavens, and speaks of God "spreading out" (רָקַע) the "clouds" (עָנָנִים). Also, in [Ezekiel 1:22](#), the Qal passive participle of נָטָה ("to extend, stretch out, spread out") is used to describe the radiant crystalline (or perhaps "ice-like") entity, compared to (note קָ) the heavenly expanse (רָקִיעַ). It must be stressed, however, that this verse does not have in view the actual expanse of heaven, but rather something which is being compared to it. Thus, the idea of "stretching out" mentioned in this verse does not concern cosmic expansion.

That idea leaves only twelve of Humphreys' claimed seventeen Bible verses as *possible* descriptions of cosmic expansion. In these twelve verses, eleven times the verb נָטָה is employed to describe the stretching of the heavens ([Job 9:8](#); [26:7](#); [Ps. 104:2](#); [Isa. 40:22](#); [42:5](#); [44:24](#); [45:12](#); [51:13](#); [Jer. 10:12](#); [51:15](#); [Zech. 12:1](#)); once each the synonyms מָתָה and טָפַח are used (both verbs are *hapax legomena*, and appear in [Isa. 40:22](#) and [48:13](#), respectively).<sup>28</sup> While these verbs do legitimately mean "to spread out, to stretch out," it's not clear they relate, in their respective contexts, to the expansion of space.<sup>29</sup> Indeed, these verses may be describing, through vivid poetic metaphor, God's creation of the tremendously vast universe (where the verbs relate — in a general sense — to the fashioning of the heavens and their host, rather than to a distinct act of making the universe larger in size by means of the expansion of the fabric of space). Even if, though, these verses do concern the physical expansion of space, they are more likely associated with the formation of the "expanse" (רָקִיעַ) on Day Two of the Creation Week rather than the populating of the heavens on Day Four.<sup>30</sup> If anything, the language of the Day 2 account in [Genesis 1:6–8](#) concerning the creation of the expanse (identified with "heaven" in [verse 8](#)) allows for a logical connection with those verses elsewhere describing the stretching out of the heavens. What textual warrant is there for the association of such verses with an act of God expanding space on Day Four? There is none.<sup>31</sup> Such is a requirement of the time dilation models, but not of the biblical text.<sup>32</sup> Clearly, there exists a need to guard against the real possibility that one's allegiance to a particular scientific model will lead to eisegesis — reading into the biblical text a foreign meaning.

(3) Time dilation cosmological models are necessarily dependent on assumption that planet earth provides temporal frame of reference for the creation narrative. If such is the case, as the argument goes, then it is permissible for eons of time (billions of years' worth) to have transpired in the distant reaches of the universe, provided that only six normal twenty four hour days passed on earth — as per [Exodus 20:11](#) and [31:17](#).

However, for this argument to be valid, it needs to be also demonstrated that the creation narrative focusses on planet earth (insofar as it concerns the passage of time) to the exclusion of the rest of the cosmos. Humphreys rightly identifies the passage of time in the creation narrative is described with reference to the earth, with a “day” marked by the passage of both an “evening” & “morning” ([Gen. 1:5](#)).

“God quite reasonably tells us periods of time in terms of our frame of reference, and not in terms of some otherworldly frame of reference, as some authors would have it. So Genesis 1, [Exodus 20:11](#), and other passages are telling us that God made the universe in 6 days E.S.T.—Earth Standard Time” (Humphreys 1994a, 263). This scheme thus allows for indefinite amounts of time to pass elsewhere in the universe provided that the earth experiences no more than six days, as defined by its own rotation. Time, in the creation narrative, is localized. Hartnett also notes, “Once we realize that time is relative, any discussion of the age of the universe has to ask ‘by which clock?’ The reference frame God has given us in Genesis 1 is clearly from an earth-rotation perspective, i.e., by earth clocks. The creation of the whole universe was thus in six days, about 6,000 years ago in [relativistic time dilation models]. And the whole universe is about six thousand years old. There is no suggestion of a ‘billions-of-years ago’ date for creation, nor are the stars ‘older’ than the earth (by earth clocks).” Nevertheless, the model allows that, “tucked away within day 4—an ordinary-length day by earth time — we find billions of years of cosmic time” (Williams and Hartnett 2005, 178).

But, is the passage of time as described in the creation narrative localized? And is the narrative so singularly focused on earth to suggest that—special though earth truly is—the passage of time on earth is the only temporal frame of reference that matters?<sup>33</sup> The creation narrative in [Genesis 1:1–2:3](#) has a focus which extends beyond earth, as indicated by several features in the narrative: First, [Genesis 1:1](#), which likely represents an instance of introductory encapsulation,<sup>34</sup> and contains a merism (“heaven & earth”) indicating the universal focus of the narrative. This is reinforced by the use of inclusion — a literary device which envelopes or brackets a unit of text by presenting a word, phrase, or theme at the beginning of that unit, and again at the end of that unit. [Genesis 1:1](#) forms an inclusio with [Genesis 2:1–3](#) in that the key terms contained in the narrative’s opening verse—[בָּרָא](#) (“created”), [אֱלֹהִים](#) (“God”), and [הַשָּׁמַיִם](#) and [הָאָרֶץ](#) (“the heavens” and “the earth”) — are repeated in reverse order in [Genesis 2:1–3](#) ([הַשָּׁמַיִם](#) and [הָאָרֶץ](#) in 2:1; [אֱלֹהִים](#), initially, in 2:2; and [בָּרָא](#) in 2:3), thereby bracketing the contents of the creation narrative (Mathews 1996, 114) & thus revealing scope of the narrative’s focus. Moreover, nine of the narrative’s thirty four verses ([6–8](#), [14–19](#)) concern themselves with the creation of the heavens & celestial bodies. As the narrative is concerned with the whole cosmos, is it fair to say that the narrative’s perspective on the passage of time is governed by the rotation of the earth, irrespective of how

much actual time transpires in other regions of the universe? The narrative gives no indication that the passage of time it describes is applicable only to the earth or the solar system. Thus, any argument for time dilation on Day Four (or any other day) is an argument from silence. Just because such a theory might be *permitted* by biblical text (*assuming* the statements about the passage of time pertain only to earth), it is in no way clearly *warranted* by the text.

(4) Coupled with the preceding point, there exists also a question about authorial intent relative to the understanding of the original reader receivers of the biblical text. Traditionally, evangelicals have understood proper understanding of Scripture to be that which recognizes the meaning that was *author intended* as conveyed by the text (see Stein 1994, 20ff.).<sup>35</sup> Authorial intention, Poythress says, is “supremely important” in dealing with divinely inspired Scripture. He agrees with Hirsch that the goal of biblical interpretation is (or ought to be) the recovery of the author’s intended meaning (Poythress 2009, 173ff). Not only is this a practical requirement of actually *understanding* the text, it is an ethical obligation, lest the reader do a disservice to the authors by misrepresenting the meaning they intend to convey (Poythress 2009, 173).

But in seeking to rightly interpret the biblical text it is necessary to consider the original readers and the historical context that they shared with the human author of a given passage. Vanhoozer states, “Authorial intention is always located in a network of beliefs & practices that form the background for communicative action” (Vanhoozer 1998, 250). Quoting Wendell Harris, he also observes the tremendous importance of “shared contexts”: “Meaning [communicated] is dependent on the author prospectively & the reader retrospectively sharing the context. What others know & know we know are shared contexts” (Vanhoozer 1998, 251).<sup>36</sup> Brown calls this the “audience context” (Brown 2007, 192). Consequently, as Boyd writes, in endeavoring to communicate successfully, “the author shaped text commensurate with the particular historical, cultural, linguistic and ideological context he had in common with his original readers.” The author would have looked at the event he was describing, and then, taking into account his intended audience, would have produced his text (Boyd 2005, 640).<sup>37</sup> The question, therefore, is, Would Moses have expected his original audience, hearing the words of [Genesis 1:1–2:3](#), as well as [Exodus 20:11](#) and [31:17](#), to conclude that the “six days” mentioned in those texts refers to time as measured from earth’s perspective, and not some universal frame of reference?<sup>38</sup> Would they have conceived of billions of years of time transpiring in the universe as only six days elapsed on earth? Would the original readers have understood texts such as [Job 9:8](#), [Psalm 104:2](#), and [Isaiah 40:22](#) in terms of cosmic expansion? A fair evaluation of their historical context strongly suggests not.

Humphreys, however, maintains that interpreters must not look merely to the intended meaning of the *human author*, but must also recognize that the divine author could have intended more than the human author in the inspired scriptural text (Humphreys 1994a, 256). In support, he appeals to [1 Peter 1:10-11](#) and notes that the human authors of the text did not fully understand the meaning the Holy Spirit moved them to write. Accordingly, Humphreys claims, “If we were to limit ourselves to the intent of the [human] speaker or writer as he spoke or wrote, this passage says we would miss a lot of rich truth,” and, “The principle [of seeking out the intended meaning of the human author] essentially shuts us away from God & what he intended to say to us. We don’t study Genesis in order to know the mind of Moses; we study to know the mind of God” (Humphreys 1994a, 256). These statements are misguided for several reasons.

First, they fail to rightly understand the point of Peter’s statement. Peter doesn’t claim that the writers of old were oblivious to the *meaning* of what they wrote; they *understood* their writings spoke of a coming Messiah. What they didn’t know was the ultimate *referent* of their prophecy or the *time* of his coming. The reason for their incomplete understanding doubtlessly had to do with the fact that the prophecies imparted only limited information; the full picture of the person of whom they spoke (Christ) became clearer as more information was progressively revealed in the course of time.[39](#)

Second, these statements risk violating the principle of *single meaning* (Thomas 2001, 44–46; N.B. his defense of this principle from [Genesis 1:27–30](#); cf. Ramm 1970, 112–113). For supporters of time dilation models, the meaning of “six days” is different for the original readers than it is for contemporary readers; “stretched out” means one thing to the original readers and quite another to contemporary readers who’ve benefited from interaction with modern science. Individual passages in this view could be argued to contain more than one meaning—with the particular meaning determined by which audience (original or contemporary) is tracking with the intention of which author (human or divine). Worse still, this notion risks setting God’s intended meaning in opposition to the human author’s intended meaning, and so making the text an instrument of confusion.

Third, these statements imply that the Lord actually failed to communicate with His original audience. There was only partial access to the meaning of special revelation until scientists came along some 3400 years later & enlightened readers of the text to the fuller meaning. Accordingly, scientific interpretation becomes the final arbiter of meaning, potentially undermining the authority of Scripture. This surely is not the intention of Humphreys and Hartnett, though it seems to be (at least potentially) a natural consequence of such an outlook on hermeneutics.

Finally, these statements could potentially allow contemporary readers to find in the text whatever “fuller” meaning suits their purposes. Once the constraint of the audience’s historical context is removed in interpreting meaning, it can become very easy to twist the grammatical context in order to “find” deeper meaning in the text.

As Boyd correctly observes, “The timelessness of the text is a testimony the divine Author had a wider readership in mind. Our starting point [for interpretation] must be the understanding of the first readers” (Boyd 2008, 185). Discounting how the text would have been understood by the original readers quickly opens the door to eisegesis.

(5) A final point of critique concerns Humphreys’ model (his original and revised models) exclusively. Humphreys claims that, subsequent to Day 4 of the Creation Week, there was a distinct episode of cosmic stretching and the accompanying time dilation during the year-long Flood event (Humphreys 1994a, 261; Vardiman and Humphreys 2011b, 13–14). Humphreys claims as biblical support for this element of his model [2 Samuel 22:10](#) and [Psalm 18:9.40](#). There are serious problems with Humphreys’ assertion. First, as demonstrated above, [2 Samuel 22:10](#) and [Psalm 18:9](#) are parallel passages that employ theophonic language to describe God’s act of bowing the heavens so to personally come to aid of His anointed.<sup>41</sup> These verses have nothing to do with an act of stretching out the heavens in any way relevant to cosmic expansion. Furthermore, even if they did speak of cosmic expansion, there is nothing in the context of these verses to indicate the time of the Genesis Flood is in view. ([2 Samuel 22:5](#) and [Psalm 18:4](#) mention floodwaters, but the Hebrew word is נַחַל meaning “torrent,” not מַבּוּל, the term reserved for the Genesis Flood. In any case, David’s vivid description of the “torrents of destruction” is a metaphorical one; it has in view the violent nature of David’s enemies who came upon him swiftly and angrily, like an uncontrolled torrent of water.)

The bottom line is that there is *no exegetical evidence* for an episode of time dilation during the Genesis Flood. Why then does Humphreys propose there is? Ostensibly, it is to help prop up the tentative conclusions of the RATE initiative with respect to accelerated nuclear decay during the year-long Flood (Humphreys 2000a, 367–369; 2005b, 67–74; Vardiman, et al. 2005, 763). But this turns proper theological method on its head. In building creationist models, it is critical that they begin with *biblical theology*, that is, the analysis of the doctrinal content of each individual book of the Bible (or group of books by single author) giving consideration to a book’s place in the history of God’s progressive revelation. This is where difficult work of detailed exegesis takes place. Biblical theology is to be followed by integration or synthesis of the messages of individual texts across the boundaries of history and authorship.

This leads to an organization of biblical truth in a categorical or *systematic* fashion, which, in turn, *provides the doctrinal basis for the validation and appropriation or (alternatively) the rejection of extrabiblical truth claims that arise out of the study of history, science, and the other disciplines* (see Faulkner with Anderson 2016, 324; cf. Osborne 2006, 350–357). In other words, it is essential for creationist models to be *drawn from* the biblical text (properly interpreted with careful adherence to the proper hermeneutical method & going through the appropriate stages of theological development) rather than, as it seems Humphreys is doing in this instance, *imposed on* the biblical text.

To attempt to fit tenets of a particular model into the text, when no clear evidence for that model is to be found subsequent to going through the appropriate steps of biblical exegesis & theological development, risks violating Paul’s warning against “going beyond what is written” ([1 Cor. 4:6](#)). And, while it is acceptable for human interpretations coming from science & other fields of study to spur the interpreter back to the study of the text, to ensure that he or she has correctly worked through all of the many aspects of exegesis, synthesis, and systematization (Faulkner with Anderson 2016, 330), never should they be used as a basis to insert into the text a meaning unsupported by the relevant literary and contextual information.

One final point of critique regarding relativistic time dilation models needs to be raised, although it is neither an exegetical nor a theological critique. Rather, it is a critique of the inherent logic of such models in relation to the broader (scientific) argument for recent creation. Creationists have appealed to a variety of evidences in support of a recent creation for the earth & the cosmos. In particular, many have argued that the persistence of the arms of spiral galaxies (which rotate at different velocities relative to the distance from a galaxy’s center) are evidence of the recent creation of those galaxies (and universe). Humphreys has been among those who use this line of argumentation (Humphreys 2005a, 2006). However, time dilation models require that there has been billions of years of time in the distant reaches of the cosmos, as measured local time (not earth time). If this is the case, why are not the arms of distant spiral galaxies twisted beyond recognition? In order to preserve the conclusions of time dilation cosmological models, it is necessary for creationists who hold them to appeal to the same types of ad hoc explanations for persistence of spiral arms used by secular (old-age) cosmologists. This is a gross inconsistency for creationists promoting time-dilation models.<sup>42</sup> Either this particular argument for recent creation (spiral arm wind up) must be abandoned, or time dilation models must be abandoned. Creationists cannot *consistently* hold on to both.

## The Need for Exegetical and Theological Accuracy in Addressing the Age of the Universe

This paper has surveyed the historical development of the relativistic time dilation cosmological models of Humphreys and Hartnett, examining primary assumptions, supporting arguments & conclusions relative to exegesis and theology. It concludes that these cosmological models are dependent on strained exegesis & they introduce interpretations of the biblical text that are dependent on modern scientific concepts that would have been foreign to the original readers. At the risk of being exceedingly blunt, it must be stated this paper witnesses a problem that has become an epidemic in the modern creationist movement: Scientists, both professionals & amateurs (as well as medical doctors, engineers and general enthusiasts) are naïvely approaching the tasks of biblical exegesis and theological development, improperly deriving from the biblical text scientific models (or, worse, imposing preconceived models on the Bible by means of proof-texting), and then are using those models as framework for the interpretation of other scientific data, and even interpretation of other biblical passages. It's increasingly wearisome to this author & the other committed recent-creationist biblical scholars to see physicists & astronomers who attempt to do the work of theologians and Hebraists, when they presume to speak authoritatively on theological or linguistic topics & don't interact with qualified experts in respective fields of research that they endeavor to address.

In a summary of his contributions to the *International Conference on Creationism*, wherein his views on a time dilation cosmology were first discussed, Humphreys (1995b) noted that his two papers—one biblical and the other scientific—"had to pass rigorous peer review by experts before they could be presented." Peer review of academic material is highly beneficial, as it is a safeguard against errant material having an undue influence on readers. The creationist movement has commonly suffered a lack of quality peer review when it comes to the appeals to the biblical text made by scientists to support their theories. To summarize the sentiments that were expressed by one of the author's former professors, it risks bringing reproach on the creationist movement when well-meaning but theologically-untrained people present rigorously-developed scientific concepts and then attempt to ground them in the Bible with out-of-context quotes from translations (devoid of attention to the original languages), or (worse) with matter-of-fact appeals to Strong's *Concordance* as if that proves their point.<sup>43</sup> Creationists who truly care about the biblical text can and must do better than this.



As it concerns cosmology, creationist scientists do need to advance in developing their models. But in doing so, they need to be committed to solid work in biblical theology, making a concerted effort to determine what each relevant passage of Scripture is communicating in light of its author's historical context (and original readership) and in a manner consistent with the lexical, grammatical, syntactical, and structural elements of the passage. It is critical to foster a commitment to a sound grammatical-historical hermeneutic & robust theological method (moving from biblical theology, to systematic theology, to worldview development & then to interaction with the scientific data) so as to avoid inadvertently imposing on the biblical text models that are foreign to the Scripture. Faulkner's proposal for a new solution to the light travel time problem does this (Faulkner 2013b; Faulkner with Anderson 2016, 199–220).

Concerning time dilation cosmological models, the foregoing considerations of the exegetical and theological evidence suggests they should be discarded. *If* they are promoted, it should be with open admission of their exegetical and theological shortcomings.

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## Footnotes

1. Note that the proper fulfillment of an entity's purpose is assumed in the Lord's pronouncement of "very good" in [Genesis 1:31](#). See Anderson 2013 (394–395) and Keil (1869–1891) 2011 (41–42).
2. An overview and critique of these, and other, solutions proposed to date is offered in Chapter 11 of *The Created Cosmos: What the Bible Reveals About Astronomy* (Faulkner with Anderson 2016). Notably, one other option that has been proposed, but which sound scientific data demands be dismissed, is that the distances in question are not as great as commonly understood. See the rebuttal to this perspective in Faulkner 2013a.
3. The title of this work is somewhat confusing, for while Humphreys did propose that the earth was young, he also proposed that the universe was old, as measured by its own temporal reference frame.
4. Humphreys describes a white hole as "a black hole running in reverse," a theoretical astronomical phenomenon having an event horizon permitting only outward motion through itself. As matter (and energy) expanded forth from within the white hole, the event horizon would shrink until the white hole ceased to exist.
5. This necessarily excludes any possibility of the canopy model advocated by Henry Morris.
6. Humphrey's distinction between the observable heavens, and the "heaven of heavens" referred to in [1 Kings 8:27](#) and [Psalm 148:4](#) is exegetically unwarranted. The relatively basic Hebrew construct chain [מִן־הַשָּׁמַיִם הַשְּׁמַיִם](#) simply means "the highest heaven," a poetic expression for the loftiest extent of heaven. It does not, as Humphreys suggests, mean a region of heaven beyond the waters above, though this point is irrelevant to this critique.
7. Humphreys is decidedly loose in what he counts as textual support for his model, as some of these passages—most notably [Job 37:18](#) and [Ezekiel 1:22](#)—likely do not even concern the astronomical heavens. This issue's relevancy will be discussed later in this paper in relation to the exegetical problems of time dilation models. Notably, Humphreys (1994a, 261) also proposes an episode of cosmic expansion during the Genesis Flood based on [2 Samuel 22:10](#) and [Psalm 18:9](#). The exegetical viability of this interpretation will likewise be evaluated later.
8. This assertion overlooks the possibility of the ex nihilo creation (as opposed to the mere formation) of the cosmic bodies on Day Four. Moreover, as far as the exegesis of the biblical text is concerned, it overlooks the fact that Peter only states that the earth (not the heavenly bodies) "was formed out of water and by water."
9. This assertion will be key within the following evaluation of Humphreys' model, especially given the introductory verse of the creation narrative, which, by means of the merism ("heaven and earth"), appears to indicate a universal focus. If the focus is universal, what does that suggest about the temporal reference frame?
10. Ostensibly, Humphreys here means "young" from the temporal reference frame of earth.

11. The concerns which Phillips claimed defeated the “Timothy test” are Joshua’s account of the long day ([Josh. 10](#)), the chronology of Judges (seemingly sequential, but in fact containing many instances of chronological disjunction), the chronology of Kings and Chronicles (which rely on different regnal dating practices), the genealogies of Genesis 5 and 11 (which Phillips takes as chronologically useless), and list of Israel’s border cities set forth in Joshua 14–19 (but here Phillips incorrectly presumes this list as anachronistic because he misdated key events in Israel’s history, opting for a 13th-century Exodus and conquest, rather than a biblical 15th-century date).
12. It is noteworthy that recent work by Jason Lisle and Jake Hebert has challenged this perception. See their abstract from the annual Creation Research Society Conference, to be published in the forthcoming volume of the *Creation Research Society Quarterly*.
13. Here again Humphreys notes the 17 aforementioned scriptural passages (see [2 Sam. 22:10](#); [Job 9:8](#); [26:7](#); [37:18](#); [Ps. 18:9](#); [104:2](#); [144:5](#); [Isa. 40:22](#); [42:5](#); [44:24](#); [45:12](#); [48:13](#); [51:13](#); [Jer. 10:12](#); [51:15](#); [Ezek. 1:22](#); and [Zech. 12:1](#)) which he claims indicate the [past and present] outward expansion of space.
14. Consistent with his original model, Humphreys argues that there was an episode of cosmic expansion during the Genesis Flood based on [2 Samuel 22:10](#) and [Psalm 18:9](#) (Vardiman and Humphreys 2011b, 13–14; cf. Humphreys 2008; 2016). The exegetical viability of this view will be considered later in this paper.
15. The exegetical challenges of Hartnett’s claim about the  $\psi\kappa\iota\gamma$ , specifically as they concern the syntax of the passage in question, will be discussed at length in the following critique offered in this paper.
16. Hartnett apparently takes [Genesis 1:1](#) as a reference to the initial creation of matter and energy on Day One, and not as an instance of introductory encapsulation, in which God’s activities during the Creation Week are summarized. This issue will be discussed in this paper’s following critique of time dilation models.
17. On this point Hartnett invokes many of the same verses describing the “stretching” of the heavens that Humphreys used in defense of his model—especially [Psalm 104:2](#); [Isaiah 40:22](#); [42:5](#); [44:24](#).
18. Hartnett likewise maintained in his paper published two years previously, “For Carmeli’s cosmological relativity to be true on the largest scales in the universe and for Einstein’s relativity to be true on the local scale, including in our solar system where it has been tested, it is required that enormous time dilation must have occurred at Creation. This resulted from massive expansion of the fabric of space itself—even at superluminal speeds, because it is space that expanded, it is not limited by the motion of particles through that space. This effect caused clocks on earth to run much much slower than clocks on the galaxies that expanded out during Creation week. The acceleration of that expansion ceased at the close of Creation week, God no longer stretched out the heavens. This meant that galactic clocks then began to run at the same rate as earth clocks. However, during the days of Creation (primarily Day 4 I contend) this meant that light filled the universe—it had billions of years of cosmic time—and therefore Adam was able to see the stars when he first opened his eyes” (Hartnett 2008, 203).
19. Later Hartnett went on record, saying, “Numerous verses have been used by creationists (e.g. [Psalm 104:2](#); [Isaiah 40:22](#); [42:5](#); [44:24](#); [Job 9:8](#); [37:18](#)), myself

included, to say the universe has undergone cosmological expansion, as part of God's creation. But it would seem that this is pure eisegesis, and not good exegesis" (Hartnett 2014, 457). In the subsequent section, this paper will give consideration to the interpretive claims Hartnett advanced for his original model, as well as those he later advanced for his newer view. It will address, from an exegetical angle, the intended meaning of passages commonly claimed in support of cosmic expansion.

20. Robert Newton is a pseudonym formerly used by Jason Lisle while he was in doctoral studies. Robert Newton's 2001 paper thus represents the earliest development of Lisle's convention.
21. This is surprising, as Hartnett had previously expressed certain misgivings about Lisle's Anisotropic Synchrony Convention, at least concerning its physical implications (Hartnett 2002a).
22. Previously, Hartnett had expressed concern about determining what synchrony convention Scripture employs (see, e.g., Hartnett 2011a, 61); but there is no evidence he addressed this concern.
23. Humphreys appeals to [Psalm 148:4](#) as evidence that the waters above remain beyond the expanse and were not, as some creationists have contended, drained to supply the floodwaters in Genesis 6–8.
24. The extent to which this might be true of the abode of God, the "third heaven" of Paul's discourse in 2 Corinthians 12, may be debatable, but is beyond the purview of this paper. Also, whether the Hebrew readers of Genesis 1 would have conceived of any real line of demarcation between the atmospheric heaven and the astronomical heaven also is worthy of discussion. The fact that [Genesis 1:20](#) describes birds as flying "upon the surface" (עַל-פְּנֵי) of "the expanse of heaven" (רְקִיעַ הַשָּׁמַיִם) suggests the original readers did conceive of the expanse as having a near interface, with the atmosphere representing the very edge of the heavens. Indeed, other texts do not seem to demarcate between the two realms of heaven. Flying creatures are said to fly "in" the heavens ([Deuteronomy 4:17](#)), and the heavens are likewise said to be the abode of the sun, the moon, and the stars (see [Deuteronomy 4:19](#), et al.).
25. Humphreys' speculation about some of the waters separated out from the earth transforming into the elements that were formed into the cosmic bodies (planets, stars, etc.) is an intriguing notion (see Humphreys 1994a, 263). While it may be scientifically feasible, though, it is sheer conjecture from a textual standpoint.
26. Moreover, it deserves to be noted, regardless of whether this verse concerns the "bowing" or "stretching out" of the heavens (cf. [Ezek. 1:22](#)), the fact remains that these verses pertain to events that occurred during the life of David, not during the Creation Week.
27. The tendency for major English translations (other than the New English Translation) to render שָׁמַיִם as "sky" or "skies" rather than "clouds" is curious, especially since the word also appears in [Job 35:5](#), [36:28](#), [37:21](#), and [38:37](#), where it clearly refers to "clouds" (note also Koehler and Baumgartner 2001, s.v. שָׁמַיִם).
28. Hartnett errs in claiming the verb רָקַע with the stretching out of the heavens is in [Isaiah 40:22](#), but the word does not appear there (cf. Hartnett 2011b, 126).



- Incidentally, *רקע* is employed in verses speaking about the stretching out of the heavens, but never is the verb in those verses linked with the noun *שָׁמַיִם* (“heaven”).
29. Here Humphreys and Hartnett come very close to committing a semantic fallacy identified by Carson (1996, 34–35) of reading into a particular term used in the biblical text a concept, that though now associated with that term in modern contexts, was not associated with the term in the historical context of the passage wherein that term is used. The common translation of the Hebrew *נטה*, “to stretch/spread out” may suggest to the modern reader some kind of elastic or inflationary expansion, which he might well associate with scientific ideas about cosmic expansion. But the Hebrew word carries with it a very different sense of “spreading [something] out.” The Hebrew *נטה* is commonly used in reference to rolling out the fabric of a tent ([Gen. 12:8](#); [26:25](#); etc.), a sense not at all foreign to the context of verses talking about the “stretching out” of the heavens (e.g., [Ps. 104:2](#); [Isa. 40:22](#); etc.).
  30. One reviewer’s comment is on this point particularly worthy of mention: “Verbs like *נטה* and *רקע* when used to describe the creation of the heavens or ‘firmament’ probably have more the sense of the unrolling of a tent or scroll, than that of stretching out like some elastic material. In fact, I’m not sure that the notion of ‘stretching’ in the sense of stretching something elastic is even a concept found in Biblical Hebrew. Our English translations do use the word ‘stretch’ quite a number of times, but it is usually in the sense of ‘extending forth’ (one’s hand, for example), rather than stretching something to make it larger. I suspect that reading the notion of the expansion of the universe into the Hebrew words sometimes translated ‘stretch’ is semantically unwarranted.”
  31. There is likewise no textual justification for a post-Creation Week episode of cosmic expansion/time dilation, as Humphreys repeatedly suggested. Such will be discussed in point 5 of this critique.
  32. Hartnett eventually came to recognize this and so retreated from his original cosmological model, as is expressed in his later works, where he calls appeals to the aforementioned passages in support of cosmological expansion as part of God’s creative work “pure eisegesis” (Hartnett 2014, 457; cf. 2011b, 127). However, if there is a legitimate connection (thematically and/or logically) between these verses and God’s creation of the *רָקִיעַ* on Day Two, this is not genuinely eisegesis, just a misidentification of the day on which God engaged in the act described in the verses in question. In any case, it is rather harsh for Hartnett to accuse so bluntly other creationists of engaging in eisegesis when he himself does not in any place in his writing on this topic engage in robust, methodical lexical, grammatical, syntactical, structural, contextual, or theological analysis of the biblical text. Nor does he consult any commentaries, Bible dictionaries, lexicons, grammars, or other appropriate theological resources. Indeed, such interaction may have led creationist scientists to take a more nuanced approach to this issue in the first place.
  33. The consistency of this notion with the authorial intent of the author of Genesis in relation to the understanding of the original readers (15th-century BC Hebrews) will be addressed in the next point of this critique.

34. On this point, Cassuto perceptively notes concerning [Genesis 1:2](#) that the Hebrew construction [וְהָאָרֶץ הָיְתָה תֹהוּ וָבֹהוּ](#) (“Now the earth was formless and void”) plainly shows that verse 2 begins a new subject. “It follows, therefore, that the first verse is an independent sentence that constitutes a formal introduction” (Cassuto 1961, 20). Reinforcing this fact, if [Genesis 1:1](#) were not introductory encapsulation, the narrative would invite confusion. [Genesis 1:1](#) states that God made the “heavens” ([שָׁמַיִם](#)). Later, in verses 6–8, the text indicates that God made an “expanse” ([רָקִיעַ](#)) and that He then called the expanse “heaven” ([שָׁמַיִם](#)). If [Genesis 1:1](#) is just a statement about God’s first creative act, and not a case of introductory encapsulation, the reader is thus forced to conclude that there are two different occasions—on Days 1 and 2, respectively—on which God creates a material entity that He refers to as “heaven.” The only way to avoid inherent contradiction at this juncture is to understand the reference to “heaven” in verse 1 and that in verse 8 as speaking of two distinct things. But such a reading conflicts with the sense of [רָקִיעַ](#) and its relationship to the word [שָׁמַיִם](#) it requires that the reader apply two distinct meanings to the same word used within the same literary context (which, though not impossible and is sometimes warranted by the context, typically is an inadvisable hermeneutical practice). However, there is no contradiction in the narrative if the statement in [Genesis 1:1](#) is understood as representing an instance of introductory encapsulation. Responding to this position, Humphreys objects that if [Genesis 1:1](#) was an instance of introductory encapsulation, then there remains no explicit statement about the creation of original matter: “We would no longer know for certain that God created the original matter” (Humphreys 1994a, 259). This alarmist objection fails to take account of the whole tenor of Scripture. Even if [Genesis 1:1](#) does not inform its readers about the creation of primordial matter, [Exodus 20:11](#) and [31:17](#) indicate that God made all matter in the space of six days during the Creation Week. Other biblical passages—such as [John 1:3](#) and [Hebrews 11:3](#)—echo this truth and remove all doubt about the identity of the Creator. Collectively, they leave no room for any suspicions about preexistent matter. The Lord God made everything.
35. Vanhoozer (1998, 262) states this more formally: “*the meaning of a text is what the author attended to in tending to his words*” (emphasis his). The presence of definite meaning thus depends on the author.
36. Communication through human language involves the speaker’s (i.e., the writer’s) meaning and the addressee’s (reader’s) understanding (Clark 1996, 23). This is not to say that the reader in any way controls textual meaning, but it does suggest that any text which fails to account for how it will be understood by the intended audience is likely to fail in the task of communication. All good authors take account of their intended audience.
37. Citing cognitive linguists Tomlin, Forrest, Pu, and Kim (“Discourse Semantics”), Winther-Nielsen writes, “The speaker (or author) becomes the architect of his text who guides his listener (or reader) in construing a conceptual representation of events and ideas. The speaker (author) as the architect and the hearer (reader) as constructor must both construe a coherent text through their integration of knowledge and management of information. The hearer (reader) makes pragmatic implicatures from

the contextual situation and builds cognitive inferences from the text and the world knowledge he shares with the speaker (author)." (Winther-Nielsen 2002, 69).

38. Note that the passage of time was not, for the Hebrew readers, inextricably linked to the progressive rotation of the earth, as Humphreys (1994a, 263) seems to suggest. When the sun and moon were miraculously made to stand still in [Joshua 10:12-14](#), and when the shadow moved backward ten steps for King Hezekiah in [2 Kings 20:8-11](#), the rotation of the earth stopped (Faulkner with Anderson 2016, 115-127); time did not stop.
39. Even assuming Humphreys' understanding of [1 Peter 1:10-11](#), as it concerns the creation account, Boyd writes, "In historical narrative, there is much less linguistic latitude than in poetic prophetic passages, which are frequently metaphorical, and thus more difficult to understand. I believe that in [1 Peter 1:10-12](#), Peter is referring to texts of the latter type" (Boyd 2008, 185, fn. 62). Either way, Humphreys places too much stock in Peter's brief remark, almost as a sort of rescuing device for his interpretation (and the model he bases on it) which does not easily fit the apparent meaning of the Genesis text. It seems essentially to be an excuse to counterread the text.
40. Here Humphreys commits a semantic fallacy of arbitrarily selecting a supposed "primary" meaning of the word  $\eta\upsilon\tau$ , ostensibly because it suits his model—even though that meaning is much less likely in light of the surrounding literary context. On this form of semantic fallacy, see Osborne (2006, 90-91). On the importance of proper original language study within the task of biblical interpretation, see Kaiser and Silva (1994, 48-51).
41. This paper assumes the basic definition of theophany: an appearance of God perceptible to humans.
42. Ron Samec has, quite commendably, sought to specify the maximum apparent age for a time-dilated universe (see Samec 2016; Samec and Figg 2012). He argues that "only some ~100 million years (not 13.80 billion!) years [sic] of apparent history is exhibited at least in the nearby (<2 kiloparsec, or about 6000 [lightyear]) cosmos—and probably for the "deep" universe as well" (Samec 2016, 47). Thus, the approximate maximum apparent age for a time-dilated universe proposed by Samec will not accommodate the time necessary to resolve the light travel time problem—at least not taking into account the requirements and assumptions of Humphreys' and Hartnett's respective models as they have been proposed. Considerably more work still needs to be done in this area.
43. David Fouts in a letter to the editor of a creationist journal (1998, 39) rightly observes, "As I understand the level of Biblical scholarship coming from both the progressive creationist (and theistic evolutionist) and young-Earth perspectives, I see two problems. Both of these must be addressed on either side of the issue. First, many on both sides act in seeming ignorance (generally speaking) of scholarship done by Biblical scholars in basic grammar, syntax, etymologies and semantics. Our tendency is to think that every believer can properly interpret the Word of God. While this may be theoretically true, what has resulted is an amazing amount of difference of opinions.

44. I think that perhaps we often involve ourselves in eisegesis to support our scientific models rather than yielding our models to solid exegesis. This tendency may be symptomatic of the second problem: both sides seem to be placing natural theology (general revelation) on the same plane as the supernatural (special revelation). This is certainly the case for the progressive creationists and increasingly the case for the young-Earthers." Fouts then appropriately implores, "I would appeal to creation scientists to thoroughly employ Biblical scholars and scholarship in an effort to develop scientific models which are consistent with the Biblical records as interpreted within the grammatical-historical milieu in which they were written, and cease basing those same models on a stroll through Strong's Concordance alone."



## CREATION RESEARCH INSTITUTE RESOURCES

# Is the Age of the Earth a 'Side' Issue?

BY [JAKE HEBERT, PH.D.](#) \* |  
FRIDAY, DECEMBER 07, 2012

Many secularists recently criticized Florida Senator Marco Rubio for not affirming, during the course of an interview, the claim that the earth is 4.5 billion years old.<sup>1</sup>

About a week later, a woman wrote to the American Christian television program *The 700 Club*, expressing her concerns that her sons and husband were "walking away from God" as a result of intellectual doubts about the Bible:

I have three teenage boys and now two of them are questioning the Bible. . . . They tell me if the Bible is truth then I should be able to reasonably explain the existence of dinosaurs. . . . How do I explain things to them that the Bible doesn't cover?<sup>2</sup>

Pat Robertson, the program's host, responded that the great reptiles were on the earth "before the time of the Bible." He also said the earth was more than 6,000 years old, citing radiocarbon dating and dinosaur "carcasses."<sup>2</sup>

But his response didn't address the perfectly sensible issue raised by this woman's sons: if the Bible really *is* God's Word, then it *should* provide a logical framework for explaining dinosaurs.

And the Bible does provide such a framework! Dinosaurs were created on Day Six of the creation week along with the other land animals ([Genesis 1:24-25](#)). Hence, humans would indeed have seen

these great "dragons." In fact, the Bible contains detailed descriptions of two dragon-like animals in Job 40 and 41. But making sense of dinosaurs requires accepting God's Word as it's written without attempting to blend it with evolutionary and old-earth storytelling. Robertson obviously thinks that proclaiming a straightforward understanding of Genesis is likely to drive children from the Christian faith. But young people can quickly discern intellectual inconsistency, and it is transparently inconsistent to claim to believe that the Bible is the inerrant Word of God and also accept an idea of "millions of years" that is not even hinted at in Scripture. This glaring inconsistency may actually make children question Christianity more—not less.

Moreover, the two "evidences" Robertson cited, when properly understood, actually confirm a young age for the earth. Carbon-14 (radiocarbon) decays relatively quickly, so no detectable carbon-14 should ever be present in carbon-containing specimens that are more than 100,000 years old. Yet detectable amounts of carbon-14 are routinely found in coal and natural gas samples that are supposedly many millions of years old.<sup>3</sup>

Although Robertson's mention of dinosaur "carcasses" was a garbled reference to fossilized dinosaur bones, he inadvertently touched upon the subject of "soft dinosaur tissue." Fragile organic material (such as blood cells, blood vessels, and even possible DNA) have been recovered from dinosaur fossils.<sup>4</sup> Yet how could such fragile organic material possibly survive for tens of millions of years? Christians tempted to dismiss the age of the earth should ask some questions: if this issue isn't really important, then why the uproar when a well-known person questions an old earth? And why are the enemies of the gospel so eager to marginalize Christians who affirm a young age for the earth? The answer is obvious: this issue does matter for a number of reasons.<sup>5</sup> Although the scientific data overwhelmingly favor a young age for the earth, the enemies of the gospel do have a potent weapon in their arsenal: ridicule. No one wants to be ridiculed, and Satan is shrewd enough to use a fear of ridicule to intimidate Christians from believing—and proclaiming—this vital doctrine.

# Theistic Evolution and the Day-Age Theory

BY [RICHARD NIESSEN](#) |  
SATURDAY, MARCH 01, 1980

Two elements are essential in any evolutionary scheme, whether it be theistic or atheistic: long periods of time and the assumed validity of the **molecules-to-man** evolutionary scenario. Atheists care little for the biblical account, except to ridicule its statements. Theistic evolutionists, however, profess a certain allegiance to the Scriptures and must attempt to harmonize the biblical account with the evolutionary scenario. The biblical text, at least to the unbiased observer, indicates a universe and earth that were formed in six days; evolutionists suppose at least six billion years. The mechanism by which theistic evolutionists harmonize the two is known as the **day-age theory**.

The key term in this attempted harmony is the word **day** as it is used in Genesis 1. The Hebrew word for **day** is *yom*, and, we are reminded, it is used in a variety of ways: (1) the daylight period in the diurnal cycle as in Genesis 1:5, 14, 16, 18; (2) a normal 24-hour period; and (3) an indefinite time period as in Psalm 90:10.

A passage that is invariably appealed to is 2 Peter 3:8: "One day is with the Lord as a thousand years and a thousand years as one day." Also, it is claimed that too much activity took place on the sixth day ([Genesis 2](#)) to fit into a normal day: Adam's naming of thousands of animals, his perception of his loneliness, and the subsequent creation of Eve.

The claim, then, is that the **days** of Genesis 1 are really long periods of time, which correspond to the major periods of evolutionary geological history.

## A Refutation of the Day-Age Theory

Most Bible-believing creationists maintain the day-age theory is an unbiblical option for the following reasons:

(1) *An improper interpretation of 2 Peter 3:8.*

It is axiomatic in hermeneutics (the science of biblical interpretation) that "a text without a context is a pretext." Just as a tape recording can be edited to make the speaker say whatever the editor desires, so the Scriptures can be juggled to suit a person's fancy or predisposition. For example, "And Jesus answered ... 'What is truth?' " ([John 18:37 - 38](#)). All the above words are straight from the Bible, but a closer examination discloses that it was actually Pilate who uttered the statement, and that the intervening words have been "edited" out.

2 Peter 3:3-10 is a unit. The context speaks of scoffers in the last days who will ridicule the second coming of Christ. Their rationale is uniformitarian in nature: Jesus promised to come quickly, He has not come yet, therefore He is not going to come at all. Peter refutes these uniformitarian assumptions with a reference to the Flood and the certainty of judgment for these scoffers. Then, responding to the charge that Christ has failed to fulfill His promise, Peter writes the words in question, and concludes by reaffirming the certainty of the second coming of Christ.

Verse 8 was never intended to be a mathematical formula of  $1 = 1000$  or  $1000 = 1$ . The point is that God created time, as well as the universe, and therefore stands above it (cf. Heb. 1:2). While we mortals think 1000 years is a long time, God can scan 1000 years of history — past and future — as quickly as we can scan from one end of the horizon to the other. The verse could have equally been worded, "Five minutes is with the Lord as ten thousand years," and still have conveyed the same message. Note the use of the word *as*, describing similarity, is not the same as an equal sign. Conversely, God is able to do in one day what would normally require a thousand years to accomplish. A pertinent suggestion here, in light of the



passage's reference to Creation and the Flood, is a possible allusion to the flood's rapid buildup of the sedimentary layers of the so-called **geologic column**. One day's flood activity could build up layers of sediments that would normally take a thousand years to form by uniformitarian (slowly acting) processes.

2 Peter 3:8 has nothing whatever to do with the length of the creation week. Genesis 1 needs to be interpreted in its own context and not by an irrelevant verse written 1500 years later.

