

## The Editor's Page

Ed Christian

This is not the first issue of *JATS* to focus on creation, but it is the first to include articles on creation written by well-credentialed scientists. Far too often theologians writing on creation or the flood are woefully naïve about basic physics, chemistry, and biology—and more naïve about such fields as geology, paleontology, and evolutionary theory. This sometimes leads them to speculate in unfruitful ways or accept as fact ideas that creation scientists know to be impossible. We welcome the four articles our scientific colleagues have contributed.<sup>1</sup> They all believe in creation, but they have the technical expertise most of us lack.

All but three of the articles in this issue were first presented at the International Faith and Science Conference held August 23–29, 2002, in Ogden, Utah.<sup>2</sup> These articles were selected by three of the ATS officers present at the conference. Papers selected had to be within the bounds of the ATS centrist beliefs on creation.<sup>3</sup> The conference was limited to eighty-four Seventh-day Adventist scientists, theologians, and church administrators.<sup>4</sup> To encourage frank discussion, only those invited were admitted, and comments made there have been kept confidential.

Dabrowski writes: “The conference was held both to affirm belief in God as Creator as revealed in the biblical account, and to begin a dialogue on questions, issues, and diverse views about the origin of the earth.”

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<sup>1</sup> You may note that some of their papers do not follow the citation style generally found in *JATS*. I've allowed them to use note styles acceptable in their own fields, so long as they are consistent.

<sup>2</sup> The articles by Schafer and Booth and Brand's article “What Are the Limits of Death in Paradise?” were submitted independently and went through the usual double-blind review process.

<sup>3</sup> Three other papers—by Randy Younker, John Baldwin, and Fernando Canale—were recommended but for various reasons were not available.

<sup>4</sup> Details and quotations given here, unless otherwise noted, are from Ray Dabrowski's news report, “Adventist Scholars and Leaders Begin Faith and Science Conversation,” found at <http://www.adventistreview.org/2002-1538/news.html>. Dabrowski is the communication director of the General Conference of Seventh-day Adventists.

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In his remarks to those attending, General Conference President Jan Paulsen said, “Having the faith and science conference with focus on creation was in part difficult, but very necessary. More good comes from having it and talking about difficult matters than from running away from them. It is necessary that we learn to talk together.”

However, he also cautioned, “As a church we don't come to these discussions with a neutral position. We already have a defined fundamental belief in regard to creation. We believe that earth and life on it was created in six literal days and that the age of earth since then is a young one.”

The position of the Adventist church on creation, as found in the church's statement on fundamental beliefs, is as follows:

**Creation:** God is Creator of all things, and has revealed in Scripture the authentic account of His creative activity. In six days the Lord made “the heaven and the earth” and all living things upon the earth, and rested on the seventh day of that first week. Thus He established the Sabbath as a perpetual memorial of His completed creative work. The first man and woman were made in the image of God as the crowning work of Creation, given dominion over the world, and charged with responsibility to care for it. When the world was finished it was “very good,” declaring the glory of God. (Gen. 1; 2; Ex. 20:8-11; Ps. 19:1-6; 33:6, 9; 104; Heb. 11:3.)<sup>5</sup>

Having read all of these articles at least three times, I am especially excited about the first four. Richard Davidson's “The Biblical Account of Origins” is probably the best available scriptural defense of the position held by many ATS scholars.

Be sure to read Timothy Standish's “Bits and Particles: Information and Machines Sufficient to Infer an Intelligent Designer.” Standish carefully explains the biological role of a single protein without which animal life is impossible and shows that it could not possibly have come into being through evolution. The article filled me with love and admiration for the God Who Designs. Genesis 1 gives us God speaking things into existence. True science, working in harmony with Scripture, reveals to us the astonishing complexity and elegance with which the Creator made all things fit together. I don't see how any scientist could read this article without falling at God's feet in awe. Surely, every step forward in scientific knowledge, read correctly, provides additional evidence that God is the greatest of all scientists.

Leonard Brand's “What Are the Limits of Death in Paradise?” raises questions we have too long ignored. Many of us are guilty of imposing onto Scripture our own conceptions of what a perfect world would be like, assuming that our thoughts are God's thoughts (Isa 55:9), that our definition of death is God's definition. We admit that we live in a world where all things are to some degree

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<sup>5</sup> Fundamental Belief 6, available at <http://www.adventist.org/beliefs/index.html>

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influenced by sin, but just how different is what we see from the original creation? If “The spirit of Christ’s self-sacrificing love is the spirit that pervades heaven and is the very essence of its bliss,”<sup>6</sup> is self-sacrifice also part of God’s design for this earth? If some of the *e.coli* bacteria necessary for digestion—which presently multiply by the millions in our colons every day and die by the millions—were excreted during a bowel movement, would they live forever? Would that piece of excrement remain forever intact and undecayed in the Garden of Eden, or did God design a way for it to be useful as it decayed, disintegrated, and disappeared? If Adam ate an apple and tossed the core to the ground, would that core always remain white and juicy, or would it decay, providing food for insects and plants? If the cycle of self-sacrificing decay and regeneration we see today is not somewhat similar to what happened before sin, then how do we account for it? Is it all a result of sin? This is not like saying, “Once we had perfect digestions, but now we sometimes have indigestion.” It’s more like saying, “Now we digest, but once we had systems where digestion wasn’t necessary.” Holding the latter position makes necessary a second creation after the fall, and this is not the biblical teaching. Brand raises several interesting possibilities while remaining within the bounds of scriptural teaching scholars have too often misinterpreted.

Finally, Rahel Schafer’s “The ‘Kinds’ of Genesis 1: What Is the Meaning of *Min*?” compares the word “kind” in Genesis with the same word in Lev 11, shedding light on both chapters. This is an example of sound, useful biblical exegesis, answering questions and illuminating texts. Schafer provides strong evidence that the “kind” and the “species” are not synonymous and that the Bible does not teach the fixity of species. On the other hand, she also shows why the text precludes the possibility of macro-evolution, as God commands the sea or the earth to bring forth the “kinds” ready-made.

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<sup>6</sup> Ellen G. White, *Steps to Christ*, 77.

## **The Biblical Account of Origins**

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### **Introduction**

The basic elements in the biblical account of origins are summarized in the opening verse of the Bible, Gen 1:1:

- I. “In the beginning”—the “when” of origins;
- II. “God”—the “Who” of origins;
- III. “created”—the “how” of origins;
- IV. “the heavens and the earth”—the “what” of origins.

In this paper we will take up each of these elements in turn, with special emphasis upon the “when”<sup>1</sup> and aspects of the other elements that impinge upon the relationship between Scripture and science.

### **I. The “When”: “In the *Beginning*”**

In discussing the “when” of creation, a number of questions arise for which an answer may be sought in the biblical text. Does Gen 1–2 describe an absolute or relative beginning? Does the Genesis account intend to present a literal, historical portrayal of origins, or is some kind of non-literal interpretation implied in the text? Does the biblical text of Gen 1 describe a single creation event (encompassed within the creation week), or is there a prior creation described in Gen 1:1, with some kind of gap implied between the description of Gen 1:1 and

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<sup>1</sup> This emphasis upon the “when” of creation is in stark contrast with that of, e.g., Raymond F. Cottrell, “Inspiration and Authority of the Bible in Relation to Phenomena of the Natural World,” in *Creation Reconsidered: Scientific, Biblical, and Theological Perspectives*, ed. James L. Hayward (Roseville, CA: Association of Adventist Forums, 2000), 203, who claims that “The Bible writers have much to say about who created the universe [which according to Cottrell refers exclusively to ‘the atmospheric heavens, or sky, and to the surface of the earth,’ 197], some to say about why he created it, little to say about how he created it, and nothing to say about when he created it.” Likewise, this is contra Frederick E. J. Harder, “Theological Dimensions of the Doctrine of Creation,” in *Creation Reconsidered*, 282, who writes, “Indeed, there is total lack of concern in the biblical record with the question of ‘when’ [the ‘when’ of creation].”

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Gen 1:3ff.? Does the Genesis account of origins present a recent beginning (at least for the events described in Gen 1:3ff., including life on earth), or does it allow for long ages since creation week? Let us look at each of these questions.

**A. An Absolute or Relative Beginning?**

The answer to the question of an absolute vs. a relative beginning in Gen 1 depends to a large degree upon the translation of the first verse of the Bible, Gen 1:1. There are two major translations/interpretations.

**1. Independent Clause.** The standard translation until recently is as an independent clause—“In the beginning God created the heavens and the earth.”<sup>2</sup> Such a translation implies that God existed before matter, and thus He created planet earth at some point “out of nothing” (*creatio ex nihilo*).

**2. Dependent Clause.** In recent decades, some modern versions have translated Gen 1:1 as a dependent clause, following the parallels in the ancient Near Eastern (hereafter abbreviated ANE) creation stories. So Gen 1:1 reads, “When God began to create the heavens and the earth, . . .” Then Gen 1:2 is taken as a parenthesis, describing the *state* of the earth when God began to create (“the earth being . . .”). Gen 1:3ff. resumes the sentence structure of v. 1 and describes the actual commencement of the work of creation (“And God said . . .”).<sup>3</sup> A serious theological implication follows. If, according to the dependent clause translation, the earth already existed in the state described in Gen 1:2 when God began to create (Gen 1:1), then God and matter might be seen to be co-eternal principles. This conclusion would imply that Gen 1 does not address the absolute creation of planet earth, when, as we will see below, in fact it does.

Implications of these two views may be summarized in the following chart:

<b>Independent Clause</b>	<b>Dependent Clause</b>
a. <i>Creatio ex nihilo</i> is explicitly affirmed.	a. No <i>creatio ex nihilo</i> is mentioned.
b. God exists before matter.	b. Matter is already in existence when God begins to create.
c. God creates the heavens, earth, darkness, the deep, and water.	c. The heavens, earth, darkness, the deep, and water already exist at the beginning of God’s creative activity.
d. There is an absolute beginning of time for the cosmos.	d. No absolute beginning is indicated.