(2) *The inadequacy of a thousand-year **day**.*

Let us grant, for the sake of discussion, the mathematical formula that the theistic evolutionists desire. In that case, day one is the first thousand years of earth's history, day two the second thousand years, etc. Consistency would logically dictate that each of the six periods be the same length, resulting in a 6000-year period of creation from nothing to Adam. But 6000 years is only a drop in the bucket compared to the time required to make the evolutionary system work. A lack of a vast time period is the death knell of the evolutionary process. So, let us try 1 day equals 10,000 years. No, 60,000 years is not enough time either. How about 1 day equals 100,000 years? 1 million years? 10 million years? 100 million years? 1 billion years? Ah, yes, that does it for the required time! But what does it do to language as a tool to communicate meaningful information? If words have this kind of infinite flexibility, then the art of communication is in deed a lost cause. These tactics would be laughed to scorn if they were attempted in any other field of study. We should certainly not tolerate them in the study of God's Word.

It appears that 2 Peter 3:8 is merely the wedge used to get the camel's head into the tent. The Hebrew word *olam* was available to communicate the idea of a long time period if Moses had intended to convey that idea. And the Hebrew word *yom* was available had he wanted to convey the idea of a 24-hour day.

(3) *The demands of primary word usage.*

Every language has certain words that are used, in different contexts, with different meanings. For example, *Webster's Dictionary* defines the noun **ship** as follows:

ship (n) 1: a large seagoing boat 2: airplane 3: a ship's officers and crew. If you were able to see the noun form of ship, in isolation and without a context, which of the three definitions would first come to mind? Obviously the definition listed as #1, or the primary definition of the word. If the context absolutely demanded it, #3 could be used, but it would certainly be an unusual usage of the word.

It is likewise in the biblical languages. The lexicons (Greek and Hebrew dictionaries) list the words and then the definitions in descending order of usage. The translation of Greek and Hebrew is not accomplished by the casting of lots, nor by the spin of a roulette wheel. The primary usage of any term is always given priority in any translation and secondary uses are tried only when the primary usage does not make sense in the context in which the term is set.

The Hebrew word *yom* is used more than 2000 times in the Old Testament. A cursory examination reveals that in over 1900 cases (95%) the word is clearly used of a 24-hour day, or of the daylight portion of a normal day. Many of the other 5% refer to expressions such as "the day of the Lord" ([Joel 2:1](#)) which may not be exceptions at all, since the second coming of Christ will occur on one particular day (1 Cor. 15:51-52), even though His reign extends over a longer period of time.<sup>1</sup> Therefore, even without a context, an unbiased translator would normally understand the idea of "24-hour period" for the word *yom*.

(4) *The demands of context.*

Words generally do not hang in space and in isolation from other words. When they appear in writing, they are always surrounded by other words which serve as modifiers and/or clarifiers. Let us take the

word **ship** used as an illustration in the last point. It is only necessary to add two words to not only differentiate between the noun and the verb forms, but to clarify which of the uses is intended within that form. For example: "The ship flew." The definite article identifies the form as a noun; the verb identifies the secondary usage of the word as an airplane rather than a boat.

We need not belabor the point by multiplying examples here. If I write: "I spaded the garden on my day off," it is clear from the surrounding words that this activity is confined to one particular day. So it is in Genesis 1: all the surrounding words convey, to the unbiased reader, the idea that each activity is confined to one of the particular 24-hour days of this creation week.

*(5) The numerical qualifier demands a 24-hour day.*

The word "day" appears over 200 times in the Old Testament with numbers (i.e., first day, second day, etc.). In every single case, without exception, it refers to a 24-hour day. Each of the six days of the creation week is so qualified and therefore the consistency of Old Testament usage requires a 24-hour day in Genesis 1 as well.

*(6) The terms "evening and morning" require a 24-hour day.*

The words **evening** (52 times) and **morning** (220 times) always refer to normal days where they are used elsewhere in the Old Testament. The Jewish day **began** in the evening (sunset) and **ended** with the start of the evening the following day. Thus it is appropriate that the sequence is **evening-morning** (of a normal day) rather than **morning-evening** (= start and finish). The literal Hebrew is even more pronounced: "There was evening and there was morning, day one. . . . There was evening and there was morning, day two," etc.

(7) *The words "day" and "night" are part of a normal 24-hour day.*

In Genesis 1:5, 14-18, the words **day** and **night** are used nine times in such a manner that they can refer only to the light and dark periods of a normal, 24-hour day.

(8) *Genesis 1:14 distinguishes between days, years, and seasons.*

And God said, "Let there be light-makers in the expanse above to divide the day from the night, and let them be for signs, and for the determination of *seasons* and for *days* and for *years*."

Clearly the word **days** here represents days, **years** represents years, **seasons** represents seasons. It is a **red herring** to claim that, if the sun did not appear until the fourth day, there could be no days and nights on the first three days. The Bible clearly says that there was a light source (apparently temporary in nature, Genesis 1:3), that there were periods of alternating light and darkness (1:4-5), and that there were evenings and mornings for those first three days (1:5, 8,13).

(9) *Symbiosis requires a 24-hour day.*

Symbiosis is a biological term describing a mutually beneficial relationship between two types of creatures. Of particular interest to us are the species of plants that cannot reproduce apart from the habits of certain insects or birds. For example, the yucca plant is dependent upon the yucca moth, and most flowers require bees or other insects for pollination and reproduction. The *Calvaria* tree, on the Mauritius Islands, was totally dependent upon the dodo bird to ingest its seeds, scarify its hard coating, and excrete the seeds before germination could take place. Since the dodo bird became extinct in 1681, no reproduction of this tree has taken place. In fact, the youngest trees are 300 years old! Many additional examples could be cited. According to Genesis 1, plants were created on the third day (vv. 9 - 13), birds on the fifth day (vv. 20 - 23), and insects on the sixth day (vv 24-25, 31). Plants could have survived for 48 or 72 hours

without the birds and the bees, but could they have survived 2-3 billion years without each other according to the day-age scenario? Many birds eat only insects. Could they have survived a billion years while waiting for the insects to evolve?<sup>2</sup> Hardly.

(10) *The survival of the plants and animals requires a 24-hour day.*

If each **day** were indeed a billion years, as theistic evolutionists require, then half of that **day** (500 million years) would have been dark. We are explicitly told in verse 5 that the light was called **day** and the darkness was called **night**, and that each day had one period of **light-darkness**. How then would the plants, insects, and animals have survived through each 500 million year stretch of darkness? Clearly a 24-hour day is called for.

(11) *The testimony of the fourth Commandment.*

It is a marvelous thing to observe the unity of the Scriptures and the orderliness with which God carries out His plans. Have you ever wondered why there were six days of creation, rather than some other number? In the light of the apparently instantaneous creation of the new heavens and new earth of Revelation 21, and the instantaneous nature of the miracles of the New Testament, why is it that God takes **as long as** six days to create everything? And why is it that God rested on the seventh day? Was He tired after all this exertion? No, Psalm 33:6-9 state that "the heavens were made by the Word of the Lord . . . He spoke and it was done. He commanded and it stood fast." There is no hint of exertion here. Genesis 2:2-3 merely means that He ceased working because the created order was completed, not because He was tired.

The commentary on these questions is found in Exodus 20:8-11, and it reads as follows:

verse 8 - Remember the sabbath **day**, to keep it holy.

verse 9 - **Six days** you shall *labor* and do all your work,

verse 10 - But the **seventh day** is the sabbath (rest) of the Lord your God. In it you shall not do any work...

verse 11 - **For** in **six days** the Lord **made** heaven and earth, the sea, and all that is in them and rested on the **seventh day**...

Verses 8-10 speak of man working six days and ceasing from his work on the seventh. These are obviously not eons of time, but normal 24-hour days. A key word in verse 11 is **for**, because it introduces the rationale or foundation for the previous command. It continues by equating the time period of creation with the time period of man's work week (six days plus one day) and states that God Himself had set the example in Genesis 1. That indeed is the reason why the creation week was 7 days — no more, no less. The passage becomes nonsense if it reads: "Work for six days and rest on the seventh, because God worked for six billion years and is now resting during the seventh billion-year period." If God is resting, who parted the waters of the Red Sea in Exodus 14? And what did Jesus mean in John 5:17 when He said, "My Father is working until now, and I myself am working"?

Sometimes the claim is made by theistic evolutionists that we do not know how long the days were way back in Genesis 1. In the first place, Genesis 1 was not **way back**, but was only a few thousand years prior to the writing of Exodus. Since the earth is constantly slowing down in its rotation, the early earth would have been spinning faster and therefore the days would have been shorter, not longer.

But the day-age people have overlooked something even more obvious here: Genesis 1 and Exodus 20 were written by the same author — Moses — at about the same time (ca. 1500 B.C.). Therefore, the common authorship of both passages is evidence that he had the same time period in mind when he used the word **day**. Furthermore, we might note that the Fourth Commandment was actually written by the finger of God Himself on tablets of stone (Ex. 31:18; 32:16-19; 34:1, 28, 29; Deut. 10:4). If anyone should have known how long the days were, it should be the Creator Himself!

(12) *The testimony of the rabbis.*

The Talmudic literature contains commentaries on virtually every passage in the Old Testament. The liberties they take in interpreting some passages boggle the imagination and yet one thing is certain: they are unanimous in accepting a normal, 24-hour day for Genesis 1. If there were the slightest grammatical or contextual indicator within that chapter that would point to a longer period, you can be sure they would have spotted it and developed it at length. The fact that they do not is a strong testimony for interpreting the days as normal, 24-hour periods.

(13) *The testimony of the church fathers.*

It is sometimes claimed that the church fathers believed in long ages for the days in Genesis 1. That is a half truth. The only two who held to this view were Origen and Clement of Alexandria, and they were allegorizers who devised unusual interpretations for every part of Scripture. Their system of allegorizing led to the most unbelievable interpretations, which were bounded only by the limits of their fertile imaginations. Other early commentators on Genesis 1 include the Epistle of Barnabas, Irenaeus, and Justin Martyr. Their remarks have frequently been misunderstood to mean that they believed in the day-age theory. That is not true. What they were doing was developing an eschatological framework which included a literal 1000-year reign of Christ on earth (the millennium). Their logic followed these lines:

- a. God worked for six days and rested on the seventh.
- b. One day is with the Lord as a thousand years (cf. 2 Peter 3:8).

The six days of creation and one day of rest therefore typify the six thousand years of human history that will be concluded by the one thousand-year millennium, followed by eternity. Creation

- c. took place on 4000 B.C. therefore the millennium should commence on A.D. 2000, terminate on A.D. 3000, and usher in the timeless period of eternity.

Whether or not we agree with their reasoning and the resulting prophetic framework, we conclude that these early church fathers were not denying the literal six-day creation, but were affirming their faith in it.

The view of the Reformers (Luther, Calvin, etc.) is that of a six-day creation, of 24 hours apiece.

Thomas Scott's commentary of 1780 generally mentions varying interpretations where they exist, but says nothing about any possibility of the "days" being other than 24-hour periods.

It is only since the middle of the nineteenth century that commentators began talking about long periods of time within Genesis 1 itself. That is truly amazing! The Pentateuch was written by Moses in 1500 B.C. The day-age theory is not mentioned by any serious biblical scholar until the 1800's A.D. For 3300 years this supposed secret lay hidden awaiting the craftiness of nineteenth-century scholarship to unlock its mysteries and reveal them to a waiting world! Something is wrong here. Either God does not know how to express Himself very clearly, or three thousand years' worth of biblical scholars were blind for failing to see this obvious truth, or . . . the whole day-age theory is nothing more than a modern contrivance.

Is there some event in the mid 1800's that would tie in with this? Indeed, there is. It was at this time that Darwin's *Origin of Species*, Lyell's *Principles of Geology*, and other evolutionary treatises were flooding the marketplace, resulting in a widespread popular acceptance of the major tenets of evolution. Instead of holding their ground and insisting on the authenticity of God's account of origins, many theologians made the evolutionary theory the criterion of truth and practically fell over each other in their wild scramble to compromise the biblical account of origins with the speculations of nineteenth-century atheists and agnostics. Where it comes to a contest between the Bible and the theories of men, it seems that there are always those who will lean over backwards to make sure the Bible gets the short end of the stick.

(14) *The theological problem of sin and death.*



According to theistic evolutionists, plant and animal life flourished and died at least 500 million years before man evolved. Their deaths have been recorded as the fossil remains embedded in the sedimentary rocks of the so-called **geologic column**.

Romans 5:12, however, does not agree: "Therefore as through one man sin entered into the world, and death through sin, so death passed to all men, because all have sinned."

The passage then goes on to identify Adam as the **one man** referred to in verse 12. There is nothing ambiguous about the passage; it means exactly what it says: Adam was the first man, and there was no death prior to the Garden of Eden incident recorded in Genesis 3. Either theistic evolution and its day-age theory are wrong, or Romans 5:12 is in error. There is no harmonizing or fence-straddling here; one must make a choice between holding to theistic evolution or believing the plain statements in the Bible.

There is yet another lesson to be learned from this New Testament passage. There is a tendency among neo-evangelicals today to make a false dichotomy between the Bible's statements of **faith and practice** and statements pertaining to **science and history**. The former, we are told, are accurate; the latter are riddled with errors of fact. This view is also known as the **partial inspiration** or **limited inerrancy** view of inspiration. Romans 5:12 shows that the above is untenable because the passage bases a theological doctrine (man's sin) upon a historical event (Adam's fall). Likewise 1 Cor. 15:45 bases the doctrine of the resurrection upon the historicity of Adam as the first man. Many other examples could be cited, but the lesson is clear: the theology ("faith and practice") of the Christian life is inseparably linked to and interwoven with the historicity and scientific validity of the narrative portions of Scripture. To deny one is to deny the other.

*(15) The feasibility of the events of the sixth day.*

One problem seems to be: **how could Adam have named all the animals in one day?** There are two factors to consider here.

First, only a limited number of animals are required. The purpose of parading this entourage of animals before Adam appears to have been to demonstrate to him that man was an entirely different order of creation than the animal kingdom and that none of them could ever serve as a physical and psychological companion to him. This obviously eliminates most of the organisms of the earth: insects, mice, lizards, and fish need not even apply for the position. Since God selected the animals here, He probably limited the number of candidates to those who would even conceivably be suitable. The text itself limits them to "all cattle, and to the fowl of the air, and to every beast of the field" ([Genesis 2:20](#)).

Second, Adam must have had an extremely high intelligence. Because Adam was capable of using 100 percent of his pre-Fall brain, he would probably have had an IQ of 1500 or better. Furthermore, Adam did not have to learn his vocabulary: God programmed it into his brain at the moment of his creation, and he was created as a fully functioning person. It was therefore with the utmost facility that Adam named the animals that were brought before him.

The second problem is due to a misreading of the biblical text where it says in Genesis 2:18 that "it is not good that the man should be alone." Being alone is not the same as being lonely. The latter requires some time; the former does not.

Unless one is predisposed, because of outside assumptions (evolution), to find fault with the passage, there is nothing inherently unreasonable about the events occurring on one normal 24-hour day, as indicated.

## **Conclusion**

Much could be said about the scientific fallacies of the evolution model and the scientific superiority of the creation model<sup>3</sup> but that is beyond the scope of this essay. The emphasis here has been on the

professing Christian who is attempting to unequally yoke together two entirely opposing scenarios (creation and evolution) and who is using an unscriptural methodology (the day-age theory) to accomplish this unholy matrimony. Ecclesiastes 4:12 speaks about a three-fold cord being not easily broken. This essay has woven together a fifteen-fold cord that is not easily broken. The day-age theory, according to the above evidence, is not permitted by Scripture and is therefore false. Elijah said, "How long will you waver between two opinions....([1 Kings 18:21](#)). Each of us needs to decide where he stands on this vital issue.

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<sup>1</sup> There are very few, if any, of these "exceptions" that actually require the meaning of a period of time other than a solar day.

<sup>2</sup> Note that the order of the Bible is not the order required by evolution. See the writer's article "Significant Discrepancies Between Theistic Evolution and the Bible." (*Christian Heritage Courier*, August, 1979). Also see John C. Whitcomb's book *The Early Earth*, (1972), and Henry M. Morris' book *Biblical Cosmology and Modern Science* (1970) - both available from CLP Publishers, P.O. Box 15666, San Diego, CA 92115.

<sup>3</sup> See Henry M. Morris, [Scientific Creationism](#) (San Diego: CLP Publishers, 1974).

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# The Ocean's Salt Clock Shows a Young World

BY [FRANK SHERWIN, M.A.](#) \* |  
THURSDAY, JULY 01, 2010

The biblical geologic model of earth history is certainly at odds with traditional uniformitarian assumptions. Creation geologist Dr. Andrew Snelling has published a comprehensive two-volume text on the catastrophic nature of earth's recent past.<sup>1</sup> In it, he provides powerful biblical and scientific evidence pointing to the young age of our created planet.

For example, consider the accumulated salt in the world's oceans. Evolutionists maintain that the seas--from whence our supposed ancestors generated--are at least three billion years old. However, the low concentration of salt in the oceans calls this great age into question. There are many other salts in the ocean besides "table salt," which is composed of equal amounts of chlorine and sodium atoms. These solid crystals can be dissolved by water, which separates elements from one another into individual charged atoms called ions. Researching the historically possible values, as well as present processes of both output and input of sodium, gives us insight into the ocean's history. Leached sodium ions from weathered minerals is carried to the oceans from rivers and other sources. It has been reliably estimated that 457 million tons of this sodium is added to the oceans annually by river drainage.<sup>2</sup>

Sodium also leaves the ocean via salt spray and ion exchange in a measured amount. If these rates were consistent throughout the past (a proposition that must be assumed), then salt accumulation can become a kind of clock used to measure the ocean's age. We know how fast salt enters and how fast it leaves. It is apparent that the oceans have not yet reached equilibrium. Instead, they keep getting saltier every year.

By being as generous as we can for the evolutionist regarding sodium input and output rates, the ocean's age is only 40 to 60 million years.<sup>3</sup> This obviously is far short of the uniformitarian (evolutionary) age of 3 *billion* years. But the "40 to 60 million years old" age is considerably more than the thousands of years creation scientists maintain is the biblical/ scientific age of this planet.

The discrepancy lies in the assumption that there was *no* sodium in the oceans at creation, and that all salt has been added at present rates since that time. However, the modern creation science model of earth's history begins with a saltwater environment in which the newly created saltwater fish would swim. Exactly how salty the oceans were cannot be known. The global Flood added considerable amounts of sodium into the seas due to volcanism (volcanic dust contributes some sodium) and massive erosion.

Critics attempt to blunt the implications with the faulty argument of aluminum accumulation in the oceans. Some maintain that since the current amount of this metal in the seas would indicate the earth was only a century old, the ocean's salt clock is invalid. But unlike sodium, aluminum exits the ocean as rapidly as it enters. The cycle time, technically called "residence time," is short, only about 100 years. This is clearly not true for the element sodium, so the ocean's missing salt refutes belief in an old earth.

Accumulating salt in the ocean does not "prove" anything, but it does deal a death blow to evolutionary ideas. Holding to the well-attested biblical text gives us the true age of the world's oceans--measured in just thousands of years.<sup>4</sup>

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# Ice Cores, Seafloor Sediments, and the Age of the Earth, Part 1

BY [JAKE HEBERT, PH.D.](#) \* |  
FRIDAY, MAY 30, 2014

In an attempt to learn about past climates, scientists have drilled and extracted cylindrical cores from the Greenland and Antarctic ice sheets. Because of the great thickness of these sheets, the cores can have combined lengths of thousands of meters.

Permanent ice sheets probably did not exist in the pre-Flood world, but if they had, they almost certainly would have been destroyed during the great Flood. Hence, today's high-latitude ice sheets have only had about 4,500 years—the time since the Flood—to grow to their present sizes.

Yet secular scientists assign very old ages to the ice deep within these cores. For instance, ice near the bottom of two Antarctic cores, the Vostok and EPICA Dome C cores, is said to be 400,000 and 800,000 years old, respectively. Clearly, these vast ages are incompatible with the Bible's short timescale. Do ice cores present an unanswerable argument for an old earth?

## “Deep Time” Not Needed for Thick Ice Sheets

It should first be noted that vast amounts of time are *not* needed for the formation of thick ice sheets. Even if one grants the assumption that average high-latitude snowfall rates have been roughly constant throughout time, the Greenland ice sheet would need (in the absence of melting) only about 5,000 years to form, and the Antarctic ice sheets would require only about 10,200 years.<sup>1</sup> Although these numbers are greater than the roughly 4,500 years since the Flood,

they are easily compatible with the biblical model that predicts much higher snowfall rates during the post-Flood Ice Age.<sup>2</sup>

So the issue is not whether vast amounts of time are necessary for thick ice sheets to form—they clearly are *not* needed. Informed secular scientists know this but would still argue, based upon their models of Earth history, that the ice sheets have nevertheless existed for millions of years. So the key question is, “Have secular scientists really identified hundreds of thousands of annual layers within these ice sheets?”

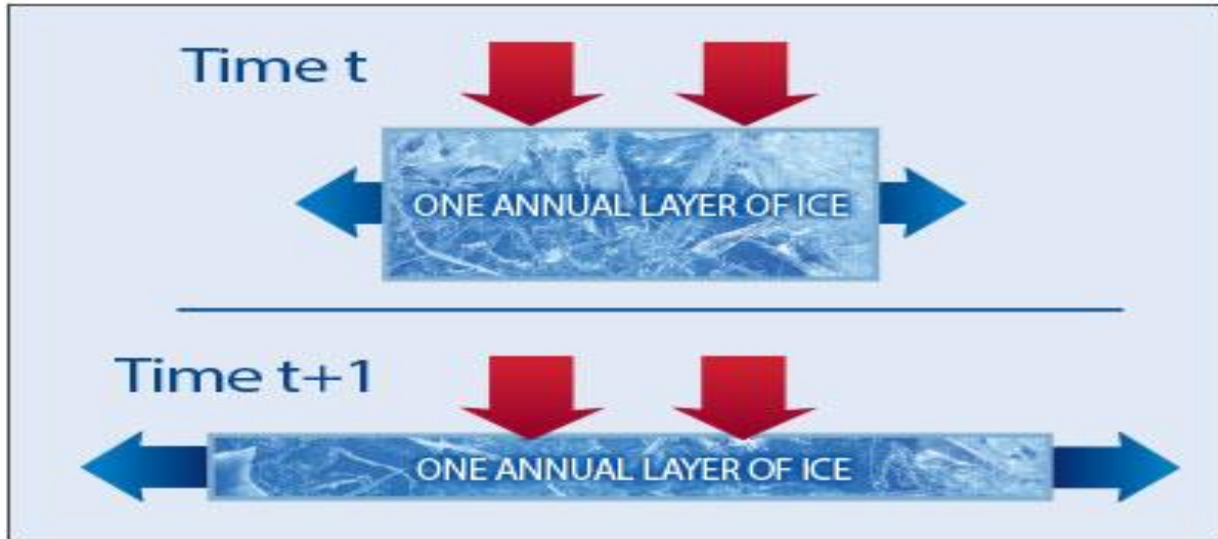
### Visible Layers in Ice Cores

Snow and ice in the high latitudes generally do not melt even during the summer months—they accumulate over time. Layers of snow fall and are covered by subsequent layers. As layers of snow accrue, their vertical thickness increases, and the snow transforms into ice as the air is squeezed out.

This ice contains layers that are distinct from one another. For instance, *depth hoar complexes* can be identified and are used to assist in the dating of ice within a core. Depth hoar is essentially low-density snow characterized by large ice crystals (often cup-shaped) and can form in clear, calm weather when the temperature above the snow changes rapidly with increasing height. If this clear weather is followed by a large storm, then a crisp, firm surface called a *wind crust* or *wind slab* can form above the depth hoar. Such conditions can occur repeatedly, usually during the late summer/autumn months, resulting in a depth hoar complex.<sup>3</sup>

### Glacial-Flow Models

Can scientists determine the elapsed time since a given ice layer was deposited by visually inspecting and counting presumed annual layers within the ice core? It may appear straightforward, but in actual practice there are a number of complicating factors.



**Figure 1.** Because layers of ice become thinner at increasing depths within an ice sheet, mathematical flow models must be used to determine how much thinning is present at a given depth.

Layering becomes more indistinct at greater depths within the core. Hence, scientists cannot simply visually examine and count the deeper layers if they want to extend the chronology into the more distant past. Nor can they simply guess the locations and number these deeper layers based on corresponding layer thicknesses higher in the core. This is because the weight of the overlying ice causes the layers to be forced downward and become progressively thinner at greater and greater core depths (Figure 1).

Hence a theoretical *flow model* is needed to convert a measured distance down the length of the core into a calculated time. In fact, flow models are actually the most common method of dating ice cores.<sup>4</sup> In constructing their flow models, secular scientists *assume* that the ice sheets have been in existence for millions of years, and that they have maintained more or less the same heights for all that time. In other words, they base their models on the belief that the ice sheets have been in a nearly “steady state” of equilibrium for millions of years.<sup>5</sup> These assumptions naturally yield vast age assignments and an assumed extreme thinning of the deeper layers.



Creation scientists Larry Vardiman and Michael Oard have constructed their own flow models—models that assume the ice sheets began forming shortly after the Flood about 4,500 years ago.<sup>6,7</sup> In a creation-Flood glacial-flow model, one would expect that such drastic thinning with depth would be absent. In fact, in creation-Flood ice flow models, these lower layers might actually be quite thick.

## **The Astronomical Theory**

Although uniformitarian scientists would acknowledge that their flow models implicitly assume an old earth, they would argue that this assumption is justified, partly because the ages assigned to the ice cores agree with the expectations of a popular theory for ice ages called the astronomical or Milankovitch theory. According to this theory, ice ages are “paced” by subtle increases and decreases in northern high-latitude summer sunlight. These variations are caused by subtle changes in the earth’s motions as it orbits the sun, changes that are thought to take tens of thousands of years. Because secular scientists assume the solar system is billions of years old, they believe they are free to extrapolate these motions backward hundreds of thousands of years into the supposed “prehistoric” past.

Although the astronomical theory is currently popular, it is actually a theory from the 1800s, has a number of serious problems, and was previously rejected by meteorologists long ago.<sup>8</sup>

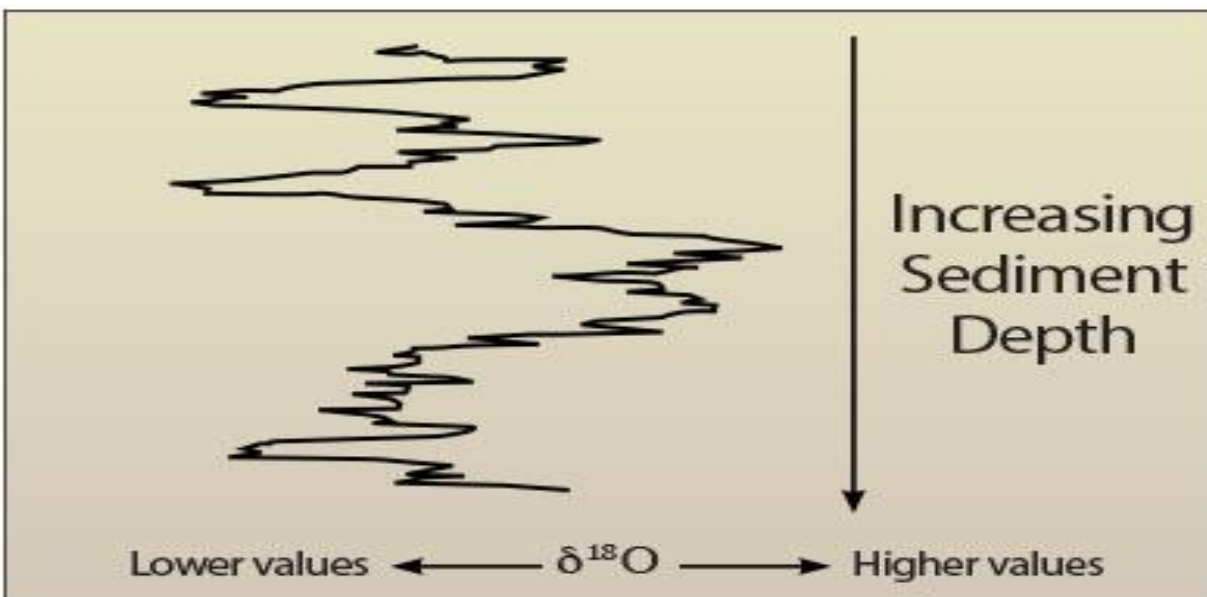
To better understand the link between the astronomical theory and the long ages assigned to the ice cores, it is necessary to discuss a topic that on the surface appears to have no connection whatsoever to the dating of ice cores: the chemistry of seafloor sediments.

## **The Oxygen Isotope Ratio**

Much like the technique used in ice core research, scientists drill and extract cores from the ocean floor in an attempt to discern information about past climates. These sedimentary layers contain subtle

variations in chemistry, including variations in something called the *oxygen isotope ratio*, indicated by the shorthand symbol  $\delta^{18}\text{O}$ .

There are two common varieties, or isotopes, of the oxygen atom. One of these, oxygen-18, is a little heavier than the other, oxygen-16. The oxygen isotope ratio simply measures the amount of oxygen-18 compared to oxygen-16 in a given sample, compared to a standard. Higher and more positive values of  $\delta^{18}\text{O}$  indicate an increased amount of oxygen-18 compared to oxygen-16, while more negative values indicate decreased amounts of oxygen-18.



**Figure 2.** Secular scientists believe that “wiggles” in the chemistry of the seafloor sediments can yield information about past climates. For example, maximum values in a quantity called the oxygen isotope ratio are thought to indicate times of maximum glacial extent.

Tiny marine organisms called *Foraminifera* (forams for short) build shells made of calcium carbonate ( $\text{CaCO}_3$ ), a molecule that contains oxygen. These forams use *both* oxygen-16 and oxygen-18 to construct their shells. When these organisms die, their shells drift downward to the ocean bottom and become part of the ocean sediments. From the remains of these shells, researchers can determine values of the oxygen isotope ratio at different depths within the sediment cores.

Secular scientists believe that variations in the  $\delta^{18}\text{O}$  values indicate past changes in climate. When these  $\delta^{18}\text{O}$  values are plotted on a graph, they “wobble,” increasing and decreasing at various depths within the sediment core (Figure 2). Secular scientists view these oxygen isotope ratios as climate indicators—higher values of  $\delta^{18}\text{O}$  within the sediments are thought to indicate ice ages.

However, serious difficulties arise when attempting to infer past climates from the chemistry of seafloor sediments. The  $\delta^{18}\text{O}$  value of the foraminiferal shell depends upon both the seawater temperature at the time the foraminiferal shell was being formed and the past  $\delta^{18}\text{O}$  value of the surrounding seawater (also at the time of shell formation).

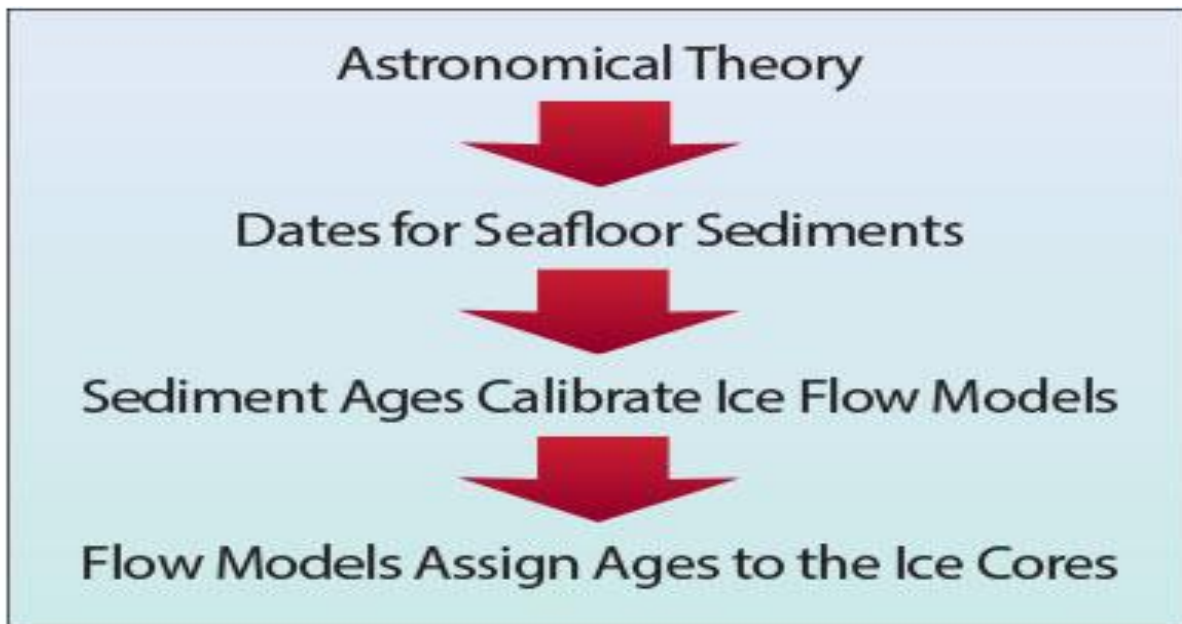
Because  $\delta^{18}\text{O}$  values within the high-latitude ice sheets are much lower than oceanic  $\delta^{18}\text{O}$  values, the growth or melting of these large ice sheets can noticeably affect oceanic  $\delta^{18}\text{O}$  values. Furthermore, seawater temperature at the time of the shell’s formation depends upon not just long-term average temperatures, but also upon local short-term temperature variations in time and space, so it is not obvious how much of the variation in foraminiferal  $\delta^{18}\text{O}$  values is due to global average temperatures, how much is due to local temperature fluctuations, and how much is due to variations in global ice volume. For this reason, the secular interpretation of these foraminiferal  $\delta^{18}\text{O}$  changes has changed over the years: secular scientists used to believe that variations in foraminiferal  $\delta^{18}\text{O}$  values were mainly indicators of changes in temperature, but now they see them more as indicators of changes in global ice volume. These ambiguities, as well as other complications, make inferring information about past climates from the chemistry of seafloor sediments *extremely* problematic.<sup>9</sup>

## Orbital Tuning

Despite its problems, secular scientists have become so convinced the astronomical theory is correct that they actually use the theory to “date” the seafloor sediments. This technique is called *orbital tuning*.<sup>10</sup> How does it work?

Although secular scientists assume “slow and gradual” deposition of seafloor sediments, they believe that sedimentation rates have varied somewhat in the past—at times sediments accumulated on the ocean floor a little more rapidly, and at other times sediments accumulated a little more slowly.

Secular scientists use the astronomical theory to calculate the times that ice ages occurred in the alleged “prehistoric” past. They then use the peak  $\delta^{18}\text{O}$  values within the sediments—which are thought to indicate times of maximum glacial extent—to determine which layers would have been deposited during those supposed ice ages. Hence, they use the astronomical theory to “date” the sediments. In essence, they assume whatever faster and slower deposition rates are needed to ensure that these “ice age” sediment layers were deposited on the ocean floor at the “correct” times—the approximate times demanded by the astronomical theory.



**Figure 3.** *Secular scientists assume the astronomical theory of ice ages is correct, despite its problems. The astronomical theory then assigns dates to the seafloor sediments. The dates for the seafloor sediments are then used to calibrate secular ice flow models, which in turn are used to date the ice cores.*

Since the astronomical theory assumes an old earth, biblical skeptics claim that the apparent good agreement between the dates assigned to the ice cores and the predictions of the astronomical theory provides a strong argument that the earth really *is* very old. However, their argument is clearly circular—secular scientists *assume* the astronomical theory is correct, despite its problems, and then use that assumption to assign dates to the seafloor sediments.

Finally, these scientists use the dates assigned to the seafloor sediments to “calibrate” their theoretical glacial-flow models, and these models are in turn used to date the ice cores (Fig. 3).<sup>11</sup> Not surprisingly, the dates assigned to the ice cores agree with the astronomical theory!

## Simply Counting Layers?

But skeptics might counter that the old-earth assumptions are still justified because hundreds of thousands of annual layers have supposedly been counted, seemingly independent of any questionable model assumptions. The GISP2 core from Greenland is frequently mentioned, since the ice at a depth of 2,800 meters in this core is said to be 110,000 years old. One critic goes so far as to claim that the GISP2 core is the “ultimate proof” that a global, worldwide flood could not have occurred.<sup>12</sup> But the critics are mistaken. Even the deep GISP2 core does not demand long ages, and this topic is the subject of a future article.

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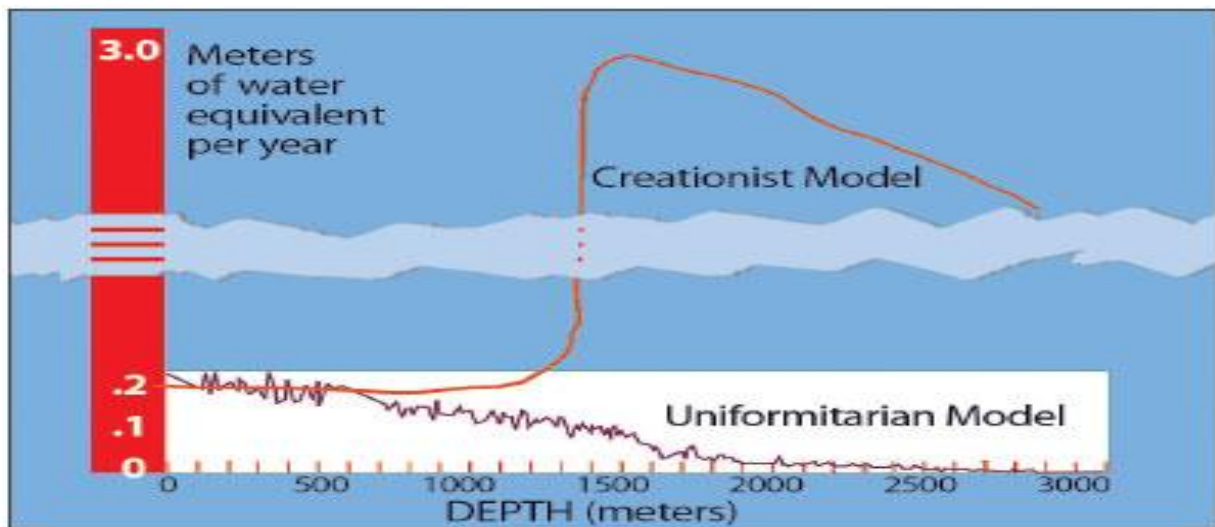
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# Ice Cores, Seafloor Sediments, and the Age of the Earth, Part 2

BY [JAKE HEBERT, PH.D.](#) \* |  
MONDAY, JUNE 30, 2014

Many people perceive the vast ages assigned to deep ice cores from Greenland and Antarctica as unanswerable arguments for an old earth. My previous article made a number of points about these ice cores.<sup>1</sup>

First, theoretical ice-flow models are the most common method of dating ice cores.<sup>2</sup> Secular flow models *assume* that the ice sheets have been in existence for millions of years. Not surprisingly, they assign vast ages to ice deep within the cores. They also predict extreme ice-layer thinning in the deeper parts of the cores, with the deepest layers only being about a millimeter thick.



**Figure 1.** Comparison between secular and creation predictions for annual layer thicknesses (in meters of water equivalent) at different depths in Greenland's GRIP core, located not too far from the GISP2 core. From reference 3, page 45.

Second, creation scientists have constructed ice-flow models that assume the Greenland and Antarctic ice sheets began forming shortly after the Genesis Flood about 4,500 years ago. Because of their different starting assumptions, these models predict much less ice-layer thinning at depth. In fact, one model predicts deep layers having thicknesses hundreds to thousands of times *thicker* than those predicted by the secular models.<sup>3</sup> The predictions for specific ice layer thicknesses in the different models are contrasted in Figure 1.

## Counting the Layers

Biblical critics respond, however, that some of the ice cores have been dated as very old by simply counting the “annual” layers, independently of old-Earth assumptions. For instance, secular scientists have counted 110,000 supposed annual layers in the uppermost 2,800 meters in Greenland’s GISP2 core.<sup>4</sup> Hence one skeptic claimed that the GISP2 ice core is the ultimate proof against Noah’s Flood and the Bible’s short 6,000-year chronology.<sup>5</sup> But is this really the case?

## Dating Methods

Secular scientists used a number of methods to date the GISP2 ice core.<sup>4</sup> In the upper 1,500 meters of the ice core, they counted *depth hoar/wind crust* patterns, a description of which was in my previous article.<sup>1</sup>

Scientists also used other methods: visual inspection to examine dust-laden “cloudy” bands (each thought to be an annual summer layer), *electrical conductivity measurements* (ECM), and *laser light scattering* (LLS).

The acidity of snow and ice is generally higher during the summer. These acids make it a little easier for electricity to pass through the ice, corresponding to increases in the ice’s electrical conductivity. Hence, when using the ECM method, jumps in the measured electrical conductivity of the ice are thought to indicate annual summer layers.

In the LLS method, a laser light is either shined directly onto the ice core or onto a sample of water from the ice core. Because dust readily scatters light, a greater fraction of the incoming light will be scattered when greater amounts of dust are contained within the sample. These jumps or spikes in the amount of scattered light are also thought to indicate spring/summer layers.

## Over-Counting the Layers

So how do biblical creationists respond to the vast ages assigned to the GISP2 ice core? Quite simply, secular scientists are over-counting the number of true annual layers. Scientists have repeatedly observed 15 to 16 different depth hoar/wind crust couplet patterns forming *per year* in central Greenland, and this number is typical.<sup>6</sup> Secular scientists have also acknowledged that two such patterns (or groups of patterns) formed during the same year could be mistaken for two separate annual patterns if they were physically separated by a significant depth of snow or ice.<sup>7</sup>

Moreover, multiple non-seasonal acid peaks can be caused by other factors (such as volcanic eruptions) and have been observed to form within a single year.<sup>8</sup> Likewise, over-counting “annual” dust layers can occur, since non-seasonal factors such as dust storms and volcanic eruptions can also result in increased dust content within the ice.<sup>9</sup>

The skeptic has two immediate objections to this creationist response. First, he would argue that other dating methods can be used as checks to guard against the possibility of over-counting. Second, he would argue that it is preposterous to think that secular scientists could be over-counting by *that* much: 110,000 years (or more!) compared to 4,500 years? But are these objections valid?