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<sup>2</sup> Examples of modern English versions with this translation include: KJV, NIV, NJB, NLT, NASB, NKJV, REB, and RSV.

<sup>3</sup> Recent translations with this reading include examples from the Jewish tradition (NJPS) and the Catholic (NAB); see also E. A. Speiser, *Anchor Bible: Genesis* (Garden City, NY: Doubleday, 1964), 3, 8–13. Medieval Jewish commentator Ibn Ezra (d. 1167) was an early advocate of this position. The Protestant versions NRSV and NEB also translate Gen 1:1 as a dependent clause, but then take v. 2 as the main clause of the sentence. Medieval Jewish commentator Rashi (d. 1105) advocated this position. For either alternative, the end result is the same, in that it gives a relative beginning to creation and may allow for pre-existing matter before God’s creative work described in Gen 1.

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Victor Hamilton, in his NICOT commentary on Genesis, summarizes the importance of the proper translation of the opening verse of Scripture:

The issue between these two options—“In the beginning when” and “In the beginning”—is not esoteric quibbling or an exercise in micrometry. The larger concern is this: Does Gen 1:1 teach an absolute beginning of creation as a direct act of God? Or does it affirm the existence of matter before the creation of the heavens and earth? To put the question differently, does Gen 1:1 suggest that in the beginning there was one—God; or does it suggest that in the beginning there were two—God and preexistent chaos?<sup>4</sup>

Evidence for the traditional view (independent clause) is weighty, and I have found it persuasive.<sup>5</sup> This includes:

**a. Grammar and Syntax.** Although the Hebrew word *bʿrēšît* (“in the beginning”) does not have the article, and thus could theoretically be translated as the construct “In the beginning of . . .”, the normal way of expressing the construct or genitive relationship in Hebrew is for the word in its

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<sup>4</sup> Victor P. Hamilton, *The Book of Genesis: Chapters 1–17*, New International Commentary on the Old Testament (Grand Rapids: Eerdmans, 1990), 105. We might note in passing another view which takes Gen 1:1 as a dependent clause “when . . .”, but still affirms an absolute beginning for creation. In this view the various terms in Gen 1:2—*tohû* “unformed” and *bohû* “unfilled,” and the terms for “darkness” and “deep”—are all meant by the author to imply “nothingness.” So verse 1 is a summary; verse 2 says that initially there was “nothingness,” and verse 3 describes the beginning of the creative process. See especially Jacques Doukhan, *The Genesis Creation Story: Its Literary Structure*, Andrews University Seminary Doctoral Dissertation Series, vol. 5 (Berrien Springs, MI: Andrews UP, 1978), 63–73. Against the suggestion that all the words in Gen 1:2 simply imply “nothingness,” it must be observed that verses 3ff. do not describe the creation of water, but assume its prior existence. The word *têhôm* “deep,” combined with *tohû* and *bohû* together (as in Jeremiah 4:34), do not seem to refer to nothingness, but rather to the earth in an unformed-unfilled state. In Gen 1:2 this unformed-unfilled earth is covered by water. It should be noted that Doukhan’s recent thinking seems to be moving away from the “nothingness” position. This is apparent not only from personal conversations, but also, e.g., from his unpublished paper, “The Genesis Creation Story: Text, Issues, and Truth,” presented at BRISCO, Loma Linda, CA, October 2001, 13 [referring to the “primeval water of Gen 1:2 as polemic against the ANE creation myths”]: “This does not mean, however, that the author [of Gen 1] is thinking of symbolic water. He may well be referring to real water, but his concern is not so much water *per se*; he is not dealing with the creation or the chemical description of water as such.”

<sup>5</sup> For more detailed discussion, see especially Walter Eichrodt, “In the Beginning,” in *Israel’s Prophetic Heritage: Studies in Honor of James Muilenburg*, ed. B. W. Anderson and W. Harrelson (New York: Harper and Brothers, 1962), 1–10; Hamilton, 106–108; Gerhard F. Hasel, “Recent Translations of Genesis 1:1: A Critical Look,” *Bible Translator* 22 (1971): 154–168; idem, “The Meaning of Genesis 1:1,” *Ministry* (January 1976): 21–24; Hershel Shanks, “How the Bible Begins,” *Judaism* 21 (1972): 51–58; Bruce Waltke, “The Creation Account in Genesis 1:1–3; Part III: The Initial Chaos Theory and the Precreation Chaos Theory,” *Bibliotheca Sacra* 132 (1975): 222–228; and E. J. Young, “The Relation of the First Verse of Genesis One to Verses Two and Three,” in *Studies in Genesis One* (Philadelphia: Presbyterian & Reformed, 1976), 1–14.

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construct state to be followed by an absolute *noun*. In harmony with this normal function of Hebrew grammar, when the word *b<sup>e</sup>rēšît* occurs elsewhere in Scripture as a construct in a dependent clause, it is always followed by an absolute *noun* (with which it is in construct), not a finite *verb*, as in Gen 1:1.<sup>6</sup> Furthermore, in Hebrew grammar there is regularly no article with temporal expressions like “beginning” when linked with a preposition. Thus “In the beginning” is the natural reading of this phrase. Isa 46:10 provides a precise parallel to Gen 1:1: the term *m<sup>e</sup>rēšît* (“from the beginning”), without the article, is clearly in the absolute, and not the construct. Grammatically, therefore, the natural reading of Gen 1:1 is as an independent clause: “In the beginning God created the heavens and the earth.”

Syntactically, Umberto Cassuto points out that if Gen 1:1 were a dependent clause, the Hebrew of Gen 1:2 would have normally either omitted the verb altogether<sup>7</sup> or placed the verb before the subject.<sup>8</sup> The syntactical construction that begins Gen 1:2, with *waw* (“and”) plus a noun (“earth”), indicates “that v. 2 begins a new subject” and “therefore, that the first verse is an independent sentence” (independent clause).<sup>9</sup>

**b. Short Stylistic Structure of Genesis 1.** The traditional translation as an independent clause conforms to the pattern of brief, terse sentences throughout the first chapter of the Bible. As Hershel Shanks remarks, “Why adopt a translation that has been aptly described as a *verzweifelt geschmacklose* [hopelessly tasteless] construction, one which destroys a sublime opening to the world’s greatest book?”<sup>10</sup>

**c. Theological Thrust.** The account of creation throughout Gen 1 emphasizes the absolute transcendence of God over matter. This chapter describes One who is above and beyond His creation, implying *creatio ex nihilo* and thus the independent clause.<sup>11</sup>

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<sup>6</sup> Jer 26:1; 27:1; 28:1; 49:34; all part of the clause “in the beginning of the reign of X.”

<sup>7</sup> If v. 2 constituted a parenthesis, as suggested by Ibn Ezra and his modern counterparts. A parallel situation is found in 1 Sam 3:2–4. See Umberto Cassuto, *A Commentary on the Book of Genesis, Part One: From Adam to Noah* (Jerusalem: Magnes Press, 1978), 19–20.

<sup>8</sup> If v. 2 constituted the main clause of the sentence, as suggested by Rashi and his modern counterparts. Parallels for this construction are found in Jer 26:1; 27:1; 28:1; and Hos 1:2. See Cassuto, 19.

<sup>9</sup> Ibid, 20. So Gordon J. Wenham, *Word Biblical Commentary: Gen 1–15* (Waco, TX: Word, 1987), 15: “‘And’ + noun (= earth) indicates that v 2 is a disjunctive clause.”

<sup>10</sup> Shanks, 58.

<sup>11</sup> See Brevard S. Childs, *Myth and Reality in the Old Testament*, Studies in Biblical Theology, no. 27 (London: SCM, 1962), 32: “This verse can be interpreted grammatically in two different ways. . . . While there is a choice grammatically, the theology of P [Gen 1] excludes the latter possibility [i.e., that Gen 1:1 is a dependent clause] . . . we have seen that the effort of the Priestly writer is to emphasize the absolute transcendence of God over his material.” Gerhard von Rad argues similarly: “Syntactically perhaps both translations are possible, but not theologically. . . . God, in the freedom of his will, creatively established for ‘heaven and earth,’ i.e., for absolutely everything, a beginning of its subsequent existence” (*Genesis: A Commentary*, Old Testament Library [Philadel-

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**d. Ancient Versions.** All the ancient versions (LXX, Vulgate, Symmachus, Aquila, Theodotion, Targum Onkelos, the Samaritan transliteration, Syriac, Vulgate, etc.) render Gen 1:1 as an independent clause.

**e. Parallel with John 1:1.** The prologue to the Gospel of John is clearly alluding to Gen 1:1 and commences with the same phrase that begins Gen 1:1 (LXX). In John 1:1, as in the LXX, this phrase “In the beginning [*En archē*]” has no article, but is unmistakably part of an independent clause: “In the beginning was the Word. . .”].

The recent<sup>12</sup> impetus for shifting to the dependent clause translation of Gen 1:1 is based ultimately on ANE parallel creation stories which start with a dependent clause.<sup>13</sup> But ANE parallels cannot be the norm for interpreting Scripture. Furthermore, it is now widely recognized that Gen 1:1–3 does not constitute a close parallel with the ANE creation stories. For example, no ANE creation stories start with a word like “beginning”—the biblical account is unique! Already with Hermann Gunkel, the father of form criticism, we have the affirmation: “The cosmogonies of other people contain no word which would come close to the first word of the Bible.”<sup>14</sup>

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phia: Westminster, 1972], 49). Kenneth A. Mathews, *Genesis 1:1–11:26*, The New American Commentary (Broadman and Holman, 1996), 139, rightly points out that the theological argument cannot be the sole basis for decision (contra Childs and von Rad), and yet at the same time, “there is no room in our author’s cosmology for co-eternal matter with God when we consider the theology of the creation account in its entirety.”