## “Checks” Not That Helpful

Explosive volcanic eruptions increase the amount of sulfuric acid in the atmosphere, and these post-eruption acid spikes can be detected within ice cores, as well as volcanic fragments called *tephra*. If the



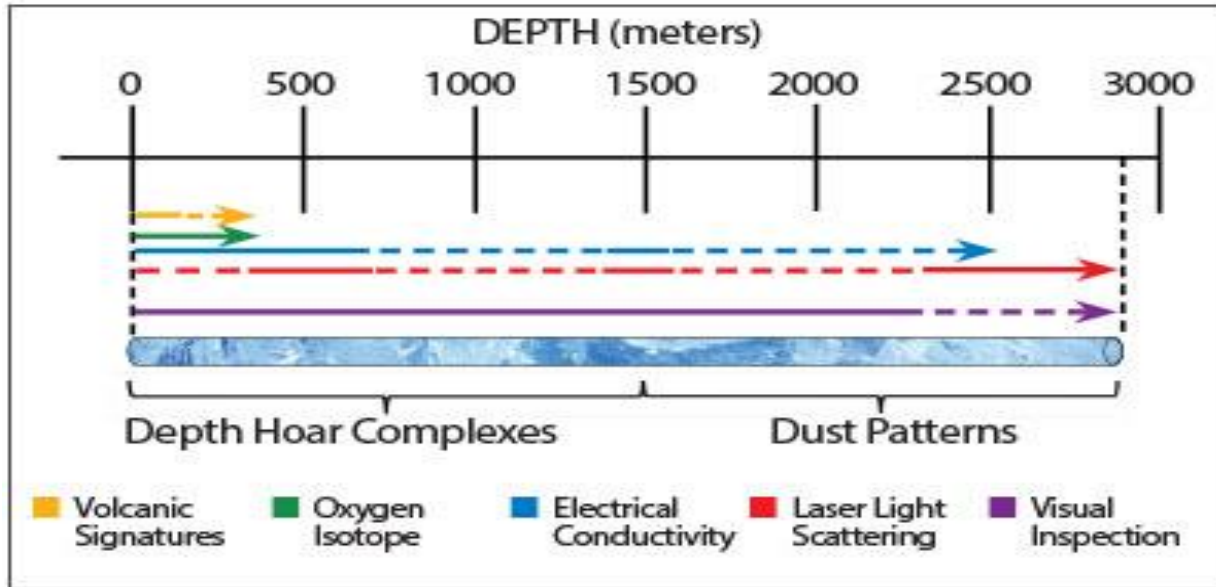
date of an eruption is known, then this eruption's volcanic *reference horizon* within the ice can be used as a check to ensure that the annual layer counts above that specific horizon are accurate.

However, the dates of volcanic eruptions can generally be confirmed by eyewitness testimony for only the last 300 years, with a small number of eruptions that potentially can be dated as far back as 2,000 years.<sup>10</sup> So volcanic reference horizons cannot be used as checks for layer counts within the deeper parts of the cores. And it is the deeper layer counts that are in question. Some might argue that radioisotope dating can be used to date older volcanic eruptions, but these dates cannot be confirmed by eyewitness accounts, and regular *Acts & Facts* readers are well aware of the problems with radioisotope dating!<sup>11</sup>

Likewise, a number called the *oxygen isotope ratio*, indicated by the shorthand symbol  $\delta^{18}\text{O}$ , gives the amount of a "heavy" variety of oxygen atom compared to a "light" variety of oxygen atom at a given depth within the ice. Higher values of the  $\delta^{18}\text{O}$  number within the ice are thought to indicate warmer climates.

Seasonal fluctuations in  $\delta^{18}\text{O}$  values can presumably act as a check to ensure against over- or under-counting these "annual" layers. However, the seasonal  $\delta^{18}\text{O}$  signal disappeared at a depth of only 300 meters within the GISP2 core!<sup>4</sup> Hence, measured  $\delta^{18}\text{O}$  values at deeper core depths could not be used to check yearly layer counts.

The ECM and LLS methods could be used intermittently throughout the core, but, as noted earlier, they are clearly not foolproof. Moreover, at deeper core depths, their use was problematic, as discussed below.

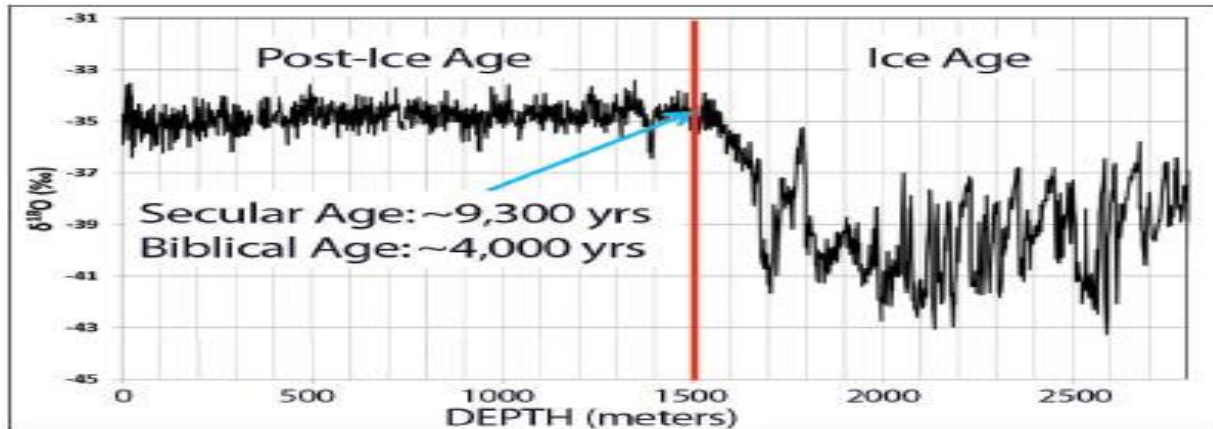


**Figure 2.** Chart showing the depth ranges at which various methods could be used as “checks” against visual layer counts (purple arrow) in the upper 2,800 meters of the GISP2 core. Generally, depth hoar complexes were counted in the upper 1,500 meters, and dust patterns (“cloudy” bands or LLS “peaks”) were counted in the bottom 1,300 meters. Dashed segments indicate depths at which a method could be used only intermittently. From reference 4, especially Table 2.

Figure 2 shows that multiple methods could only be used consistently as checks for relatively short sections of the core, and even then these methods were subject to the weaknesses already described.

## Over-Counting the Top Half

In the creation-Flood model, the post-Flood Ice Age was a relatively short event, probably lasting about 700 years.<sup>12</sup> Since the Flood occurred around 2500 B.C., the Ice Age would have ended roughly 4,000 years ago. Based on  $\delta^{18}\text{O}$  measurements within the GISP2 core, warmer temperatures seem to be fairly constant at depths above 1,500 meters (Figure 3). If this 1,500-meter depth corresponds to the end of the Ice Age, then the true age of the ice at this depth is roughly 4,000 years. However, secular scientists assign an age of about 9,300 years to this ice.<sup>13</sup>



**Figure 3.** Oxygen isotope ratio ( $\delta^{18}O$ ) measurements in the GISP2 ice core. The red line indicates the approximate transition between “Ice Age” and “post-Ice Age” ice.

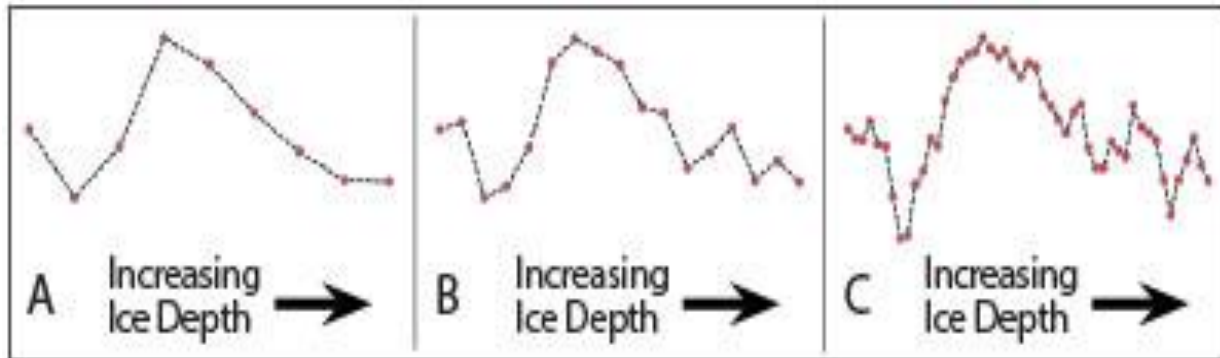
As mentioned above, it is typical for large numbers of depth hoar/wind crust patterns to form within a single year, and widely spaced patterns formed within a single year could be mistaken for separate annual layers. Given the multiple tens of thousands of depth hoar/wind crust patterns that are likely in the top 1,500 meters of the core, a modest fraction of misidentified “annual” layers can easily account for these 5,000 “extra” years.

### Over-Counting the Bottom Half

Average dust levels in the bottom portions of the Greenland ice cores are about 12 times greater than dust levels in the upper parts of the cores. Moreover, this dust content is highly variable, ranging from 3 to 70 times greater than dust levels in the upper core portions.<sup>2</sup>

This dust content contributes to over-counting of the layers in a number of ways. First, the increased dust content dramatically decreases the electrical conductivity, further limiting the use of the ECM method in much of the core (Figure 2). Second, while it is true that jumps in dust content in *today’s* climate usually indicate seasonal changes, it is dangerous to assume the same for the bottom part of the core. These increased, highly variable dust concentrations make it *much* more likely that secular scientists will mistake short-term increases in dust content (from storms, eruptions, etc.) for seasonal dust variations.

## Influence of Old-Earth Assumptions



**Figure 4.** How many “annual” dust peaks are actually within this simulated ice core section? Depending upon the number of measurements, one could argue that there are (A) 1 to 2, (B) 1 to 8, or even (C) 1 to 14 “annual” peaks.

Note from Figure 2 that GISP2 scientists could consistently use *only* the LLS method at depths greater than about 2,300 meters. But the LLS method was subtly influenced by old-Earth assumptions—four or five measurements were needed to discern a jump in dust content.<sup>4</sup> But this raises a question: How closely together should these four or five measurements be made? That depends on how thin one *believes* an annual layer of ice will be at a given depth. If one is expecting very thin annual layers, he will make these measurements much closer together than if he is expecting thicker layers. But remember that secular ice-flow models predict extreme thinning of the ice at depth, thinning that may be a hundred—or even a *thousand*—times greater than the thinning expected from a creation-Flood ice-flow model (Figure 1). Because secular scientists *believe* that deep annual ice layers are extremely thin, they make their measurements very close together. This makes it much more likely that they will mistake short-term “blips” in dust content and read them as seasonal variations (Figure 4 A, B, C).

## Subjective Layer Counts

GISP2 scientists had originally counted 85,000 “annual” layers in the upper 2,800 meters of the core. Moreover, because other methods could not be used in the deepest part of the core, and because even visual detection of dusty bands was difficult at these extreme depths, they were extremely dependent on the LLS method in the bottom 500 meters of this 2,800 meter-long section. These dust-layer counts were obtained with a laser beam that had a diameter of eight millimeters. But based upon another ice core chronology, these scientists had expected the ice at that depth to be 110,000 years old. Because they had initially obtained the “wrong” answer, they re-counted the dust layers in this bottom 500 meters using a much smaller one millimeter-diameter laser beam. Upon doing so, they “found” the “missing” 25,000 years!<sup>4</sup> This example dramatically illustrates both the subjective nature of the counting process and the relative ease with which secular scientists can “find” even *tens of thousands* of “annual” layers deep within the ice cores. Not surprisingly, more than 67,000 of the supposed 110,000 years were found in just this 500 meter-long section!<sup>13</sup>

In short, no Christian should be intimidated by the vast ages claimed for the ice cores. On the contrary, a number of clues in the ice cores (as well as the seafloor sediment cores discussed in my earlier article) strongly favor the creation-Flood interpretation of the data.

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# **Ice Cores, Seafloor Sediments, and the Age of the Earth, Part 3**

TUESDAY, DECEMBER 30, 2014

**by Jake Hebert, Ph.D., and Tim Clarey, Ph.D.\***

The two previous articles in this series demonstrated problems with the old-earth timescales that secular scientists have assigned to deep seafloor sediments and ice cores.<sup>1,2</sup> This article presents a positive argument for the youthfulness of the seafloor sediments—an argument that has ominous implications for the vast ages assigned to the high-latitude ice sheets.

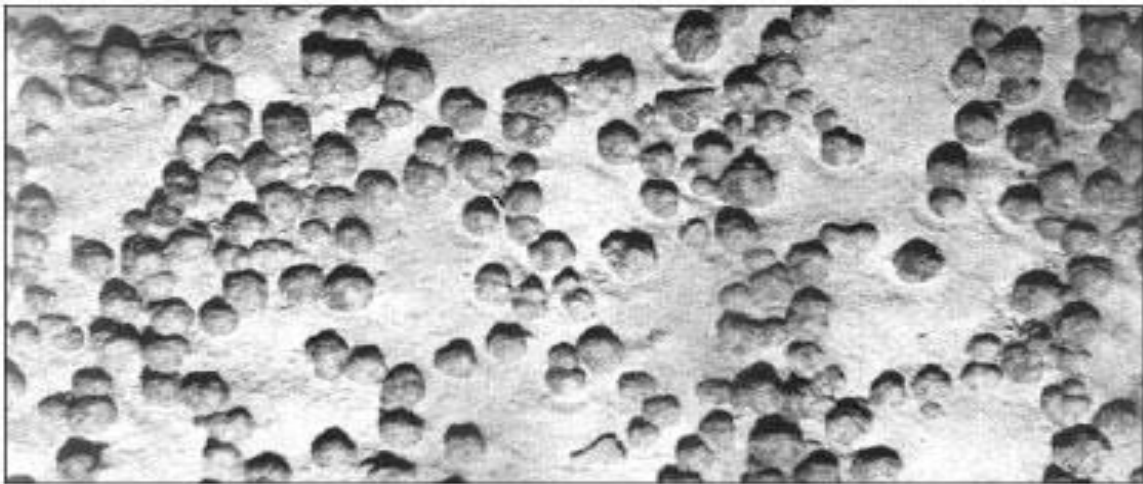
## **Dating Seafloor Sediments: Secular vs. Creation Thinking**

At today's "slow and gradual" rates, it can take a thousand years for just a couple of centimeters of sediment to be deposited on the ocean floor. Because these sediment layers can be many hundreds of meters thick, and because it's assumed that sedimentation rates have always been slow, secular scientists believe the sediment deposition required many millions of years.

Secular scientists assign ages to these layers by using the astronomical or Milankovitch hypothesis of ice ages to interpret chemical clues within the seafloor sediments. This theory simply accepts as a given the idea of "deep time"—millions of years. A previous article discussed some of the problems with the Milankovitch hypothesis.<sup>1</sup>

Although creation scientists reject the millions of years that secular scientists have assigned to the seafloor sediments, they do agree that their deposition *has* been slow and gradual for at least the last few thousand years. But even a few thousand years of slow deposition could only account for a tiny fraction of the total sediments on the ocean floor. How, then, can creation scientists explain the great thickness of these sediments? Objects called *manganese nodules* found on the floors of the Pacific, Atlantic, and Indian Oceans provide a significant clue.

## Manganese Nodules



*Figure 1. Manganese nodules are abundant on the ocean floor yet are extremely rare at great depths within the seafloor sediments. Image: U.S. Geological Survey.*

Manganese nodules are typically potato-size concretions found scattered on the ocean floor (Figure 1). Composed of manganese and other metals such as iron, nickel, and copper, these nodules form as a result of the accumulation of chemicals onto a nucleus. These chemicals originate in seawater or within water trapped between the sediment grains below the sea floor. In both cases, the end result is the formation of metallic pellets near the surface of the ocean floor. Manganese and iron extruded from underwater volcanoes can also contribute to nodule growth, as can the presence of algae and bacteria.<sup>3,4</sup>

Nodule growth is thought to cease once the nodules become buried beneath more than a few centimeters of sediment.<sup>5,6</sup> Based on radioisotope dating methods, secular scientists estimate that these nodules typically grow at the exceptionally slow rate of only a few millimeters per *million* years.<sup>3</sup>

## Manganese Mystery

Manganese nodules puzzle secular scientists because most are found in just the uppermost 50 centimeters (~20 inches) of sediment, although some are found at greater depths.<sup>3,5,6</sup>

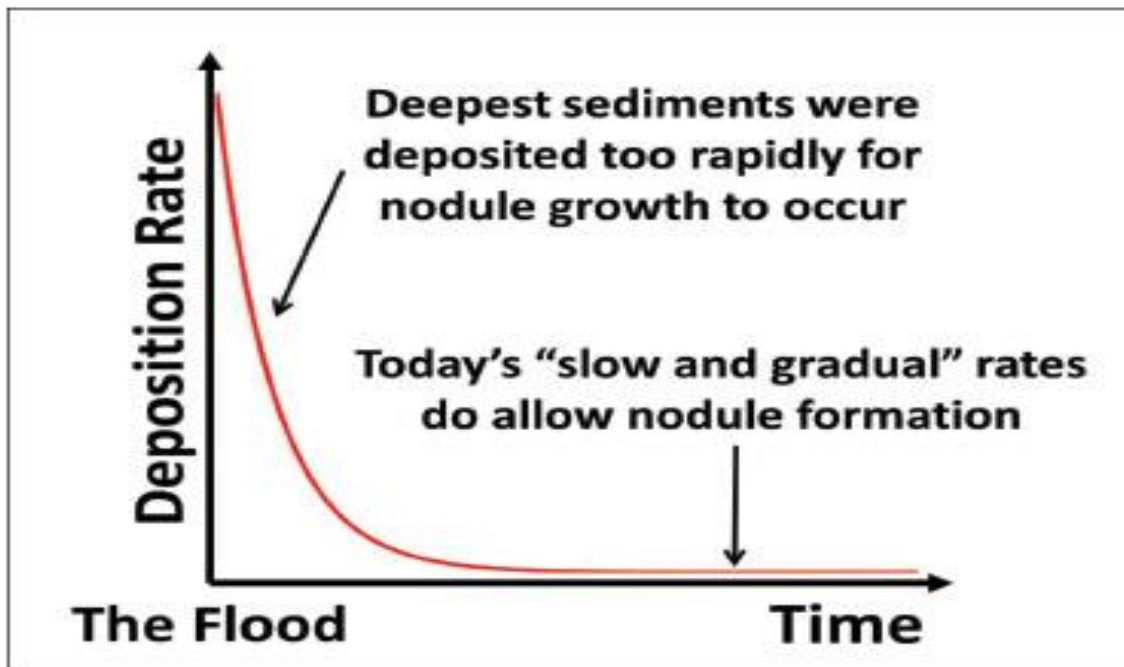
Why are nodules generally missing from the deeper seafloor sediments? If the present really *is* the “key to the past,” one would expect nodules to be found at *all* depths within the seafloor sediments. After surveying manganese nodule data from the Deep Sea Drilling Project, one secular geologist observed, “The major question arising from this survey is why nodules occur in such paucity at depth in the sediment column.”<sup>5</sup>

Some scientists have speculated that this scarcity of deep nodules can be explained by chemical dissolution of the nodules after burial. However, this proposal is problematic for at least two reasons. First, some nodules have been found at great depths, although this is relatively rare.<sup>5</sup> Second, buried nodules do not exhibit any clear trends in chemical composition with depth, as one might expect if they were in various stages of dissolving, suggesting that “buried nodules neither grow nor dissolve after their burial in the sediment column.”<sup>6</sup>

But if nodules don’t dissolve after burial, then their absence in the deep sediments implies that nodules simply were not being formed when the deeper sediments were deposited. Secular scientists have suggested possible explanations for this,<sup>5</sup> but these proposals tacitly acknowledge that past conditions were significantly different than those of today, and this violates uniformitarian assumptions. In the case of manganese nodules, the present is definitely not “the key to the past”!



## Creation Explanation



*Figure 2. The creation explanation for the rarity of manganese nodules within the deep seafloor sediments is that the bulk of the sediments were deposited too rapidly for nodules to form. This is consistent with Dr. Larry Vardiman's model of seafloor sediment deposition: Sedimentation rates were initially very high during and after the Flood and then gradually decreased to today's "slow and gradual" rates.*

Creation scientists have an extremely straightforward and logical explanation for the rarity of manganese nodules within the deep seafloor sediments: Since nodule growth is apparently possible only at the surface or below a shallow layer of sediment, the absence of nodules in the deeper sediments implies that these deeper sediments were simply deposited too rapidly for nodules to form and grow.<sup>7</sup> This is consistent with the proposal of creation scientist Dr. Larry Vardiman that the deposition of seafloor sediments was initially very rapid during and shortly after the Genesis Flood but then decreased to the slow and gradual rates we observe today (Figure 2).<sup>8</sup>

This argument is strengthened by the fact that secular scientists seem to have seriously underestimated the true rates of nodule growth. Although growth rates can vary considerably due to a number of factors, nodules have consistently been observed growing at rates hundreds of thousands of times faster than the slow rates calculated from radioisotope dating methods.<sup>4,9,10</sup> This implies that deposition of the deeper sediments would had to have been even *more* rapid in order to prevent the formation of nodules at these faster growth rates. Moreover, this glaring discrepancy between the calculated and observed rates of nodule growth is just one more indication that there are *serious* problems inherent in radioisotope dating methods.<sup>11</sup>



*Figure 3. Cape Breton Highlands planation surface in Nova Scotia, Canada. Photograph courtesy of Ian Juby (ianjuby.org).*

## Planation Surfaces

If most of the seafloor sediments were rapidly dumped into the ocean basins, then one might expect additional geological clues to fit this interpretation of the data. Is this the case?

Across every continent, we observe flat or nearly flat erosional surfaces that extend for many miles. These erosional plains are known as *planation surfaces* (Figure 3).<sup>12</sup>

Each planation surface marks a very specific event in time and therefore allows insight into the geological history of that area. These surfaces are especially important since they are observed on a global scale. The deepest global planation surface is called the Great Unconformity.

In many places around the world, the Great Unconformity resides at the Cambrian-Precambrian boundary. Uniformitarians believe this surface, and others like it, formed as the sea level slowly rose, invading (transgressing) the land and forming a broad zone of coastal erosion. Their explanation for the formation of this global surface is problematic and falls outside traditional uniformitarian thought.<sup>13</sup>

Secular geologists have identified at least five other global planation surfaces that were supposedly formed as oceans slowly flooded the continents and later drained off in cyclic succession. Secular scientists believe these planation surfaces define the tops and bottoms of what are termed *megasequences*. The Great Unconformity is, in fact, the base of the first of these megasequences, known as the Sauk sequence. The upper erosional boundaries of each megasequence are believed to have been created as each new megasequence, during its deposition, eroded the top of the previous sequence. These megasequence-bounding erosional surfaces, like the Great Unconformity, have been traced across the globe and yet the mechanism of their formation continues to perplex secular scientists.<sup>12</sup>

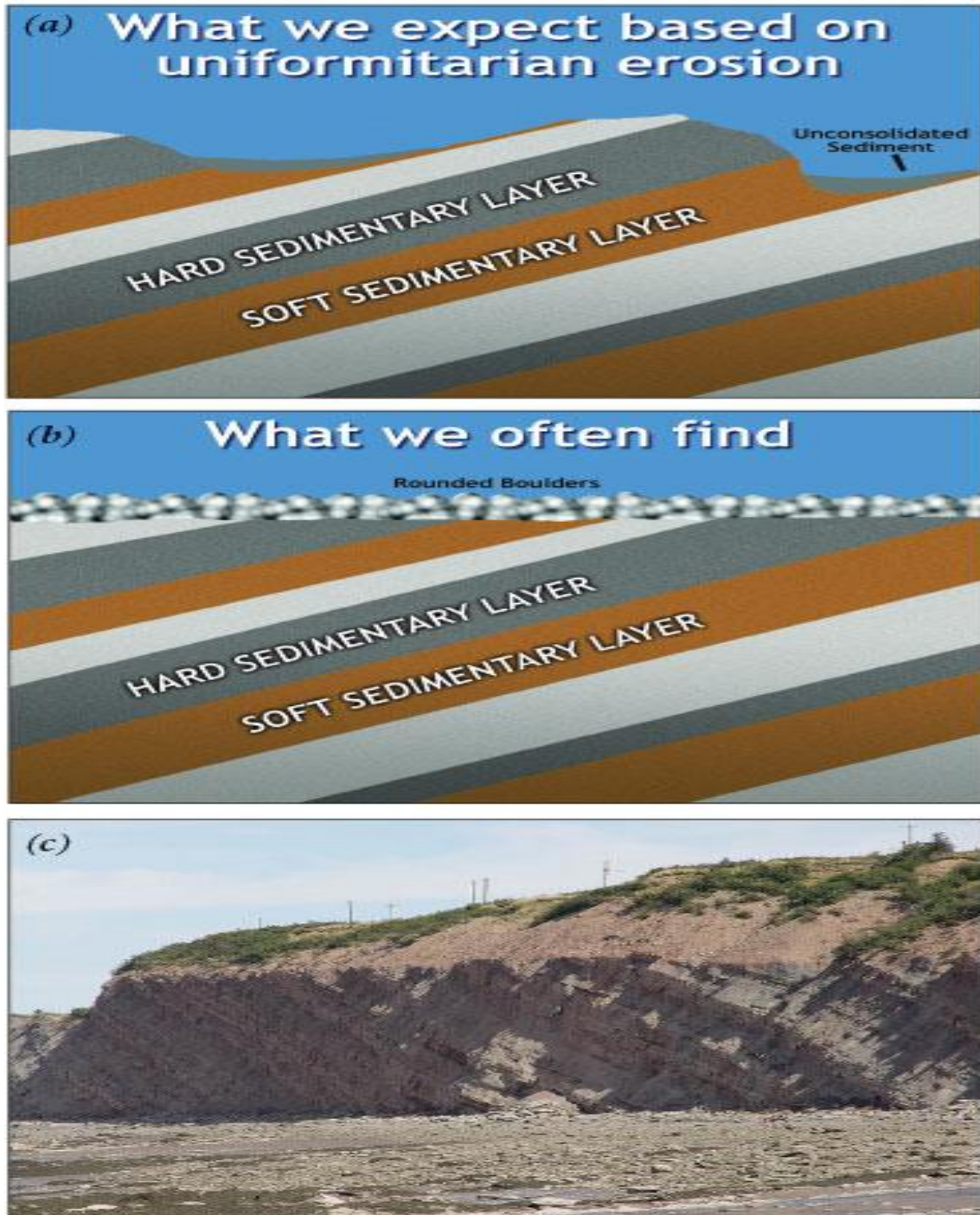
This is because modern erosion creates V-shape stream channels across all exposed land; it does *not* create planar surfaces. So, if no modern geologic process can account for the creation of flat planation surfaces, then how did they form?

## **Source of the Sediment: The Genesis Flood**

The answer requires a unique global erosional event: the Genesis Flood. At the start of the Flood, we would expect the formation of a vast erosional plain like the Great Unconformity as immense tsunami-like waves swept across the continents, stripping away soil in a matter of hours or days.

**As the Flood progressed, the water oscillated, retreated, and advanced in cycles, resulting in the formation of additional megasequences and their associated planation surfaces.**

**Thus, these erosional episodes (planation surfaces) between megasequences do not represent millions of years but merely brief hiatuses as the floodwaters surged.**



**Figure 4.** (a) “Slow and gradual” erosion of tilted strata of varying hardness should result in a pattern of hills and troughs, but (b) sheet erosion would “plane” the tilted strata flat as rapidly moving water indiscriminately eroded both hard and soft strata. (c) The flat planation surface at Joggins Fossil Cliffs in Nova Scotia, Canada, is consistent with rapid, not slow and gradual, erosion. Diagrams by Peter Klevberg and Daniel Lewis, provided by permission of Creation Ministries International ([creation.com](http://creation.com)). Photograph provided courtesy of Ian Juby ([ianjuby.org](http://ianjuby.org)).

At the end of the Flood, the newly formed ocean crust cooled and subsided, deepening the ocean basins and lowering sea levels worldwide. This caused the floodwaters to recede on a vast scale, likely as massive sheets of rapidly moving water drained off the continents.<sup>14</sup> “And the waters receded continually from the earth. At the end of the hundred and fifty days the water decreased” ([Genesis 8:3](#)).

It should also be noted that the warm, mineral-rich oceans during and after the Flood would also have greatly stimulated the growth of phytoplankton, likely resulting in many algal blooms. Since zooplankton (such as foraminifera and diatoms) can feed on phytoplankton, it’s likely that they too greatly increased in number, and their abundant remains would also have contributed to the accumulating sediments during the post-Flood period.<sup>15</sup>

### **Evidence for Rapid Erosion**

In some cases, inclined strata of varying hardness on the continents have been beveled flat (Figure 4). This is consistent with catastrophic erosion by rapidly moving sheets of water but inconsistent with slow and gradual erosion over long periods of time.<sup>12</sup> Such catastrophic sheet erosion would have dumped enormous quantities of sediment into the ocean basins in a short amount of time. The scarcity of manganese nodules in the deeper seafloor sediments is consistent with this rapid deposition, and their abundance in the upper seafloor sediments is consistent with a gradual decrease in sedimentation rates in the millennia after the Flood.

### **Implications for the Seafloor Sediment and Ice Cores**

But such rapid deposition invalidates the timescales that secular scientists have assigned to the deep seafloor sediments because these sediments are *assumed* to have been deposited slowly and gradually—not catastrophically—over many millions of years. Moreover, it also invalidates the age scales that have been assigned to the deep ice cores from Greenland and Antarctica since these age

scales are ultimately tied—via a complex network of circular reasoning—to the dates that have been assigned to the seafloor sediments!<sup>1,16</sup>

Hence, the Bible’s true history of a global flood and a young earth enables us to make far better sense of the seafloor sediment and erosional data than can uniformitarian, old-Earth assumptions and speculations. The evidence points to a young earth!

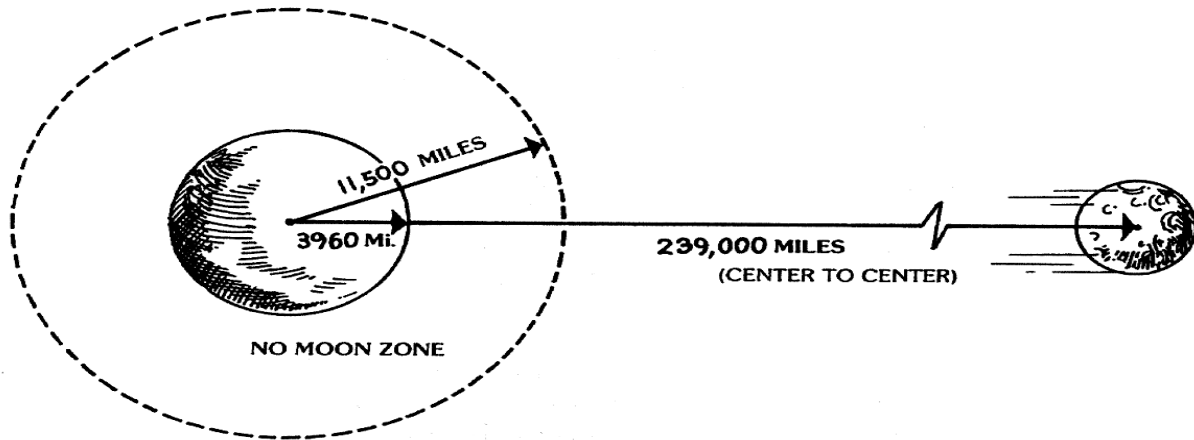
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# Young Age for the Moon and Earth

BY [THOMAS G. BARNES, D.SC.](#) |  
SUNDAY, AUGUST 01, 1982



## Receding Moon

It takes but one proof of a young age for the moon or the earth to completely refute the doctrine of evolution. Based upon reasonable postulates, great scope of observational data, and fundamental laws of physics there is proof that the moon and the earth are too young for the presumed evolution to have taken place.

There is an easily understood physical proof that the moon is too young for the presumed evolutionary age. From the laws of physics one can show that the moon should be receding from the earth. From the same laws one can show that the moon would have never survived a nearness to the earth of less than 11,500 miles. That distance is known as the Roche limit.<sup>1</sup> The tidal forces of the earth on a satellite of the moon's dimensions would break up the satellite into something like the rings of Saturn. Hence the receding moon was never that close to the earth.



The present speed of recession of the moon is known. If one multiplies this recession speed by the presumed evolutionary age, the moon would be much farther away from the earth than it is, even if it had started from the earth. It could not have been receding for anything like the age demanded by the doctrine of evolution. There is as yet no tenable alternative explanation that will yield an evolutionary age of 4 billion years or more for the moon. Here is as simple a proof as science can provide that the moon is not as old as claimed.

How does an evolutionist reconcile this proof that the moon is too young for the presumed evolution to have taken place? This known dynamical limit in the earth-moon system is a great problem to knowledgeable evolutionists. Robert Humes in his book *Introduction to Space Science* (John Wiley, 1971) acknowledges the problem and states that "The whole subject of the origin of the moon must be regarded as highly speculative." Dr. Louis B. Slichter, Professor of Geophysics at Massachusetts Institute of Technology treats this problem in great detail and concludes that "the time scale of the earth-moon system still presents a major problem."<sup>2</sup>

It turns out that the earth-moon tidal friction causes the earth's spin rate to be slowing down. Lord Kelvin used that changing spin rate, assumed an initial molten earth, and proved that the earth could not be a billion years old, or the earth's present shape would be different.<sup>3</sup>

Hence from theoretical and observational considerations there are two proofs that the earth-moon system can not be as old as a billion years.

- 1) The earth-moon spacing & recession rate refutes that long age.
- 2) The shape of the earth refutes that long age.

## **Radiometric Evidence of Rapid Creation**

Dr. Robert V. Gentry has radiometric evidence that the basement rock of the earth was formed in a cool state, not in a molten condition. A cool initial state of the earth gives support to a young age for the earth. His research involves the study of pleochroic halos (colored spheres) produced by the radioactive decay of Polonium 218. He analyzed over one hundred thousand of these halos in granitic rocks which had been taken from considerable depths below land surface and in all parts of the world. Two very important conclusions were drawn from this research 1) The Polonium 218 was primordial, that is to say, this radioactive element was in the original granite. 2) Because the halos can only be formed in the crystals of the granite, and the Polonium 218 half-life is only 3 minutes, the granite had to be cool and crystallized originally. The Polonium 218 would have been gone before molten granite could have cooled. It would take a very long time for a molten earth to cool. The final conclusion - summarized in this brief quote from one of Gentry's technical papers: "The simple evidence of the halos is that the basement rocks of the earth were formed solid." "Halos in other minerals can be shown to give equally startling evidence of a young earth."<sup>4</sup> One needs to read some of Gentry's technical articles to see how clearly he established his conclusion that the Polonium 218 was primordial. That in itself presents problems to conventional radiometric dating. The conventional radiometric dating postulates would not jibe with this initial state which Gentry has identified.

## **Magnetic Evidence of a Young Earth**

The known decay in the earth's magnetic field and the inexorable depletion of its energy clearly point to an imminent and inevitable end of the earth's magnetic field. A Department of Commerce publication lists evaluations of the strength of the earth's dipole magnet (its main magnet) since Karl Gauss made the first evaluation in the 1830's. It states that the rate of decrease is about 5% per hundred years. It then states that if the decay continues the magnetic field will "vanish in A.D. 3391."<sup>5</sup>

This decay has some harmful environmental effects. The earth's magnetic field extends into the space around the earth. This provides a protective shield against cosmic rays and solar wind. The half-life of this decaying magnetic field is 1400 years (meaning that every 1400 years its strength is cut in half). The field strength is now only about one third as strong as it was at the time of Christ. More harmful radiation is penetrating down to the surface of the earth. This is an irreversible degradation of our environment.

Horace Lamb predicted this decay in an 1883 theoretical paper on the source of the earth's magnetic field. Looking backward in time, in the light of his theory and the present known decay rate, and assuming the maximum plausible initial strength, puts an age limit on the earth's magnet of only a few thousand years.<sup>6</sup>

Evolutionary geologists assume that there is some type of dynamo mechanism sustaining the earth's magnet. No one has yet come up with an acceptable theory for such a dynamo. That mechanism is supposed to be able to reverse the direction of the earth's magnet. They assume that this magnet has not been decaying continually but has reversed back and forth many times for billions of years. They must hold to a long age or it is the death knell for the whole theory of evolution. Reversal phenomena are "read" into the magnetization of accessible rocks in the crust of the earth. The literature shows real problems and some self-contradictions with those interpretations.<sup>7</sup>

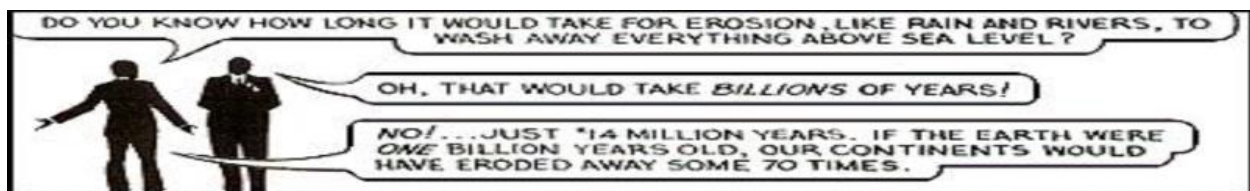
## Conclusion

The age of the earth and moon can not be as old as required in the doctrine of evolution, as has been shown when the great laws of physics are applied to observed large scale phenomena such as:

- 1) The recession rate of the moon and the Roche limit.
- 2) The faster earth spin rate in the past.
- 3) The decay of the earth's magnetic field.
- 4) The pleochroic halos in the earth's basement rock.

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DO YOU KNOW HOW LONG IT WOULD TAKE FOR EROSION, LIKE RAIN AND RIVERS, TO WASH AWAY EVERYTHING ABOVE SEA LEVEL?

OH, THAT WOULD TAKE *BILLIONS* OF YEARS!

NO!... JUST \*14 MILLION YEARS. IF THE EARTH WERE *ONE* BILLION YEARS OLD, OUR CONTINENTS WOULD HAVE ERODED AWAY SOME 70 TIMES.

\*THE TOTAL AMOUNT OF SEDIMENT FLOWING INTO THE OCEAN IS 27.5 BILLION TONS EVERY YEAR. THERE ARE 30.4 MILLION CUBIC MILES OF CONTINENTAL CRUST ABOVE SEA-LEVEL HAVING A MASS OF 383 MILLION BILLION TONS.

$$\frac{383 \text{ MILLION BILLION TONS}}{27.5 \text{ BILLION TONS PER YEAR}} = 14 \text{ MILLION YEARS}$$

\*CREATION: ACTS, FACTS, IMPACTS 1974 BY THE INSTITUTE FOR CREATION RESEARCH, SAN DIEGO, CALIF., Pgs. 166-167.



HERE'S ANOTHER GOODIE... IF \*14,300,000 TONS OF METEORITIC DUST FALLS ON THE EARTH EACH YEAR...



THE SAME DUST FALLS ON THE MOON. IN 5 BILLION YEARS, IT WOULD BE \*137 FEET DEEP.

\*SCIENTIFIC AMERICAN, FEB. 1960, Pg. 132.  
\*\*THE CREATION EXPLANATION, KOFNHL & SEGRAVES, HEROLD SHAW PUBLISHER, Pg. 190 (1975).



HOW COME ON THE FIRST MANNED LUNAR FLIGHT NEIL ARMSTRONG'S FOOTPRINT ONLY WENT INTO 1/8 INCH OF DUST?



(GASP)... IT'S... IT'S A *YOUNG* MOON! I'M GOING TO BE SICK!

## **EVOLUTIONISTS SHOULD DUST OFF THEORY**

By David Paul Burris (my father)

**As I write this, America is celebrating the 40<sup>th</sup> anniversary of Apollo 11, when man first walked upon the surface of the moon and safely returned to Earth.**

**Evolutionists had feared that there would have been a layer of loose, undisturbed space dust upon the moon's surface of from 50 to 180 feet deep, an amount that would have accumulated in the 4.5 billion years that they estimate as the age of the moon and Earth.**

**With this condition of the moon's surface the Lunar Lander would have sunk down into this dust layer and the Lunar Lander could not blast off for a return trip to Earth. To prevent it from sinking down, huge "Duck Foot" landing pods had been attached to the Lunar Lander.**

**Neil Armstrong had expressed a fear of walking on the moon's surface for the same reason.**

**But to plant the American Flag, he even had to hammer the flag staff into the hard surface of the moon and his fear of walking upon it was unfounded.**

**The "Duck Foot" landing pods were not really needed. What they found was only a very shallow, less than one inch of space dust, accumulation of space dust, an amount that would have accumulated in only thousands of years. The 50 to 180 feet of space dust was not there.**

**But the evolution hypothesis demands billions of years for evolution to take place. It would be impossible for it to happen in only thousands of years.**

**So, the evolution hypothesis is thus shown to be impossible and false.**

**It's a young world, after all.**

\*\*\*\*\*

# Creationism and Biblical Genealogies

**By Mike Janssen**

The interpretation of ancient texts is a tricky enterprise, and the more ambiguous the text, the more difficult it is to come to a concrete, widely-accepted interpretation. As such, the Genesis Creation account is often difficult to deal with - is it reliable history as written, or ambiguous difficult to believe? Debate is heated even within the Christian community. Biblical literalists ascribe to the viewpoint that the Bible is to be interpreted literally (except for certain poetic passages). Those who hold such a viewpoint interpret the Creation account in Genesis as taking place over six literal 24-hour days. Additionally, the Bible contains genealogies describing the descendants of Adam to Jewish patriarchs and beyond. It is not surprising, then, that attempts have been made by Biblical literalists to use genealogies given in the Bible to assign a date to the origin of humanity. Given interpretation of Creation week (and its length), it is possible to assign a date to Creation itself. The two most famous such attempts (incorporating a literal week as Creation week) were made by John Lightfoot and James Ussher in the 17th century. Their work is known as the Ussher-Lightfoot Calendar.

## The Age of Humanity

In order to use Biblical genealogies as a calendar, one must make the fundamental assumption that Adam and Eve were the first humans. Obviously, if this is not the case, the Bible's genealogical record is incomplete, and thus any calculation made using its genealogies would be erroneous.

In 1642, John Lightfoot published a "voluminous" calculation of the exact date for the creation of the universe: September 17, 3928 B.C. This date was reached after an analysis of the Biblical genealogies found in Genesis, Exodus, 1 and 2 Kings, and 1 and 2 Chronicles. Eight years later, James Ussher deduced that the first day of Creation began at nightfall preceding Sunday, October 3, 4004 B.C. According to Ross (2004), a final round of "academic sparring" resulted in John Lightfoot's adjustment of Ussher's date to conclude that all creation took place the week of October 18-24, 4004 B.C. He concluded that the creation of Adam took place on October 23 at 9:00 A.M. In addition, Ussher derived specific dates for "every historical event mentioned in the Bible" (Ross 2004). The methodology employed by Ussher was similar to that employed by other scholars; thus, the dates they independently achieved are fairly concordant. Among other assumptions, both Lightfoot and Ussher decided that the Genesis 1 creation days were "six consecutive twenty four-hour periods" (Ross 2004). Unfortunately, this genealogical Creation chronology was incorporated into the King James Version of the Bible from the 18th century onward, either as margin notes or even headings in the text. Thus, it was difficult to tell inspired work from commentary. As Protestantism spread, the King James Version of the Bible became the standard English translation. Thus, the 4004 B.C. creation date went unquestioned for many years. Yet, how was this date reached?