<sup>12</sup> The dependent clause view is not totally new to modern times. As noted above, it was proposed already in medieval times by the Jewish scholars Rashi and Ibn Ezra. However, John Sailhamer, “Genesis,” *The Expositor’s Bible Commentary* (Grand Rapids: Zondervan, 1990), 2:21–22, shows that these scholars did not reject the traditional reading (independent clause) on grammatical grounds, but because of their pre-understanding of cosmology in which the heavens were created from fire and water, and thus the water of Gen 1:2 must have been in existence prior to v. 1. Hence v. 1 could not refer to an absolute beginning, and an independent clause reading was impossible. As with the biblical scholars of this last century, the worldview of these medieval interpreters became the external norm for interpreting the biblical text.

<sup>13</sup> E.g., *Enuma elish* (“When on high . . .”). The Atrahasis Epic also begins with a dependent clause (the beginning of the Eridu Genesis is probably the same, but is not extant.) These are the three main ancient Mesopotamian versions of the creation story that have been discovered by archaeologists: the Sumerian Eridu Genesis (dating originally from ca. 1600 B.C.), the Old Babylonian Atrahasis Epic (dating from ca. 1600 B.C.), and the Assyrian *Enuma elish* (dating from ca. 1000 B.C.). The discovery of these ANE parallels with the biblical account led most critical biblical scholars of the 19<sup>th</sup> and 20<sup>th</sup> centuries to posit that the biblical account of origins in Genesis is borrowed from the older Mesopotamian stories, and thus many concluded that the biblical account, like its ANE counterparts, is to be read as a mythological text, not a literal, historical, factual portrayal of origins. For translations of these stories, see: Alexander Heidel, *The Babylonian Genesis [Enuma elish]*, 2d ed. (Chicago: U of Chicago P, 1963, c1951); W. G. Lambert and A. R. Millard, *Atrahasis: The Babylonian Story of the Flood* (Oxford: University P, 1969); Thorkild Jacobsen, “The Eridu Genesis,” *JBL* 100 (1981): 513–529.

<sup>14</sup> Hermann Gunkel, *Genesis*, 7<sup>th</sup> ed., Handkommentar zum Alten Testament (Göttingen: Vandenhoeck & Ruprecht, 1966), 101. The ANE stories consistently start out (literally) with the words



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Other evidence for the dependent clause interpretation is likewise equivocal. The alleged parallel with the introductory dependent clause of the Gen 2 creation account is not as strong as claimed, since Gen 2:4b–7, like the ANE stories, has no word like the “beginning” in Gen 1:1, and there are other major differences of terminology, syntax, and literary and theological function.<sup>15</sup> The expression *b<sup>e</sup>rēšît* elsewhere in the Hebrew Bible (all in Jeremiah: 26:1; 27:1; 28:1; 49:34–35) is indeed in the construct, but as noted above, these construct occurrences are consistently followed by an absolute *noun* (“in the beginning of the *reign* . . .”), as expected in construct chains, whereas Gen 1:1 is unique in being followed by a finite *verb*, which is not the normal syntax for a construct form. Furthermore, as we have seen above, the use of *m<sup>e</sup>rēšît* “from the beginning” without the article, but clearly in the absolute, in Isa 46:10, shows that *b<sup>e</sup>rēšît* does not need the article to be in the absolute.

In sum, I find the weight of evidence within Scripture decisive in pointing toward the traditional translation of Gen 1:1 as an independent clause: “In the beginning God created the heavens and the earth.”<sup>16</sup> Here, in the opening verse

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“in the day . . .”, which may be seen to parallel the introduction to the second creation account, Gen 2:4b, but not Gen 1:1.

<sup>15</sup> See Hasel, “Recent Translations,” 161, for a listing of these crucial differences.

<sup>16</sup> There are a few interpreters who affirm an independent clause as the best translation of Gen 1:1, and yet still find no absolute beginning of creation in this chapter. These interpreters take Gen 1:1 as an independent clause, but also as a summary statement, or formal introduction/title that is then elaborated in the rest of the chapter. See, for examples, Cottrell, 198–199; Hamilton, 117; von Rad, 49; and Waltke, 225–228. Gen 1:2 is seen as a circumstantial clause connected with verse 3: “Now the earth was unformed and unfilled . . . And God said, ‘Let there be light.’” The actual creating only starts with v. 3. Against the interpretation of v. 1 as a summary statement, John Sailhamer offers three weighty objections. First, “*The conjunction ‘and’ at the beginning of the second verse makes it highly unlikely that 1:1 is a title.*” Sailhamer elaborates: “If v. 1 were a title, the section following it would most certainly not begin with the conjunction ‘and’” (Sailhamer, *Genesis Unbound*, 163). In his accompanying note he further explains: “The conjunction ‘and’ (Hebrew: *waw*) at the beginning of 1:2 shows 1:2–2:4 is coordinated with 1:1, rather than appositional. If the first verse were intended as a summary of the rest of the chapter, it would be appositional and hence would not be followed by the conjunction, e.g., Genesis 2:4a; 5:1” (253). *Gesenius’ Hebrew Grammar*, 455 (§142c) makes the same point as Sailhamer by indicating that v. 2 should be seen as a circumstantial clause contemporaneous with the main clause of v. 1, not of v. 3. See also C. F. Keil, *The Pentateuch*, Commentary on the Old Testament in Ten Volumes, by C. F. Keil and F. Delitzsch (Grand Rapids: Eerdmans, 1976), 1:46: “That this verse [Gen 1:1] is not a heading merely, is evident from the fact that the following account of the course of the creation commences with *waw* [in Hebrew in the original] (*and*), which connects the different acts of creation with the fact expressed in ver. 1, as the primary foundation upon which they rest.”

As a second argument against this view, Sailhamer points out that “*In the original the first verse is a complete sentence that makes a statement, but titles are not formed that way in Hebrew.* In Hebrew titles consist of simple phrases” (*Genesis Unbound*, 102). Sailhamer points to examples of titles later in Genesis (2:2a; 5:1) that confirm his point (*ibid*, 102–103). Thirdly, “*Genesis 1 has a summary title at its conclusion, making it unlikely it would have another at its beginning.* As would be expected, the closing summary comes in the form of a statement: ‘Thus the heavens and earth were finished, and all their hosts’ (Genesis 2:1). Such a clear summary statement *at the close of the*

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of the Bible, we have a distancing from the cosmology of the ANE, an emphasis upon an absolute beginning, in contrast to the cyclical view of reality in the ANE, and in contrast to the ANE view that matter is eternal.

### B. A Literal or Non-literal Beginning?

The question of literal or non-literal interpretation of the creation accounts in Gen 1–2 is of major importance both for biblical theology and for contemporary concerns about origins. Many, including already at the turn of the twentieth century the critical scholar Gunkel, have recognized the intertextual linkage in Scripture between the opening chapters of the Old Testament and the closing chapters of the New Testament.<sup>17</sup> In the overall canonical flow of Scripture, because of the inextricable connection between protology (Gen 1–3) and eschatology (Rev 20–22), without a literal beginning (protology), there is no literal end (eschatology). Furthermore, it may be argued that the doctrines of humanity, sin, salvation, judgment, Sabbath, etc., presented already in the opening chapters of Genesis, all hinge upon a literal interpretation of origins.<sup>18</sup>

Scholars who hold a non-literal interpretation of Genesis approach the issue in different ways. Some see Gen 1 as mythology,<sup>19</sup> based upon ANE parallels as already noted. Others see it as literary framework,<sup>20</sup> theology,<sup>21</sup> liturgy,<sup>22</sup> (day-

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*narrative* suggests that 1:1 has a purpose other than serving as a title or summary. We would not expect two summaries for one chapter” (ibid, 103). I find Sailhamer’s arguments persuasive, and therefore I conclude that Gen 1:1 is not simply a summary or title of the whole chapter.

<sup>17</sup> Hermann Gunkel, *Schöpfung und Chaos* (Göttingen: Vandenhoeck & Ruprecht, 1895). For recent discussion, see the unpublished paper by Michael Hasel, “In the Beginning—The Relationship between Protology and Eschatology,” presented at the South American Biblical-Theological Symposium, UNASP, Brazil, July 28, 2002.

<sup>18</sup> The interconnection is often stated thus: If humans are only a product of time and chance from the same evolutionary tree as the animals, then they are no more morally accountable than the animals; if not morally accountable, then there is no sin; if no sin, then no need of a Saviour. If no literal seven-day creation, then no literal Sabbath. While this may be simplistically stated here, it does point toward a profound interrelationship between origins and the other biblical doctrines. See M. Hasel, who examines major elements that are affected by one’s understanding of origins, such as divine initiative and character; perfection; solution to sin; eternal life; worship; and time.

<sup>19</sup> See, for example, Gunkel, *Schöpfung und Chaos*; Childs, 31–50.

<sup>20</sup> This “framework hypothesis” maintains that “the Bible’s use of the seven-day week in its narration of the creation is a literary (theological) framework and is not intended to indicate the chronology or duration of the acts of creation” (Mark Ross, “The Framework Hypothesis: An Interpretation of Genesis 1:1–2:3,” in *Did God Create in Six Days?* Joseph A. Pipa, Jr. and David W. Hall, ed., [Taylors, SC: Southern Presbyterian, 1999], 113). This view was popularized especially by Meredith G. Kline, in his article “Because It Had Not Rained,” *Westminster Theological Journal* 20 (1958): 146–157, and in his commentary on Genesis in *The New Bible Commentary, Revised* (Downers Grove, IL: InterVarsity, 1970). For additional examples of the literary framework interpretation, see Henri Blocher, *In the Beginning: The Opening Chapters of Genesis* (Downers Grove, IL: InterVarsity, 1984), 49–59; Lee Irons with Meredith G. Kline, “The Framework View,” in *The Genesis Debate: Three Views on the Days of Creation*, ed. David G. Hagopian (Mission Viejo, CA: Crux Press, 2001), 217–256; D. F. Payne, *Genesis One Reconsidered* (London: Tyndale, 1964), *passim*; Ross, 113–120; and Bruce Waltke, *Genesis: A Commentary* (Grand Rapids: Zondervan,

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age) symbolism,<sup>23</sup> metaphor/parable,<sup>24</sup> or vision.<sup>25</sup> Common to all these non-literal views is the assumption that the Genesis account of origins is not a literal, straightforward historical account of creation.

Is there any evidence within the text of Genesis itself that would indicate whether or not the creation account was intended to be taken as literal? Indeed, I find several lines of evidence. First, the literary genre of Gen 1–11 points to the literal historical nature of the creation account. Kenneth Mathews shows how

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2001), 73–78. For these scholars, the “artistic, literary representation of creation” serves a theological purpose, i.e., “to fortify God’s covenant with creation” (ibid, 78). The framework hypothesis has become very popular among evangelical scholars in recent years.

<sup>21</sup> See, for example, Conrad Hyers, *The Meaning of Creation: Genesis and Modern Science* (Atlanta: John Knox, 1984); Davis Young, *Creation and the Flood: An Alternative to Flood Geology and Theistic Evolution* (Grand Rapids: Baker, 1974), 86–89. Larry G. Herr, “Genesis One in Historical-Critical Perspective,” *Spectrum* 13/2 (Dec 1982): 51–62, similarly separates between the cosmology (the ANE view of the universe) and the cosmogony (the theology of the writer) and suggests that “the chapter uses the common ancient Near Eastern cosmology in expressing what it takes to be the *theological* (or cosmogonic) truth” (61). The abiding cosmogonic or theological statement is that “God created the world miraculously in an orderly fashion,” but the erroneous details of the “common cosmology of antiquity” used by the author may be discarded (58). “Genesis 1 is theological in intent and scientists need not attempt to harmonize the ancient cosmology with the cosmology of modern science” (59). Frederick E. J. Harder, “Literary Structure of Genesis 1:1–2:3: An Overview,” in *Creation Reconsidered*, 243, asks, “May theological truth be transmitted within historical or scientific contexts that are not literal?” and the rest of his article implies that the answer is indeed “yes.” Harder’s views demonstrate a strong Kantian cleavage between faith and empirical knowledge; Harder, 242–243, also wonders in print (without committing himself) whether the Genesis creation account is poetry or myth, and therefore not literal.

<sup>22</sup> Terence E. Fretheim, “Were the Days of Creation Twenty-Four Hours Long? YES,” in *The Genesis Debate: Persistent Questions about Creation and the Flood*, ed. Ronald F. Youngblood (Grand Rapids: Baker, 1990), 26, suggests that “It is probable that the material in this chapter [Gen 1] had its origins in a liturgical celebration of the creation.”

<sup>23</sup> There two main “day-age” theories. A common evangelical symbolic interpretation, sometimes called the (broad) concordist theory, is that the seven days represent seven long ages, thus allowing for theistic evolution (although sometimes evolution is denied in favor of multiple step-by-step divine creation acts throughout the long ages); see, for example, Derek Kidner, *Genesis: An Introduction and Commentary*, Tyndale Old Testament Commentaries (Downers Grove, IL: InterVarsity, 1967), 54–58; and Hugh Ross and Gleason L. Archer, “The Day-Age View,” in *The Genesis Debate: Three Views on the Days of Creation*, 123–163. Another position, the “progressive-creationist” view, regards the six days as literal days that each open a new creative period of indeterminate length; see Robert C. Newman and Herman J. Eckelmann, Jr., *Genesis One and the Origin of the Earth* (Downers Grove, IL: InterVarsity, 1977), 64–65. The effect of both these “day-age” views is to have the six days represent much longer periods of time for creation.

<sup>24</sup> See, e.g., John C. L. Gibson, *Genesis*, Daily Study Bible (Edinburgh: Saint Andrew, 1981), 1:55–56.

<sup>25</sup> According to this “visionary” view the six days are “days of revelation,” a sequence of days on which God instructed Moses about creation, and not the six days of creation itself. See P. J. Wiseman, *Creation Revealed in Six Days* (London: Marshall, Morgan, and Scott, 1948), 33–34; and Duane Garrett, *Rethinking Genesis: The Sources and Authority of the First Book of the Pentateuch* (Grand Rapids: Baker, 1991), 192–194. This view was popularized in the nineteenth century by the Scottish geologist Hugh Miller (1802–1856).

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the suggestion of “parable” genre—an illustration drawn from everyday experience—does not fit the contents of Gen 1, nor does the “vision” genre, since it does not contain the typical preamble and other elements that accompany biblical visions.<sup>26</sup> Terence Fretheim, although himself suggesting a liturgical origin for what he considers the pre-canonical Gen 1 material, acknowledges that the narrative as it now stands in Gen 1 has been freed from these cultic/liturgical settings and in its present context is to be interpreted literally as describing the temporal order of creation.<sup>27</sup>

Walter Kaiser has surveyed and found wanting the evidence for the mythological literary genre of these opening chapters of Genesis and shows how the best genre designation is “historical narrative prose.”<sup>28</sup> More recently, John Sailhamer has come to the same conclusion, pointing out the major differences between the style of the ANE myths and biblical creation narratives of Gen 1–2, prominent among which is that the ANE myths were all written in poetry, while the biblical creation stories are not poetry, but prose narratives.<sup>29</sup> Furthermore, Sailhamer argues that the narratives of Gen 1–2 lack any clues that they are to be taken as some kind of non-literal, symbolic/metaphorical “meta-historical”

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<sup>26</sup> Mathews, 109. Hasel, “The ‘Days’ of Creation,” 48, also shows how the visionary view rests largely on mistranslating the word *‘asāh* “made” in Exod 20:11 as “showed,” a meaning which is not within the semantic range of this Hebrew word. Garrett’s suggested parallel with the 6+1 structures of the book of Revelation is far from convincing (Garrett, 192–194), since the apocalyptic genre of Revelation is filled with explicitly symbolic language and imagery which are totally absent in Gen 1.

<sup>27</sup> Fretheim, 28. I do not concur with Fretheim’s suggestion that the origins of Gen 1 are in the cultus. Fretheim is apparently unduly influenced by von Rad and others who saw the creation accounts as subservient to salvation history. The scholarly paradigm has recently shifted toward recognizing creation theology in the Hebrew Bible as important in its own right and not to be subsumed under salvation history. See, e.g., William P. Brown and S. Dean McBride, Jr., “Preface,” in *God Who Creates: Essays in Honor of W. Sibley Towner* (Grand Rapids: Eerdmans, 2000), xi: “The title of this volume, *God Who Creates*, identifies a tectonic shift in emphasis that has taken place in the theological study of the Bible over the past several decades. . . . In a nutshell, this change marks nothing short of a paradigm shift from a once exclusive stress upon the mighty interventions of God in history to God’s formative and sustaining ways in creation.”

<sup>28</sup> See Walter Kaiser, “The Literary Form of Genesis 1–11,” in *New Perspectives on the Old Testament*, ed. J. Barton Payne (Waco: Word, 1970), 48–65.

<sup>29</sup> Sailhamer, *Genesis Unbound*, 227–234. Sailhamer points out that unlike the ANE myths of creation, which were (as far as we have record) all in poetry, Gen 1–2 is written as narrative. “The fact that they [the biblical stories of creation] are written in narrative form rather than in poetry shows that at least their author understood them as real accounts of God’s work in creation. Judging from what we know about ancient creation myths, the biblical texts give every impression of having been written and understood as realistic depictions of actual events. It simply will not do to say that the Genesis creation accounts are merely ancient myths and thus should not be taken literally. If we are to respect the form in which we now have them—as narrative—we must reckon with the fact that they are intended to be read as literal accounts of God’s activity in creation. . . . As we now have them, Genesis 1 and 2 have all the appearances of a literal, historical account of creation” (230–231). This is not to deny that there are isolated verses of poetry in Gen 1–2, including what some have seen as a poetic summary of God’s creation of humanity (Gen 1:27), and the record of the clearly poetic, ecstatic utterance of the first man after the creation of woman (Gen 2:23).

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narrative, as some recent evangelicals have maintained.<sup>30</sup> Sailhamer acknowledges that the creation narratives are different than later biblical narratives, but this is because of their subject matter (creation) and not their literary form (narrative). He suggests that perhaps we should call Gen 1 and 2 “mega-history,” describing “literally and realistically aspects of our world known only to its Creator.”<sup>31</sup> As mega-history, “That first week was a real and literal week—one like we ourselves experience every seven days—but that first week was not like any other week. God did an extraordinary work in that week, causing its events to transcend by far anything that has occurred since.”<sup>32</sup>

Second, the literary structure of Genesis as a whole indicates the intended literal nature of the creation narratives. It is widely recognized that the whole book of Genesis is structured by the word “generations” (*tôlêdôt*) in connection with each section of the book (13x). This is a word used in the setting of genealogies concerned with the accurate account of time and history. It means literally “begettings” or “bringings-forth” (from the verb *yālad* “to bring forth, beget”) and implies that Genesis is the “history of beginnings.” The use of *tôlêdôt* in Gen 2:4 shows that the author intends the account of creation to be considered just as literal as the rest of the Genesis narratives.<sup>33</sup> As Mathews puts it,

The recurring formulaic *toledôth* device shows that the composition was arranged to join the historical moorings of Israel with the beginnings of the cosmos. In this way the composition forms an Adam-Noah-Abraham continuum that loops the patriarchal promissory blessings with the God of cosmos and all human history. The text does not welcome a different reading for Genesis 1–11 as myth versus the patriarchal narratives.<sup>34</sup>

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<sup>30</sup> Ibid, 234–245. According to the “meta-history” view advanced by some contemporary evangelical scholars, Gen 1–2 do describe creation as a historical fact, but “the account we have of it, however, is cast in a realistic but non-literal narrative” (237). Sailhamer points out how this view is not supported by the text itself. “A straightforward reading of Genesis 1 and 2 gives every impression that the events happened just as they are described. It is intended to be read both realistically and literally” (237). Sailhamer shows how this is in contrast to, e.g., the story Nathan told David (1 Sam 1:1–3), which has internal clues that the story should not be taken literally (the men and the town in the story are not specifically identified, as they would be in an actual historical account) (237–238). Sailhamer also points out that the narrative form of Gen 1–2 is the same as the form of the narrative texts in the remainder of the Pentateuch and the historical books. “The patterns and narrative structures that are so evident in Genesis 1 are found with equal frequency in the narratives which deal with Israel’s sojourn in Egypt and their wilderness wandering. They are, in fact, the same as those in the later biblical narratives dealing with the lives of David and Solomon and the kings of Israel and Judah. If we take those narratives as realistic and literal—which most evangelicals do—then there is little basis for not doing so in Genesis 1” (238).