Ussher's methodology was simple: use the genealogies provided in the Bible to construct a timeline. Barr (1984) identifies three distinct periods that Ussher had to deal with: the early times (Creation through the reign of King Solomon), the early age of kings (Solomon to the destruction of the temple), and the late age of kings (Ezra & Nehemiah to the birth of Christ). The early times were likely easiest to deal with, as the Bible provides an unbroken male lineage from Adam to Solomon, complete with the age of each father at the birth of his son, the next patriarch. Genesis alone provides genealogies from Adam to Jacob. However, the same ages are not presented by all versions of the Bible. For instance, the Septuagint (the pre-Christian Greek translation of the Old Testament) provides considerably longer ages, adding another 1500 years to the Creation date. Ussher avoided this problem by relying on the Hebrew Bible (the Masoretic).

The early age of kings is a bit more complicated to deal with, as the lineage breaks down; instead, the Bible records the lengths of kings' reigns. Additionally, overlaps and ambiguities in the text complicate the picture. Thus, Ussher relied on cross-referencing the Bible with other known dates of events and people to create this part of the timeline.

The late age of kings complicated matters even more, as no information (pertaining to time length) is provided whatsoever in the Bible. Thus, it was necessary to use other writings (from other cultures) to link the later events to those of the time of Christ. In doing so, Ussher arrived at a date of 4004 B.C. After an error by Dionysius Exiguus, the creator of the Anno Domini numbering system, was discovered, Ussher readjusted accordingly, putting Creation firmly at 4004 B.C. (Wikipedia). Thus, an age for the creation of humanity is given.



**Table 1: Table of Patriarchs**

Key												
<b>F:</b> Age of fatherhood					<b>L:</b> Length of Life							
<b>B:</b> Birth date (Anno mundi)					<b>D:</b> Date of Death (Anno mundi)							
	Septuagint				Samaritan				Masoretic			
	Age		Year		Age		Year		Age		Year	
Patriarch	F	L	B	D	F	L	B	D	F	L	B	D
<i>Adam</i>	230	930	0	930	130	930	0	930	130	930	0	930
<i>Seth</i>	205	912	230	1142	105	912	130	1042	105	912	130	1042
<i>Enosh</i>	190	905	435	1340	90	905	235	1140	90	905	235	1140
<i>Cainan</i>	170	910	625	1535	70	910	325	1235	70	910	325	1235
<i>Mahalalel</i>	165	895	795	1690	65	895	395	1290	65	895	395	1290
<i>Jared</i>	162	962	960	1922	62	847	460	1307	162	962	460	1422
<i>Enoch</i>	165	365	1122	1487	65	365	522	887	65	365	622	987
<i>Methuselah</i>	187	969	1287	2256	67	720	587	1307	187	969	687	1656
<i>Lamech</i>	188	753	1474	2227	53	653	654	1307	182	777	874	1651
<i>Noah</i>	502	950	1662	2612	502	950	707	1657	502	950	1056	2006
<i>Flood</i>	2262				1307				1656			
<i>Shem</i>	100	600	2164	2764	100	600	1209	1809	100	600	1558	2158
<i>Arphachshad</i>	135	615	2264	2879	135	438	1309	1747	35	438	1658	2096
<i>Cainan</i>	130	460	2399	2859								
<i>Shelah</i>	130	460	2529	2989	130	433	1444	1877	30	433	1693	2126
<i>Eber</i>	134	504	2659	3163	134	404	1574	1978	34	464	1723	2187
<i>Peleg</i>	130	339	2793	3132	130	239	1708	1947	30	239	1757	1996
<i>Reu</i>	132	339	2923	3262	132	239	1838	2077	32	239	1787	2026
<i>Serug</i>	130	330	3055	3385	130	230	1970	2200	30	230	1819	2049
<i>Nahor</i>	79	208	3185	3393	79	148	2100	2248	29	148	1849	1997
<i>Terah</i>	70	205	3264	3469	70	145	2179	2393	70	205	1878	2083
<i>Abraham</i>	100	175	3334	3509	100	175	2249	2424	100	175	1948	2123
<i>Isaac</i>	60	180	3434	3614	60	180	2349	2529	60	180	2048	2228
<i>Jacob</i>		147	3494	3641		147	2409	2556		147	2108	2255

## Creation According to the Bible

One of the key issues in interpreting the Biblical account of creation is the interpretation of the word "day." In the Genesis Creation account, God created the Earth, the Universe, and everything in it in a span of six "days"; thus, different lengths for these "days" will yield different ages for the Earth. According to Ross (2004), the Hebrew word  $y\text{◊}m$ , translated as "day," means a finite period of time; however, the length of such a time is not fixed from usage to usage. On the other hand, Wise (2002) contends that, since  $y\text{◊}m$  is translated to mean a literal 24-hour day nearly every time it occurs in the Bible, that it must have this meaning in the Genesis creation account. Biblical literalists interpret "day" as a literal 24-hour day.

Potential support for the young-earth interpretation is provided by Boyd (2005) in his analysis of the statistical distribution of Hebrew verbs. Boyd begins by pointing out that there are three possible ways to read the Biblical Creation account: 1) an "extended poetic metaphor, which communicates truth but in the plain sense of its words does not correspond to reality"; 2) a "narrative, which purports to be truth when it is in fact in error"; 3) a "narrative, which accurately portrays reality" (Boyd 2005). Boyd sets out to use verb distribution as the means by which one can determine the genre of the Creation account. He evaluates the verbs present in various parts of the Bible (such as 1 Kings, or 1 Chronicles), in which the text is unquestionably of the narrative genre, and then compares them to the verbs present in Biblical poetry, such as that found in the book of Psalms. Using this data, the Genesis 1:1-2:3 Creation account is a narrative, with probability between 0.999942 and 0.999987 at a 99.5% confidence level.

Therefore, it is "statistically indefensible" to argue that the text is poetry (Boyd 2005:632). Thus, Boyd asserts that the first approach (reading the text as poetry) can be safely disregarded. According to Boyd (2005), then, the text must be read as a narrative. As a young-earth creationist, Boyd believes the account to be true. However, the young-earth interpretation of Genesis Creation account is not the only option. The Gap Theory, the Day-Age theory, and theistic evolution are widely-accepted alternatives.

Gap theory is the notion that there is an indeterminate amount of time (the gap) between the first two verses of Genesis. Genesis 1:1 states: "In the beginning God created the heavens and the earth." Next comes the gap of possibly millions of years. Then, Genesis 1:2 states: "And the earth was formless and void, and darkness was over the surface of the deep; and the Spirit of God was moving over the surface of the waters" (Thompson). Such a gap allows for the lengthy geologic record to harmonize with the Bible. The Day-Age theory is the notion that, while there is no gap in time omitted by the Bible, each Creation "day" was not a literal day, but instead an age - a period of millions of years or more (Ross 2004). Thus, the age of the Earth achieved by this theory can be concordant with the age reached by scientists: 4.5 billion years. It is noteworthy to point out that Day-Age theorists, such as Hugh Ross, don't generally include evolution in their theory of Creation. Evolution is found in the theistic evolution interpretation. This option takes evolution as axiomatic and states that God used evolution to create. Thus, the scientific record is valid, and the Genesis Creation account is, at most, symbolic.

## Conclusion

**One can now begin to see how it's possible to use the age of humanity, together with a given length of Creation week, to assign an age to the Earth. Doing so combines the chronology of Ussher & Lightfoot with the literal narrative interpretation of Genesis & gives a Creation date of 4004 B.C. given the variations (large & small) in different translations of the Old Testament, there's little proof the genealogical information presented is complete or accurate. It is worth noting that different interpretations of the scriptural description of the Six-Day Creation week will yield different ages, even when combined with a 6000-year age of humanity. Nevertheless, young-earth creationists predominately ascribe to the interpretation of Ussher's human calendar and Six-Day Creation Week.\***

\* Young Earth Creationists that Place the Earth's Age at Approximately 10,000 Years Old Claim At Least 22 Generations are Omitted in the Genesis Genealogical Tables. These Creationists Contend that the Tables are Purposed for Proving Descendancy Not Date-Setting.

\* If we assume the average family in the pre-Flood world numbered 20 children, and multiply ten generations of families listed in Genesis Five, we arrive at the following figures:

YEAR

0	1st Generation Adam & Eve—2
165	2nd Generation Children—20
330	3rd Generation Grandchildren—200
495	4th Generation Great-Grandchildren—2,000
660	5th Generation G-G-Grandchildren—20,000
825	6th Generation G-G-G-Grandchildren—200,000
990	7th Generation G-G-G-G-Grandchildren—2,000,000
1155	8th Generation G-G-G-G-G-Grandchildren—20,000,000
1320	9th Generation G-G-G-G-G-G-Grandchildren— 200,000,000
1485	10th Generation G-G-G-G-G-G-G-Grandchildren— 2,000,000,000

1656

**YEAR OF THE FLOOD?**

To this number must be added all the survivors of the previous generations, which would add another 200 plus million. (See fig. 4.)<sup>4</sup>

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<sup>4</sup> Lindsay, D. G. (1992). [\*The genesis flood: continents in collision\*](#). Dallas, TX: Christ for the Nations.

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# Old Earth Theology: A Factor that Explains Inconsistent Belief of Inerrancy Among Florida Southern Baptists

by [David Mcgee](#) on October 1, 2014

## Southern Baptist Affirmation of the Historicity of Genesis 1–11

In 1961, the Fundamentalists and modernist controversy surfaced again with the Southern Baptist Convention. It swirled around the publication of Ralph Elliot's commentary of Genesis (Williams 2000, p. 21). Broadman Press (publishing arm of the Southern Baptist Convention) had published Elliot's commentary, *The Message of Genesis*, in which he denied the unique creation of Adam and Eve, affirmed Noah's Flood was local, and the patriarchs were not literal persons (Williams 2000, p. 22). "To make matters worse, Elliot's employer, Midwestern Baptist Theological Seminary during this controversy, reaffirmed him a consecrated Christian, a promising scholar, teacher & a loyal servant of the Southern Baptists" (Williams 2000, p. 23). As a result, the Baptist Faith and Message 1963 was adopted with a reaffirmation of the infallibility of Scripture and additional changes designed to "establish doctrinal parameters for all Southern Baptist institutions" (Williams 2000, p. 24). The implication was that Elliot's commentary was unacceptable language to describe the belief that the Holy Bible was written by men, divinely inspired, and is a perfect treasure of divine instruction without mixture of error. The controversy did not end 1963; rather, it escalated in 1969 when Broadman Press published the Broadman Commentary & choose G. H. Davies to comment on Genesis. His beliefs were no different than Elliot's regarding the historical accuracy of Genesis (Williams 2000, page 25). This revealed that the leadership within the Southern Baptist Convention held different views of the inspiration of the Bible than the intended understanding of the Baptist Faith and Message of 1925 and 1963. "For the first time in several decades Southern Baptists faced a theological crisis" (Bush & Nettles 1999, p. 328). A resurgence of the supremacy of the Bible was needed. Two conservative men, who believed in the inerrancy of the Bible, Paige Patterson and a Federal judge from Houston, Paul Pressler, had an idea on how to reverse the liberalism that had penetrated the Southern Baptist leadership.

## Resurgence of the Southern Baptist Convention

In 1985, a Peace Committee was formed to “determine sources of the controversy and make findings and recommendations . . . so that Southern Baptists might affect reconciliation” (Bush and Nettles, 1999, p. 496). The Peace Committee made its final report in 1987 at the Southern Baptist Convention in St. Louis and found that a liberal drift had entered the convention. They found evidence of a mixture of beliefs. Within the six seminaries there were diversity of opinions from faculty members, who affirmed or modified the historicity of Adam, the historical events in the Bible, the authorship of every book of the Bible, and the miracle claims reported in the Bible (Report of the Southern Baptist Convention Peace Committee 1987). Two recommendations were made: 1) “acceptance that the seminaries were the root of the problem in the convention” and 2) “any solution to the controversy must be rooted in a plan to change the seminaries” (Williams 2000, pp. 138–139).

Knowing that the leadership of the Southern Baptist Convention had affirmed inerrancy and had elevated the plain meaning of Genesis 1–11 was the primary purpose. The secondary and tertiary purposes were to revitalize the six seminaries with professors that would affirm the BFM 2000 with a result that the general membership of Southern Baptist Convention, in time, would affirm the BFM 2000 as well. In 2013, this researcher sampled a population of Florida Southern Baptist members to ascertain to what degree, if any, they affirm the doctrine of inerrancy. The process to gather and analyze the data will be discussed next.

## Research Process

The Southern Baptist Convention has a membership of over 16,000,000 (Southern Baptist Convention 2013) and the Florida Baptist Convention has about 1,000,000 (Florida Baptist Convention 2013). Leedy and Ormrod claim that beyond populations of 5000 a sample size of 400 is adequate (2004, p. 217). There were 502 randomly selected participants representing the Southern Baptist Churches of Florida. This provided a 95% confidence level that results were accurate (<http://www.surveysystem.com>). The researcher developed an assessment tool called the Biblical Inerrancy Test (BIT) consisting of 68 questions: 46 were Likert-scale (quantitative) and 22 were open-ended (qualitative).



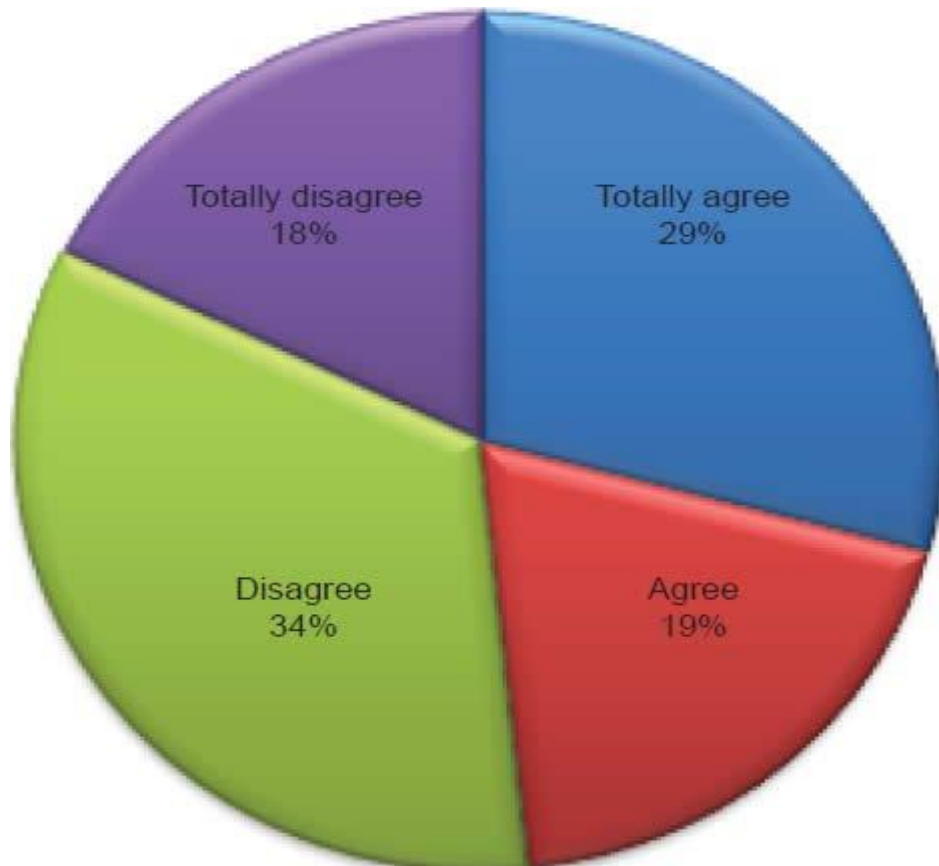
The validity & reliability of the BIT was determined by an expert panel comprised of faculty and a research firm. The phone calls were made by America's Research Group. Britt Beemer began the America's Research Group in 1979 as a research and strategic consulting firm. The list of America's Research Group clients includes many of the nation's top retailers, leading brands, investors, and entrepreneurial companies. America's Research Group consumer telephone surveys are conducted by a dedicated, well-trained group of researchers with frequent monitoring & quality-assurance procedures. Results are compiled by their staff of market research professionals (Beemer 2011). America's Research Group has produced the statistical research for Answers in Genesis for two books: *Already Gone & Already Compromised*.

## Age of the Earth Survey Question

After the results from the Biblical Inerrancy Test were compiled and analyzed the researcher explored the responses of question 31 (Q31). The purpose in this question was to discover to what degree Florida Southern Baptists affirm a belief in the age of the earth based upon the current influence of evolutionary science and teaching of the Bible. The question and results are outlined below.

### Chart 1

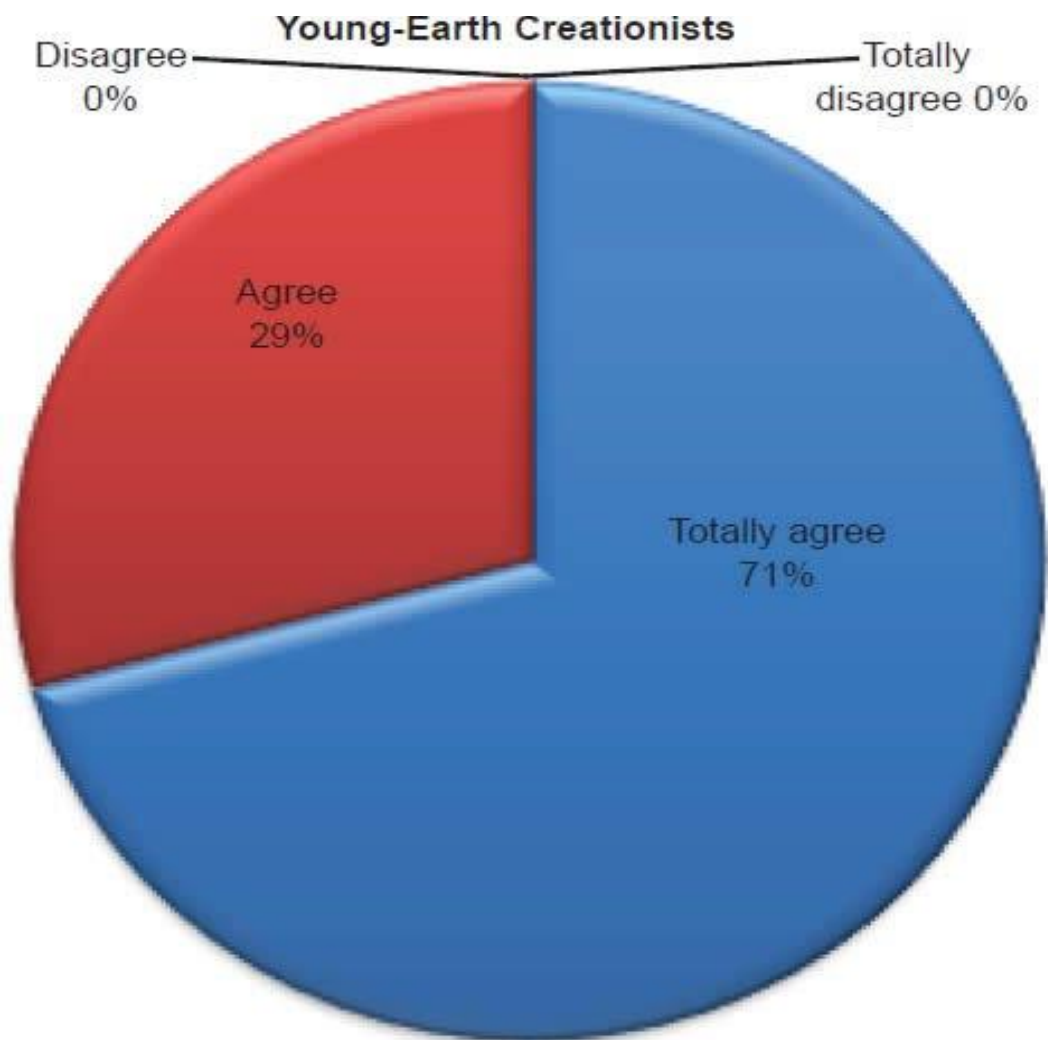
*Q31. Do you feel 1 the earth is less than 12,000 years old?*

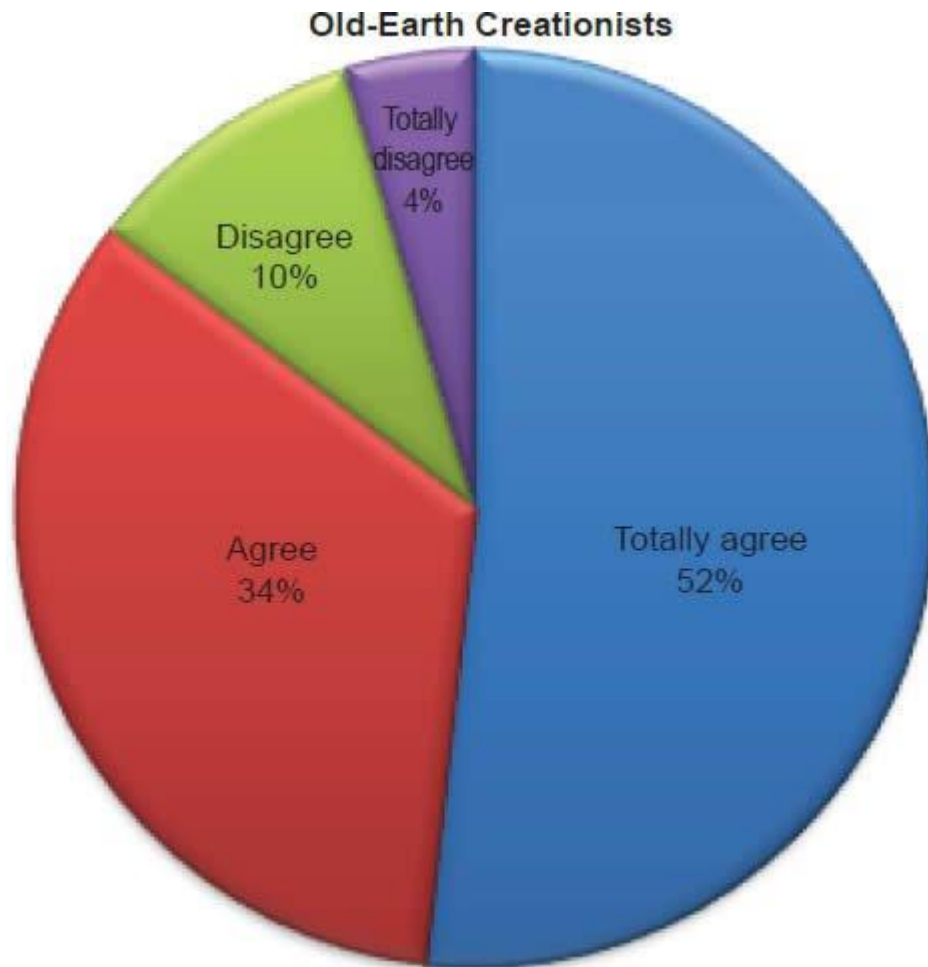


## Beliefs of Young-Earth and Old-Earth Creationists

Chart 2

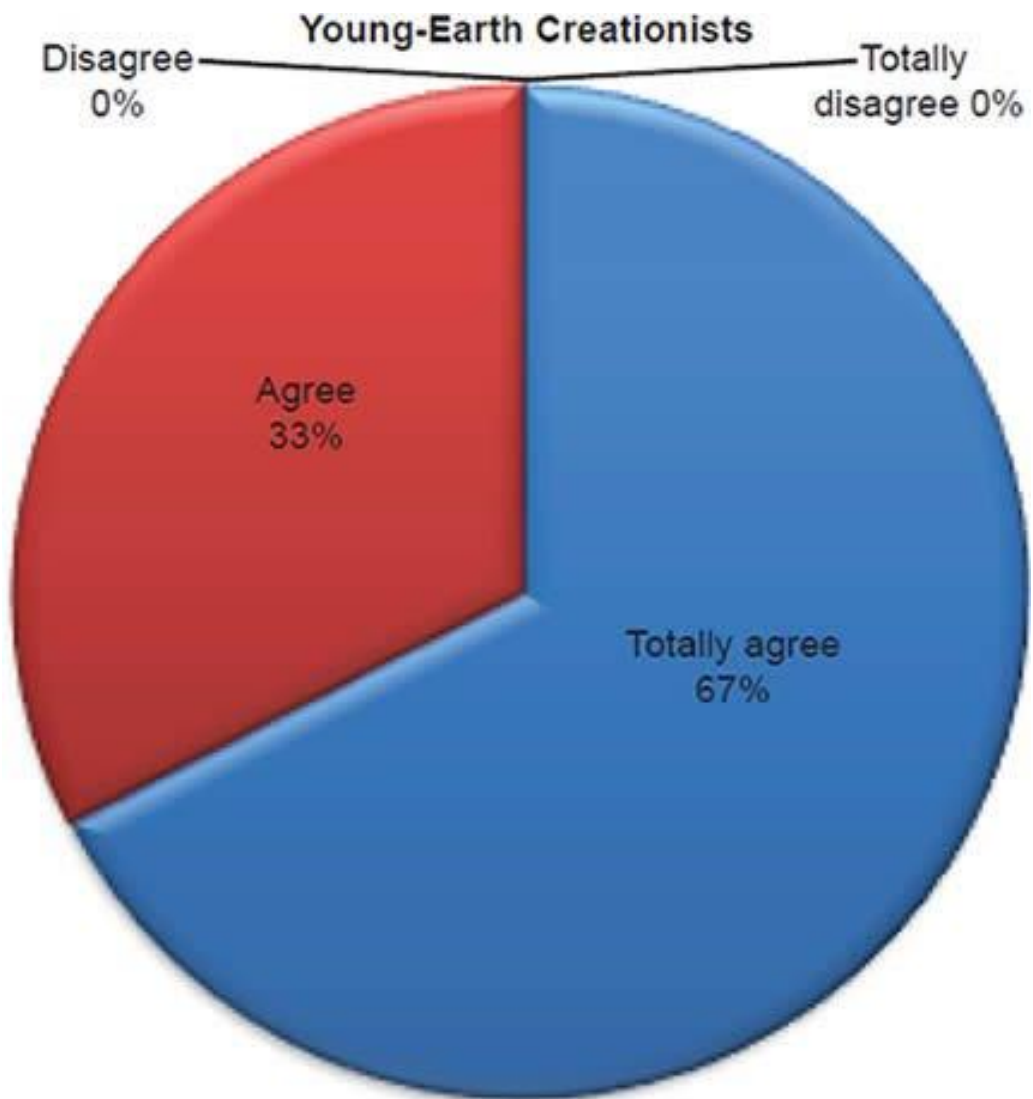
*Q1. Do you feel all the accounts/stories in Bible are true?*

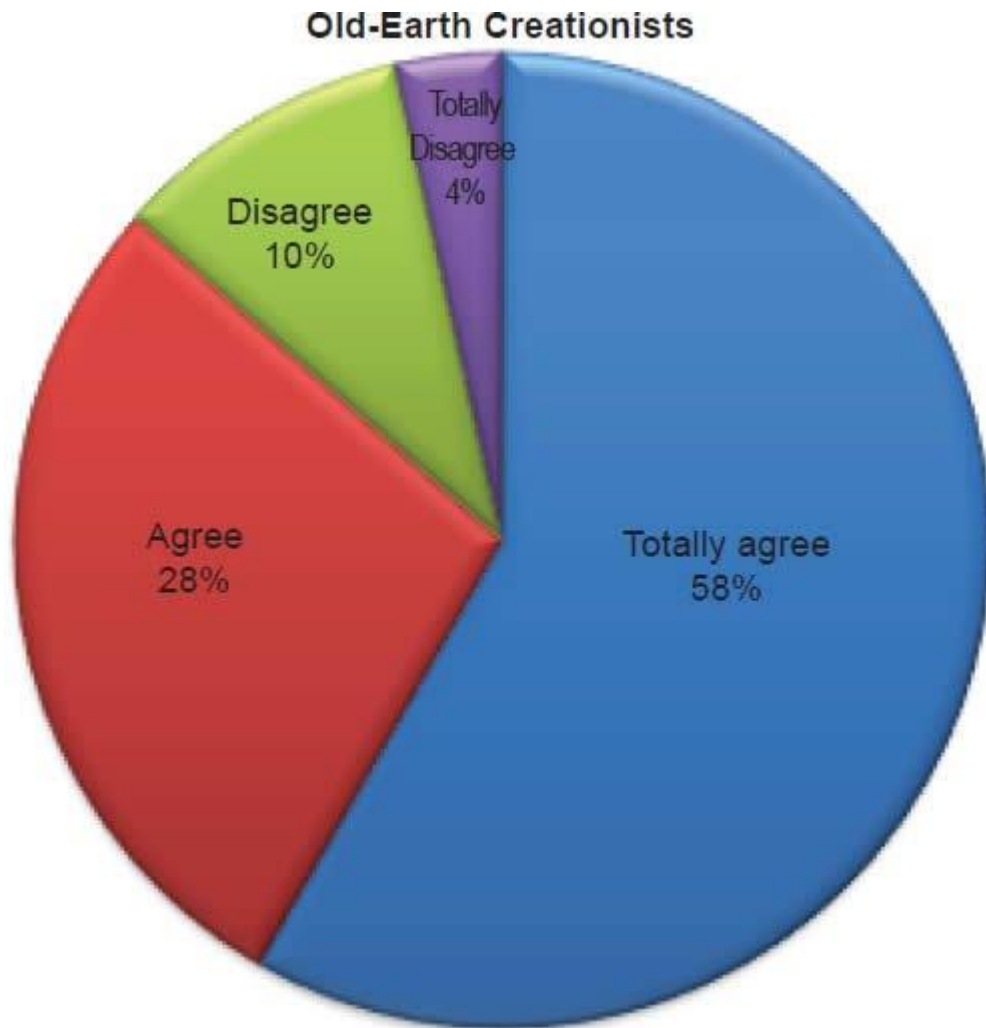




### Chart 3

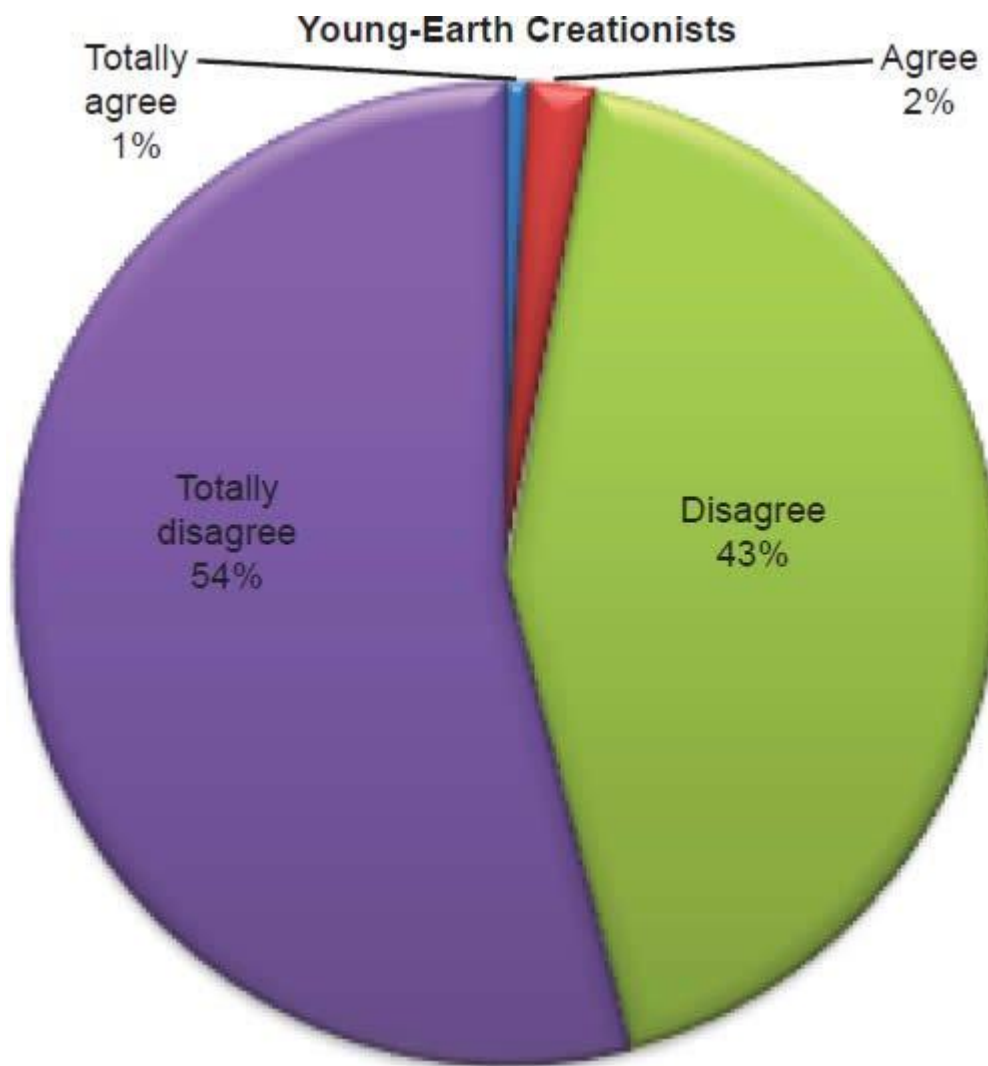
*Q4. Do you feel Bible is true and trustworthy in all matters?*



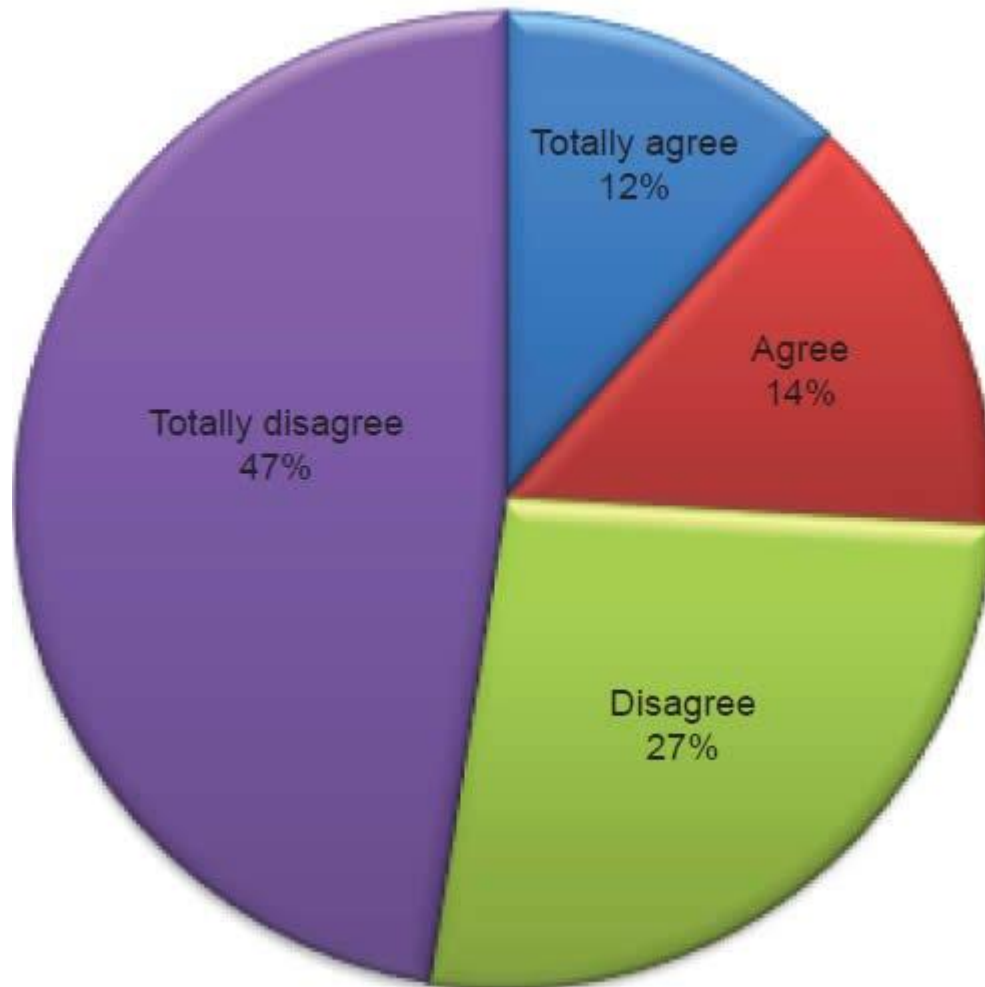


## Chart 4

*Q7. Do you feel Bible contains errors?*



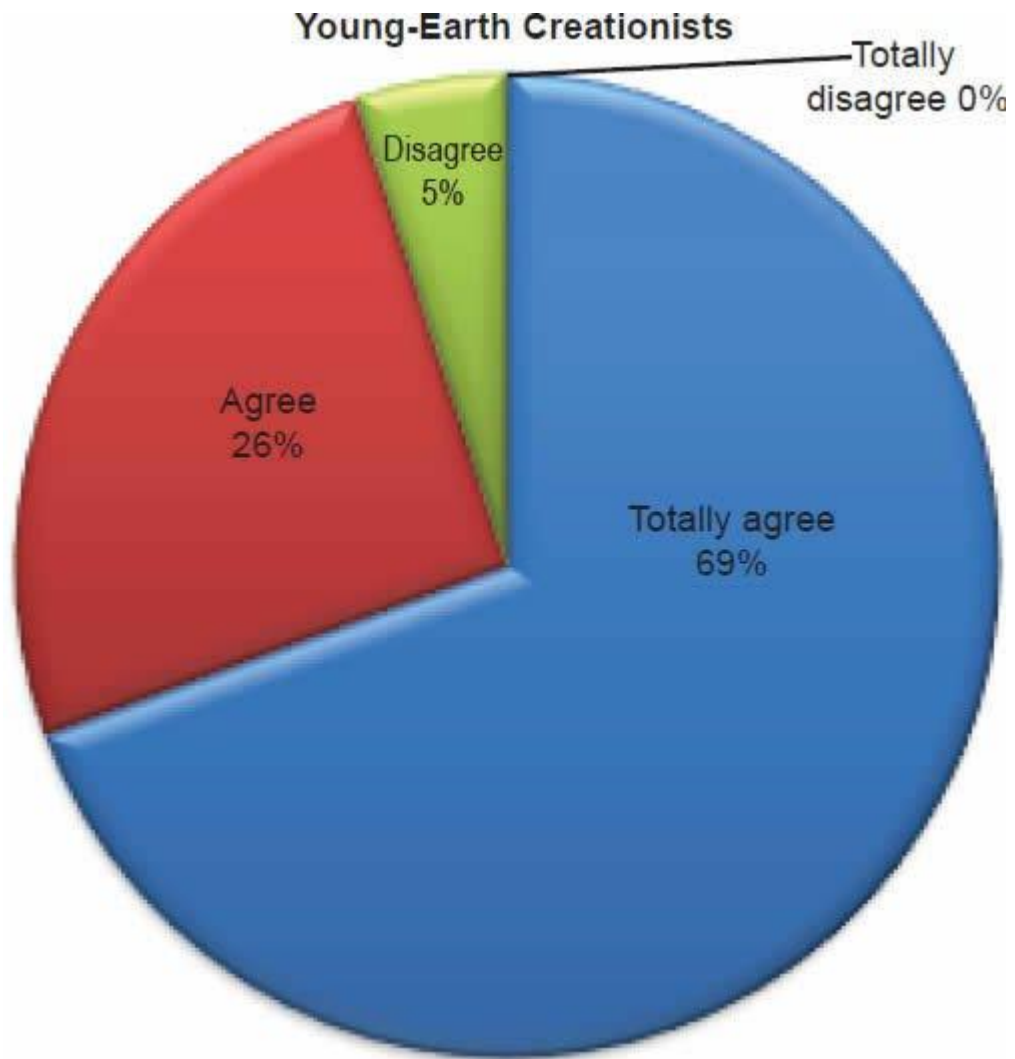
### Old-Earth Creationists

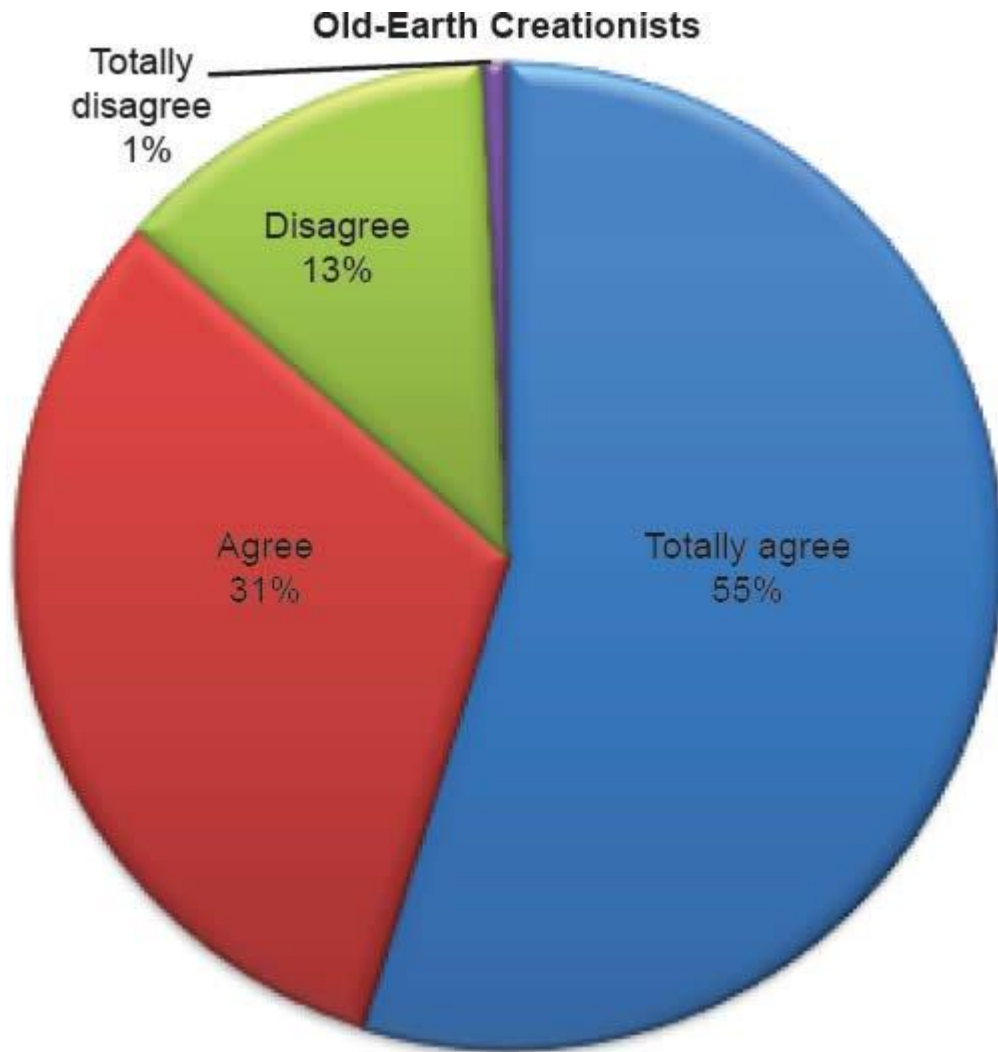




### Chart 11

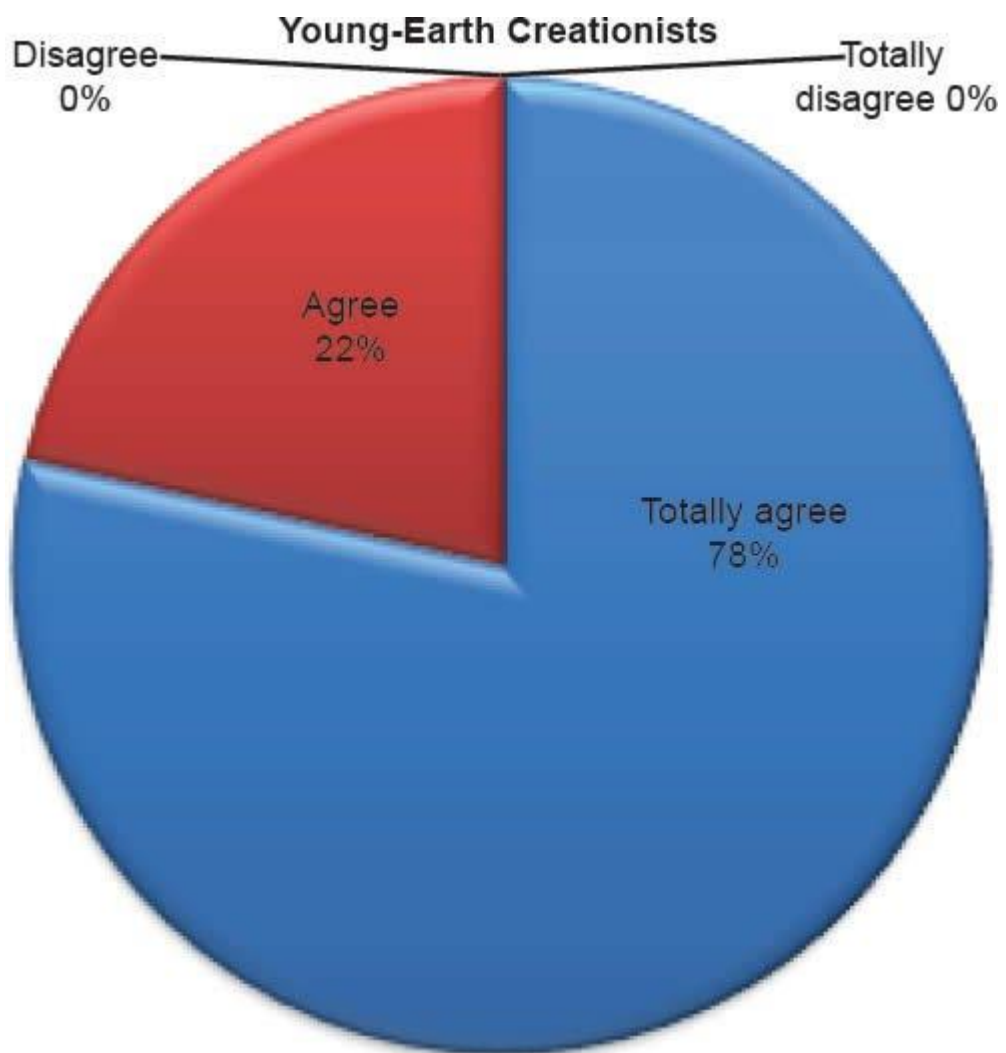
*Q33. Do you feel God created the earth in six literal 24-hour days?*