<sup>31</sup> Ibid, 239.

<sup>32</sup> Ibid, 244.

<sup>33</sup> See Jacques Doukhan, *The Genesis Creation Story*, 167–220; and Mathews, 26–41, for detailed discussion.

<sup>34</sup> Mathews, 41.

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Later in his commentary, Mathews insightfully points out how the *tôlêdôt* structuring of Genesis precludes taking the Genesis accounts as only theological and not historical:

[I]f we interpret early Genesis as theological parable or story, we have a theology of creation that is grounded neither in history nor the cosmos . . . The *toledôth* structure of Genesis requires us to read chap. 1 as relating real events that are presupposed by later Israel. . . . [I]f taken as theological story alone, the interpreter is at odds with the historical intentionality of Genesis.<sup>35</sup>

For critical scholars who reject the historical reliability of all or most of the book of Genesis, this literary evidence will only illuminate the intention of the final editor of Genesis, without any compelling force for their own belief system. But for those who claim to believe in the historicity of the patriarchal narratives, the *tôlêdôt* structure of Genesis, including its appearance *six* times within the first eleven chapters of Genesis, is a powerful internal testimony within the book itself that the account of origins is to be accepted as literally historical like the rest of the book.

Other internal evidence within Genesis that the Creation account is to be taken literally, rather than as symbolic of seven long ages conforming to the evolutionary model—as suggested by some scholars—involves the use of specific temporal terms. The phrase “evening and morning,” appearing at the conclusion of each of the six days of creation, is used by the author to clearly define the nature of the “days” of creation as literal twenty-four-hour days. The references to “evening” and “morning” together outside of Gen 1, invariably, without exception in the OT (57 times, 19 times with *yôm* “day” and 38 without *yôm*), indicate a literal solar day. Again, the occurrences of *yôm* “day” at the conclusion of each of the six “days” of creation in Gen 1 are all connected with a numeric adjective (“one [first] day,” “second day,” “third day,” etc.), and a comparison with occurrences of the term elsewhere in Scripture reveals that such usage always refers to literal days.<sup>36</sup> Furthermore, references to the function of the sun and moon for signs, seasons, days, and years (Gen 1:14) indicates literal time, not symbolic ages.

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<sup>35</sup> Ibid, 110–111.

<sup>36</sup> In the 359 times outside of Gen 1 where *yôm* appears in the OT with a number (i.e., a numerical adjective), it always has a literal meaning. Similarly, when used with a numbered series (as in Gen 1, Num 7, 29), *yôm* always refers to a normal day. Three alleged exceptions (Hos 6:2; Zech 3:9; 14:7) turn out upon closer inspection not to be exceptions to this rule: in these prophetic sections a *literal* day is applied in prophecy to a longer period of time (see discussion in Henry M. Morris, *Studies in the Bible and Science* [Philadelphia: Presbyterian and Reformed, 1966], 36). Cf. Andrew E. Steinmann, “אָהַר as an Ordinal Number and the Meaning of Genesis 1:5,” *Journal of the Evangelical Theological Society* 45 (2002): 577–584, who shows how “the use of אָהַר in Gen 1:5 and the following unique uses of the ordinal numbers on the other days demonstrates that the text itself indicates that these are regular solar days” (584).

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Intertextual references to the creation account elsewhere in Scripture confirm that the biblical writers understood the six days of creation as six literal, historical, contiguous, creative, natural twenty-four-hour days. If the six days of creation week were to be taken as symbolic of long ages, of six visionary days of revelation, or anything less than the six days of a literal week, then the reference to creation in the fourth commandment of Exod 20:8–11 commemorating a literal Sabbath would make no sense.<sup>37</sup> The Sabbath commandment explicitly equates the six days of man’s work followed by the seventh-day Sabbath with the six days of God’s work followed by the Sabbath. By equating man’s six-day work week with God’s six-day work week at creation, and further equating the Sabbath to be kept by humankind each week with the first Sabbath after creation week blessed and sanctified by God, the divine Lawgiver unequivocally interprets the first week as a literal week, consisting of seven consecutive, contiguous twenty-four-hour days.

In penetrating articles, Gerhard F. Hasel,<sup>38</sup> Terence Fretheim,<sup>39</sup> and James Stambaugh,<sup>40</sup> among others,<sup>41</sup> set forth in detail various lines of evidence (including evidence not mentioned here for lack of space), based on comparative, literary, linguistic, intertextual, and other considerations, which lead me to the “inescapable conclusion” that “The author of Genesis 1 could not have produced more comprehensive and all-inclusive ways to express the idea of a literal ‘day’ than the one chosen,” and that “the designation *yôm*, ‘day,’ in Genesis 1 means

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<sup>37</sup> This is a major argument made not only by Seventh-day Adventists and other Saturday-sabbath keepers! See, e.g., Henry Morris, *Biblical Cosmology and Modern Science* (Grand Rapids: Baker, 1970), 59: “Thus, in Exodus 20:11, when the Scripture says that ‘in six days the Lord made heaven and earth, the sea, and all that in them is,’ there can be no doubt whatever that six literal days are meant. This passage also equates the week of God’s creative work with the week of man’s work, and is without force if the two are not of the same duration.”

Again, Fretheim, 19–20: “*The references to the days of creation in Exodus 20:11 and 31:17 in connection with the Sabbath law make sense only if understood in terms of a normal seven-day week.* It should be noted that the references to creation in Exodus are not used as an analogy—that is, your rest on the seventh day ought to be like God’s rest in creation. It is, rather, stated in terms of the imitation of God or a divine precedent that is to be followed; God worked for six days and rested on the seventh, and therefore you should do the same. Unless there is an exactitude of reference, the argument of Exodus does not work” (Italics original).

<sup>38</sup> Gerhard F. Hasel, “The ‘Days’ of Creation in Genesis 1: Literal ‘Days’ or Figurative ‘Periods/EPOCHS’ of time?” *Origins* 21/1 (1994): 5–38; reprint, *Creation, Catastrophe, and Calvary*, ed. John T. Baldwin (Hagerstown, MD: Review and Herald, 2000), 40–68.

<sup>39</sup> Fretheim, 12–35.

<sup>40</sup> James Stambaugh, “The Days of Creation: A Semantic Approach,” *CEN Tech. J.* 5/1 (1991): 70–78.

<sup>41</sup> See especially J. Ligon Duncan III and David W. Hall, “The 24-Hour View,” in *The Genesis Debate: Three Views on the Days of Creation*, 21–66; Robert V. McCabe, “A Defense of Literal Days in the Creation Week,” *Detroit Baptist Seminary Journal* 5 (2000): 97–123; Joseph A. Pipa, Jr., “From Chaos to Cosmos: A Critique of the Non-Literal Interpretations of Genesis 1:1–2:3,” in Pipa and Hall, 153–198; and Benjamin Shaw, “The Literal Day Interpretation,” in Pipa and Hall, 199–220. See also Walter Booth’s “Days of Genesis 1: Literal or Nonliteral?” in this issue of *JATS*.

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consistently a literal twenty-four-hour period,”<sup>42</sup> and that “God created in a series of six consecutive twenty-four days.”<sup>43</sup>

As a broader intertextual evidence for the literal nature of the creation accounts, as well as the historicity of the other accounts of Gen 1–11, it is important to point out that Jesus and *all* New Testament writers refer to Gen 1–11 with the underlying assumption that it is literal, reliable history.<sup>44</sup> Every chapter of Gen 1–11 is referred to somewhere in the New Testament, and Jesus Himself refers to Gen 1, 2, 3, 4, 5, 6, and 7.

While the non-literal interpretations of biblical origins must be rejected in what they deny (namely, the literal, historical nature of the Genesis accounts), nevertheless they have an element of truth in what they affirm. Gen 1–2 is concerned with mythology—not to affirm a mythological interpretation but as a polemic against ANE mythology.<sup>45</sup> Gen 1:1–2:4a is structured in a literary, symmetrical form.<sup>46</sup> However, the parallelism of days in Gen 1 is not a literary artifice created by the human author, but is explicitly described as part of the successive creative acts of God Himself, who as the Master Designer created aesthetically. The divine artistry of creation within the structure of space and time certainly does not negate the historicity of the creation narrative.

Genesis 1–2 does present a profound theology: doctrines of God, Creation, humanity, Sabbath, etc., but theology in Scripture is not opposed to history. To the contrary, biblical theology is always *rooted* in history. There is no criterion within the creation accounts of Gen 1–2 that allows one to separate between cosmogony and cosmology, as some have claimed, in order to reject the details of a literal six-day creation while retaining the theological truth that the world depends upon God. Likewise there is profound symbolism in Gen 1. For example, the language describing the Garden of Eden and the occupation of Adam and Eve clearly allude to the sanctuary imagery and the work of the priests and

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<sup>42</sup> Hasel, “The ‘Days’ of Creation in Genesis 1,” 62.

<sup>43</sup> Stambaugh, 75.

<sup>44</sup> Matt 19:4, 5; 23:35; 24:37–39; Mark 10:6–9; 13:19; Luke 1:70; 3:34–38; 11:50–51; 17:26, 27; John 1:1–3, 10; 8:44; Acts 3:21; 4:25; 14:15; 17:24, 26; Rom 1:20; 5:12, 14–19; 8:20–22; 16:20; 1 Cor 6:16; 11:3, 7, 8, 9, 12; 15:21, 22, 38–39, 45, 47; 2 Cor 4:6; 11:3; Gal 4:4, 26; Eph 3:9; 5:30–31; Col 1:16; 3:10; 1 Tim 2:13–15; Heb 1:10; 2:7–8; 4:3, 4, 10; 11:4, 5, 7; 12:24; James 3:9; 1 Pet 3:20; 2 Pet 2:4–5; 3:4–6; 1 John 3:8, 12; Jude 6, 11, 14–15; Rev 2:7; 3:14; 4:11; 10:6; 12:1–4, 9, 13–17; 14:7; 17:5, 18; 20:2; 21:1, 4; 22:2, 3). For the identification of the person or event in Gen 1–11 indicated by these passages, see Henry Morris, *The Remarkable Birth of Planet Earth* (Minneapolis: Bethany Fellowship, 1972), Appendix B: “New Testament References to Genesis 1–11” (99–101).

<sup>45</sup> See Gerhard F. Hasel, “The Polemic Nature of the Genesis Cosmology,” *The Evangelical Quarterly* 46 (1974): 81–102; idem, “The Significance of the Cosmology in Genesis 1 in Relation to Ancient Near Eastern Parallels,” *AUSS* 10 (1972): 1–20.

<sup>46</sup> See Cassuto, 17, Wenham, 6–7, and our discussion in section III below, for diagrams of the symmetrical matching of the days of creation. As the Master Artist, God created artistically, building symmetry into the very structure of the creation week.



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Levites (see Exod 25–40).<sup>47</sup> Thus the sanctuary of Eden is a symbol or type of the heavenly sanctuary (cf. Exod 25:9, 40). But its pointing beyond itself does not detract from its own literal reality.

I find it fascinating to note that critical scholars who do not take the authority of the early chapters of Genesis seriously, and thus have nothing to lose with regard to their personal faith, have often acknowledged that the intent of the one who wrote Gen 1 was to indicate a regular week of six literal days. Against those who would contend that the writer(s) of the early chapters of Genesis are not intending literal history, and that this is the view of “the great majority of contemporary Scripture scholars,” the Concordist Alvin Plantinga collects samples of these statements.<sup>48</sup> For example, Julius Wellhausen, a giant in critical biblical scholarship, popularizer of the Documentary Hypothesis for the Pentateuch, wrote, concerning the author of Genesis: “He undoubtedly wants to depict faithfully the factual course of events in the coming-to-be of the world, he wants to give a cosmogonic theory. Anyone who denies that is confusing the value of the story for us with the intention of the author.”<sup>49</sup> Again, Hermann Gunkel, father of form criticism, says, “People should never have denied that Genesis 1 wants to recount how the coming-to-be of the world actually happened.”<sup>50</sup>

Plantinga also cites James Barr, whom he describes as “Regius Professor of Hebrew in the University of Oxford until he joined the brain-drain to the US, and an Old Testament scholar than whom there is none more distinguished.” Barr writes: “To take a well-known instance, most conservative evangelical opinion today does not pursue a literal interpretation of the creation story in Genesis. A literal interpretation would hold that the world was created in six days, these days being the first of the series which we still experience as days and nights.” Then, after substantiating that evangelical scholars do not generally hold to a literal interpretation of the creation account, Barr continues: “In fact the only natural exegesis is a literal one, in the sense that this is what the author meant.”<sup>51</sup> Elsewhere, Barr goes even further:

. . . 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 Genesis 1–11 intended to convey to their readers the ideas that: (a) creation took place in a series of six days which were

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<sup>47</sup> See Richard M. Davidson, “Cosmic Metanarrative for the Coming Millennium,” *JATS* 11 (2000):108–111, for the biblical evidence and secondary literature there cited. Even more recently (2001), see Waltke, *Genesis*, 85–88.

<sup>48</sup> Alvin Plantinga, “Evolution, Neutrality, and Antecedent Probability: A Reply to McMullin and Van Till,” in *Intelligent Design Creationism and Its Critics: Philosophical, Theological, and Scientific Perspectives*, ed. Robert T. Pennock (Cambridge, MA: MIT Press, 2001), 216–217.

<sup>49</sup> Julius Wellhausen, *Prolegomena zur Geschichte Israels*, 6<sup>th</sup> ed. (Berlin: de Gruyter, 1927), 296, trans. Albert Wolters, cited in Plantinga, 216.

<sup>50</sup> Gunkel, *Genesis*, trans. Albert Wolters, cited in Plantinga, 216. See also Gunkel’s statement regarding the days of Gen 1: “the ‘days’ are of course days and nothing else” (Gunkel, *Genesis*, 97).

<sup>51</sup> James Barr, *Fundamentalism*, 2<sup>nd</sup> ed. (London: SCM Press, 1981), 40.

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the same as the days of 24 hours we now experience; (b) the figures contained in the Genesis genealogies provide by simple addition a chronology from the beginning of the world up to the later stages of the Biblical story, and (c) Noah's flood was understood to be worldwide, and to have extinguished all human and land animal life except for those in the ark.<sup>52</sup>

Another giant in Old Testament scholarship not cited by Plantinga, Gerhard von Rad, probably the foremost OT theologian of the 20<sup>th</sup> century, another critical scholar who refuses to accept as factual what Gen 1 asserts, nonetheless honestly confesses, "What is said here [Gen 1] is intended to hold true entirely and exactly as it stands."<sup>53</sup> "Everything that is said here [in Gen 1] is to be accepted exactly as it is written; nothing is to be interpreted symbolically or metaphorically."<sup>54</sup> Von Rad is even more specific regarding the literal creation week: "The seven days [of creation week] are unquestionably to be understood as actual days and as a unique, unrepeatable lapse of time in the world."<sup>55</sup>

We could add to this list of critical scholars the preponderance of major interpreters of Genesis down through the history of the Christian church,<sup>56</sup> and in modern times "whole coveys or phalanxes" (to use Plantinga's expression) of conservative-evangelical scholars, who support a literal six-day creation as the intention of the author of Genesis. This includes numerous recent evangelical commentators. For example, John Hartley: "Ancient readers would have taken 'day' to be an ordinary day. . . . A seven-day week of creation anchors the weekly pattern in the created order."<sup>57</sup> Again, John Walton writes concerning the Hebrew word for "day": "We cannot be content to ask, 'Can the word bear the meaning I would like it to have?' We must instead try to determine what the

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<sup>52</sup> Idem, personal letter to David C. K. Watson, April 23, 1984, published in the *Newsletter* of the Creation Science Association of Ontario, 3/4 (1990/91), cited in Plantinga, 217.

<sup>53</sup> Von Rad, *Genesis*, 47.

<sup>54</sup> Gerhard von Rad, "The Biblical Story of Creation," in *God at Work in Israel* (Philadelphia: Fortress, 1984), 99. Von Rad's next sentence is intriguing: "The language [of Gen 1] is actually scientific, though not in the modern sense of the word." Von Rad argues that Gen 1 combines theological and scientific knowledge into a wholistic picture of creation.

<sup>55</sup> *Ibid*, 65.

<sup>56</sup> See especially Duncan and Hall, 47–52, for a survey of the history of interpretation, which "confirms that the cumulative testimony of the Church favored normal creation days until the onslaught of certain scientific theories" (47). In another article, David W. Hall, "The Evolution of Mythology: Classic Creation Survives As the Fittest Among Its Critics and Revisers," in Pipa and Hall, 267–305, demonstrates that "the long history of biblical interpretation, and specifically the Westminster divines' written comments, endorse only one of the major cosmological views considered today: *They thought creation happened neither in an instant nor over a long period, but in the space of six normally understood days*" (267, italics his). Hall shows how modern proponents of non-literal days for creation have distorted the views of various interpreters of Genesis in the history of the Christian church in order to try to make their writings support a long age interpretation when in fact they do not.

<sup>57</sup> John E. Hartley, *Genesis*, The New International Biblical Commentary (Peabody, MA: Hendrickson; Carlisle, Cumbria, UK: Paternoster, 2000), 52.

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author and audience would have understood from the usage in the context. With the latter issue before us, it is 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.”<sup>58</sup>

Based upon the testimony of the Genesis account and later intertextual allusions to this account, I must join the host of scholars, ancient and modern—both critical and evangelical—who affirm the literal, historical nature of Gen 1 and 2, with a literal creation week consisting of six historical, contiguous, creative, natural twenty-four-hour days, followed immediately by a literal twenty-four-hour seventh day, during which God rested, blessing and sanctifying the Sabbath as a memorial of creation.

But this leads us to our next point, concerning whether all of creation described in Gen 1–2 is confined to that literal creation week, or whether there is a creation prior to the creation week

#### C. Multiple or Single Beginning?

Does the opening chapter of the Bible depict a single week of creation for all that is encompassed in Gen 1, or does it imply a prior creation before creation week and some kind of time gap between Gen 1:1 and Gen 1:3ff.? This issue focuses upon the relationship among Gen 1:1, 1:2, and 1:3ff.? Several different interpretations of this relationship have been advanced.