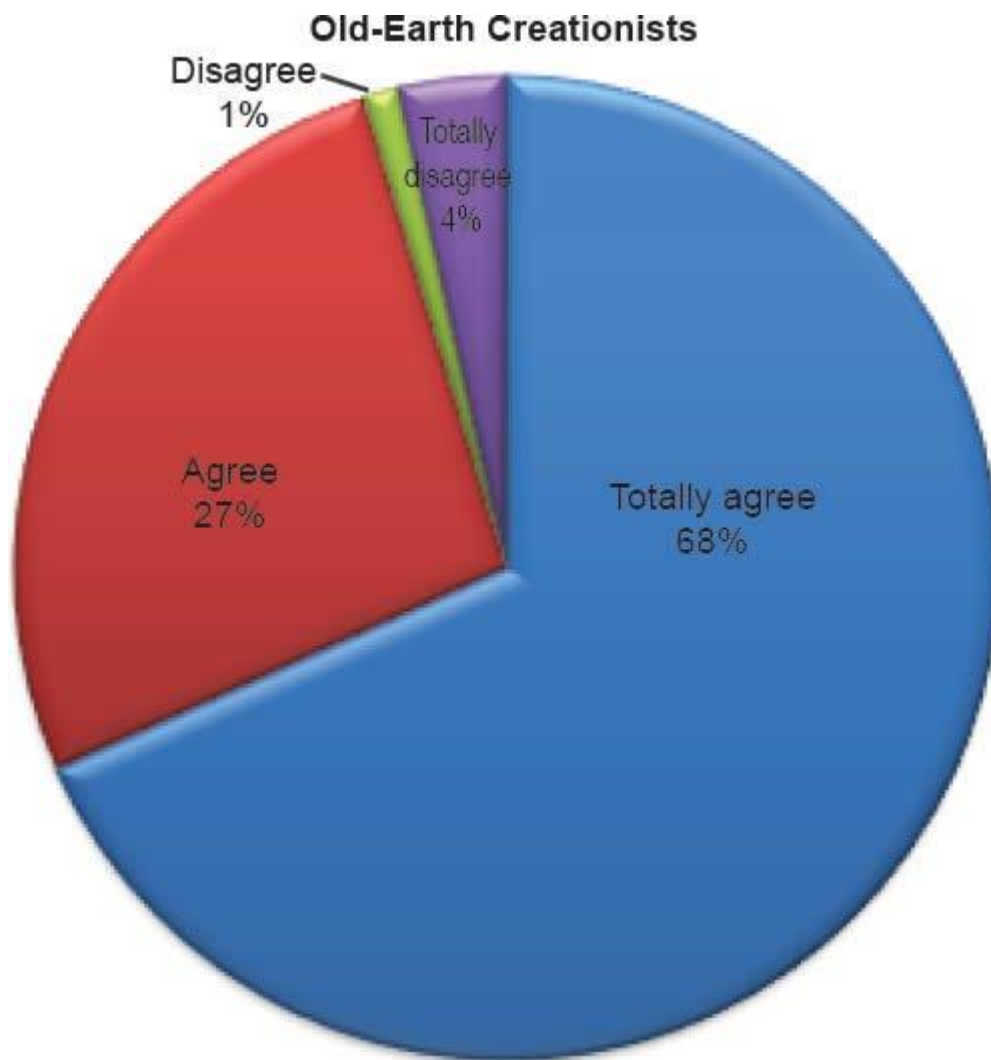




## Chart 12

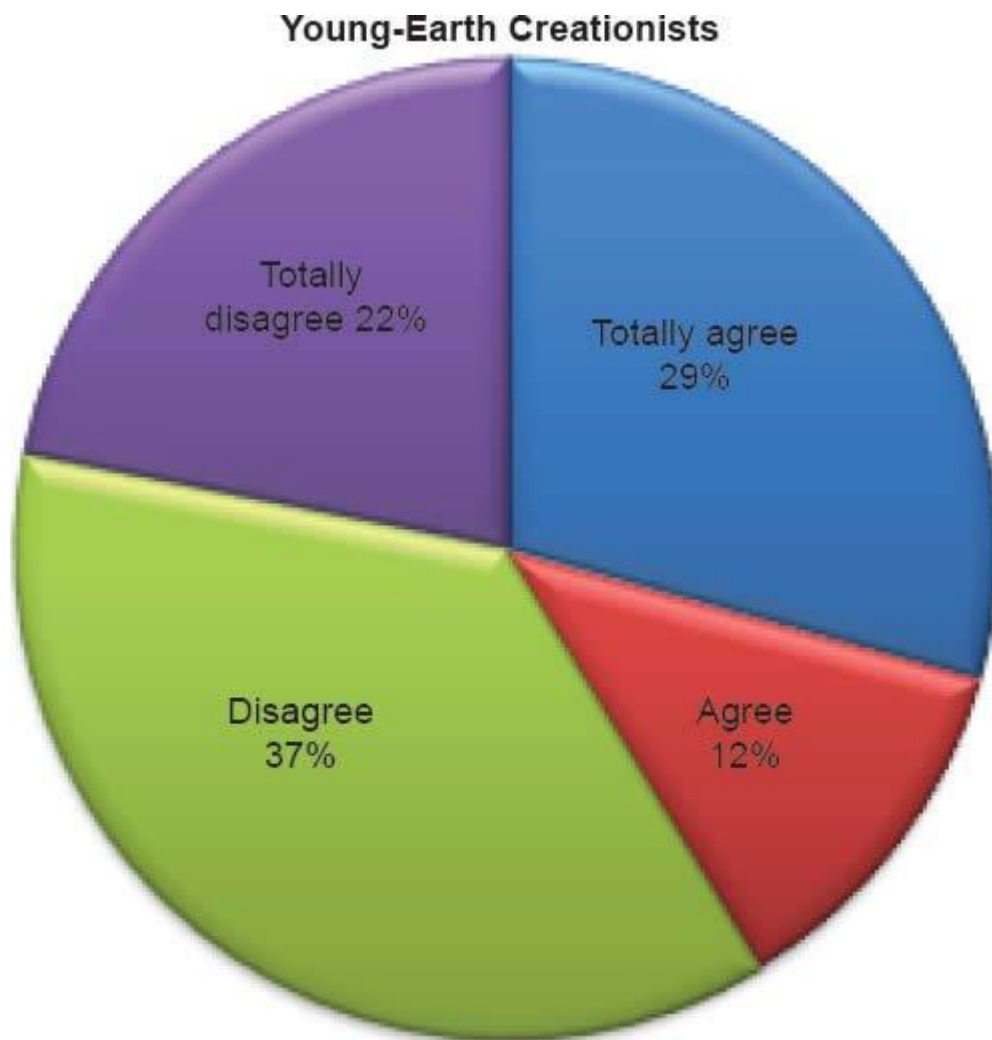
*Q34. Do you feel Adam and Eve were real people?*

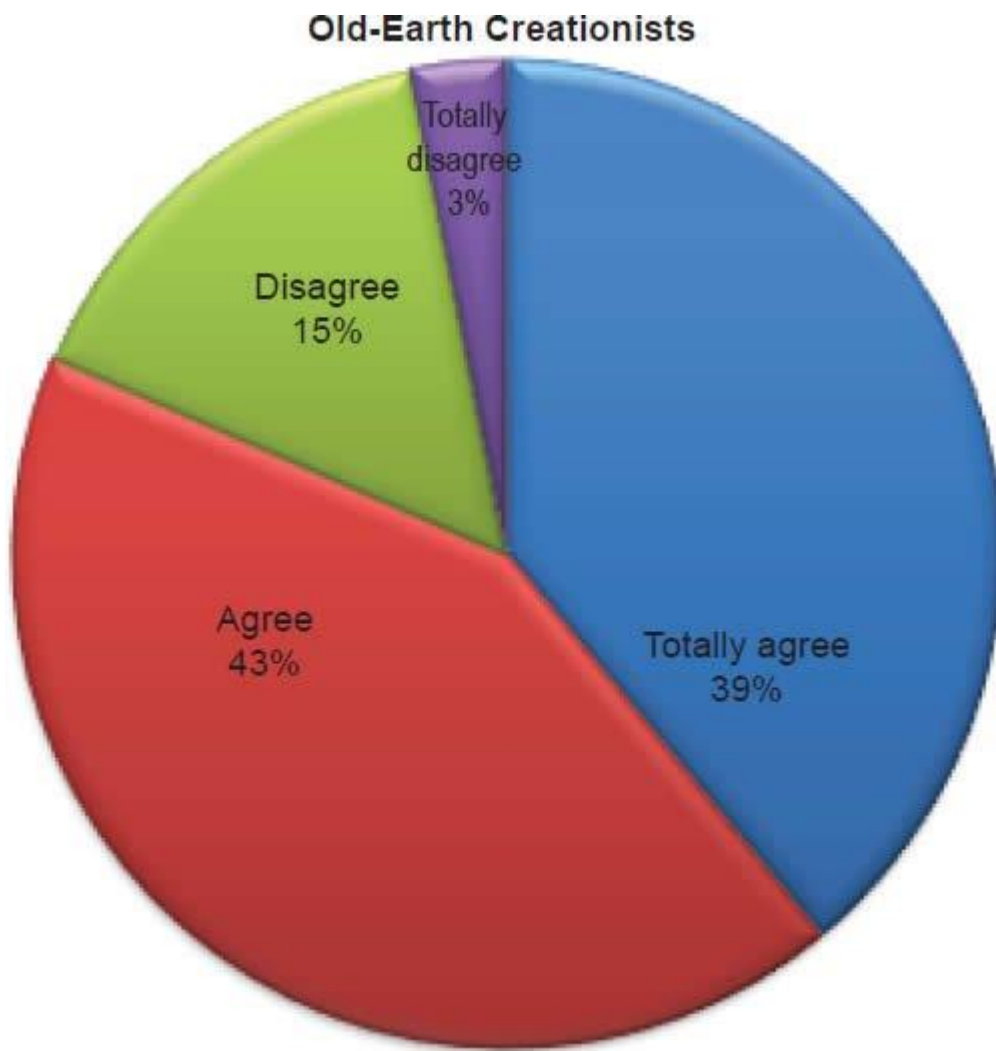




### Chart 13

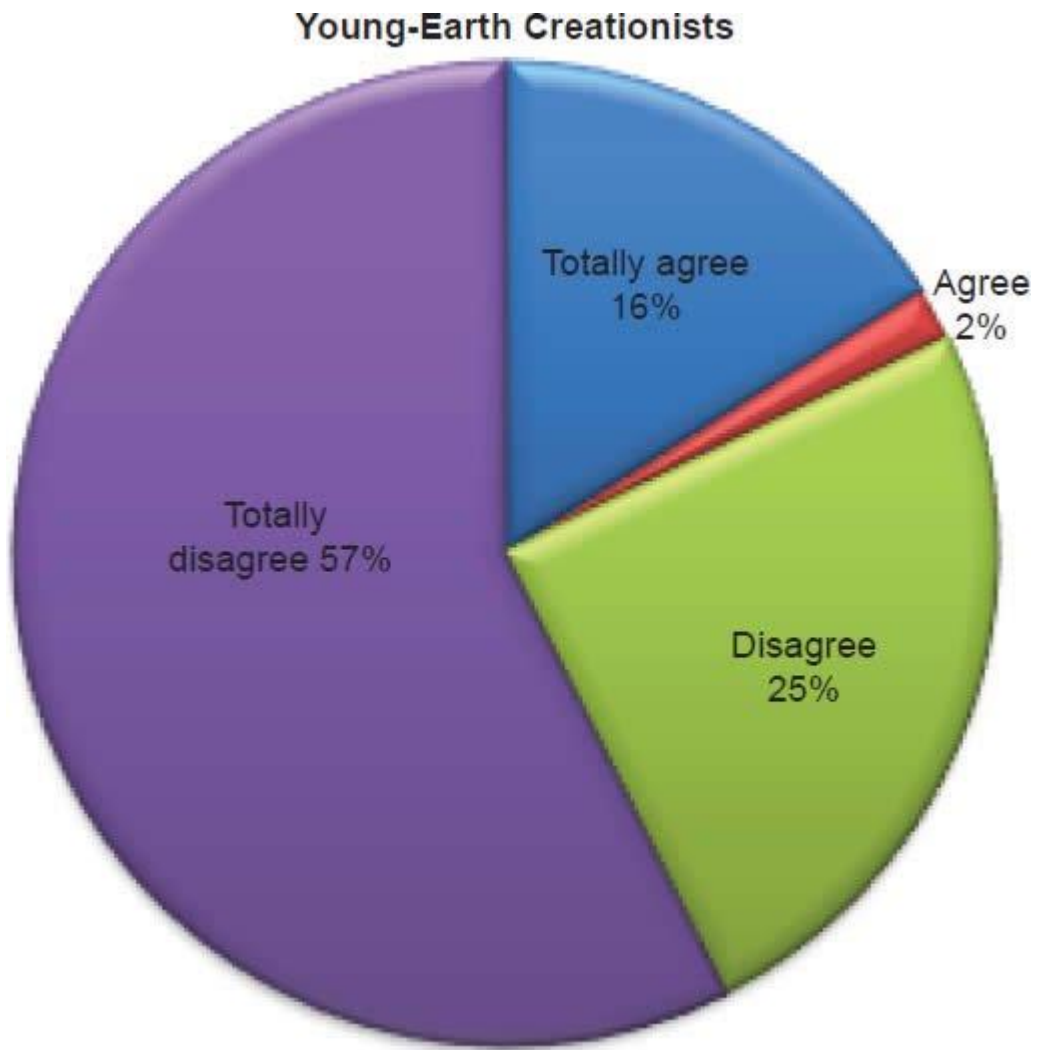
*Q35. Do you feel dinosaurs lived on the earth millions of years ago?*

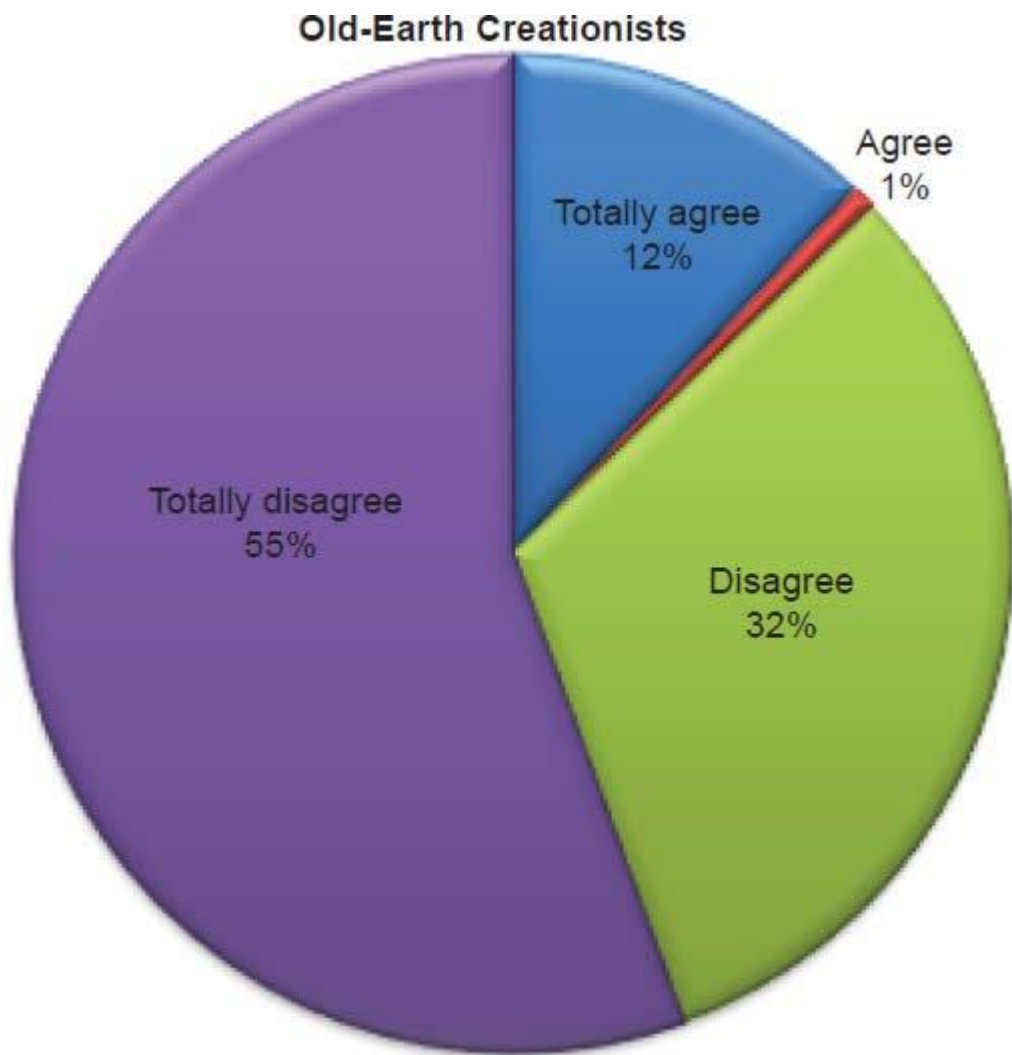




## Chart 14

*Q40. Do you feel humans evolved from ape-like creatures?*

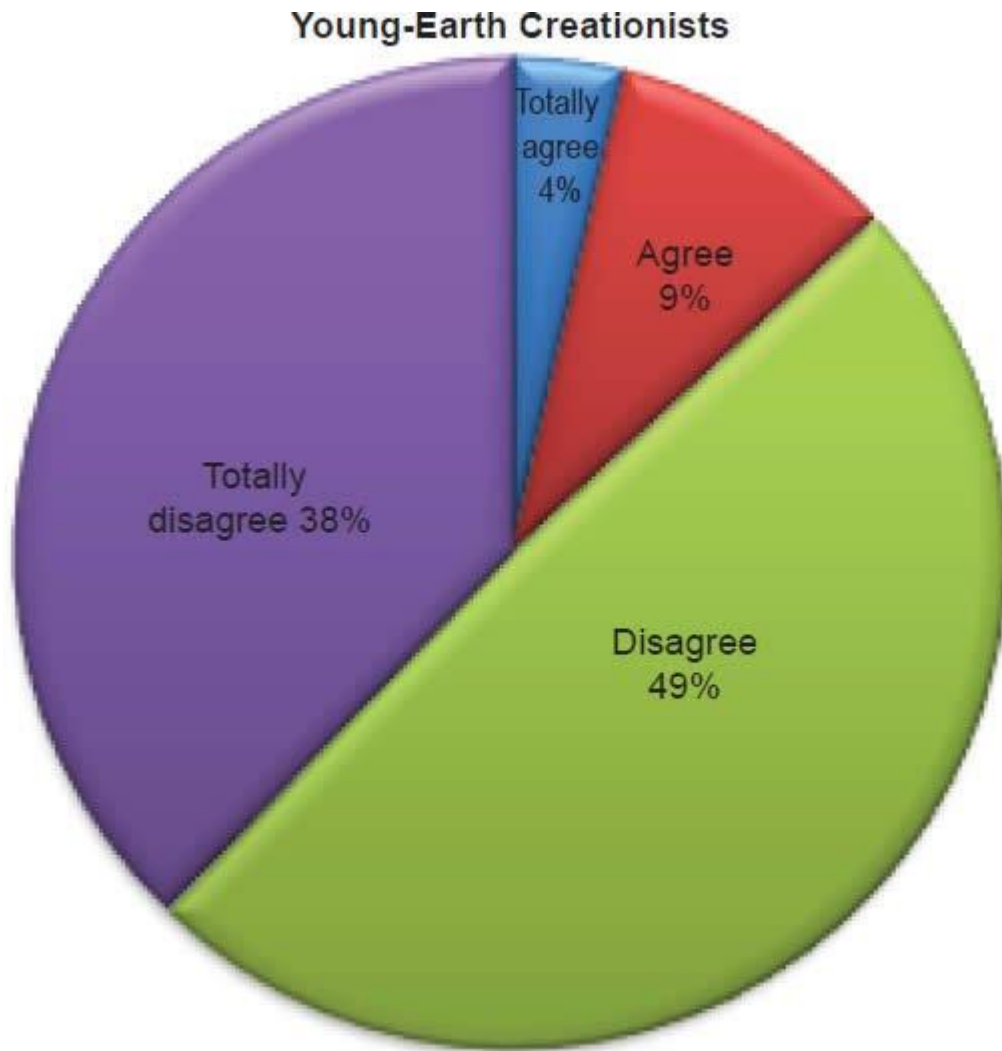




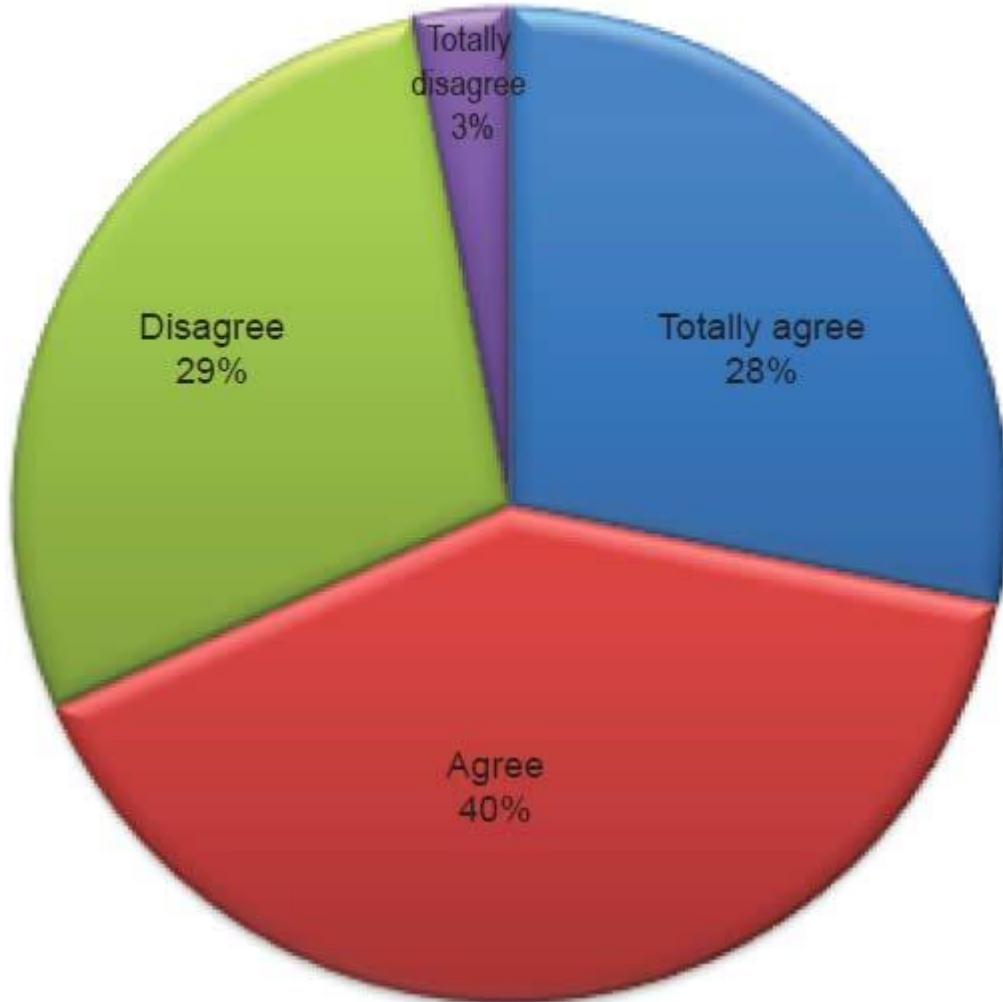


## Chart 15

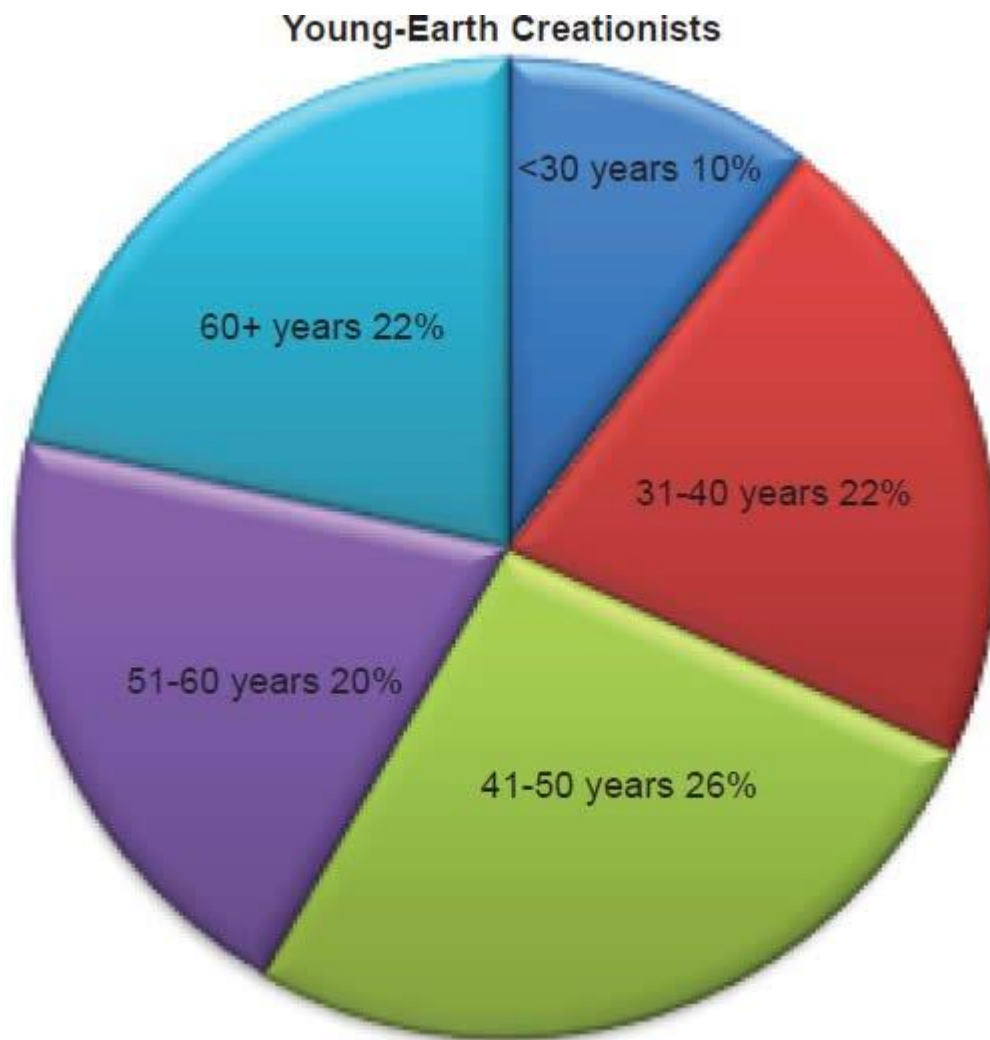
*Q41. Do you feel because of science that the earth is millions/billions of years old?*



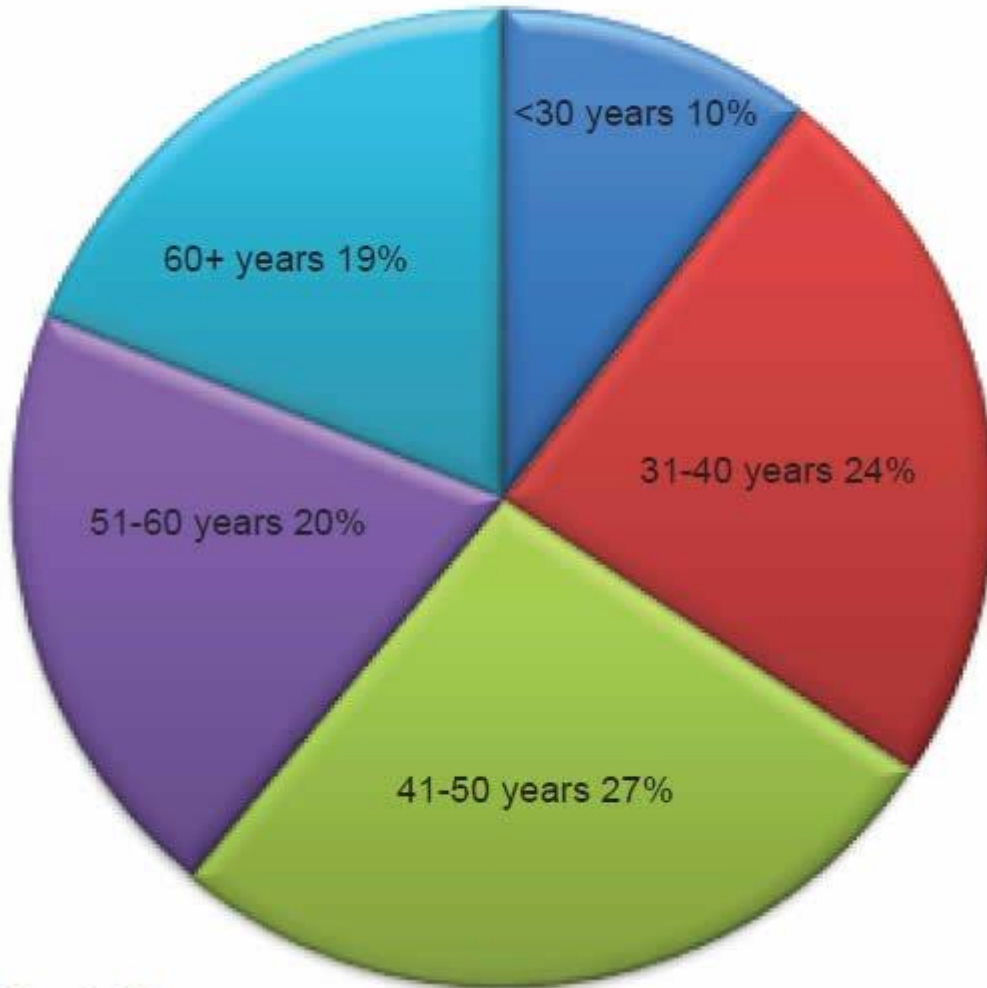
### Old-Earth Creationists



**Chart 27**  
*Q63. Age Groups*

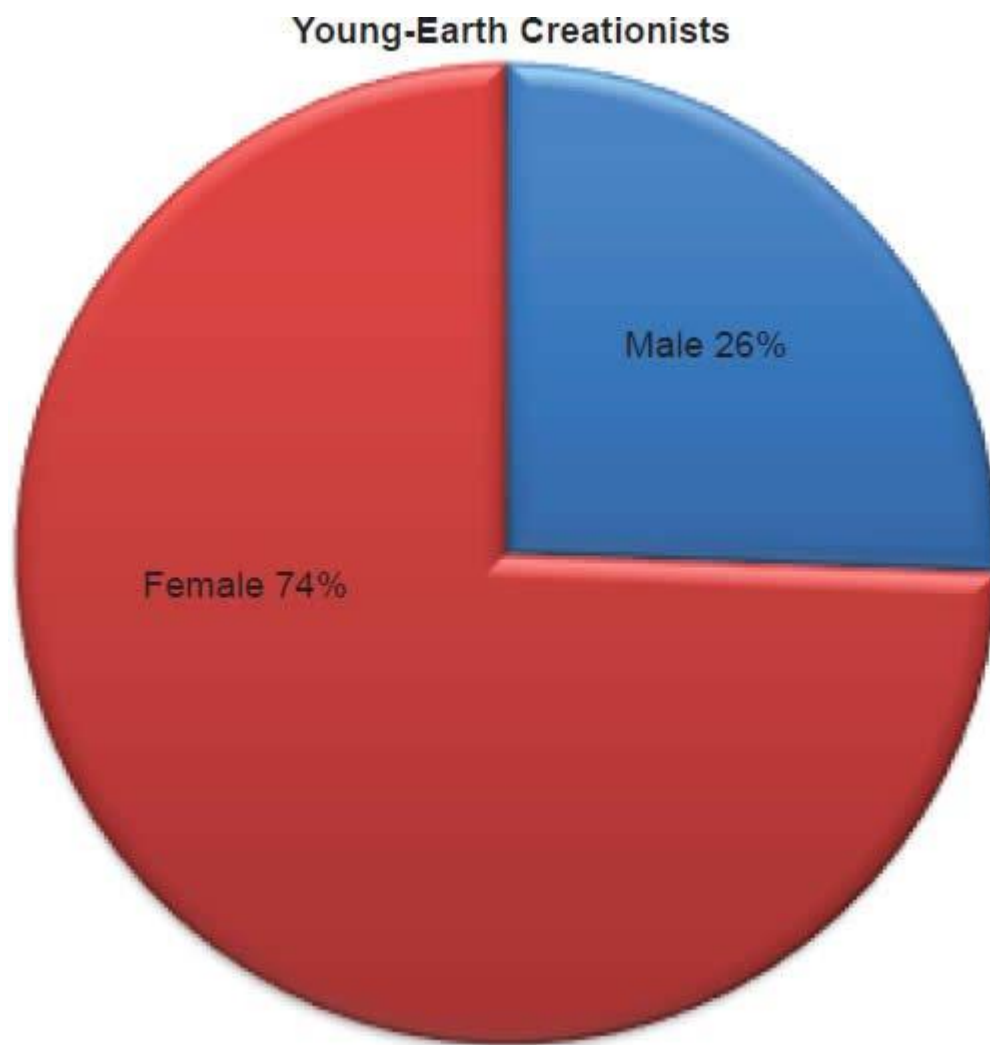


### Old-Earth Creationists

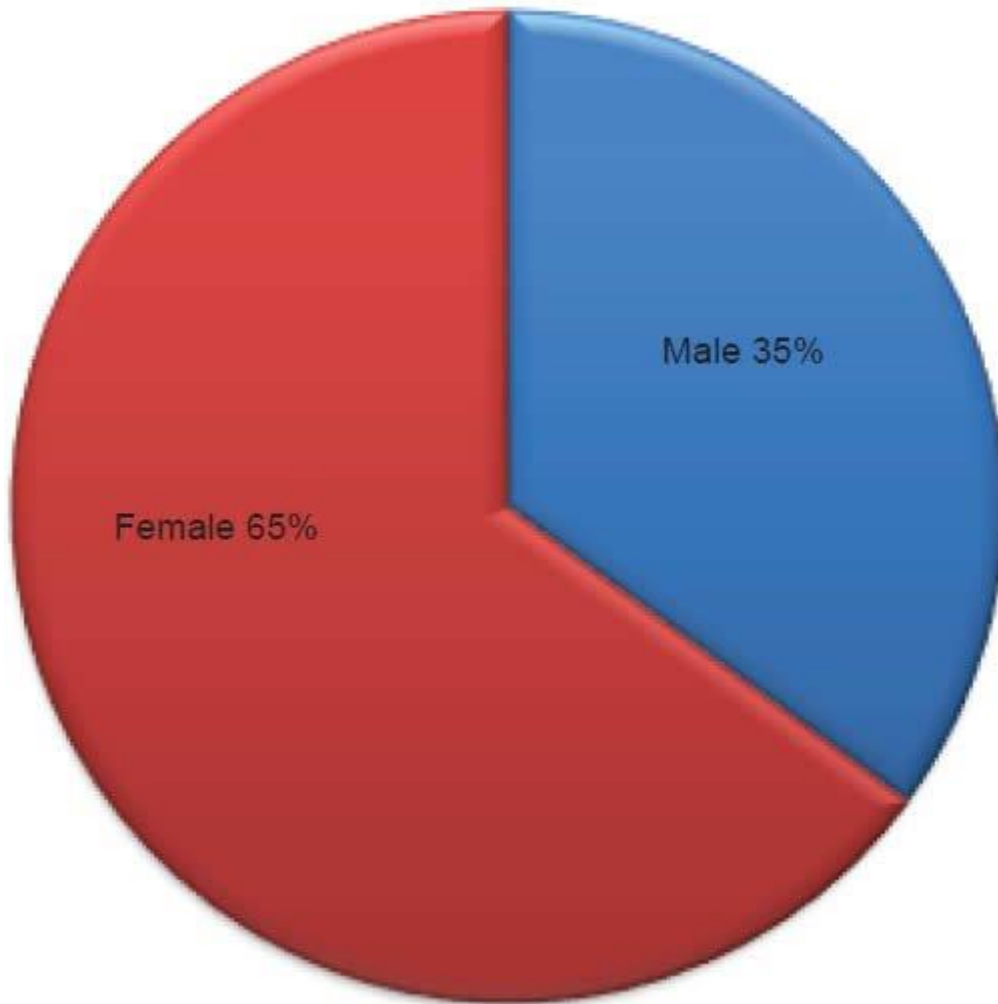


## Chart 28

*Q67. Sex/Gender (By observation)*



### Old-Earth Creationists



## Statistical Analysis

A factor analysis<sup>12</sup> was computed using SPSS, the leading statistics software for the social sciences, with the initial eigenvalue set at 1. The results revealed that there were ten factors that contributed to understanding the variance of the BIT survey results. Those ten factors had a cumulative percentage of 59.762. That is, those ten factors were able to explain roughly 60% of the variance from the mean. A rotated factor matrix revealed that the ten factors could be condensed into 5 clusters of factors based upon question similarity.

## Implications from the Data

The frequency data in conjunction with the factor analysis shows that there are implications such that belief in the age of the earth is one factor that can influence other inerrancy related beliefs.<sup>13</sup> In addition, the other four factors: one's belief (or disbelief) in the authority of the Bible for personal living; deity of Christ; general affirmation in inerrancy; and one's church attendance and frequency of Bible reading also contributed to the degree to which Florida Southern Baptist members affirmed inerrancy of the Bible. These analyses lead to a number of conclusions.

## Inerrancy (in General)

Belief in the inerrancy of the Bible is strongly affirmed by both groups represented in Chart 2, Chart 3, and Chart 4, but a small percentage of old-earth creationists have doubts about this key doctrine of the church. With young-earth creationists 0% dispute that all the stories/accounts of the Bible were true, 0% dispute that the Bible is true & trustworthy in all matters, and 3% believe the Bible contains errors. Averaging the percentages together, about 1% of young-earth creationists doubt the inerrancy of the Bible. This is contrasted with old-earth creationists of whom 14% dispute that all the stories/accounts of the Bible were true, 14% dispute that the Bible is true and trustworthy in all matters, and 26% believe the Bible contains errors. Averaging percentages together, 18% (about 1/6th) old-earth creationists have doubts about the inerrancy of the Bible.

## Six Literal 24-hour days in Genesis

Belief that God created the earth in six literal 24-hour days is strongly affirmed as described in Chart 11, but a smaller percentage of old-earth creationists do have some doubts. With young-earth creationists 5% dispute God created the earth in six literal 24-hour days. This is moderately higher for old-earth creationists of whom 14% dispute God created the earth in six literal 24-hour days.

## Historical Adam

Belief that Adam and Eve were real people is affirmed as described in Chart 12; nevertheless, both groups demonstrate a moderately high belief that humans evolved from ape-like creatures (Chart 14). Within young-earth creationists, 0% dispute the historicity of Adam and Eve, and 18% believe humans evolved from ape-like creatures. This is statistically the same for old-earth creationists, of whom 5% dispute the historicity of Adam and Eve and 13% believe humans evolved from ape-like creatures. This result finding presents a clear misunderstanding of young-earth creationism, because, by definition, a belief in the evolution of ape to man is not consistent with young-earth creationism. However, the purpose of the article is to argue evolutionary science has influenced a segment of Florida Southern Baptists to doubt the inerrancy of the Bible. Even those who would align themselves with young-earth creationism have capitulated to a degree, maybe unknowingly, in the supremacy of science over the supremacy of the Bible.

## Age of the Earth

The fact that 13% of young-earth creationists believe that science has influenced them to believe the earth is millions or billions of years old (Chart 15) is significant, but the above response to the historical Adam data should be a sufficient response. Of all the possible explanations, that 41% of those who claim to be young-earth creationists and believe dinosaurs lived on the earth millions of years ago (Chart 13) is the most difficult to answer. A few possible responses exist, however. Response one is that 41% of those who believe that dinosaurs lived on the earth millions of years ago and believe that the earth is less than 12,000 years old are really not young-earth creationists (Chart 1). This would then indicate that there is a greater percentage of old-earth creationists than those who self-identified as such within the Florida Southern Baptist convention; moreover, there is a greater proportion that have been influenced by evolutionary science.



The data then might indicate through statistical analysis that belief in the age of the earth is a more significant cluster factor in belief in the inerrancy of the Bible; however, this potential analysis is beyond the scope of this article. Response two is that those 41% do reflect true young-earth creationists who have not pondered deeply this topic. However, if instructed with the implications of such belief and educated in a seminar from Answers in Genesis, the results might be significantly different.

Response three is that, like seminary professors who affirm both the doctrine of inerrancy and hold to an old-earth cosmology,<sup>15</sup> these are young-earth creationists who are inconsistent in their beliefs. However, unlike seminary professors, these lay persons have not realized that evolutionary science has influenced them to believe incongruous statements.

Of those who are old-earth creationists, 82% of them believe dinosaurs lived on the earth millions of years ago (Chart 13), and 68% believe that science has influenced them to believe the earth is millions or billions of years old (Chart 15). Old-earth creationists still affirm inerrancy, even though they are more consistent in their beliefs about the age of the earth and dinosaurs; nonetheless, they are significantly more influenced by evolutionary science.

## Summary of the Data

In general, there is a strongly held belief by young- and old-earth creationists that the Bible is the inerrant Word of God. Both affirm a belief in the doctrine of the Trinity, resurrection of Jesus, reported miracles in the Old Testament, supernatural events in Genesis 1–11, and believe the Bible is their final authority. However, a dissonance resides inside of this general belief between the supremacy of the Bible and the supremacy of evolutionary science. A greater influence of evolutionary science exists among those who affirm an old-earth view; nevertheless, those who affirm a young-earth view reveal that they, too, have been influenced by evolutionary science. About 18% of old-earth creationists question inerrancy of the Bible compared to less than one percent of young-earth creationists. Roughly 8% of old-creationists doubt Jesus rose from the dead compared to 0% of young-earth creationists. On average about 12% of the old-earth creationists doubt the miraculous events reported in the O.T. Bible compared to zero% of youth-earth creationists. As to historicity of Adam, young-earth creationists (100%) and old-earth creationists (95%) do believe he was real. However, surprisingly 18% of young-earth creationists believe humans evolved from ape-like creatures, while only 13% of old-earth creationists affirm this belief. The age of earth question was not consistently answered by young-earth creationists with 41% believing the dinosaurs lived on the earth millions of years ago compared to 82% of old-earth creationists. Of old-earth creationists, 14% dispute Noah's Flood was global compared to 0% of young-earth creationists.

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## Appendix 1. Total Variance Explained

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.527	26.807	26.807	5.151	11.980	11.980
2	4.619	10.743	37.550	3.679	8.556	20.536
3	3.026	7.038	44.588	3.582	8.330	28.866
4	2.085	4.848	49.436	3.018	7.019	35.886
5	1.896	4.409	53.845	2.116	4.922	40.807
6	1.541	3.584	57.429	2.083	4.843	45.650
7	1.383	3.215	60.645	2.064	4.799	50.450
8	1.318	3.065	63.710	1.789	4.159	54.609
9	1.116	2.594	66.304	1.335	3.105	57.714
10	1.067	2.481	68.785	.881	2.048	59.762
11	.983	2.287	71.072			
12	.898	2.089	73.161			
13	.868	2.018	75.180			
14	.834	1.939	77.119			
15	.692	1.608	78.727			
16	.669	1.556	80.283			
17	.645	1.499	81.782			
18	.603	1.403	83.185			
19	.574	1.335	84.521			
20	.529	1.229	85.750			
21	.510	1.187	86.937			
22	.475	1.105	88.042			
23	.453	1.054	89.095			
24	.439	1.020	90.115			
25	.404	.941	91.056			

26	.378	.879	91.935			
27	.377	.877	92.811			
28	.323	.750	93.561			
29	.294	.684	94.245			
30	.279	.649	94.894			
31	.252	.585	95.479			
32	.236	.548	96.028			
33	.218	.506	96.534			
34	.210	.487	97.021			
35	.199	.463	97.484			
36	.192	.446	97.931			
37	.173	.402	98.332			
38	.164	.382	98.714			
39	.154	.357	99.071			
40	.131	.305	99.377			
41	.105	.245	99.621			
42	.090	.209	99.830			
43	.073	.170	100.000			

## Appendix 2. Rotated Factor Matrix.

	Factor									
	1	2	3	4	5	6	7	8	9	10
Q17	.805									
Q18	.793									
Q19	.782									
Q20	.714									
Q23	.677	.301								
Q24	.492	.485		.357					.323	
Q12	.457		-.326							.354
Q8	.436									
Q27	.356	.865								
Q26	.335	.818								
Q25	.345	.773		.302						
Q28	.397	.598		.346						
Q34		.338								.334
Q33										
Q37			.886							
Q38			.864							
Q40			.782							
Q62			.512							
Q11	.344		-.469		-.411					
Q50			.391							
Q36			.376			.353				
Q1				.801						
Q4	.330			.697						
Q2				.489						
Q7				-.466						
Q49				.369						

Q57					-.607					
Q59					.555					
Q44					.462					
Q46					-.384					
Q53										
Q31						.827				
Q32						.692				
Q41			.301			-.529	.372			
Q35			.323				.767			
Q39							.735			
Q58						-.438	.439			
Q3							.349			
Q65								.835		
Q64								.773		
Q45	.322								.755	
Q13	.415			.315					.455	.315
Q14	.376									.428

Extraction Method: Maximum Likelihood.

Rotation Method: Varimax with Kaiser Normalization.<sup>a</sup>

a. Rotation converged in nine iterations.

## Footnotes

1. America's Research Group made the final selection of the word *feel*, rather than the words *believe* or *think*. The results of the survey, in the opinion of America's Research Group, would not have been different if the words *believe* or *think* were selected.
2. All percentages were rounded to the nearest tenth.
3. People in general are not consistent with their beliefs.
4. Not all of the 67 questions are listed in this article. Only the results from the 46 Likert scale questions that assisted in answering the purpose of the article are listed in this article. Thus some of the Likert scale questions were omitted if the results did not add any new information. The other 22 questions were open-ended and did not contribute enough new information that the 46 Likert scale results had not already revealed.
5. This percentage was 0.4% which amounted to two responses out of 502.
6. When the question was asked "Do you feel evolution is the process that God used to create humans?" Of young-earth creationists 16% either *Totally agree* or *Agree* and 84% either *Disagree* or *Totally disagree*. Of old-earth creationists 20% either *Totally agree* or *Agree* and 80% either *Disagree* or *Totally disagree*.
7. When the question was asked "Do you feel Noah's Flood was local?" Of young-earth creationists 4% either *Totally agree* or *Agree* and 96% either *Disagree* or *Totally disagree*. Of old-earth creationists 14% either *Totally agree* or *Agree* and 86% either *Disagree* or *Totally disagree*.
8. When the question was asked "Do you feel the only way to God is through Jesus?" Of young-earth creationists 100% either *Totally agree* or *Agree* and 0% either *Disagree* or *Totally disagree*. Of old-earth creationists 96% either *Totally agree* or *Agree* and 4% either *Disagree* or *Totally disagree*.
9. When the question was asked "Is there ever a time when abortion is acceptable?" Of young-earth creationists 9% say *Yes*, 68% say *No*, and 23% say *I Don't Know*. Of old-earth creationists 31% say *Yes*, 46% say *No*, and 23% say *I Don't Know*.
10. When the question was asked "Do you feel the husband is the head of the household?" Of young-earth creationists 89% either *Totally agree* or *Agree* and 11% either *Disagree* or *Totally disagree*. Of old-earth creationists 79% either *Totally agree* or *Agree* and 21% either *Disagree* or *Totally disagree*.
11. Delimitations of the study are: 1) this study was delimited to those participants who answered ARG's randomized phone call and/or had a phone number that was not restricted, and 2) this study was delimited to those participants who were able answer the survey in English.
12. See Appendix 1 and Appendix 2.
13. I am not arguing that belief in the age of the earth is the cause for the other beliefs. Causation cannot be determined; rather, I can show a relationship between belief in the age of the earth and belief in the doctrine of inerrancy.
14. Populations beyond 5000 a sample size of 400 is adequate (Leedy and Ormrod 2004, p. 217); a sample size of 500 the margin of error is  $\pm 5\%$  ([www.surveysystem.com](http://www.surveysystem.com)).



# Christians Must Not Divide Over the Age of the Earth!

## FLOOD, FOSSILS, AND STRATA:

### *Geology and the Age of the Earth*

“Some drill and bore  
The solid earth, and from the strata there  
Extract a register, by which we learn,  
That He who made it, and revealed its date  
To Moses, was mistaken in its age.”

—William Cowper, “The Task”

In the early eighteenth century, about the time New England Puritan ministers were teaching the new astronomy, some also announced the discovery of fossilized evidence of human giants killed by Noah’s flood. A giant tooth weighing nearly five pounds on the banks of the Hudson River provided the evidence, though it actually had belonged to a mastodon. Mastodon fossil remains were so puzzling they were referred to as the American *incognitum*. Early American gentry were very familiar with the puzzling phenomenon, and frequently collected its bones and speculated about its identity. A salt lick in Kentucky came to be known as “Big Bone Lick” due to the discovery there in 1739 of *incognitum*’s bones. Before the Revolutionary War, bones from the site were sent to Paris, London, and Philadelphia. Recipients included George Washington, Thomas Jefferson, Benjamin Franklin, and French naturalist Georges-Louis Leclerc Buffon. Even during the Revolutionary War, Washington and Jefferson bothered to collect their bones from battlefields. Within a few decades, most rightly held that the bones were from some type of elephant like the mammoth whose frozen carcass had been discovered in Siberia. Jefferson, as the nation’s foremost authority on these bones, even believed the animal still lived in the Northwest Territories. Most Americans were not yet aware that any of God’s creatures had ever become extinct. Debates ensued whether *incognitum* had been carnivorous. Speculation about its potential savagery made its extinction God’s blessing on the human race. Fascinating fossil discoveries like *incognitum* would become key to the growing understanding of the earth, and why some would eventually believe it was old.

Ussher's famous biblical chronology from the mid-seventeenth century dated creation to 4004 BC. Students of the earth at that time felt no compulsion in challenging such work.<sup>6</sup> Why should they? The earth's age had been uncontroversial, and recent creation was assumed much the same way geocentrism had been.

No one set out to determine scientifically the age of the earth. Pragmatic concerns such as mining and digging wells provided incentive to learn about its interior. But following the Copernican revolution, questions also arose regarding the earth's nature since it now was understood to be a planet. The new science of the heavens inspired seventeenth- and eighteenth-century "theories of the earth" regarding the earth's surface and interior.

Many geologists in the late sixteenth and early seventeenth centuries, much like Johannes Kepler, viewed their work as a religious duty since they were respecting the Creator's handiwork. The late seventeenth- and early eighteenth-century British geologists often understood geology to reveal God's glory. They correlated the creation order of Genesis 1 with the fossil sequence in the strata as evidence for the truth of the Bible. During the first couple of centuries of geological theorizing, most claimed their views were in full accord with the biblical creation and flood.<sup>10</sup> Theologians especially supported early geological work. With an emphasis on God's work in history, the biblical worldview framed an understanding of the finite, linear flow to earth history.<sup>12</sup>

## THEORIES OF THE EARTH

Early modern scientific thinking about the earth was naturally influenced by the Bible. But important questions still did not admit of ready-made answers. For instance, what was the nature of the interior of the earth? Was it the biblical "great abyss," or was it filled with a liquid or fire? One theory, however, was standard.

### **Diluvialism: Early Flood Theories**

In the seventeenth and eighteenth centuries, the most influential early theory was diluvialism, explaining phenomena in light of the flood. Though some Christians had historically suggested the flood as cause of some of the earth's features, these new theorists sought more explicitly scientific explanations. And like the central figures in the geocentrism controversy, these thinkers typically sought to understand puzzling physical features in light of the Bible.<sup>15</sup> The theories were diverse, controversial, and creative. Seventeenth and eighteenth-century Protestants discussed scientifically reasonable, discoverable, and usually massive geological effects of the flood. They often speculated that the deluge produced the inclination of sedimentary layers, but differed widely otherwise. Some argued the waters collapsed the earth's crust, with mountains remaining as points not sunken down. Others conjectured that the earth entirely dissolved in the flood and was then redeposited as the present strata. Some reasoned that the land and oceans had been completely rearranged. Thomas Burnet (1635–1715) calculated that the volume of water in the oceans could not have covered the mountains during the flood. Therefore, there must be a subterranean reservoir of water. The cracking open of the crust not only released that water but also broke up the smooth surface and created a tilt in the earth's axis. This brought about the origins of seasonal climates. And because the sun was not created until the fourth day, the first three days could have been of undetermined length, thus allowing an extended history of the earth. Burnet's theories were controversial enough, but he also provoked trenchant criticism by discounting the biblical flood as literal history.<sup>18</sup>

John Woodward (1665–1728), regarded as the “Grand Protector of the Universal Deluge,” agreed with Burnet regarding a hollow earth filled with water. But he condemned Burnet for not maximizing the flood’s effects. The desolating waters, according to Woodward, would have broken the entire landmass into particles. The deposition of the rock layers represents the heavier particles on bottom and the lightest on top. The resulting strata were also broken and dislocated in places, with virtually no significant modification of the earth’s surface since the flood.

William Whiston (1667–1752) also believed the water necessary to cover the earth had been trapped in its core. A comet traveling perilously close tilted the earth on its axis, releasing the deadly interior waters. Getting double-duty from comet theory, Whiston postulated a comet also had affected the chaos of Genesis 1:1–2. Edmund Halley (1656–1742), of comet fame, earlier had theorized that a comet induced the earth to tilt, causing the flood. But Halley’s theory didn’t require as much water, speculating that the tilting sloshed the oceans out of their basins over the continents. Louis Bourguet (1678–1742), like Woodward, hypothesized that the flood’s complete dissolution of the earth re-hardened into various sedimentary layers. But he added mountain formation coupled with a novel use of the now accepted heliocentrism: the earth’s daily rotation stirred the dissolved landmass into the final contours of mountain ranges.<sup>21</sup>

The seventeenth and eighteenth centuries also produced theorists approaching diluvialism in quite the opposite fashion; they minimalized the flood’s effects. Based on biblical teaching alone, some argued against a violent deluge; the olive branch brought to Noah by the dove implied an olive tree survived the catastrophe. Others argued that the flood’s short duration could not have caused the multitude of fossil layers. Some diluvialists posited the flood universally killed all humans but limited the flood geographically because of the absence of catastrophic geologic effects.<sup>23</sup>

Catholic thinkers accentuated the flood’s supernaturalism and deemphasized observable effects such as marine fossils discovered inside mountains. Some argued that interpreting the deluge scientifically demeaned its miraculous nature. Others worried providing flawed proofs would create doubts in the minds of believers and strengthen skeptics. But Voltaire ridiculed it nevertheless: “All is miracle in the history of the deluge.... It would be senseless to explain it; these are mysteries one believes by faith; and faith consists in believing what reason does not believe, which is another miracle.” Catholic censors denouncing physical explanations of the flood safeguarded their theology, but opened the door for Enlightenment geologists to abandon the Bible altogether.<sup>25</sup>

Even if flood theorists found little consensus, attempts to understand the geo-historical effects of the flood contributed to the rise of modern geology. But by the mid-eighteenth century, extensive European fieldwork led to widespread doubts that the flood primarily caused all the rock sequences and fossils. Before 1770, flood theories predominated, but afterward a “critical mass” regarding theories of the earth was reached. From 1770 to 1800, a variety of important ideas began to coalesce. One of the major sources of the new ideas came from well-digging and especially mining.

In 1605, just three years before Dutchman Hans Lippershey (1570–1619) unveiled a telescope that fascinated Galileo, another important event took place in Holland. An Amsterdam well dug more than 200 feet deep revealed fascinating alternating layers of silts, sands, and clays. This evidence of remarkable stratification would be studied by scholars for the following century. And the end of the seventeenth century would witness impressive advances in mapping stratigraphic cross-sections for the use of miners. With its attempts to understand the substructure of the vast underground, mining in Europe played a critical role in the development of geology.

Reformation advancements in university education like those we saw associated with Melancthon included mining. The 1556 publication of Georgius Agricola's *De Re Metallica (On the Nature of Metals)* with its clear description of the rock layers provided the authoritative text for most of the following two centuries.

But mining knowledge really exploded in the second half of the eighteenth century. The Industrial Revolution necessitated locating and extracting abundant resources such as coal and iron. Journeys devoted to searching for distant mineral deposits multiplied, with many romanticized publications resulting with the word *Voyage* in their titles.

The study of the origin and distribution of minerals and rocks became a distinct scientific field. Teaching in a major mining academy, Abraham Gottlob Werner (1749–1817) focused on the structure and content of the earth's subsurface. Though he didn't create this new science, Werner coined its name, "geognosy." Geognosy provided methodical accounts of the earth's architecture, "both global and local, vertical and horizontal, dividing it, in a hierarchical manner, from great systems to elementary lithostratigraphic units. Of significance, geognosy gave a name to each subdivision. It fixed their sequential order of superposition, which it tried also to trace laterally step by step."

### **Neptunism: Oceans Do the Work**

Werner also speculated about rock origins, with his theory called "Neptunism." Named after the Roman god of the sea, the theory conjectured that the terrestrial subsurface crystallized from oceans. As the standard model in the latter half of the eighteenth and early nineteenth centuries, Neptunism largely ended the dominance of diluvialism. Some such as Richard Kirwan (1733–1812) viewed Neptunism through a biblical lens, thinking of the initial watery chaos of Genesis 1:2, as well as the flood waters receding into caverns in the earth. But as an Enlightenment deist, Werner felt no obligation to the Bible and did not accept the biblical flood.<sup>39</sup> Without submission to external authority, he sought to project his ideas as a rational and objective examination of the evidence. Nonetheless, its reductionism regarding geological mechanisms legislated erroneous expectations that various homogenous strata would be discovered throughout the earth.

### **Plutonism: Heat Does the Work**

Neptunists tried to make oceanic sedimentation responsible for too many geologic features. Plutonism, named after the Greek god of the deep earth, held that interior heat generates not only volcanic rocks but also produces granites and uplifts in the surface. James Hutton (1726–1797) theorized that subterranean heat uplifted new continents that over time eroded and were deposited into the oceans, only to have the endless cycle begin again. Hutton argued that so many cycles had already passed that no current rocks could be considered original.<sup>43</sup>

Hutton fell into his own reductionist outlook. Whereas other theories viewed the earth as in steady decay, Hutton construed the earth as a kind of self-replenishing heat engine deduced from first principles rather than field observations. Controversially he assumed all geologic features have resulted from past natural processes still operating today at the same rates. This view, later called uniformitarianism, directly challenged the idea that short-lived, violent events produced most geologic effects, that is, catastrophism.<sup>45</sup> Many Christians deemed uniformitarianism unacceptable since it undermined supernatural activity such as creation and the flood.

### **CHARLES LYELL'S UNIFORMITARIANISM: REJECTING THE SUPERNATURAL**

Charles Lyell's (1797–1875) famous book that Darwin devoured, *Principles of Geology*, contended that geology would never become a science until it relied solely on observable processes to explain the past. He employed his legal training to present a sustained case against catastrophism, usually associated with progressive creationists. Linking geology with the Bible disturbed Lyell. So he sought to remove supernatural causes and to discredit a universal flood.<sup>48</sup> He emphasized, then, Huttonian uniformitarianism to attack diluvialism, but took it to a whole new level. Committed to no change over time, Lyell proposed that dinosaurs might one day reappear or great numbers of mammals would be discovered in the earlier strata.<sup>50</sup> Most geologists, however, accepted the evidence of fossil changes in rock sequences and found Lyell's approach unrealistic.

Lyell's dogmatism runs counter to contemporary geology, which accepts frequent small and infrequent large geologic events. Lyell's view precluded acceptance of catastrophic mass extinctions (such as the so-called big five). Gradualism, that major changes always come by slow, incremental steps, has come to be rejected. On the other hand, actualism, the unity of historical processes, with its emphatic rejection of supernatural explanations, is still accepted.<sup>52</sup>

But if some like Werner, Hutton, and Lyell sought to liberate geology from biblical connections, many theorists continued to search for correlations with the Bible. But just how to understand the evidence in correlation with the flood was requiring considerably more creative hybrid theories. Earlier theorists developed numerous models to account for the missing volume of flood water. Now much greater knowledge of the earth's interior was forcing similar moves. For reasons we will see shortly, the burgeoning knowledge of the earth's strata led to an increasing marginalization for all-encompassing flood theories in the last half of the eighteenth century. But Christian diluvialists persisted into the nineteenth century, though the difficulties sometimes led to in-house quarrels over what specific effects the flood had on the earth.

A remarkable revival of diluvialism was born around the beginning of the nineteenth century with a new burst of resourceful hypothesizing. Because current processes (e.g., erosion) could not explain all the earth's surface features, the flood (or running waters for those not concerned to correlate their theory with the Bible) became the most likely explanatory cause as the last of a number of earth-shaping events. Even after glaciology began to be understood several decades later, the notion of running waters, often cataclysmic, as the cause of many surface features remained an ongoing theory.<sup>55</sup> Perhaps other catastrophes better explained the earth's internal features. But in 1822 geologist William Conybeare (1787–1857) even coined a term "diluvium," for the flood's water-born debris, the last great geologic catastrophe shaping the earth's surface.

William Buckland (1784–1856), pioneering geologist at Oxford University, also was a theologian concerned to demonstrate the Bible's trustworthiness in light of geological discoveries.

His conviction that the flood explained all the internal rock formations had waned after studying volcanoes. But his study of surface features prompted his dramatic announcement in 1823 that he had confirmation of the universal flood. Buckland correctly identified recently discovered fossils in Kirkdale Cave (North Yorkshire, England) as non-native: hyena, elephant, and hippopotamus. He originally supposed they had been swept there from afar by the flood, but evidence eventually led him to believe the animals lived there before being destroyed by the deluge. This radical idea, that Great Britain had once featured a vastly different ecological system, was quite controversial. But a major figure had reincorporated the flood into geology.

## DISCOVERIES THAT LED TO OLD EARTH THEORY

Buckland may have led the renewed charge to defend the biblical flood, but like virtually all geologists at the time, including Christians, he believed the evidence pointed to a very old creation. That same evidence had prompted him to seek flood evidence on the earth's surface. Difficulties long associated with correlating biblical and earth history pertained largely to the evidence of life contained in rocks.

### Fossil Theories

Originally “fossil” (Latin *fossilium*) meant anything dug up from the ground, and generally the Greeks and Romans showed little interest in them.<sup>60</sup> The ancients easily identified fossilized animal bones that had contemporary analogues. But enormous fossil bones were another story and likely contributed to stories of giant human bones both ancient and modern (e.g., *incognitum*).

### *Inorganic Views*

By the end of the Middle Ages most believed fossils spontaneously formed in rocks. The view from their perspective was hardly irrational: how could living things have ever made their way inside rocks? Theories of causation for these included tricks or “sports” of nature, mysterious natural forces, astral fertilizations of the soil, satanic creations, and even God's ancient experiments.

During the Copernican controversy, the church showed little interest in fossils. Though Luther basically attributed them to the flood, marine fossils discovered on land were paid little attention. Speculations regarding fossil causes included a type of fatty matter was fermented by heat; seeds or germs sunk through pores into rocks; underground passages carried seeds to mountaintops to be watered by snow; and even that God created fossils as puzzles to test believers' faith. The prevailing view in the sixteenth century and even into the seventeenth was that the strange rock-encased forms had spontaneously generated. Fossils were just unique rocks that formed without ever having been part of any animal or plant.<sup>64</sup>

Theorists admitted fossils often looked similar to living things or other slightly different fossils, even referring to them as analogues. British naturalist Martin Lister (1638–1712) zealously explored the English countryside, collecting fossils and mapping their distribution. He reportedly trekked halfway across England to follow the trail of just one fossil in a particular rock layer. Yet writing at the end of the seventeenth century, Lister denied that fossil shells were really shells. They were only resemblances found in unique rocks, *Lapides sui generis*. How could they have come from living animals if they were of the same material as the surrounding rock?<sup>67</sup>

### *Modern Organic Views*

But if only a few such as Leonardo da Vinci (1452–1519) had once recognized the organic origin of fossil shells, around 1660 fossils began regularly to be considered as evidence from the living past. Robert Hooke (1635–1703) affirmed the organic origin of fossils in 1665 even though some had no living analogues. He likened fossils to divine archaeological objects serving as archives of the past. And because written in stone, they provide even more lasting monuments than Egyptian pyramids. Other observers such as flood theorist John Woodward (1665–1728) accepted the organic origin of fossils and noted they not only differed from their analogues today, but analogues also differed from place to place. By the middle of the seventeenth century, publications throughout Europe described fossils, even though systematic classification terminology had not yet been developed. Bernard Le Bovier de Fontenelle (1657–1757) foresaw the need for paleontological maps indicating fossil geographical distribution with their resemblances to present-day flora and fauna.

Carolus Linnaeus (1707–1778), the father of modern taxonomy, laid the foundation for the modern description of fossils. His *Systema Naturae* classified the plant and animal kingdoms. Linnaeus conceived of orders containing a number of genera that contained the closely related species. He introduced the modern technique of assigning every species two Latin names, the first term for genus, the second for species. For more than a century afterward the overwhelming majority of scientists considered the species a largely unchanging biological reality until Darwinism rendered them more like snapshots in time.

So eighteenth-century geologists overwhelmingly accepted the organic origin of fossils and believed they likely resulted from the flood. Theories abounded as to how the fossils of marine animals were discovered on high mountains. Diverse notions of the flood, with or without the lowering of the oceans or the raising of the ground were all much discussed. Discovery of tropical animal fossils in temperate zones (e.g., Kirkdale Cave) as well as gigantic flora and fauna fossils were just some of the enigmas confronting thinkers at the dawn of geology.<sup>77</sup> During this period passion arose in Great Britain for inventorying minerals, rocks, and especially fossils. John Woodward carefully collected and catalogued an immense collection of fossils still preserved today at Cambridge.<sup>79</sup> Later a network of fossil dealers sold rare specimens to wealthy clients. The famous tongue-twister “she sells seashells, by the seashore” was based on the life of Mary Anning (1799–1847), discoverer of important fossils and collector for famous geologists.

### **Strata: The Layers Reveal Their Secrets**

While the organic origin of fossils was being settled, problems for recent creation and traditional flood theories were mounting. The challenges had to do not only with the types of fossils being discovered, but where they were discovered: in rocks. The fossil-embedded layers revealed unanticipated keys to the earth’s past.

Nicolas Steno (1638–1686), often viewed as the father of geology, sincerely desired to demonstrate agreement with his discoveries and the creation and flood of Genesis. He also devoted an entire year to studying ancient shell deposits and the geological structure of Tuscany. He became convinced that Tuscany once lay under water, and that the flood provided the satisfactory

explanation. The publication of Steno’s studies in 1669, the *Prodromus* (“forerunner” of a work never published), is regarded as one of the most important texts in the history of science. Unlike others who theorized from a chair, his originality lay in allowing objects to reveal their history and

mode of production, whether large (regional structures) or small (fossils or crystals). One of his handwritten manuscripts displays his attitude: “They sin against the greatness of God, who do not wish to observe the actual works of nature but, satisfied by reading the writings of others, imagine and fabricate various hypotheses.”<sup>82</sup> The birth of stratigraphy is associated with Steno’s recognition of what later would be called the principle of superposition: due to the order in which they were deposited, older layers of rock generally lie under the younger.

Steno’s discovery had been recognized before. Miners had long defined certain beds as markers helping them navigate layers of rock. The strata were often labeled by letters or numbers because they generally followed in order. Then fossils themselves were termed “medals” or “monuments” as ways of indexing and dating the various strata. By the latter half of the eighteenth century, the contents of these strata were being catalogued as archives of earth’s history. So when the “father of English geology,” William Smith (1769–1839), displayed his fossil collection, he grouped similar types together according to the strata in which they were found and coined the term “stratigraphy.” He also identified and named many of the Mesozoic rock units and created a geological map of much of England and Wales.<sup>87</sup>

But these discoveries presented a problem for theorists seeking a comprehensive flood explanation of the strata. Why were the fossils found in the strata with such regularity that the layers could be indexed by them? Should not the flood have thoroughly mixed rather than thoroughly sorted the animals and plants of that world? Some pondered why no human fossils were mingled in the strata. The problem led Johannes Jakob Scheuchzer (1672–1733) to seek diligently for *homo diluvia testis*, a (fossilized) human witness of the flood. In 1726, he dramatically announced just such a find, claiming it a clear flood relic confirmable by even the most exacting anatomist. The “ancient sinner” fossil was celebrated and reproduced in numerous publications. Georges Cuvier, however, carefully and conclusively demonstrated in 1812 that it belonged to an extinct giant salamander.

Another problem had to do with the kind of fossils entombed in the rocks. I’ve already alluded to the controversy raised by Buckland’s discovery of tropical animal fossils in England. Further finds of that sort raised the question: *Did the earth in the past have very different ecologies?* Stranger still were the discoveries of fantastic creatures such as the dinosaurs. William Buckland described in 1824 for a rapt public the gigantic carnivore from the Jurassic rocks. He named it *Megalosaurus* (great lizard), the first published description of a dinosaur. He and fellow clergyman William Conybeare also conveyed details about the remarkable flying reptiles. Non-scientists developed tremendous interest in the historical past by identifying and collecting fossils.<sup>90</sup> By the latter half of the nineteenth century, dramatic paleontological discoveries opened the door to a vastly richer understanding of the past.

But if the strange fossil world was being increasingly better understood, Christians were increasingly being faced with the challenge of making sense of the extinctions. The sheer number of extinct animals raised concerns how all of them could have fit on the ark. Early assumptions even made it theologically difficult to accept the possibility of extinctions. If God created species for his glory, why did he allow them to become extinct before humans had ever seen them?<sup>92</sup> Did extinctions imply an imperfect creation from the start?

Some sought to escape the problem by theorizing only near complete extinctions, that “lost” species might still live somewhere yet unexplored (e.g., Jefferson’s suggestion about *incognitum*). The great John Ray in the late seventeenth century frankly admitted he had no easy answer and retreated to the widely held inorganic fossil view to avoid the extinction problem.



Most vexing of all was the question why the strata revealed occasional extinctions followed by sudden appearances of quite different creatures. Georges Cuvier (1769–1832), the father of modern paleontology, recognized that strata characterized by unique fauna were replaced by distinctive younger fauna and could thus be dated relative to one another. This principle would come to be called the law of faunal succession. He observed that “modern” species diminish farther down in the strata, whereas the older strata contain extinct species with no modern counterparts.<sup>97</sup> He noted that reptiles predated mammals, and marine mammals predated terrestrial mammals. William Buckland in 1821 noted that continental Europe had faunal succession similar to that of Britain. By the middle of the nineteenth century, similar patterns discovered in British and continental European biostratigraphy were corroborated on other continents, leading to the virtually complete understanding of the stratigraphic column during that century.

### **The Flood Column Becomes a Creation Column**

Late seventeenth- and early eighteenth-century British geologists often understood the fossil sequence as evidence for creation, and sought to correlate the strata with the first chapter of Genesis. But since the seventeenth century, the primary lens for understanding the geologic column had been the flood. Yet diluvialists had never agreed on an overall theory of the earth nor had they been convincing in their handling of the growing challenges presented by advancing geological knowledge. Unanticipated from a flood standpoint, fossils were found sorted according to strata rather than mixed. Human fossils were never found in the old strata, but strange creatures like the dinosaurs were. Extinctions were followed by new and different species. If the flood seemed unable to account for the challenges, and neither spontaneous generation nor evolutionary approaches were acceptable, the only tenable option remaining for most people, not just Christians, was to accept that God had progressively created many new life forms following various extinctions in the earth’s past. The flood column came to be viewed primarily as a creation column.

Cuvier resisted any evolutionary implication of the evidence. He insisted that similar organisms resulted not from common ancestry but common function, and that Lamarck (like Darwin later) had to posit transitional forms not found in the fossil record. So though his religious convictions made him uncomfortable with the notion of repeated creations, Cuvier accepted that the evidence supported “progressionism,” a cycle of catastrophe-divine creation-catastrophe, with each new divine creation becoming more complex.<sup>104</sup>

Though not all of the Christians contributing to the rise of modern geology held a progressive creationist view (some held to an old earth gap theory), virtually all were both old earth creationist and anti-evolutionary. William Conybeare viewed Lamarck’s evolutionary theory as “monstrous.” Adam Sedgwick (1785–1873), William Buckland (1784–1856), and Hugh Miller (1802–1856) also strongly rejected Lamarckianism. They believed that the absence of missing links in the fossil record argued against the gradual transformation of organisms over time. Miller and Sedgwick were especially outraged with Robert Chamber’s (1802–1871) proposal of an animal ancestry for humans in his *Vestiges of the Natural History of Creation* (1844). By the early nineteenth century, the same evidence that led the overwhelming majority of Christian geologists to view the strata as a creation column also convinced them the earth was very old. By the middle of that century, Darwin presented the same evidence as an evolution column through the world-changing lens of the *Origin of Species*. **And those who resisted Darwinism and theological liberalism (surveyed in the previous chapter) like Hodge or the fundamentalists or William Jennings Bryan were old earth creationists. They wore the primary anti-evolutionist mantle for a full century.**

But even though the fossil column had come to be viewed as a creation column, Christian geologists continued to look for the effects of the flood. Some such as William Buckland continued to use the flood as explanation for the carving and shaping of the earth's surface features. But Louis Agassiz (1807–1873), an early influential pioneer in the study of glaciers and later a decidedly anti-Darwinist, demonstrated that glaciers best explained surface features rather than diluvialism. Even though he eventually convinced Buckland and others of his view, most geologists rejected it in continued support of diluvialism. *By the 1850s, however, the majority began to consider seriously ice age theory. Modern geology, and, as we will see, even leading young earth creationists hold that the superficial features of northern Europe and North America have been extensively shaped by glaciation.*<sup>110</sup>

The gradual dissociation of flood explanations for various geologic features was not acrimonious among the majority of Christian geologists and theologians. A vocal but largely uninfluential minority, the scriptural geologists, protested old earth creationism and the move away from flood geology, as we will see in the following chapter. For the most part, amicable biblical interpretation generally developed alongside the new understanding in the developing science. Some attempted **hybrid models** incorporating the notion of a geographically local flood destroying all humans other than those saved on the ark.<sup>112</sup> But perhaps most conservative Christians continued to accept a geographically universal flood without attempting scientific correlations until the rise of modern flood geology.

## Later Dating Methods Strengthening Old Earth Theory

Dating methods moved from relative and inexact to increasingly more exact methods. Early estimates based on such things as erosion and sedimentation rates were very inexact. A great many types of dating methods developed over time such as measuring starlight or the number of ice cores in glaciers. Radiometric dating gets the most attention since it has also permitted the development of absolute rather than relative dating methods for rocks and the earth.

Other aspects central to modern geology also seemed to corroborate the ancient age of the earth. One such critical concept is now central even in many leading young earth creation models: the notion that a supercontinent(s) broken up and moved by plate tectonics led to our present continents. As early as 1596, Abraham Ortelius (1527–1598), geographer and creator of the first modern atlas, noted the similarities in the coastlines of the Americas, Europe, and Africa and suggested that they had once been joined. Others before the twentieth century also posited similar ideas.

But Alfred Wegener (1880–1930) generally gets credited for postulating continental drift in 1912. He observed that various continents shared fossil species that could not have traversed water and that represented originally different climatic zones. The most reasonable theory was to postulate that the continents themselves had moved. Stratigraphic sequences and structural elements of matching shorelines also suggested they once had comprised just one continent, which he named Pangaea (“all lands”). Moreover, matching ancient glacial changes from these continents seemed to confirm the theory. Wegener's ideas, though widely accepted in Britain by 1925, were not fully accepted by American geologists until the 1960s. The revolution in plate tectonics that began in the 1960s was documented by the detailed mapping of the continents' locations from years past. Providing the explanation for Wegener's continental drift, plate tectonics holds that the earth is covered by moving crustal plates driven by radioactive heat deep in the earth's mantle.

For example, Great Britain has traveled great distances into different climate zones in the past due to plate tectonics.<sup>119</sup> The floors of the oceans thus continually regenerate themselves by spreading from the center and sinking at the edges. The revolution in geology produced by plate tectonics cannot be overstated.

## CONCLUSION

The earliest theories of the earth were mostly flood theories. But diluvialism struggled to account for the surprising geologic discoveries such as the lack of fossil mixing in the strata, different species such as extinct dinosaurs followed by new creatures, and more. Historians of geology agree that the rise of old earth geology involved much more than the acceptance of the theories of Hutton or Lyell. The vast majority were creationists opposed to evolutionary ideas as well as uniformitarianism. Most geological pioneers sought in varying degrees to correlate their understanding of the earth's past with the Bible. Many of the geologists working at the time were evangelicals and believed in the truth of the Bible.<sup>122</sup>

Similar to the Copernican controversy, Bible-believing Christians practiced the conservatism principle in the lead-up to modern geology. They reluctantly courted the possibility of an old earth and whether the flood could explain most or at least major parts of modern earth science. They proposed a large number of hybrid flood models, but none won the day even among flood theorists. **Old earth evangelicals, whether day-age or gap theorists, also never wavered in their commitment to biblical inerrancy.**

There was no major controversy about the age of the earth or the geologic column two hundred years ago. But, of course, there is today. The difference between now and then is that the fossil column can be interpreted three different ways: as flood column, creation column, or evolution column. Beyond the obvious scientific questions, a significant number of theological issues are related to each view as well. We will look at some of those in the next four chapters. Each of our three evangelical groups (YEC, EC, and OEC) faces difficult questions.

Because of the age of the earth controversy, of special interest is how YECs understand and interpret the relevant scientific evidence. As we will see in chapter 7, leading modern young earth creationists are sophisticated and have worked hard on questions facing them. Those questions include the following: Should the fossil column be trusted or rejected? How should we think about the rise of new species? How should one understand extinctions? But first we turn in the following chapter to a brief survey of the history of young earth creationism.<sup>5</sup>

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<sup>5</sup> Cabal, T. J., & Rasor, P. J., II. (2017). [\*Controversy of the Ages: Why Christians Should Not Divide over the Age of the Earth\*](#) (pp. 99–120). Bellingham, WA: Lexham Press.

## **THEOLOGICAL TRIAGE:** *Drawing Doctrinal Boundaries*

Liberals have never met a doctrine worth fighting for; fundamentalists have never met a doctrine not worth fighting for.

—Anonymous

Sixteenth-century Lutherans certainly had a robust sense of heresy. They were willing to imprison even the son-in-law of Martin Luther's great collaborator Philipp Melancthon. Caspar Peucer married Magdalena, Melancthon's daughter, and taught Copernican astronomy at Wittenberg. But Peucer's twelve-year imprisonment was not for crypto-Copernicanism: he had taught the new science openly even if cautiously. Instead, he was incarcerated for crypto-Calvinism. Even the great Kepler would later be expelled from the Lutheran congregation in Linz in 1612. Holding a Calvinist view of communion (Christ is spiritually present), he couldn't sign in good conscience the Lutheran Formula of Concord (Christ is substantially present in the sacramental union of bread and wine with the body and blood of Christ). But this had nothing to do with his enthusiastic advancement of Copernicanism.

Boundaries are an inevitable fact of life. No boundaries are more important for humans than worldview boundaries. We decide how to live and die based on them. Christians have always believed theological boundaries are essential for identifying, nurturing, and protecting the faith. But knowing where, when, and how to draw Christian doctrinal boundaries is not necessarily easy.

Creationist ministries necessarily must draw boundaries for their teams of co-workers. For Answers in Genesis (AiG), the boundaries include recent creation, a geographically universal flood, speciation limits, and biblical inerrancy. Reasons to Believe (RTB) draws lines around an ancient earth, narrow speciation, and inerrancy. BioLogos defines its ministry around evolution (and modern science); biblical inspiration and authority (not inerrancy); and the incarnation, death, and resurrection of Jesus Christ. More things, of course, could be listed distinguishing these three leading evangelical creationist ministries. But as we saw in the previous chapter, even their different understandings of the nature of biblical inspiration set them apart.

Non-specialist evangelicals presented with the differences between these three organizations must sort through complex biblical, theological, philosophical, scientific, and historical information. Enormous resources are expended in presenting, defending, and criticizing each other, so deciding which to believe (if any) presents a daunting challenge. With extremely serious theological charges sometimes leveled, careful thinking is crucial in deciding where to draw lines. And, of course, it's possible to get the boundaries right, but to go about setting them in wrong ways.

### **THEOLOGICAL TRIAGE**

R. Albert Mohler Jr. helpfully suggests a way to reflect on "which Christian doctrines and theological issues are to be given highest priority in terms of our contemporary context." He uses the notion of triage, the process used in settings like emergency rooms in which patients are sorted according to the urgency of their medical need. Though recognizing the task is not easy, Mohler proposes Christians use a theological triage of three levels to ascertain theological urgencies.

**First-level doctrines are essential to Christianity**, and include “doctrines such as the Trinity, the full deity and humanity of Jesus Christ, justification by faith, and the authority of Scripture.” Mohler notes that Christ’s death, burial, and bodily resurrection are such that those who reject them are “by definition, not Christians.”<sup>6</sup> Similar things can be said about the Trinity and justification by faith. He notes that the authority of Scripture is a first-order doctrine because otherwise the church is left “without any adequate authority for distinguishing truth from error,” leading to “an eventual denial of Christianity itself.”