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<sup>58</sup> John Walton, “Genesis,” *The NIV Application Commentary* (Grand Rapids: Zondervan, 2001), 81. The testimonies of various other interpreters who employ the grammatical-historical method may be multiplied. Already with Martin Luther (representing the unanimous view of the Reformers), there was a break from the allegorical method of medieval exegesis: “We assert that Moses spoke in the literal sense, not allegorically or figuratively, i.e., that the world, with all its creatures, was created within six day, as the words read”; Martin Luther, *Lectures on Genesis: Chapters 1–5, Luther’s Works* (St. Louis: Concordia, 1958), 1:5. This view can be traced in numerous conservative-evangelical commentators. Nineteenth-century commentator C. F. Keil writes: “the six creation-days, according to the words of the text, were earthly days of ordinary duration” (Keil, 1:69). H. Leupold counters various arguments for a non-literal interpretation and concludes that only “six twenty-four hour days followed by one such day of rest” fits the context of Gen 1 and the fourth commandment (*Exposition of Genesis* [Columbus: Wartburg, 1942], 58. John Sailhamer writes: “That week [Gen 1:3ff.], as far as we can gather from the text itself, was a normal week of six twenty-four hour days and a seventh day in which God rested.” (*Genesis Unbound*, 95.) Terence Fretheim concludes: “It is my opinion that those who defend the literal meaning of the word [“day” in Gen 1] have the preponderance of the evidence on their side” (14). Victor Hamilton is clear: “whoever wrote Genesis 1 believed he was talking about literal days” (53). John Stek concurs: “Surely there is no sign or hint within the narrative [of Gen 1] itself that the author thought his ‘days’ to be irregular designations—first a series of undefined periods, than a series of solar days—or that the ‘days’ he bounded with ‘evening and morning’ could possibly be understood as long aeons of time.” (John H. Stek, “What Says Scripture?” in Howard J. Van Till, et al., *Portraits of Creation: Biblical and Scientific Perspectives on the World’s Formation*, [Grand Rapids: Eerdmans, 1990], 236).

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**Active Gap Theory.** A first interpretation is often labeled as the “ruin-restoration” or the “active gap” view. According to this understanding,<sup>59</sup> Gen 1:1 describes an originally perfect creation some unknown time ago [millions, billions of years ago]. Satan was ruler of this world, but because of his rebellion (described in Isa 14:12–17), sin entered the universe. Some proponents of the active gap position hold that God judged this rebellion and reduced it to the ruined, chaotic state described in Gen 1:2. Others claim that Satan was allowed by God to experiment with this world, and the chaos described in Gen 1:2 is the direct result of satanic experimentation. In any case, those holding this view translate Gen 1:2: “the earth *became* without form and void.”

Genesis 1:3ff. then presents an account of a later creation in which God restores what had been ruined. The geological column is usually fitted into the period of time of the first creation (Gen 1:1) and the succeeding chaos, and not in connection with the biblical Flood.

The ruin-restoration or active gap theory flounders purely on grammatical grounds: it simply cannot stand the test of close grammatical analysis. Gen 1:2 clearly contains three noun clauses, and the fundamental meaning of noun clauses in Hebrew is something fixed, a state or condition, not a sequence or action.<sup>60</sup> According to the laws of Hebrew grammar, one must translate “the earth *was* unformed and unfilled,” not “the earth *became* unformed and unfilled.” Thus Hebrew grammar leaves no room for the active gap theory.

**No Gap and Passive Gap Theories.** The “no gap” and “passive gap” theories are sub-headings of an interpretation of biblical cosmogony in Gen 1 that may be termed the *initial “unformed-unfilled”* view. This is the traditional view, having the support of the majority of Jewish and Christian interpreters through history.<sup>61</sup> According to this initial “unformed-unfilled” view (and common to both the “no gap” and “passive gap” theories), Gen 1:1 declares that God created “the heavens and earth” out of nothing at the time of their absolute beginning.

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<sup>59</sup> See, for examples, Arthur Custance, *Without Form and Void* (Brockville, Canada: By the Author, 1970); the *Scofield Reference Bible* (1917, 1967); and Jack W. Provonsha, “The Creation/Evolution Debate in the Light of the Great Controversy Between Christ and Satan,” in *Creation Reconsidered*, 310–311.

<sup>60</sup> Gesenius’ *Hebrew Grammar*, 454 [¶141i]. For analysis and refutation of the “ruin-restoration” theory both on philological and theological grounds, with particular focus upon the grammatical impossibility of this view’s interpretation of Gen 1:2, see especially F. F. Bruce, “And the Earth was Without Form and Void,” *Journal of the Transactions of the Victoria Institute* 78 (1946): 21–23; W. W. Fields, *Unformed and Unfilled: A Critique of the Gap Theory of Genesis 1:1, 2* (Winona Lake, IN: Light and Life, 1973); R. L. Reymond, “Does Genesis 1:1–3 Teach Creation Out of Nothing?” *Scientific Studies in Special Creation*, ed. W. E. Lammerts (Grand Rapids, 1971), 14–17; and Bruce Waltke, “The Creation Account in Genesis 1:1–3”: 136–143.

<sup>61</sup> For a list (with bibliographical references) of major supporters, see especially Hasel, “Recent Translations,” 163, and Waltke, “The Genesis Creation Account, III,” 216–217. These include, e.g., Martin Luther, John Calvin, C. F. Keil, F. Delitzsch, J. Wellhausen, E. König, G. Ch. Aalders, H. Leupold, Alexander Heidel, B. S. Childs, Derek Kidner, N. H. Ridderbos, E. J. Young, E. Maly, and G. Henton, Gordon Wenham, and Nahum Sarna.

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Verse 2 clarifies that when (at least) the earth was first created, it was in a state of *tohû* “unformed” and *bohû* “unfilled.” Verse 3ff. then describes the divine process of forming the unformed and filling the unfilled.

I concur with this view, because I find that only this interpretation cohesively follows the natural flow of these verses, without contradiction or omission of any element of the text.

The flow of thought in Gen 1–2:4a, according to this view, is as follows:

(a) God is before all creation (v. 1).

(b) There is an absolute beginning of time with regard to “the heavens and the earth” (v. 1).

(c) God creates “the heavens and earth” (v. 1), but (at least) the earth is at first different than now—it is “unformed” and “unfilled” (*tohû* and *bohû*; v. 2).

(d) On the first day of the seven-day creation week, God begins to form and fill the *tohû* and *bohû* (vv. 3ff.).

(e) The “forming and filling” creative activity of God is accomplished in six successive literal twenty-four-hour days.

(f) At the end of creation week, the heavens and earth are finally finished (Gen 2:1). What God began in v. 1 is now completed.

(g) God rests on the seventh day, blessing and sanctifying it as a memorial of creation (2:1–4).

The above points seem clear in the flow of thought of Gen 1–2:4a. However, there is one crucial aspect in this creation process about which it may not be possible to be dogmatic. This concerns *when* the absolute beginning of the heavens and earth in v. 1 occurred: either at the commencement of the seven days of creation or sometime before. Some see vv. 1–2 all as part of the first day of the seven-day creation week. The “raw materials” described in Gen 1:1–2 are here included in the first day of the seven-day creation week. This may be termed the “*no gap*” interpretation.<sup>62</sup> Others see vv. 1–2 as a chronological unity separated by a gap in time from the first day of creation described in v. 3. The “raw materials” of the earth in their unformed-unfilled state were created before—perhaps long before—the seven days of creation week. This view is usually termed the “*passive gap*.”<sup>63</sup>

Several considerations lead me to prefer the “passive gap” to the “no gap” theory. First, as John Hartley points out in his NIB commentary, “The consistent pattern used for each day of creation tells us that verses 1–2 are not an integral part of the first day of creation (vv. 3–5). That is, these first two verses stand apart from the report of what God did on the first day of creation.”<sup>64</sup> Hartley is referring to the fact that each of the six days of creation begins with the words,

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<sup>62</sup> See, for example, Henry Morris, *The Biblical Basis for Modern Science* (Grand Rapids: Baker, 1984); and idem, *The Genesis Record* (Grand Rapids: Baker, 1976), 17–104.

<sup>63</sup> See, for example, Harold G. Coffin, *Origin by Design* (Hagerstown, MD: Review and Herald, 1983), 292–293, who allows for this possibility.

<sup>64</sup> John E. Hartley, *Genesis*, 41.

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“And God said . . .” and ends with the formula “and there was evening and there was morning, day x.” If the description of the first day is consistent with the other five, this would place vv. 1–2 outside of, and therefore before, the first day of creation.

Secondly, as we will argue under the section of the “what” of creation, the phrase “the heavens and earth” in Gen 1:1 is most probably to be taken here, as elsewhere in Scripture, as a merism (*merismus*) that includes the entire universe.<sup>65</sup> If “heavens and earth” refers to the whole universe, this “beginning” (at least for part of the “heavens”) must have been *before* the first day of earth’s creation week, since the “sons of God” (unfallen created beings) were already created and sang for joy when the foundations of the earth were laid (Job 38:7).

Thirdly, we will also argue in the “what” section that the dyad “heavens and earth” (entire universe) of Gen 1:1 are to be distinguished from the triad “heaven, earth, and sea” (the three earth habitats) of Gen 1:3ff. and Exod 20:11. This means that the creation action of Gen 1:1 is outside or before the six-day creation of Exod 20:11, and of Gen 1:3ff.

Fourthly, the text of Gen 1:1 does not indicate how long before creation week the universe (“heavens and earth”) was created. It could have been millions or billions of years. John Sailhamer points out that the Hebrew word for “beginning” used in Gen 1:1, *rēšît*, “does not refer to a point in time, but to a *period* or *duration* of time which falls before a series of events.”<sup>66</sup> So in the first verse of the Bible we are taken back to the process of time in which God created the universe. Sometime during that process, this earth<sup>67</sup> was created, but it was initially in an “unformed-unfilled” (*tohû-bohû*) state.<sup>68</sup> As a potter or architect first gathers his materials, and then at some point later begins shaping the pot on

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<sup>65</sup> This is not to imply that the writer of Genesis (whom I take as Moses) necessarily understood the nature and extent of the universe in exactly the same way as we do today. (In fact, he may have known *more* about some phenomena of the universe than modern science has been able to determine: if Moses also wrote the book of Job, then he knew of other worlds with intelligent life forms—see Job 38:7—while science today can only guess that this might be the case.) What I am suggesting is that the merism “heavens and earth” used by Moses in Gen 1:1 implies that God created “all that is out there,” whatever and wherever it may be, paralleling the expression in John 1:3: “All things were made by Him, and without Him nothing was made that was made.”

<sup>66</sup> Sailhamer, *Genesis Unbound*, 38. Sailhamer (*ibid*, 38–44) refers to other biblical examples of this usage of the word *rēšît* (e.g., Jer 28:1) and contrasts it with other Hebrew words for “beginning” that refer specifically to a beginning point of time.