**Second-order doctrines are those that do not define Christianity**, but Christian disagreements “will create significant boundaries” such as those that separate congregations and denominations. Examples include the meaning and mode of baptism and whether women can serve as pastors. “Many of the most heated disagreements among serious believers take place at the second-order level, for these issues frame our understanding of the church and its ordering by the Word of God.”<sup>9</sup>

Finally, **third-level doctrines are those “over which Christians may disagree and remain in close fellowship, even within local congregations.”** Christians affirming the bodily and historical return of Christ may debate a variety of other eschatological matters yet remain closely united in ministry and mission. Prioritizing doctrines in this way does not imply Christians should consider any biblical truths insignificant. But Mohler rightly spells out the extremes: “The mark of true liberalism is the refusal to admit that first-order theological issues even exist. Liberals treat first-order doctrines as if they were merely third-order in importance, and doctrinal ambiguity is the inevitable result. Fundamentalism, on the other hand, tends toward the opposite error. The misjudgment of true fundamentalism is the belief that all disagreements concern first-order doctrines. Thus, third-order issues are raised to a first-order importance, and Christians are wrongly and harmfully divided.”

## **DARING TO APPLY THEOLOGICAL TRIAGE TO THREE EVANGELICAL CREATIONIST MINISTRIES**

### **Answers in Genesis**

I am grateful most young earth creationists do not believe the earth’s age is worth dividing over. In my denomination, church, and school, I suspect young earth creationists (YECs) outnumber old earth creationists (OECs), but our skirmishes over the age of the earth have never led to division. In spite of deep commitments to either view, **the age of the earth has been considered a level-three doctrine.**

As noted in the previous chapter, I believe Answers in Genesis has drawn boundaries for inerrancy too narrowly. Their view not only submits biblical inspiration to a particular view of the earth’s age, but also to modern scientific theories such as specific views of the fossil column, details about taxonomy, and Neanderthals. Moreover, AiG insists that rejection of YEC has led and will lead to the ruined condition of the church and the world. If their warnings are true, my church, denomination, and school will fall because we have not heeded them. Christians who “tremble” before scientists rather than God’s Word have no place in Christian leadership.<sup>40</sup> But if AiG’s alarms are false yet we acted on them, we would become divided in mission and fellowship for terribly wrong reasons. Note this sampling of the terrible effects AiG claims follows from embracing OEC: the downfall of Western culture and morals, the loss of Christians’ personal faith, and the undermining of the gospel itself.

For example, in response to a blog arguing why a Christian might hold an old earth view, Terry Mortenson posted the following on AiG's website as part of his reasoning to reject OEC:

Furthermore, historically, the church's widespread acceptance of millions of years over the past 200 years has contributed massively to a growing resistance to the gospel in nations that were in the past very influenced culturally by biblical Christianity. That acceptance also has been a very significant reason, among others, that many children raised in gospel preaching churches and Christian families have (since leaving home) departed from the church or even the faith they once professed. There has indeed been a "slippery slide" of the church into much apostasy. Denominations that were once orthodox 100 or 150 years ago are now liberal and deny the biblical gospel. Europe, Britain, and America, which once were so powerfully impacted by the gospel and were launching pads for missions to the world, are now post-Christian and increasingly anti-Christian. Who would have thought 30 years ago that professing evangelicals today would doubt or deny that Adam ever existed or would embrace or accept homosexual behavior? The undermining of the truth of Genesis 1–11 regarding the age of the earth and the Flood has unquestionably contributed to the undermining of the truth of Genesis 1–3 regarding Adam, marriage, and sexuality both in the church and in the culture."

Certainly, if these things are true, then my church, school, and denomination need to take action to remove OEC leaders sooner rather than later. On the other hand, if these dreadful accusations are false, they should be recanted. Space precludes a detailed response, but several things should be noted.

First, though these kinds of far-reaching claims are not uncommon, the careful historical work substantiating them is. Extremely serious but controversial accusations should first be carefully grounded on evidence. Sweeping claims of these sorts are frightening to those who must trust the leaders making them. But claims are easier to make than justify. For instance, AiG would rightly be disturbed if, say, an extremely influential OEC ministry made a claim like the following:

About the time of the rise of modern (old earth) geology, the modern missionary movement was born. As the earth's creation column was being revealed, William Carey took the gospel to Hindus and Adoniram Judson evangelized Buddhists. Braced by their convictions about the creation column, OECs also led the way in resisting Darwinism after publication of *The Origin of Species* in 1859. At the turn of the twentieth century, OEC fundamentalists stood in the gap against theological liberalism. And by the middle of the twentieth century, OEC dominance among evangelicals produced tremendous godly effects upon the United States. As Gallup reports, greater than "95% of Americans identified as Christian in the 1950s," the highest percentage of the twentieth century.

Tragically, the publication of *The Genesis Flood* in 1961 launched the modern YEC movement. That decade saw prayer thrown out of public schools and the rise of the drug and free sex culture. By the 1980s Henry Morris celebrated the proliferation of YEC ministries that led to 44% of Americans believing in YEC. By 2008, the YEC revolution had fully come into its own: the creation column had become a flood column with 60% of Americans believing in a flood "within the past 10,000 years that covered all of the earth and was responsible for most of the rock layers and fossils that are seen across the world."<sup>44</sup>

During that decade the culture and church hit new moral and spiritual lows, with young people leaving the church in droves. The undermining of the truth of OEC interpretations of Genesis has unquestionably contributed to the undermining of both the church and the culture.

Of course, these two paragraphs above are nonsense, even though genuine polling data is cited. Any number of similarly alarming claims can be made using questionable cause fallacies. Or to turn Mortenson's reasoning on its head, one could claim that since now YEC has become so popular among creationists, we should soon expect a revival of the missions and morality so damaged by the once-dominant OEC. Historians attribute the past cultural dethronement of evangelical influence to other causes. Biblical theology was displaced in the academy by the humanities. Theological liberalism aided and abetted this move by making the inner life of humanity the rightful place to ground religious knowledge.<sup>46</sup> But by far the biggest factor was the widespread impact of Darwinism, with its attendant naturalistic influences. Evangelical and fundamentalist leaders in the culture a century ago termed themselves "anti-evolutionists" for a reason. Contesting evolution united them; agreement about the interpretive details of Genesis was considered largely unimportant.<sup>49</sup>

AiG faces its own critics who use the kinds of criticism AiG directs at OECs. A small but serious Christian movement today argues that the real problem occurred long before the rise of modern geology. This group contends that the turn to heliocentrism defined the moment when biblical authority was surrendered to science. The chief proponent of this view, Gerardus Bouw, now retired professor at Baldwin-Wallace College in Berea, Ohio, holds a Ph.D. in astronomy from Case Western Reserve University. He contends that any variance between the "readings" of astronomy and the Bible are always due to error in the readings of the "Book of Nature."<sup>51</sup> The earth "is not older than about six thousand years," and "the Bible teaches us of an earth that neither rotates daily nor revolves yearly about the sun; that it is at rest with respect to the throne of him who called it into existence; and that hence it is absolutely at rest in the universe." Bouw contends: "If God cannot be taken literally when he writes of the 'rising of the sun,' then how can he be taken literally in writing of the 'rising of the Son?'"<sup>53</sup>

AiG featured astronomer, Danny Faulkner, believes Bouw's view is a problem for YECs: "Alas, there are recent creationists in the world today who are geocentrists. They teach that the rejection of God's Word did not begin with Darwin's theory of biological evolution or even with Hutton and Lyell's geological uniformitarianism. Instead, they argue that the scientific rebellion against God began much earlier with heliocentrism." Faulkner goes on to present an extensive argument biblically and scientifically why geocentrism should be rejected.

Bouw rises to the challenge, claiming Faulkner's criticism "is very shallow and often misrepresents geocentricity, geocentrists, the history of the Copernican revolution, its evidences, and the authority of Scripture." Bouw concludes his response by charging Faulkner with rejecting the biblical teaching of a geocentric universe for no "reason other than his opinion. In effect, his view is founded on the assumption that the proper interpretation of the Bible in the realm of science may await future discoveries by science."<sup>56</sup> Faulkner's worries that geocentrism makes YEC an easy target for critics is "sheer nonsense" because knowledgeable antagonists can single out the hypocrisy of insisting the days of Genesis 1 are literal but the sun's rising and setting is not. Bouw contends that YECs like Faulkner who reject geocentrism do so "for the sole purpose of appearing intellectual and acceptable to the world, which desire is enmity with God (James 4:4). The creationist movement is fortunate that evolutionists don't understand these simple issues, for if they did, creationists would be shamed and held contemptible even more than they are now."

Other Christian groups such as the Missouri Lutherans also defended geocentrism “well into the twentieth century.” But the point here is that Bouw’s rejection of heliocentrism and Faulkner’s defense of it remarkably parallel debates between OECs and YECs. In this case Faulkner and other YECs who reject geocentrism find themselves being accused of surrendering Scripture to science.

Especially troubling is the way AiG frequently makes the confusing and misleading claim that YEC is a gospel issue. In an article titled, “Millions of Years—Are Souls at Stake? Biblical Authority,” Ken Ham writes, “Well, it isn’t a salvation issue—but it is!”<sup>60</sup> He argues that OECs interpret the Bible in light of science, which “means God’s Word is not the final authority and is not without error. It also opens the door to others doing this with other historical claims of Scripture—such as the Resurrection and virgin birth.” This charge is especially irresponsible and self-defeating. As we have seen in chapters 6 and 7, YECs make the very same moves in relating theology and science, just with compressed time scales. Does this mean YECs’ reading speciation and plate tectonics/continental drift into the Bible opens the door for others to reject the resurrection of Christ and virgin birth?

Ham considers especially problematic the OEC view that animals died before the fall of Adam. After making his biblical and scientific case, Ham argues that “it seems obvious that bloodshed, death of animals and man, disease, suffering, and thorns came after sin.”<sup>62</sup> And because the Old Testament sacrificial system set the stage for Christ’s sacrifice, “if there was death and bloodshed of animals before sin, then this undermines the atonement. Also, if there were death, disease, bloodshed, and suffering before sin, then such would be God’s fault—not our fault! Why would God require death as a sacrifice for sin if He were the one responsible for death and bloodshed, having created the world with these bad things in place?” Ham concludes: “So to believe in millions of years is a gospel issue. This belief ultimately impugns the character of the Creator and Savior and undermines the foundation of the soul-saving gospel.”<sup>64</sup>

Ham’s claim creates a sense of urgency for AiG’s message, but is nonetheless theologically careless. Describing the age of the earth as a salvation issue would be shockingly heretical and is therefore trivial. But calling it a gospel issue that “undermines the foundation of the soul-saving gospel” is a seriously similar assertion certain to create a major boundary between believers over the age of the earth. Debating OECs over the issue of animal death before the fall is perfectly reasonable. But Ham’s assurance that those who disagree can still be saved hardly ameliorates his accusation that OECs undermine the very mission of Jesus.

Ham’s move is based on arguing from non-human effects of the fall. Questions about those effects have been raised for centuries. Did the fall affect the heavens, too, or were heavenly bodies expected to be perfect (e.g., no craters on the moon)? Did certain animals develop carnivorous features after the fall (fangs, claws, and digestive systems)? Did any scientific laws change post-fall (e.g., second law of thermodynamics)? Debate over animal death before the fall is both interesting and important, but to refer to it as a gospel issue is reckless—precisely because the saving work of Christ has to do with the fall’s effects on human beings.

D. A. Carson notes that to describe something as a “gospel issue” can be just another way of categorizing the importance of doctrinal issues into either important or not. And because the gospel is supremely important, calling an issue a gospel issue then draws a boundary around it. But often the issue at hand is just a hot topic, albeit important, that defines our particular interests. Prominent YEC Todd Wood agrees with Carson. Wood rightly emphasizes that the doctrine of creation and even how God created are important. But he finds the use of describing YEC as a gospel issue “alarming.” He notes the gospel is “not about when God created the universe,” but “is about Jesus and how we obtain life through Him.



We ought not add to the gospel other things, important though they may be.” He also is bothered the way the “gospel issue” is “too often used as a weapon to beat up those who disagree with the person using it.” And Wood is especially alarmed that “gospel issue” maneuvers “seem to be adding to the gospel. The gospel is not the story of Jesus’ salvation + my favorite doctrine. Even if those doctrines are true (and important), we should not attach them directly to the gospel. The Bible has very strong words for people who try to place extra burdens on people in addition to the gospel. That makes a false gospel. Ironically, it seems to me that calling things ‘gospel issues’ is an actual gospel issue.”<sup>72</sup>

## Reasons to Believe

**A fair critique of this book would be the lack of equal time spent criticizing Reasons to Believe (RTB). But the intention is not to give them a pass, but to argue that the age of the earth is the wrong place to draw lines. So, of the three major creationist ministries, RTB stood out the least because it completely affirms the Chicago Statement on Biblical Inerrancy (CSBI). On the other hand, AiG desires to reformulate the CSBI in its image, and BioLogos promotes acceptance of dangerous anti-inerrancy viewpoints. RTB also does not accept universal common descent as does BioLogos.**

However, Hugh Ross, president of RTB, does deserve criticism for some of the ways he has exacerbated the age of the earth controversy. He has been rightly criticized for seeking to solve perennial theological debates by use of the concept of extra-dimensionality. Perhaps this might have been less a concern if he just related the concept to something like God’s relationship to creation. But Ross seeks to tackle Trinitarianism, Christology, divine sovereignty and human freedom, and more by use of at least eleven space-time dimensions. In response to the first edition of *Beyond the Cosmos* containing these ideas, Ross met with a panel at a national meeting of the Evangelical Theological Society in 1997. Most noted their appreciation for his apologetics work. But his “extra-dimensionality” approach to theology was less warmly received. William Lane Craig criticized Ross: “I find his attempt to construe God as existing in hyper-dimensions of time and space and to interpret Christian doctrines in that light to be both philosophically and theologically unacceptable.” Craig went on to challenge Ross either to explain his positions better or “else to modify his views so as to avoid them.”<sup>75</sup> Ross claimed his way of explaining things to laypeople had been misunderstood, that he unwaveringly holds to orthodox theology. Perhaps a common perception among evangelical theologians regarding his theological work applies also to other creationist ministries: scientists do better science and theologians do better theology.

Ross has also been noted in calling for evangelical councils to bring resolution to the age of the earth controversy. Unfortunately, when calling for these councils early on, he referred to the current dispute as “analogous” to the problem at the Council of Jerusalem (Acts 15). The issue decided at that council, Ross notes, was that certain teachers were adding legalistic burdens to Gentiles, blocking them from saving faith in Christ. The immediate context of his analogy was his telling the story of a new believer attacked by radical YECs, making impossible demands on the young convert’s faith.<sup>77</sup> The seeming analogy of YECs as legalists was hardly an auspicious way to call for a council with them. Eventually Ross claimed the council idea was not working, so he called for testing the competing age of the earth models. By means of testing their respective hypotheses, in a short time the issue should be settled as to which view was correct.<sup>78</sup>

Ross has gone on to publish several books touting the testability and success of his model relative to other competitors such as naturalistic evolution, theistic evolution, and young earth creationism. Not helping calm the fray over the age debate, he wrote in 2009: “One serious critique of young-earth creationist attempts to explain the natural realm is that their explanations, typically rooted in religious dogma, have no flexibility to adapt and self-correct as knowledge increases.” But that is not true. As we saw in chapter 7, contemporary YEC models have adapted dramatically to the latest science over the decades. And YEC leaders have been willing to abandon ideas and models they believed were no longer viable (e.g., the vapor canopy). R. A. Peters, apparently no longer a creationist of any sort, argues that even secular science should not treat YECs as the church has sometimes handled heretics: demanding faith and persecuting infidels. He argues that young earth creationists are continuing to develop more sophisticated and self-critical traditions.<sup>80</sup>

## **GENERAL LESSONS LEARNED FROM THIS STUDY**

Biblical Christians historically have practiced the conservatism principle in science-theology conflicts. The practice was founded on the assumption of biblical inerrancy, the coherence of biblical and natural facts, and a reluctance to adjust biblical interpretation unless proven science made clear the biblical interpretation had been wrong. Contrary to its stated position, even AiG practices this complex but necessary Galileo proposal. And in spite of differing positions on the age of the earth and other science-theology issues, AiG and RTB both have practiced the conservatism principle. BioLogos, on the other hand, not only maintains no commitment to biblical inerrancy but is willing to propose views far removed from anything like a traditional understanding of inspiration. Its apparent openness for a one way submission of the Bible to the terms of modern science distinctly rejects the Galileo proposal.

None of the three ministries are denominationally accountable, thus they are under no obligation to present robust theological systems. Their effects, however—theologically and emotionally—on churches are significant. Obviously very different doctrines of creation, humanity, and the fall of Adam are presented. And as mentioned, the three groups offer quite different approaches to biblical inspiration. RTB and AiG have much in common with their commitments to inerrancy and the rejection of human evolution. AiG, however, insists that the very nature of biblical inspiration be tied to recent creation and several specific scientific viewpoints. The mission of BioLogos places the promotion of evolution foremost, with details of pertinent biblical doctrines to be worked out in its light.

I believe AiG draws theological boundaries too narrowly and BioLogos too broadly. I have by far the deepest doctrinal concerns regarding the effects of BioLogos on the church. But I also have serious concerns about AiG’s effect on the unity of the church.

## THE THREE MAJOR CREATIONIST MINISTRIES: DRAWING LINES

### Reasons to Believe

The history of conservative Christians wrestling with Scripture and science makes clear that generations may pass before viewpoints coalesce on specific scientific theories. A few examples might include the law of faunal succession, glacial theory, and continental drift. More goes into acceptance of specific scientific theories than just analysis of objective data.

Therefore, I suggest RTB should consider halting the notion of tests to demonstrate the superiority of its model over its counterparts, including YECs. The difference is subtle but perhaps important, between presenting evidence for one's view, and presenting even a hint that another viewpoint should surrender. There can be no question that RTB has been the target of many unfair attacks by some YECs over the decades such as referring to it as evolutionist. I also have no expectations that those attacks will end any time soon. But I remain convinced that YECs should be encouraged to develop their models in faithfulness to their biblical convictions.

### Answers in Genesis

If I believe YECs should be respected and heard regarding their biblical and scientific models, I also am convinced that some YECs draw the lines too narrowly. I believe the age of the earth should be a level-three issue. But one YEC leader told me the issue's importance makes it a "1.2" doctrine for him. Of course thinking of the issue that way does not fit Mohler's triage structure: (1) without believing this you cannot be considered a Christian; (2) you may be a Christian believing this, but regrettably we cannot do missions or education or church together; and (3) your belief differs from mine but that does not come between us. But my friend's "1.2" honesty explains the confused—and damaging—way some YECs handle the matter.

AiG's rhetoric has institutionalized for this generation the confusion about the importance of YEC. AiG's tone was first "constitutionalized" by Henry Morris but traces back to Price and the scriptural geologists. OECs are alleged to be enemies of God, thus allies of Satan. But in attempting to demonstrate this accusation, AiG leaders repeatedly overreach themselves. AiG uses the same science as do the "atheistic" OECs—but with reduced time scales, more speciation, and in considerable disagreement with some other YECs. AiG blames the downfall of the West, including the loss of faith and morality, on OEC—without documentation and in the face of cultural historians. And, again without evidence, AiG blames the Chicago Statements for opening the door to more recent decay in the churches. To fix those problems, AiG unilaterally proposes a profound reformulation of the Chicago Statements that conflates interpretation with inspiration, excluding in the process even some YECs from being inerrantists. The Bible cannot be considered inspired unless the interpreter believes not only in recent creation, but also in particular scientific theories about the fossil column, Neanderthals, and the degree of speciation permitted in baraminology. AiG even argues the gospel itself must be linked to YEC or else be undermined. The easiest documentable example of overreach is the frequency with which AiG leaders claim to know the hidden motives driving OEC theorists: they are "trembling" before scientists rather than God's Word. Yet unless AiG leaders have received a remarkable spiritual gift, they are claiming to know something only God does.

Thankfully, most YECs I know neither believe nor approve AiG's rhetoric. One may believe wholeheartedly that the Bible teaches recent creation. And one may believe YEC without believing those who disagree are unwitting agents of evil. AiG may have well succeeded in convincing many to believe YEC. I have no problem with that, but am grateful AiG has not been nearly as effective in convincing YECs to use their divisive rhetoric.

I believe divisive rhetoric is the correct term to describe AiG's language as documented throughout this book. Why? If AiG's charges against OECs were believed and acted on, massive divisions in denominations and churches would follow. I have been a pastor or seminary professor for more than 35 years. I would consider it failure in the line of duty not to correct a Christian under my charge who believed doctrines that destroy the culture, church, family, faith, and the gospel. If I knew of a leader in my church, school, or denomination who believed in such destructive doctrines, I would take a further step. I would call for that person to disavow those doctrines. If they did not, I would have no choice but to bring charges for the removal of that person from leadership. Indeed, one denomination has struggled with whether to divide over YEC.<sup>84</sup> Therefore, AiG needs to be more consistent. If it continues to use rhetoric which suggests the age of the earth is a level two doctrine, then it should also own the implications.

Yet, if AiG supporters persisted in such a way as to be disruptive and divisive, I and many evangelical leaders would consider this applied aspect of AiG doctrine to be level two. In other words, a truly consistent AiG follower might rightly find themselves rebuked in a church or ministry for divisiveness, but not for believing the earth is young. A sad affair like this would not only be the responsibility of the person causing the division, but also AiG for misleading and motivating them in the first place.

## **BioLogos**

Neither Darwinism nor theistic evolution is new, but a powerful and influential popularizing ministry urging evangelicals to get on board with them is. Neither does some of the material coming out of BioLogos appear like older versions of theistic evolution. Certain of their book titles make clear their target: *How I Changed My Mind about Evolution: Evangelicals Reflect on Faith and Science*. The volume reads like a collection of Christian conversion testimonies, except the conversion is to evolution.

But this newly packaged evangelical version of evolutionary creation still raises deep concerns. Darwinism initially seemed to demolish natural theology by providing a naturalistic explanation for design in living creatures. Evangelicalism responded by strengthening its defense of the Bible. Yet BioLogos makes no commitment to full scriptural inspiration, thus it does not practice the conservatism principle. The question then for watching evangelicals: Will BioLogos be more prone to substantial doctrinal reformulations?

Again, since BioLogos is neither a church nor a denomination, it would be unfair to expect a unified theological vision. But that is precisely one of its biggest dangers. BioLogos unifies around evolution but only a fairly sparse doctrinal basis. Its mission is to encourage evangelicals to realize that evolution can be accepted without theological worries. Yet how to construe important doctrines evolutionarily often seems to be a work in process, including how much to trust the Bible. The evangelical outsider might be forgiven for feeling like the message is: "Evolution is true, but we're not sure about all of the Bible, and we're hard at work now to figure out how to retain as much traditional evangelical theology as possible."

BioLogos holds that population genetics certifies that the entire human race cannot have descended from Adam. “At BioLogos, we are persuaded by the scientific evidence that human beings evolved, sharing common ancestors with all other life on earth. Furthermore, it increasingly appears that the genetic diversity among humans today could not have come from just two individuals in the past, but a population of thousands.”<sup>88</sup>

Human evolution, then, apparently forces rejection of the traditional doctrine of the special creation of humanity. In early response to Darwinism, theological liberals discarded the historical fall of Adam. Instead of the traditional view that humans degenerated from their created innocence, liberals argued that humanity evolved (fell) upward from its subhuman past with its animal appetites. BioLogos entertains similar evolutionary notions of how sin might have entered the world, that “there was a gradual awakening to sin. That is to say, in the same way that each human individually becomes morally responsible for actions as he or she grows up, so too the species gradually developed an awareness of their sin. On this account, there is no stark before-and-after line, but rather a gradual ‘coming of age.’ ... Perhaps God held *Homo* species 500,000 years ago responsible for some things; species 200,000 years ago for more; 30,000 years ago - even more; and when the law was given to Moses, God held the people accountable in a new way.”

Likewise, evolutionary theory since Darwin has contended that human morality evolved from animal emotions. BioLogos not only promotes this gradualist origins of human morality, but also an evolutionary account for belief in God. Thus, evolutionary psychology has revealed “the (rather unsurprising fact) that, in the words of Oxford psychologist Justin Barrett, ‘Belief in gods and God particularly arises through the natural, ordinary operation of human minds in natural ordinary environments.’ ”<sup>93</sup> Conservative evangelicals will wonder if BioLogos wants them also to consider an evolutionary account of Christian belief formation.

In the end, BioLogos faces the same epistemological question as earlier theological liberals when they rejected the full trustworthiness of Scripture: How should we ground the knowledge of God? Unquestionably BioLogos leaders desire to be faithful to Christ and the gospel. But traditional evangelicals cannot help but be concerned when the ministry recommends an article urging readers to discern the Bible’s scientific, historic, moral, and theological errors in the light of Christ’s love. Post-Darwinian liberals also sought to ground theology in Jesus Christ rather than the explicit teachings of the Bible. In actuality, human experience viewed through an evolutionary lens became their arbiter for deciding Christian doctrine.<sup>96</sup> BioLogos desires to help evangelicals no longer have to choose between faith and science. But some of us will feel BioLogos forces us to choose between their views and the Bible.

Understandably the ministry’s leaders will view themselves in the Galileo tradition, and that their endorsement of evolution is similar to the heliocentric and age of the earth debates. I also understand my qualms with them appear similar to those of YECs with OECs. But one big difference stands out: BioLogos has abandoned the conservatism principle. I would have no qualms with BioLogos were it strictly a scholarly society engaged in the study of science and theology, discussing and debating various hybrid models. Its talk of just having a conversation about evolution is no problem either. Yet, the importance of a fully trustworthy Bible is so critical for evangelicalism that I believe this issue rises to level two of doctrinal importance.<sup>6</sup>

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<sup>6</sup> Cabal, T. J., & Rasor, P. J., II. (2017). [\*Controversy of the Ages: Why Christians Should Not Divide over the Age of the Earth\*](#) (pp. 187–217). Bellingham, WA: Lexham Press.

## CONCLUSION

Though only about a half century old, in conservative evangelical circles the age of the earth controversy feels like a major science-theology conflict on par with the Darwinian. One reason is that some leading YEC groups frequently and specifically link the age controversy to the Darwinian. Therefore, the debate takes on considerably more urgency among evangelicals with longstanding antipathy to evolution. Yet the battle against Darwinism was carried on for a century mostly by OEC anti-evolutionists, including the Old Princetonians such as Charles Hodge, the fundamentalists, and neo-evangelicals such as Carl Henry. Ironically, YEC initially gained credibility in OEC circles by appearing to be a new inerrantist version of anti-evolutionism with superior, even if confusing, scientific evidence.

Evangelical voices of authority today urgently call for decisions on some extremely difficult biblical, theological, scientific and philosophical debates. Making matters more complex, an evolutionary creationist evangelical voice has been added to the mix. Many evangelicals feel forced to decide between well-known leaders or ministries, even though doing so may well lead to boundaries being drawn between them and other Christians.

These voices of authority are backed by enormous resources and popular support. Ignoring their calls for decision is not easy; fellow church members are being pressured to take a stand too. These popularizing ministries are specifically positioned to reach as many non-specialists as effectively as possible. Their presentations may contain complex and technical material beyond the training of their followers, but these ministries are not like evangelical scholarly societies, which have long debated the same issues without agreement. Instead these ministries by design often present their viewpoints as long settled truths to those who have no way of knowing otherwise.

At present these creationist ministries present their evangelical audiences with a myriad of hybrid theories. The conceptual instability and emotional atmosphere suggest that those who are uncertain what to believe should trust their Bible and wait for further light on the details. Those Christians can trust that the God of truth will have the final say in the outworking of history. But for those who believe they understand things rightly, they should humbly and patiently teach so as to nurture the unity of God's church. **And if boundaries must be drawn, and at times they must, may they be outlined with exquisite Christian kindness and gentleness.**<sup>7</sup>

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<sup>7</sup> Cabal, T. J., & Rasor, P. J., II. (2017). [\*Controversy of the Ages: Why Christians Should Not Divide over the Age of the Earth\*](#) (pp. 223–225). Bellingham, WA: Lexham Press.

## Brotherhood Battles @Age of the Earth Does God Exist? Vs. Apologetics Press

“Despite this anti-evolutionary stance that dominated the Restoration Movement writings of the 1870s, there were some voices that were pro-evolution, and these increased in dominance as the decades rode on. In 1877 Church of Christ minister Clark Braden published *The Problems of Problems*, an anti-evolutionary book that caused a storm of pro-evolutionary publications by voices that otherwise may have remained silent. Many (but not all) continued to deny human evolution, *but saw no conflict between species' mutability and Christianity*.

Among the pro-evolutionary voices were some heavy hitters within the Restoration Movement. Although Alexander Campbell died in 1866 and therefore missed most of the debate, he lived during the height of the geology debate. Rather than insist on a literal reading of Genesis one, however, he allowed the science to influence his reading of scripture, **accepting geological evidence for an old earth**.

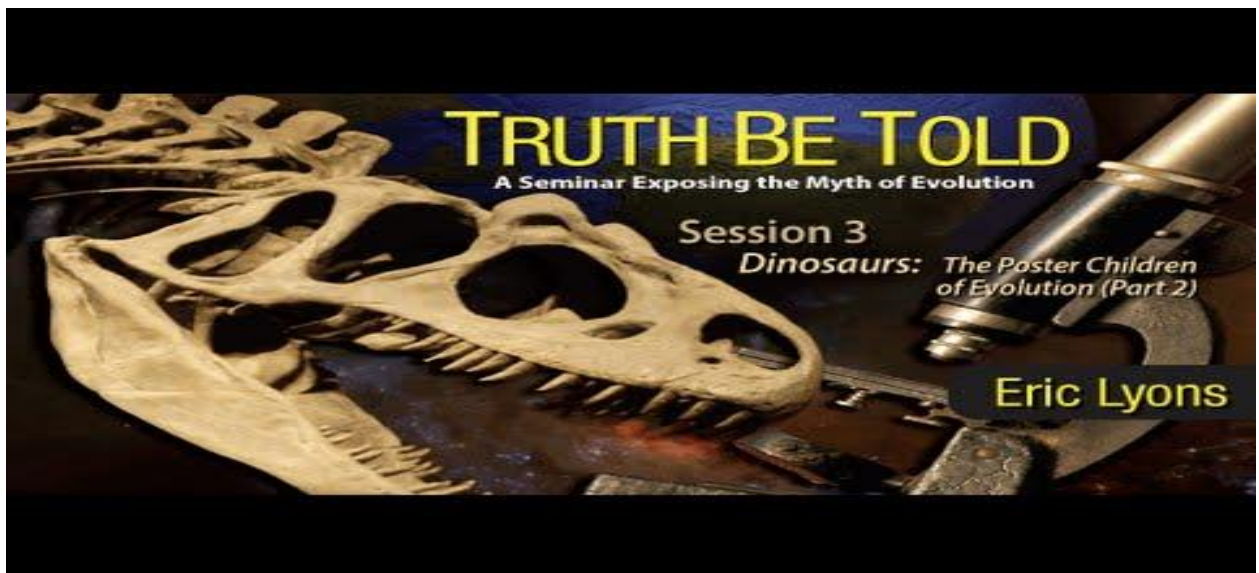
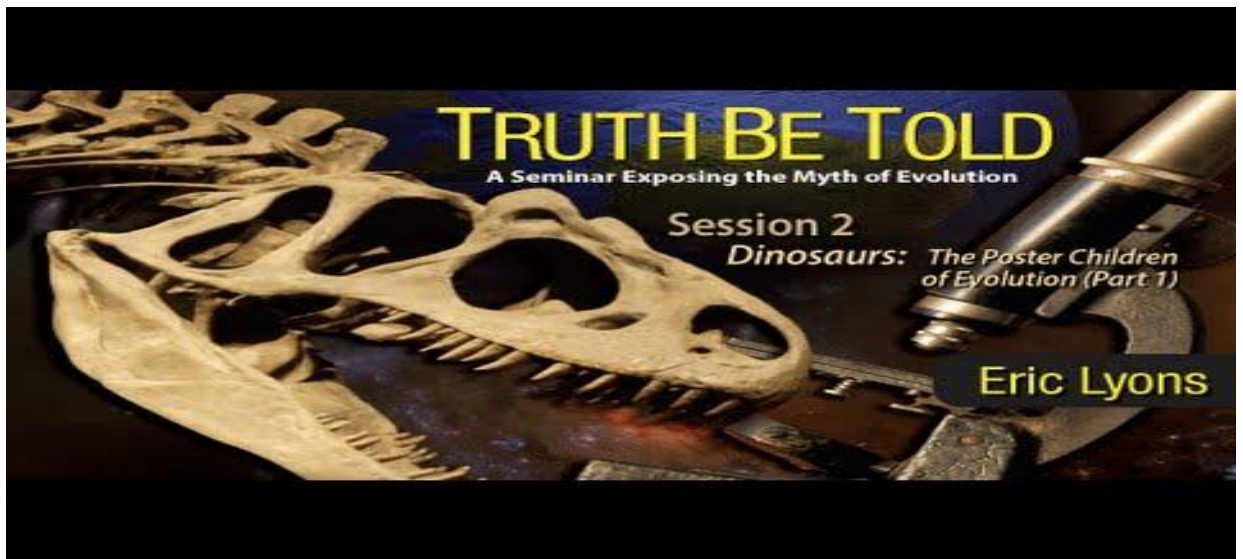
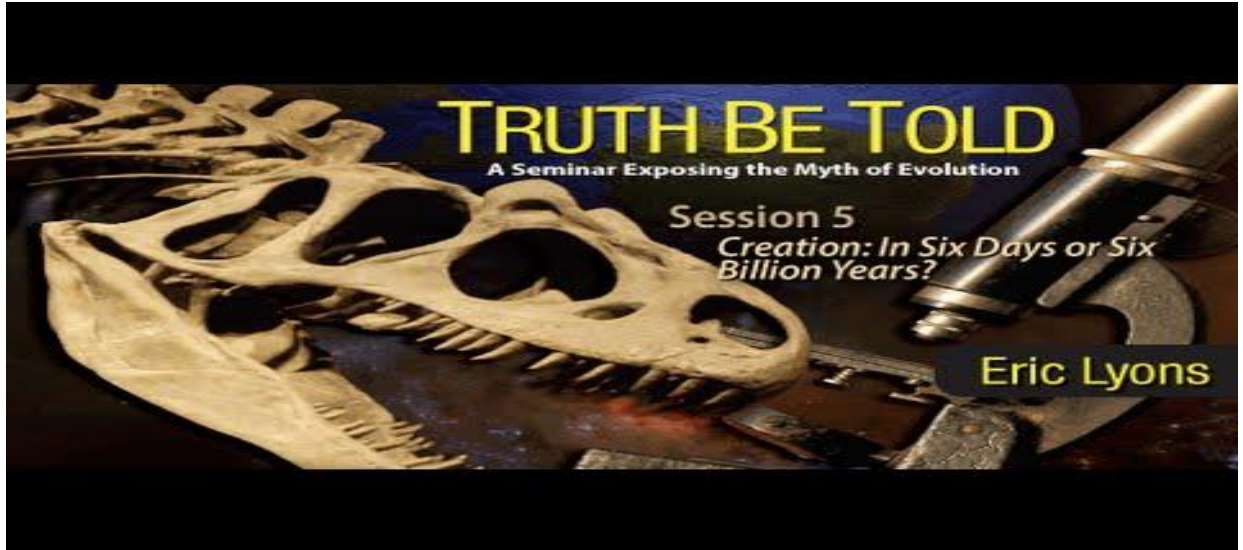
Isaac Errett in 1884, in an article entitled *Evenings with the Bible*, wrote:

‘It is of little concern to me so far as my faith in this revelation is concerned, whether the Evolution theory be true or false—whether every created thing sprung into full perfection by an immediate act of creative power, or was developed from one or more created germs, in which were packed away all the possibilities and potentialities of all the varieties of being, the various forms and grades of life that were afterwards produced. In any case, it requires this revelation to lift the veil beyond which science has never been able to penetrate, and **show in God himself the original fountain of life and creative power**.’

No less than David Lipscomb, who in the 1870s had written an openly anti-evolution article, in 1899 published five articles that showed that evolution, if true, was no threat to Christianity. In short, although many within the Church of Christ today unreflectively assume that the anti-evolution stance is the original position of the church, in reality the history of the Church of Christ is more diverse, with people engaged in open dialogue, allowing a plethora of voices to be heard.” - [Evolution & the Churches of Christ](#) (Blog)







# WHAT WAS THE CAUSE OF THE BEGINNING?

by John N. Clayton

It is assumed that the reader has read the first two booklets in this series, the first titled *A Practical Man's Proof of God* and the second *A Help in Understanding What God Is*. In these two booklets, we have established that all scientific evidence supports the fact that there was a beginning, and that the beginning was caused. We have also shown that the creator of time, space, and energy has to be something that is outside of time, space, and energy. The nature of the cause cannot be in the three-dimensional physical world in which we live and must be outside of time to have created time. That does not automatically mean that God is the creator, because recent studies in quantum mechanics have shown that there are many things that apparently function outside of the three-dimensional world that we are familiar with. The purpose of this discussion is to show that a dominant property of the cause of creation is intelligence which radiates purpose in the creation & eliminates chance as a cause of the beginning. There are several different kinds of evidence that show the nature of intelligence in the creation. We would like to briefly review these with the hope that the reader will pursue other writings that explore and expand each of them.

## Intuitive Design

Intuitive design simply means to look at the world around you without the prejudice of science, philosophy, or religion. It is difficult to observe the birth of a child and not be impressed with the incredible complexity of that process. Standing on a mountain or in a spaceship and looking out at the cosmos in which we live is a wonderful, awe-inspiring act. Snorkeling in a reef and watching the interplay of hundreds of living things is exhilarating. Watching the incredible migrations of birds, whales, eels, turtles, caribou, and fish fills us with wonder and amazement. All around us we see evidence of incredible intelligence, which poets and religious writers have extolled for centuries. The Bible writers were a part of this as they said things like, "The heavens declare the glory of God; the skies proclaim the work of his hands." (Psalm 19:1). "Go to the ant, you sluggard; consider its ways and be wise" (Proverbs 6:6)! "For since the creation of the world God's invisible qualities ... have been clearly seen, being understood from what has been made, ..." (Romans 1:20).

Atheists and skeptics will respond that there are natural ways of explaining all of these things, and we would agree. The problem is the number of things that have to be explained is staggering and growing as our knowledge expands. Offering a possible natural explanation is not a proof any more than maintaining that God did it.

## Architectural Design

In the creation there are a vast number of artistic and architectural functions that radiate incredible beauty, but have no biological or physical necessity to exist. The Fibonacci ratio, for example, exists throughout every aspect of the creation — from the shape of galaxy arms to the DNA helix. This ratio and the spiral structures it produces offer no functional advantage — it is not stronger than other structures and it does not improve the probability of survival. There is no reason for it to exist and especially not to exist in the thousands and thousands of different applications where it is found.

What the Fibonacci ratio and its structures do offer is incredible beauty. The whole creation is teeming with examples of beauty that are not essential to function, but have appeal to minds that can comprehend and appreciate it. Attempting to ascribe such beauty to chance and the interpretation of the human mind falls woefully short of supplying a satisfactory explanation.

## Mathematical Design

Over recent years, we have seen a number of new terms evolve to describe the attempts to ask if chance is a mathematical possibility in explaining what we see in the cosmos. Irreducible complexity and the soft anthropic principle have been heavily promoted at the start of the 21<sup>st</sup> century by all kinds of scientists & philosophers. The problem is that, as mankind has come to understand the processes seen in nature, we realize that there are many parameters that are necessary for things to exist as we see them. Chaos theory has helped us learn that things we thought were chaotic in many cases are just so complex that our calculating skills and tools did not allow us to see the design that is there. How many variables are there in producing a carbon atom? Any high school student knows this list is huge - the gravitational coupling constant, the strong nuclear force coupling constant, the weak nuclear force coupling constant, the electromagnetic force coupling constant, the ratio of electron to proton mass, the expansion rate of the cosmos, the entropy level of the cosmos, the mass density of the universe, fine structure constant, the decay rate of a proton, just to name a few. Similar lists can be given for the producing of a life-supporting planet or for life itself. (Note: lists are available upon request.)

Late in the 20<sup>th</sup> century, scientists & mathematicians began to apply mathematics to these kinds of lists. The problem is when you have a large number of independent variables and each of them has a finite probability, the total probability becomes astronomical. If you draw a card from a deck of cards once, the odds of getting an ace of spades is one in 52. The odds of drawing an ace of spades twice in a row back-to-back is one in 2,704 ( $1/52 \times 1/52$ ). The odds of doing it four times in a row is one in 7,311,616. This same technique has to be applied to all of the variables necessary to produce an atom, a planet, life... if the calculation is done on a purely chance basis. The probability figures come up with numbers like one chance in ten to the 800th power! Even famous atheists like Francis Crick and Antony Flew have agreed that chance isn't a valid means of explaining these numbers. They suggest that aliens or some other intelligence is responsible, which does not answer the question but just pushes it back one level.

Another response to our argument is to maintain that the cosmos is so vast and so old that, no matter what the odds are, it will happen. The problem with this explanation is... as scientists examine the cosmos, they don't find it to be infinitely old or infinitely big. If the big bang theory is accepted in any of its versions, the cosmos is finite in both size and age. Textbooks will estimate the number of baryons in the cosmos as ten to the 78th power, and that is not in the range of the probabilities that exist. The cosmos is not big enough nor old enough to allow chance to be an operating mechanism. Proposals of parallel universes and virtual existence are not supported by evidence and appear to be desperate attempts to avoid the admission of intelligence in the creation.

## **What About Imperfection?**

I am the father of a son born blind, mentally retarded, with cerebral palsy and a form of muscular dystrophy. For centuries philosophers & skeptics have maintained that any argument for intelligence in the cosmos is negated because of imperfections seen in everything around us. The miracle of the birth of a baby is blunted when that baby has enormous congenital problems. Many people see the violence of a supernova or a volcano or earthquake as a negation of any suggestion of intelligence and design in the creation. Some of the problem here is ignorance of the scientific purpose in things we see as violent. Volcanos and earthquakes are positive natural forces that benefit life on earth. Without them, new land to replace eroding continents and new minerals to sustain life would not exist. In other words, life would not be possible. Even hurricanes have a positive function in the overall ecosystem of this planet. What we consider to be imperfection is sometimes a function of our ignorance.

The other variable that has to be included in this discussion is the purpose of the existence of man. If your view of man is that he is simply the apex of evolutionary process, then finding any real purpose for our existence is problematic at best. As pollution, war & overpopulation create havoc on the planet, the value and justification for man's existence becomes blurred at best.

The biblical explanation of man is that man is created in the image of God. That means man is primarily a spiritual being, not a physical one. The Bible also indicates that God's purposes in creating man have no physical significance. Passages like [Job 1 and 2](#), [Ephesians 3:9 - 11](#), and [Ephesians 6:12](#) make it clear that man is a part of something far grander and more magnificent than those things that happen in space and time. Imperfection in this physical world is far less significant if you understand that this world is not the sum total of our existence. It is hoped that the reader will want to pursue what the nature of that existence is and how we play a significant role in the battle between good and evil. It is also hoped that in doing this the reader will find meaning and value in life that will lead to a better, more fulfilling, and more peaceful life here than has been experienced before.

# GOD'S REVELATION IN HIS ROCKS AND IN HIS WORD

by John N. Clayton

## Biblical Time

How old does the Bible say that man, life in general, and the earth are? The first point that needs to be made is that God can do whatever God likes! God has power to create the cosmos as it is, with you sitting there reading this, the paper in your hands, the memories in your head, and all that surrounds you good and bad — all of that could have been created two seconds ago or even less. God does not need time at all! If we understand God as the Bible defines and describes Him, then time is a creation of God and does not control God. The issue is not what God could do but what He did do. The evidence is that you have been sitting there more than three seconds, and the evidence is that the Creation happened more than 10,000 years ago.

Any attempt to date the earth biblically has to make assumptions just as scientific methods have to make assumptions. In 1650, Archbishop James Ussher of the Anglican Church stated beautifully the most fundamental assumptions:

1. There are no undated verses in the biblical account.
2. There are no missing people in biblical genealogies.
3. The purpose of the genealogies was chronological.
4. No historical period is missing from the Bible.
5. The genealogies are all written in chronological order.

Any dating method that attempts to use the Bible as a basis will have to use these assumptions, and yet all of these assumptions are wrong! Let us take a look at them:

**Assumption 1.** There are many undated verses and events in the Bible. How long were Adam and Eve in the Garden of Eden? I have a male chauvinistic friend who says, "Knowing my wife, it couldn't possibly have been more than 10 minutes;" but that is an assumption with great consequences. I would suggest that Adam's age was measured from the time he began to die — not from his creation, so the time in the Garden cannot even be related to his age.

Another example of an undated verse or event in the Bible is [Genesis 1:1-3](#). Denominational tradition has taught us that the first three verses of Genesis are a summary of the rest of the chapter. For years, people have read [Genesis 1:1](#) like this: "In the beginning God created the heaven and earth and, in the next 31 verses, I am going to tell you everything God did." That is simply not what it says. These verses are a historical narrative written in a historical style. Notice the wording:

When?	"In the beginning"
Something happened.	"God created the heaven and the earth"
What happened next?	"The earth was (or became, as some versions say) without form and darkness was upon the face of the deep."
What happened next?	"the Spirit of God moved upon the face of the waters."

These are historical events written in a historical sequence. These are not summary verses of what is to follow. Something is happening in each of the statements that are made, and the things that are happening are undated and untimed.

**Assumptions 2 and 3.** It is clear that biblical genealogies were not written for chronological purposes nor are they supposed to be interpreted as being complete. In the book of Ezra, for example, there are four people listed in the genealogy between Azariah and Amariah. In [1 Chronicles 6:3-14](#), the same genealogical sequence is given, but this time there are twelve people listed in the same sequence. The genealogy of [1 Chronicles 3:11-12](#) does not agree with [Matthew 1:1-17](#) which has Uzziah's father, grandfather, and great-grandfather omitted. In fact, Matthew gives 42 steps in the same genealogy for which Luke gives 55 steps. Some have pointed out that Luke records Mary's side of the family instead of Joseph's, but that does not explain 13 missing generations.

The point is these writings were not written by people living in the twenty-first century. In ancient times, people did not give complete listings of their family tree when giving their ancestry. What they usually listed were the famous people in their lineage. In [Matthew 1:1](#), for example, the genealogy of Jesus is given as follows: "Jesus Christ, the son of David, the son of Abraham." It is obvious that Jesus was not Abraham's grandson, but that is in fact what the passage says. It is not an error; it is simply that genealogies were never written in the Bible with the idea that it would be used to calculate time or to establish chronology. Ancestry (lineage) is the only message of the biblical genealogies.

**Assumptions 4 and 5.** It is totally obvious that the Bible does not include a number of historical events. The time between Malachi and Matthew is an obvious example, but there are many others that can be given. There are cases in the Bible where genealogies are reversed; for example, Noah's sons are listed in reverse order.

The point of this discussion is that, like the scientific methods of dating, biblical methods of dating involve a large number of assumptions which make any attempt to give a biblical age to the creation or to Adam doomed to failure. There is no reason to use the Bible in this way unless your denominational tradition forces you to. If your denominational creed teaches that the history of the earth involves even time periods of about 1,000 years each, the last of which is said to be the physical reign of Christ upon the earth, then you have to find a way to limit the age of the earth to a relatively small number. This is a case of a human belief system forcing something on the Bible which the Bible does not say. It seems to this author it is more logical and consistent to simply admit that this is not a biblical issue, and whether the earth is 6 seconds old, 6 days old, 6 millennia old, or 6 trillion years old does not matter.

What we have suggested in this discussion is not new. Many years ago, conservative biblical students who took the Bible literally instead of accepting the teachings of human beings said the same thing we have tried to articulate. David Lipscomb said in 1921, "I have no way of knowing how long the world was created before man was created. The Bible does not tell. It only says, 'In the beginning' and that afterwards He created the plants and animals, and last of all man. But it gives no intimation how long the earth was created before these other things were" (*Questions Answered by Lipscomb and Sewell*, Gospel Advocate Co., Nashville, TN, 1974, page 747. Originally published by McQuiddy Printing Co. in 1921). **Foy E. Wallace said,**

"There is no statement in the Bible which indicates the age of the earth. If the scientist or pseudoscientists want to ascribe to the earth an age of a million, a billion, or three hundred billion years, I will not pause to argue... 'In the beginning God.' That is all the Bible affirms on the question" (*God's Prophetic Word* by Foy E. Wallace, The Roy E Cogdill Publishing Co., Lufkin, TX, 1946, page 6).

# GOD'S REVELATION IN HIS ROCKS AND IN HIS WORD

by John N. Clayton

## What about Dinosaurs?

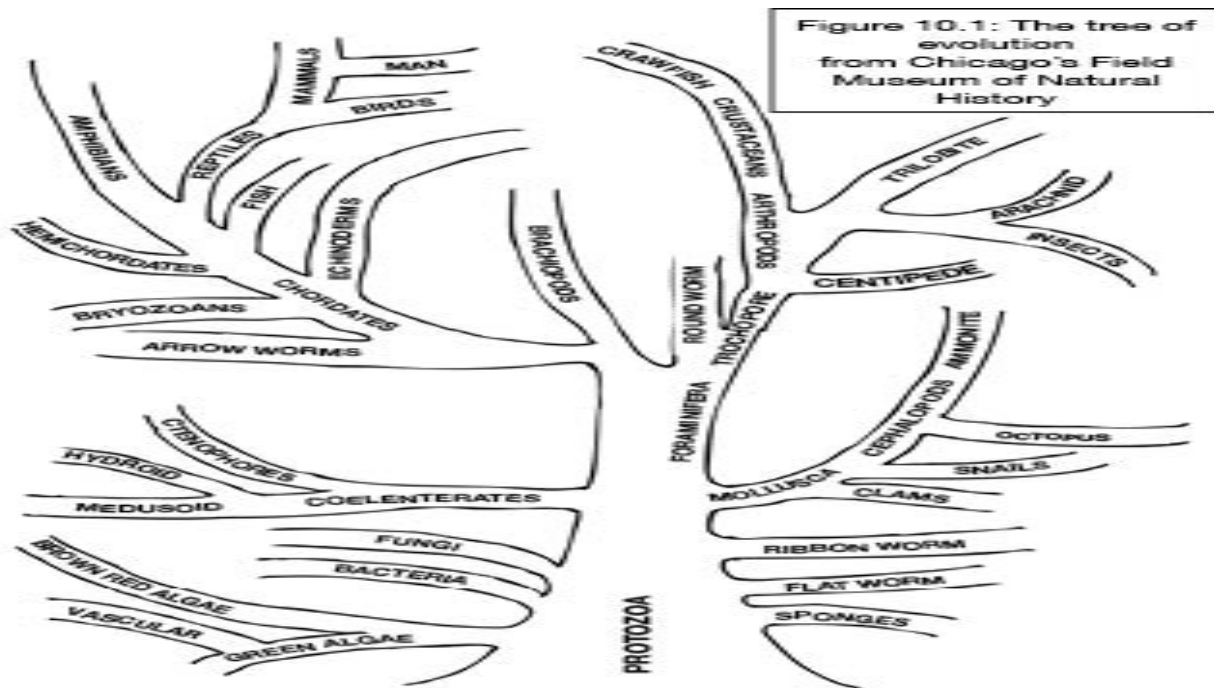
The one remaining question in our study of the Genesis account is the question of how prehistoric creatures like the dinosaurs fit into the Genesis account. Before tackling this subject, it is important to present an explanation of our approach to the words of Genesis. It is our belief, in order to have any meaningful understanding of the Bible, we must understand that words to always have the same meaning unless there is an unquestionably unique reason why they do not (such as the biblical writer redefining a term). A New Testament example might be useful. What does the word baptize mean? Greek scholars tell me the word is derived from a Greek term meaning to immerse... In [Acts 8:38](#), people went down into the water and John was said to be baptizing in the Jordan River "because there was much water there" ([John 3:23](#)). There are many places where there's no way to tell from the description whether the method of baptism was by sprinkling or pouring or some other method. If the word baptize is clear in most cases, I assume it must mean the same thing in all other places. Those who maintain that there are innumerable interpretations of the Bible do so primarily because they have refused to recognize the consistency of words in the biblical account. Much of the confusion about the Genesis account among people in the religious world has taken place because words are not used consistently.

What do words like *behemah*, *kanaph*, *remes*, etc., in Genesis mean? If you look at [appendices A and C](#) you can see these words being used. I suggest that these words are used in Genesis the same way they are elsewhere in the biblical record. *Behemah* is used 51 times in the Bible. All of the times outside of Genesis that the word's use can be determined, it is used in reference to an ungulate — an animal that nurses its young. (The reference usually is to a cow.) What does *behemah* mean in [Genesis 1:24-25](#)? Can it refer to a *Tyrannosaurus rex*? To be facetious, I seriously doubt that anyone has ever attempted to milk a *T. rex*! *Behemah* cannot refer to a dinosaur. In [Job 40:15](#), there is another reference to a large version of *behemah*. A giant ground sloth is a real possibility for the meaning of this word, but a dinosaur is not unless the words are being used in a inconsistent way! The *leviathan* of Job 40 is described in Psalm 104 as a creature of the deep ocean. Dinosaurs were not deep ocean creatures. The context of the passage is the struggle between good and evil, and the language certainly gives us a vivid picture of evil. Most dinosaurs were harmless cocker spaniel-sized reptiles. Words like behemoth and leviathan cannot be dinosaurs. All of the animals in Genesis 1 are animals that Moses was familiar with — his cattle, his poultry, etc.



It is a major error to assume that these words can include the amoeba, virus, duckbilled platypus, echidnas, bats, etc. There have been some 26 million different species of living things that have existed on this planet. If Genesis used half a verse to tell us about each of these, the Genesis account would be 13 million verses long and you would need a fork lift to pick up your Bible. That is not the purpose for which the Bible was written! Genesis is saying two things: (1) that God created everything and (2) that God created man special in His image. When, where, how, and why are not spelled out and are not relevant to the purposes for which the Bible was written. God has not told us when the dinosaurs were created. Like a lot of things, dinosaurs were created for a reason, fulfilled that reason, and then disappeared.

**There are several possible ways to explain the dinosaurs and how they fit into Genesis. The Bible says that God does not do anything in vain ([Isaiah 45:18](#)), and that is true of the dinosaurs. There is considerable evidence that the dinosaurs were major influences in the preparation of the earth for man. The dinosaurs ate gymnosperms – sporebearing plants like ferns, conifers, etc. You and I eat angiosperms – plants with fruit and seeds, not gymnosperms. The whole dinosaur ecosystem led to the successful preparing of the earth for man to be able to live and eat. If the dinosaurs were created for this purpose, then they must have been brought into existence by God in [Genesis 1:1-3](#). The word translated earth in [Genesis 1:1](#) does not refer to a blob of gook. In the rest of the Bible it refers to a functioning, life-bearing planet. The word was in [Genesis 1:2](#) is translated became in [Genesis 19:26](#). Whether this has reference to the asteroid collision mentioned earlier is problematical, but the eradication of the dinosaurs by some process cleared the way for man and his world. The prehistory of the earth is in [Genesis 1:1-3](#), while man and his world are created in what may have been a literal week, and man and his animals occupy the rest of the chapter.**



The Bible not only gives us an account, which is checkable in every detail of the history that it gives, but also a checkable means of taxonomical classification. The figure below shows the well-known Tree of Evolution as it is portrayed in Chicago's Field Museum of Natural History. In this tree, the oldest and simplest forms of life are found at the bottom of the tree & the more complex and the more recent forms of life are at the top. There are a number of problems with this model. Animals like the trilobite have been placed at the top of this tree. This has been done because the animal's so complex. The trilobite eye is sometimes referred to as nature's most perfect eye. The eye of the trilobite was so good that it could look at something a foot away & a mile away & they would both be in focus at the same time. Needless to say, this is not something that you & I can do. The problem with this is that the trilobite is one of the oldest animals to have ever lived on the earth. The trilobite is an index fossil for the Cambrian period which is the period when life began. There is no way this complex animal can logically be at the bottom of the evolutionary tree; so even though it is very old, it is placed near top of the tree in the museum chart. Other examples exist that have similar problems. Bryozoans are one of the simplest animals to have ever lived on the earth, but they are not found in the earliest rocks. There are a large number of these cases that violate assumptions of neo-Darwinism.

There is also the problem of the ease which animals can be classified. Classical evolutionary neo-Darwinism suggests that there should have been a large number of transitional forms between groups. These would have been animals that could not be classified easily, because they were an evolutionary "experiment" between orders or phyla. There should have been thousands of evolutionary dead ends — animals who were unsuccessful and died out, but were links between related taxonomical groups. What could you have that would be in between the cold-blooded animals & the warm-blooded animals? Can we logically believe in luke-warm-blooded animals? Rather than engage in a running gun battle, both scientists & more open creationists have looked at other options. An option suggested about 40 years ago by Dr. George Kerkut in his book *Meanings and Implications of Evolution* involves a forest model instead of a tree model. Another name that has been applied to this model in recent years is the lawn of evolution.

The concept being proposed is that life started in many different trees of evolution. Each tree started independently, but the changes in the tree eventually led to a diverse population of animals who were uniquely linked. Dr. John Bonner of Yale commented on Kerkut's suggestion by saying "This is a book with a disturbing message. It points to some cracks in the foundations. The truth of the matter is that we don't know whether the transition from nonliving to living occurred once or twice or many times ... ." (*American Scientist*, volume 49, June 1961, page 240 and *Scientific American*, November 1992, page 84). The really interesting thing about this model is that it is extremely close to what the Genesis account has been saying all along. The word kind in Hebrew is the word *min*, and it is a broad term. In the New Testament, [1 Corinthians 15:39](#) says that there are four kinds of flesh — the flesh of birds, the flesh of beast, the flesh of fish, and the flesh of man. The same system of classification is used in the first chapter of Genesis & in the flood chapter. We would suggest the biological community has finally caught up with Genesis and that this division matches the fossil record better than any model that has ever been proposed.

# GOD'S REVELATION IN HIS ROCKS AND IN HIS WORD

by John N. Clayton

## The History of Creation According to the Bible and the Fossils

It may be helpful to the reader to use the biblical text with the Hebrew words that are listed in [Appendix A](#) to follow this discussion. The first verse of Genesis is a creation (*bara*) verse, not a making (*asah*) verse. The things created, according to verse 1, are the heaven (*shamayim*) and the earth. What this means is that everything above and everything below were brought into existence by a miraculous act. It is interesting that the Hebrew *shamayim*, according to *Young's Analytical Concordance*, has a root that means "heaved up things." Whatever the understanding of the ancients might have been, today it is clear that the expanding universe fits such a description.

If the *shamayim* includes everything in the sky, this includes the sun, moon, and the stars. Someone might argue that these objects are described in [Genesis 1:14-19](#), but notice that the word used in these verses is making (*asah*) not creating (*bara*). The objects were created in verse 1, the light reached the earth from these objects in verse 3, but you could not establish "signs, seasons, days and years" until verses 14 through 19. Those who argue that *bara* and *asah* mean the same thing have to invent a light for verse 3 because they claim the sun & moon came into being in verses 14-19. If we take the account literally and do not compromise the use of these words, we do not have to invent a light for verse 3. Verses 6 - 7 indicate that a change took place in the waters and indicates that three zones were produced — waters above the earth, water in the earth, and waters below. This is strongly suggestive of our modern understanding of hydrosphere, lithosphere, and atmosphere.

Is there any evidence to support the above description? The answer is a strong yes. First of all, we have good evidence that the universe had an explosion or expansion at its beginning that imparted an expansion to it that we see today. The age of our solar system seems to be sequentially as the Bible describes it. There is even a phenomenon that might explain the creating & making of the sun & its light. Those who've travelled in the desert areas are familiar with the fact that it frequently is too hot in the desert to rain. Many times, I have seen rain fall in the Grand Canyon or the Mojave and found that it evaporated before it hit the ground. If the earth was hot early in its history (and every indication is that it was) and if it tried to rain, the same thing would happen. [Genesis 2:5](#) tells us that before there were plants and before man existed, "the Lord God had not caused it to rain upon the earth."

If the water cannot exist on the surface of the earth where will the water be? The only place cool enough for water to exist in a stable form thermodynamically would be the atmosphere. If that volume of water is in the atmosphere, there are heavy clouds and you would not be able to establish "signs, seasons, days, and years." There is a perfect fit between those few things that the Bible does say and what the evidence shows. This is also true in the sequence of life.

We emphasize the word sequence in this discussion. The chart in [Appendix C](#) gives a listing of the words used in the Genesis account and what those words generally apply to. There is also an indication of how many times the words are used. As you look down the list, you will notice all of the animals described are familiar. The word *behemah*, for example, always refers to an ungulate and is rendered cattle in most translations. The clearest way to see the accuracy of the sequence that is given in the biblical record is to look at the order Genesis gives. The reader might wish to begin by looking at our discussion of [Genesis 1:1-3](#) on [page 19](#). After these events, verses 6-10 tell us that the physical earth was modified. There is no indication of creation here — only modification. Before life could exist on earth, there had to be an environment that could support life.

We have already made reference to the division of the waters vertically. There is also a reference to the division of waters horizontally. Verses 9–10 tell us that land and water were separated, and that the water was in one place and the dry land was in another. Every geological evidence we have indicates that this is true. The current situation of many bodies of water and many land masses is the result of change. A casual look at the edges of North and South America, Europe, Africa, and the range of mountains in the center of the Atlantic Ocean, called the Mid-Atlantic Ridge, shows them all to be roughly parallel. If you take a pair of scissors and cut all of the land masses out along their continental shelves, you can actually fit them together like a jigsaw puzzle. Rocks on opposing shorelines usually match, and measurements from space and on the earth tell us that they are still moving today. (The reader may feel that [Genesis 10:25](#) describes this process too, but it is our persuasion that this refers to the division of the languages — not the division of the land masses.)

The Bible then tells us about the sequence of formation of plants. The first living thing we are told was grass. The Hebrew here is *deshe* and the word literally means tender grass. This is not the grass you mow with your lawnmower; that word is *chatsir*. Tender grass is described as being easily broken. The second plant material produced in the sequence is the herb from the word *eseb*. A former student of mine who's Jewish tells me that, in his understanding, this word referred to a plant without hard seeds — a spore bearing plant, for example. That cannot be proven, but it is a different thing than the "tree yielding seed after his kind, and the tree yielding fruit, whose seed was in itself." This is a clear reference to an angiosperm — a tree with fruit and seed — not a fern or moss. It seems there are three kinds of plants given in the biblical sequence — the tender grass, the herb, and the flowering tree with fruit in itself. I am sure that any student of botany reading this paragraph has recognized the process of succession.

This sequence is something that God has created and used over and over in the history of this planet, and it still takes place today. My brothers and I own a fishing camp in Canada. Many years ago there was a terrible forest fire that burned the area right down to bed rock so that not a blade of grass nor a crumb of organic material remained. The area has recovered over the years. The first several years, there were mosses & lichens that covered the rocks in some of the shaded places. These simple plants certainly fit the description of "tender grass." In one place the moss grew so thick that, when you walked on it, you sank deep into it; & you could lie down on it and it would seem like a thick soft mattress. Eventually we began to see a few ferns, some conifers and horsetail beginning to grow in places where the mosses & lichens had accumulated enough organic material to enable gymnosperms to grow. These certainly fit the definition of herb given in the Bible. In just the last few years, we have seen aspen, oaks & birch trees starting to grow where the gymnosperms have established a base for them. This succession is in exact accord with what happened in the primitive earth, and it continues to take place today.

The sequence of the Bible continues to flow in exact accordance with evidence seen in the fossils. Animal life begins in water & in the Genesis account, the Hebrew suggest a wide range of swarming creatures began in the sea. The fossil record confirms this with every phylum of life known to man being found in the earliest rocks — even backboned animals, seen in graptolite (an Cambrian period index), the acorn worm, the lancelet, and other forms.

We also see other examples of the sequence accuracy of the Bible in other forms. According to the Bible, the first warm-blooded creatures were the birds. In the fossil record, we see the archeopteryx, protoavis & several finds recently in China backing the biblical statement. Mammals are described next, with man being the last thing to be described in the Bible. The biblical sequence agrees with the fossil sequence; and since the Bible is not attempting to give us the time of these events, we can only be impressed with its accuracy and integrity. It is interesting that evolutionary models come & go, with one of the more recent of these being punctuated equilibrium. Yet with all of this change in scientific theories, the Bible from the beginning has given a model that still stands as credible with all available scientific evidence.

When I was an atheist, I was in process of writing a book titled *All the Stupidity of the Bible*. I taught myself Hebrew, went to [Genesis 1:1](#) in the original manuscripts, & attempted to show the biblical account was pure garbage. What I ran into were the kinds of things that we have discussed. I finally gave up after almost seven years of trying to prove the Bible wrong & decided the Bible was credible and I needed to look into what being a Christian was all about. I would recommend that same step to you.

# **GOD'S REVELATION IN HIS ROCKS AND IN HIS WORD**

**by John N. Clayton**

## **Conclusion**

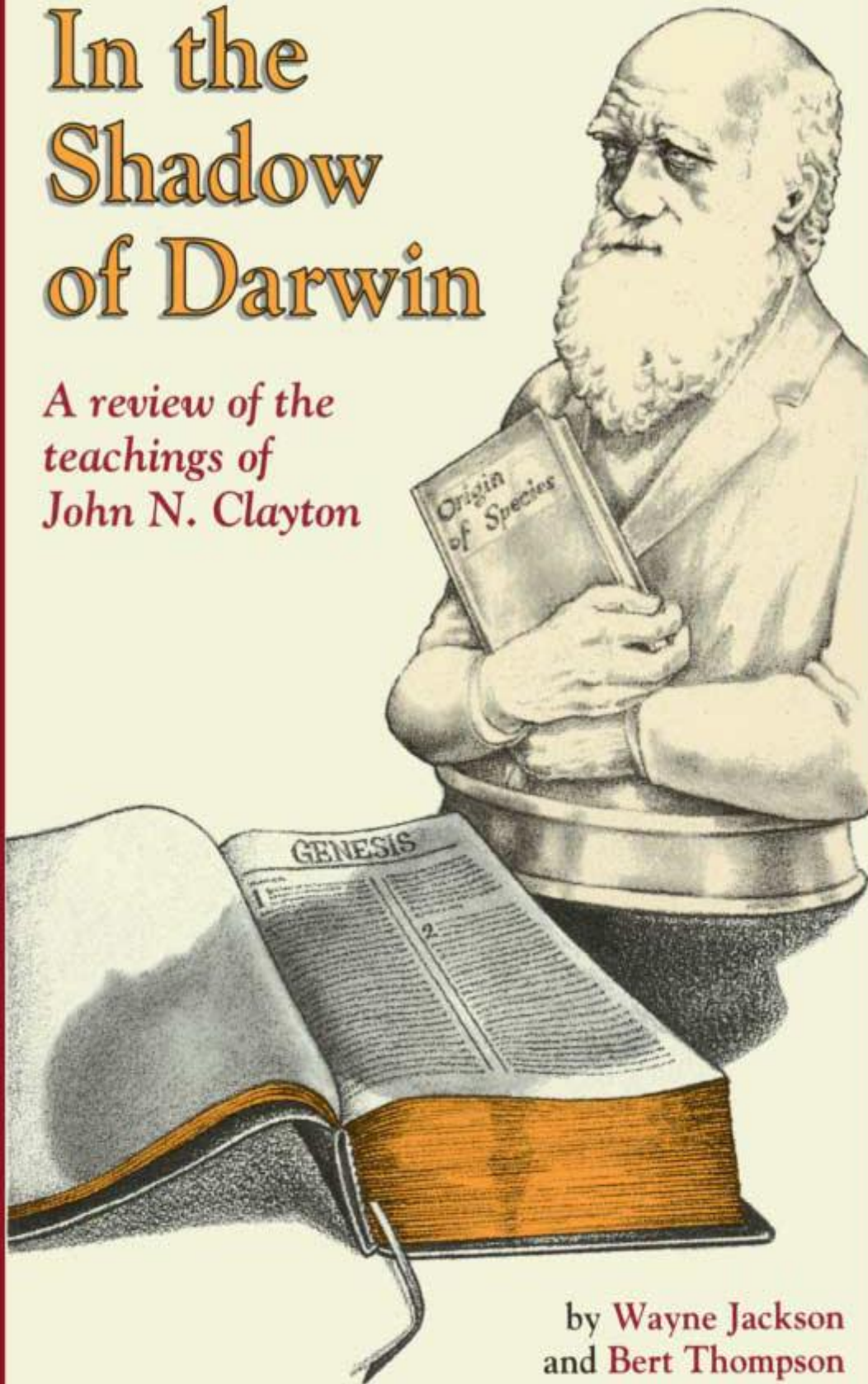
God created basic animals in a number of groups. The flesh groups are identified while insects & worms, are not. Changes have occurred within these groups. An understanding of these changes allows a great deal of biological understanding. In the prehistory of the earth in Genesis 1:1-3 the earth went through an undated, untimed period in which the resources man would need were produced. They were produced by original materials being created & then being altered by natural processes so that man could find them. As knowledge gets better, we find more and more ways to understand these things and have learned to copy them so we can produce them artificially. Genesis makes perfect sense when it is followed in a literal and careful way, recognizing that the sequence given was used initially and still takes place today in (biological) processes like succession. The creation week, which may have been a normal week, describes man and the animals man domesticated and was familiar with. If we free ourselves from human traditions and creeds and look open-mindedly & fairly at the evidence, we can see that science and the Bible are friends — not enemies. Bad science and bad theology have caused an unnecessary conflict with enormous damage being done to both science and theology. If we look at these two areas as if they exist in a positive symbiotic way, we can see that the written word revealed in the Scriptures & the created message in the world around have the same message and compliment one another in a beautiful way.

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# In the Shadow of Darwin

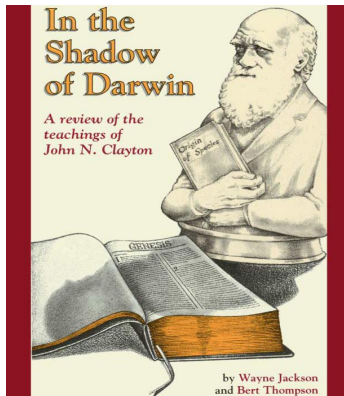
*A review of the  
teachings of  
John N. Clayton*



by **Wayne Jackson**  
and **Bert Thompson**



One of the most widely traveled speakers in the church in the field of Christian evidences is John N.



Clayton of South Bend, Indiana. Brother Clayton generally is busy several weekends of each month throughout the year with his “Does God Exist?” program, which operates under the oversight of the elders of the Donmoyer Avenue Church of Christ in South Bend, Indiana. In addition to his public lectures, John edits a bimonthly paper, also titled *Does God Exist?*, with a circulation of some 29,000+ readers. He is a prodigious producer of a variety of materials, including audio and video tapes, correspondence courses, etc. While all of this truly would be wonderful if brother Clayton were teaching faithfully the truth pertaining to Christian evidences, the sad fact is, John propagates a host of errors that are so foreign to the plain teaching of the Bible and so damaging to the faith of both young & old alike, it has become imperative that a thorough exposure of his teachings be made.

We do not write on these matters lightly. It is a serious thing to oppose a brother in Christ. Our opposition to brother Clayton’s teachings is fueled neither by a personal vendetta nor by any other ill-conceived motive. Rather, our opposition is due to the fact that—and we say this as kindly as we know how—in our judgment there are few in our great brotherhood who have taught more error, on more topics, more frequently, than John Clayton.

We do not make such a statement from a position of ignorance. While some (and this would certainly include many of John’s supporters) have only a cursory knowledge of what he teaches, we have spent well over a decade-and-a-half seriously studying the teachings of this brother. We have read his periodical, viewed his films, listened to his audio tapes, examined his correspondence courses, attended his lectures, read his books, and even met with him personally to discuss his doctrinal positions. When we say we believe that no one in the brotherhood knows the teachings of John Clayton as well as we do, it is not intended as a boast, but rather as a plain statement of fact. We have invested hundreds of hours in an exhaustive study of John’s teachings. This will be evident to the reader as the contents of this review are examined.

The book you now hold in your hands is not the first of its kind. John Clayton began his “Does God Exist?” program in 1969. By the early 1970s, a number of brethren already had begun to discern serious errors in his teachings on a number of important points. Accordingly, they corresponded with John, seeking information, asking for clarification, etc., in areas on which they knew John to be wrong. We have in our files copies of letters to John that date as far back as 1972—letters from sound brethren who saw the direction in which John seemed to be headed, and who wanted to try to do something to prevent his apostasy. As the years passed, it became quite clear to those involved in what came to be known as “the Clayton controversy” that John not only had no intention of repenting of his many erroneous teachings, but was becoming even more “solidified” in those positions. Finally, after many years of trying to communicate with John in an attempt to help him see the errors of his way, one by one brethren found themselves being told by John that he no longer would correspond with them on these matters.

It became clear that John was not to be dissuaded from the course he had set for himself. It became equally clear that many in the brotherhood were willing to support and/or endorse John only because he billed himself as a “former atheist.” [It was popular—and in many circles still is—to find someone who could boast of being a “former skeptic,” “former denominationalist,” etc., and therefore possessed a special appeal that could be used to draw an audience.] The point we are making is that in many instances the

people inviting John to speak had little or no knowledge of what he actually believed and taught. All they knew was that he was a “former atheist” who could draw a crowd. That, apparently, was enough.

Adding to John’s popularity were two other factors. First, John was practically alone in his area of instruction. Others who had gone before him in teaching Christian evidences (e.g., Dr. Russell C. Artist, former chairman of the biology department at David Lipscomb University) were either in retirement or rapidly approaching it. John virtually had the field to himself, and he rapidly took good advantage of it to build quite a following. Second, those of us in the churches of Christ, by everyone’s admission, had done a poor-to-pitiful job in the past of teaching in the areas of Christian apologetics and Christian evidences. As a result, John’s message—wrong though it was—fell on untrained ears. Since John is quite a good public speaker, and since he was being billed as a “former atheist,” the **messenger** overshadowed the **message**. Many people either heard what they wanted to hear, or simply had not been taught well enough to know that what they were hearing was wrong; subsequently John’s popularity grew. Unfortunately, as his popularity increased, so did the amount of erroneous teaching that he propagated.

Pleas for John to change—even pleas made by those whom he considered his friends—fell on deaf ears. He made it clear that: (a) he was not one to accept graciously constructive criticism; and (b) he had a great disdain for those who felt themselves smart enough to try to teach him anything. In a letter to Jon Gary Williams of LaVergne, Tennessee, John wrote:

In the Bible belt, I have found that nearly half of the preachers trained in many of our preacher training schools do not encourage what I understand the whole New Testament church to be about. Preachers are given “canned” answers to specific points of view quoted from other preachers, or authorities in the field... I seriously question whether the Church as the Lord intended it even exists in many communities in that part of the country... (1975f, p. 2).

Some among us felt that perhaps the brotherhood could be likened to a “sleeping giant” in regard to John Clayton. That is to say, if the alarm were sounded, the “giant” would awaken, examine the facts, and realize that the hour was much later than anyone at first had suspected. We were certainly to be counted among the number of concerned brethren who had faith in that “sleeping giant.” As we spoke with others who shared our concern, the idea was conceived of putting together a compendium on the erroneous teachings of brother Clayton, in the hopes that our great brotherhood **could** be warned, and that brother Clayton **could** be turned from his errors. We were encouraged by a great number of brethren to pursue this course of action. Over a period of several years, our offices were deluged by letters and phone calls from sincere people who were greatly concerned and deeply grieved about the teaching that had come to be known simply as “Claytonism.” We genuinely felt that the time had come to speak out.

Subsequently, we authored a series of fourteen articles that first appeared in the religious journal *Words of Truth*, edited by the late Bobby Duncan and published by the Sixth Avenue church of Christ in Jasper, Alabama. Those articles appeared during the dates of May 11 through August 10, 1979. Later, in September of that same year, those articles were reprinted in a thirty-two-page book titled *Evolutionary Creationism—A Review of the Teaching of John Clayton*, the immediate popularity of which took us by surprise. Ultimately, over 10,000 copies were distributed free of charge. The impact this review had on John’s program is something that only he and God know. But it quickly became evident that the book was alerting brethren who previously had been ignorant of these matters. We began to receive reports of cancellations of John’s program at various congregations, as well as reports of congregations that had planned to invite him, but, upon seeing the review, thought better of such an idea. So devastated was John’s program that he immediately published a two-page letter, which received wide distribution, attempting to counter the impact of the book. [His letter, however, did not address any of the book’s facts; it merely made personal attacks upon its authors.] Eventually, in January of 1980, John was forced to prepare an audio tape (*A Response to Evolutionary Creationism*) attempting to rebut the review.

*Evolutionary Creationism* never went out of print. However, it has been over a decade since it was first published, and much additional material has come from John Clayton that, we believe, necessitates a

revision of the original work. Those familiar with the first review will no doubt be shocked at some of the revelations contained in this newly revised version. Whereas we had hoped that brother Clayton's errors would have been corrected, exactly the opposite has occurred. His errors have increased not only in number, but in the nature of their seriousness as well. This claim is documented in great detail in the pages that follow.

We truly regretted having to write the first book reviewing John's erroneous teachings. But, scripturally speaking, we had little choice. Such passages as Jude 3, Galatians 2:4-5, 2 Timothy 4:1-3, and 2 Peter 2:1ff. make it clear that we are to contend earnestly for the faith, and that we must oppose error (even publicly, if need be). We regret having to publish this revision as well. But brother Clayton continues to spread his erroneous teachings—in some areas unchecked. We simply cannot remain silent and allow the propagation of such errors to continue unopposed.

It is a mild understatement to say that writing a book such as this is a most unpleasant undertaking. Only the authors actually can know just how unpleasant it really is. A person would have to be spiritually deficient, it seems to us, to enjoy such a task. We certainly have not enjoyed it. But we deemed it absolutely necessary. Our prayer is no different now than when we published the first addition of this book in 1979 – that John will come to a deeper faith in the Bible as God's Word, renounce the error in which he has become so entrenched, and join hands with those who respect the authority of the Word of God.

We ask that you carefully and prayerfully consider the documented evidence introduced here. Compare brother Clayton's teachings with the plain, uncomplicated statements of Scripture. We believe you will see that John's teachings are seriously at odds with the Bible and, for that reason, must be opposed.

Wayne Jackson and Bert Thompson

#### ADDENDUM

Brother Clayton often has argued that his critics speak from ignorance because they have not attended his weekend seminars, and therefore are unable to judge whether his teachings are correct or incorrect. We therefore would like to point out here that we **have** attended his seminars (Bert Thompson has attended three; Wayne Jackson has attended one). Furthermore, it matters little whether or not one attends even a single seminar because it is an easy matter to listen to John's audio tapes, view his video tapes, subscribe to his periodical, and read his many writings. Such works are readily available for a careful perusal by any interested party, and such works speak for themselves, independent of the seminars.

Additionally, we would like to make this point. For well over a decade we tried to set up either private or public meetings with John, to discuss his peculiar ideas. But time after time, John abjectly refused such a meeting. Several brotherhood lectureship directors invited him to discuss his teachings on their programs, but he declined. Editors of journals published debate propositions, but again he refused. More than one eldership wrote to us, and to John, offering to provide a place for a meeting, airfare for all parties concerned, and even an honorarium for John. Still he declined. Finally, however, the opportunity for such a meeting presented itself. Joe Orvelo, one of John Clayton's strongest supporters and a minister with the church of Christ in Manteca, California (where John was scheduled to hold a weekend seminar) misspoke himself and suggested that John gladly would agree to meet. As a result—after more than a decade of being unsuccessful in getting John to agree to a meeting—we finally had stumbled upon a situation in which brother Clayton simply had no choice but to meet with us. That discussion occurred on July 20, 1991. You will find references to it throughout this book, as well as comments on the positions that John defended in that meeting. [There is an interesting sidelight to the Manteca meeting. In the spring of 1991, when word began to spread that the Manteca church, under the dominating influence of Joe Orvelo, had secured the services of John Clayton for a summer seminar, great consternation swept through many of the churches in the San Joaquin Valley. Accordingly, a petitionary letter was sent to the Northside church in Manteca, urging these brethren to refrain from injecting brother Clayton's liberal influence into this area. The letter was signed by **twenty-five** regional gospel preachers! Tragically, Joe Orvelo was able to dissuade most of his brethren from considering the wishes of sound brethren throughout north/central California. As an aftermath, however, a number of faithful saints left the Manteca church.]

# How old is the world?

## Question:

How old is the world? Is the scientific way correct? In science, the world is around 40 billion years old. How old is the world in the Bible?

## Answer:

Dating in the Bible is a bit difficult because, for the span of time that the Bible covers, a universal calendar was not in use. Time was measured relative to local events, such as how long the current king was in power. This also led to rounding of dates since it would be rare that major events, such as the crowning of a king would take place precisely at the beginning of a calendar year. Therefore, when working backward, you can be off  $\pm$  one year times the number of events you had to use to go backward. For example, if you went back to a point in time using the length of reign of five kings, you can be off plus or minus five years.

Fortunately, the Bible contains several summaries of eras that helps to keep overall periods roughly accurate. For example, we know the length of time the Israelites were in Egypt was 430 years ([Exodus 12:40-41](#)). We also know the time from the Exodus to building of the temple was 480 years ([I Kings 6:1](#)).

Using the records given in the Scriptures, scholars have estimated that the world is roughly 6,000 years old. Now that is not the estimate we are told the scientific community accepts. Currently, popular scientists think the world is 4.5 billion years old, though that age constantly changes. When I was in high school, it was only 3.5 billion years old, a change of a billion years -- and I haven't lived nearly that long!

What many people do not realize is there are thousands of ways to measure the age of the earth. The ones popularly touted are only those few that give very long answers. The vast majority of age measurements give ages in the 10,000-year range! As an example, scientists have noted that the earth's magnetic field is losing strength. Measurements over the last hundred years tell us the current rate of decay. If we assume the decay is constant (a big assumption that cannot be proven), the maximum earth age given current strength of the field is 8,700 years.

Another example is the saltiness of our oceans. River water entering into the oceans bring in minerals, but evaporation of the water from the ocean leaves these minerals behind. Measuring just sodium content of the ocean, using numerous methods for input and output of water and sodium, and assuming we started with pure water (a huge assumption) the amount of salt currently found in the ocean yields a maximum age of 62 million years -- far less than the 4.5 billion years currently favored.

Before the moon was explored, there were concerns about the depth of meteoric dust on the surface of the moon. Space is full of dust and it falls on the moon and the earth as we travel through space. If the world and the moon were billions of years old, one would expect a layer of dust over 150 feet, but when we got to the moon, the dust only measured to be about an inch deep. Given the measured influx of dust currently, that would account for a few thousand years.

We could continue to list various other methods, such as the build-up of carbon-14 would indicate the world has a maximum age of 30,000 years, but what we should be addressing is why do these ages vary so much? The answer is simple: we weren't there! We are taking measurements made in the last one to two hundred years & projecting them backward to come up with estimated age. But to do the projection, we must make assumptions about the rate at which the process continues, starting values, and whether the current contents might have been altered. Since we weren't there, we have no idea if our assumptions are right or wrong! Actually, we can easily show that many of the assumptions are wrong. That is why the dates are published as the maximum possible value. This means we are selecting the assumptions that give long age, even though we know this can't be possible.

The reason the measurements giving the largest answers are popularly cited is simply because the theory of evolution needs large periods of time to even be remotely credible. Even current values are not large enough to do this, hence the continued search for larger values. Science has not proven the age of the earth because such proof is not possible. What it has produced are a series of estimates based on assumed conditions. The best it can give is the extreme outer limits, but it cannot give the actual date. So when a report is cited that age of a rock is 4.5 billion years, it should be read the age of the rock is at most 4.5 billion years -- it could be less, it could be a *lot* less.

The Bible claims to be a record of events in the world recorded for us by the Holy Spirit. In other words, if we accept that God created the world, then the Bible claims to be God's record of some of His involvement in that world. If we accept that the Bible is God's written message, then we are faced with the fact that God indicates that the world is well less than 10,000 years old. Does this match what we know in science? For the most part, it does. Every dating method's assumptions can be adjusted to give smaller ages. I know of only a few methods that give some possible difficulties, but again those difficulties arise from the base assumptions that are made.

**Here then is where faith comes into play. We have wide-range of evidence of possible ages of the earth. We could believe evolution and always grab the largest dates, or we could believe God & select the dates that come closest to matching the Scriptures. Either way, it comes down to our belief -- where we place our trust. Faith is the demonstration of your prejudice.**

*"Now faith is the substance of things hoped for, the evidence of things not seen" (Hebrews 11:1).*

La Vista Church of Christ

INSTITUTE FOR  
CREATION  
RESEARCH  
SCIENCE CONFIRMS  
BIBLICAL CREATION  
Wednesday, February 8, 2017  
Broadway Church of Christ 6:30 PM  
Dr. Jason Lisle

IN MY OPINION, ADDRESSING DARWINISM IS OUR CHRISTIAN RESPONSIBILITY & DOUBLES AS AN EVANGELISTIC TOOL... I ALSO BELIEVE DATE-SETTING OF SPECIFICITY IS AN OPINION DISCUSSION TANGENTIAL & UNPRODUCTIVE.

*Christians Must Not Divide  
Over the Age of the Earth!*