<sup>67</sup> I take the Hebrew word *hā’āreṣ* “the earth” in Gen 1:2 to refer to our entire globe, and not just to the localized land of promise for Israel, as Sailhamer interprets it. See below under section IV, the “what” of creation, for further discussion.

<sup>68</sup> I deliberately avoid using the word “chaos” to describe this condition of the planet before creation week. Some have claimed that the terms *tohû-bohû* refer to a “chaotic, unorganized universe.” But the careful study of these terms by David Toshio Tsumura, *The Earth and the Waters in Genesis 1 and 2: A Linguistic Study*, JSOT Supplementary Series, 83 (Sheffield: JSOT Press, 1989), esp. 155–156, shows that these terms refer not to chaos, but to a state of “unproductiveness and emptiness” in Gen 1:2. See also Rooker, 320–323.

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the potter's wheel or constructing the building, so God, the Master Artist—Potter and Architect—first created the “raw materials” of the earth, and then at the appropriate creative moment, began to form and fill the earth in the six literal days of creation week.

Fifthly, already in the creation account of Gen 1:3ff., there is an emphasis upon God's creating by differentiation or separation involving previously-created materials. On the second day, God divided what was already present—the waters from the waters (Gen 1:6–8). On the third day the dry land *appeared* (which seems to imply it was already present under the water), and the previously-existing earth brought forth vegetation (Gen 1:9–12). On the fifth day the waters brought forth the fish (Gen 1:20), and on the sixth day the earth brought forth land creatures (Gen 1:24), implying God's use of pre-existing elements. As we will note below in section IV under the “what” of creation, this same pattern seems to be true with the creation of the “greater” and “lesser” lights of the fourth day and the light of day one.

Sixthly, such a two-stage process of creation in Gen 1, like the work of a potter or architect, is supported by the complementary creation account of Gen 2, describing the way God created man and woman. In Gen 2:7, it is evident that God began with the previously-created ground or clay, and from this “formed” the man. There is a two-stage process, beginning with the “raw materials”—the clay—and proceeding to the “forming” of man and breathing into His nostrils the breath of life. It is probably not accidental that the narrator here uses the verb “to form” (*yṣr*), describing what a potter does with the clay on his potter's wheel. The participial form of *yṣr* actually means “potter,” and Moses may here be alluding to God's artistic work as a Master Potter.

Similarly, in God's creation of the woman, He follows a two-stage process. He starts with the raw materials that are already created—the “side” or “rib” of the man—and from this God “builds” (*bnh*) the woman. Again, it is certainly not accidental that only here in Gen 1–2 is the verb *bnh* “to architecturally design and build” used of God's creation. He is a Master Designer/Architect as He creates woman!

Finally, other parallels besides God's artistic work in Gen 2 seem to point toward a two-stage creation for this earth. We have already mentioned in passing that the work of creation in Gen 1–2 is described in technical language that specifically parallels the building of Moses' sanctuary and Solomon's temple. Such intertextual linkages have led me to join numerous OT interpreters in recognizing that according to the narrative clues, the whole earth is to be seen as the original courtyard and the Garden of Eden as the original sanctuary/temple on this planet. What is significant to note for our purposes at this point is that the construction of both Mosaic sanctuary and Solomonic temple took place in two stages. First came the gathering of the materials, according to the divine plans and command (Exod 25:1–9; 35:4–9, 20–29; 36:1–7; 1 Chron 28:1–29:9; 2 Chron 2), and then came the building process utilizing the previously-gathered

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materials (Exod 36:8–39:43; 2 Chron 3–4). A pattern of two-stage divine creative activity seems to emerge from these intertextual parallels that gives further impetus to accepting the “passive gap” interpretation of Gen 1.<sup>69</sup>

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<sup>69</sup> Marco T. Terreros, “What is an Adventist? Someone Who Upholds Creation,” *JATS* 7/2 (Autumn 1996): 147–149, summarizes some of the major philosophical/theological arguments that could be raised against the “passive gap” view. First, he points out that while Gen 1:2 states the earth was “without form and empty,” Isa 45:18 indicates that God “did not create it to be empty, but formed it to be inhabited.” It does not seem consistent that God would have left the earth in an “unformed-unfilled” state for billions of years, then have it inhabited for only a few thousands of years, if the divine goal was for the earth to be inhabited. My response to this is that God’s design is not only for the earth to be inhabited for a few thousand years, but forever! Though this original purpose was thwarted temporarily because of sin, after the millennium the ultimate goal will be achieved. In light of eternity (endless time!), a period of a few billion years (or however long a period from the initial creation of earth’s raw materials to creation week) is minimal!

Second, is it consistent for one to accept the evolutionary dating for the rock (“raw materials”) of the earth and not for the age of the fossils in the rocks? A third question is related: is not the “passive gap” theory a “concordist endeavor to harmonize Scripture and Science?” Or in other words, “we are being forced to accept the gap by science not by Scripture.” (Terreros, 148). My answer to these points is that I have come to this conclusion regarding the “passive gap” by exegesis of Scripture, and not due to pressure from science. Philosophically and cosmologically, I could be just as happy believing in a creation of both “raw materials” and the life forms of earth within a period of six literal contiguous days, all with an appearance of old (mature) age. (I used to hold this position.) But it is the text of Gen 1, not science, that drives me to conclude that Gen 1:1–2 is structurally outside of the parameters of the six days (see arguments above in the text of this article). Likewise, if “heavens and earth” in Gen 1:1 refers to the whole universe, then in light of Job 38:7 some of the creation described in the first verse of the Bible must of necessity be before the six-day creation week. Genesis 1 does not indicate how long before creation week the “raw materials” of earth were created: Maybe billions of years, maybe more or less. The evolutionary radiometric time clocks for the rocks may or may not be accurate. The “passive gap” is not dependent upon their accuracy, nor (at least in my understanding) is it an attempt to harmonize Scripture and Science. It is an attempt to be faithful to Scripture, and if some scientific data are harmonized in the process, then all the better.

As part of the third question, Terreros asks why—if one accepts the long period of time (a gap) between Gen 1:1 and Gen 1:2, as does the “active gap” view—one does not accept the other suggestions of the “active gap” theory regarding what happened during that time—i.e., the three stages of creation, ruin, and restoration of the earth. I’ve given the answer to this point already in the critique of the “active gap” theory: the reading “the earth *became* without form and empty” of vs. 2 simply cannot be sustained by Hebrew grammar.

Finally, Terreros raises the question regarding the relationship of Gen 1:2 to vs. 1 and vs. 3. If vs. 2 is a thought unit with vs. 1, then we have the Spirit of God hovering over the waters “for millions or billions of years to no effect” (Terreros, 148), unlike the typical result of the Spirit’s action, in which something creative happens (see Ps 104:30). Similarly, if vs. 2 is a thought unit with vs. 3, then the grammar of the nominal clauses in vs. 2 still requires that the Spirit of God hover for the whole period of time of the gap when the earth is unformed and unfilled. I have already argued above that vs. 2 is to be seen as a thought unit with vs. 1 and not with vs. 3. But the issue of the Holy Spirit’s long-term activity of hovering over the earth is illuminated by the only other occurrence of the Hebrew word for “hover” in the Pentateuch, i.e., Deut 32:11. In this verse God is compared to an eagle that “hovers over its young,” tenderly watching over them and protecting them from harm. Likewise, the Spirit’s function in Gen 1:2 is that of Protector/Care-giver, personally watching over, caring for, the “raw materials” of this earth until such time as they are formed and filled during the



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Despite my preference for the passive gap over the no gap theory, I acknowledge a possible openness of Gen 1:1–2 that allows for either option. This possible openness in the Hebrew text has implications for interpreting the pre-fossil layers of the geological column. If one accepts the “no gap” option, there is a possibility of relatively young pre-fossil rocks, created as part of the seven-day creation week (perhaps with the appearance of old age). If one accepts the “passive gap” option (my preference), there is the alternate possibility of the pre-fossil “raw materials” being created at a time of absolute beginning of this earth and its surrounding heavenly spheres, perhaps millions or billions of years ago. This initial unformed-unfilled state is described in v. 2. Verses 3ff. then describes the process of forming and filling during the seven-day creation week.

I conclude that the biblical text of Gen 1 leaves room for either (a) young pre-fossil rock, created as part of the seven days of creation (with appearance of old age), or (b) much older pre-fossil earth rocks, with a long interval between the creation of the inanimate “raw materials” on earth described in Gen 1:1–2 and the seven days of creation week described in Gen 1:3ff. (which I find the preferable interpretation). But in either case, the biblical text calls for a *short* chronology for the creation of *life* on earth. According to Gen 1, there is no room for any gap of time in the creation of life on this earth: it came during the third through the sixth of the literal, contiguous twenty-four-hour days of creation week. That leads us to our next point.

#### D. A Recent or Remote Beginning?

We have no information in Scripture as to how long ago God created the universe as a whole. But there is evidence strongly suggesting that the creation week described in Gen 1:3–2:4 was recent, some time in the last several thousand years, and not hundreds of thousands, millions, or billions of years ago. The evidence for this is found primarily in the genealogies of Gen 5 and 11. These genealogies are unique, with no parallel among the other genealogies of the Bible or other ANE literature.<sup>70</sup> Unlike the other genealogies, which may

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creation week. Such a protective/caring function is effect enough, and whether the period of time is long or short, the effect is the same.

<sup>70</sup> For other biblical genealogies, see especially Gen 4:16–24; 22:20–24; 25:1–4, 12–18; 29:31–30:24; 35:16–20, 22–26; 39:9–14, 40–43; 46:8–12; 1 Sam 14:50–51; 1 Chr 1–9; Ruth 4:18–22; Matt 1:1–17; Luke 3:23–28. For comparison with ANE genealogies, see, e.g., Gerhard F. Hasel, “The Genealogies of Gen 5 and 11 and their Alleged Babylonian Background,” *AUSS* 16 (1978): 361–374; and Richard S. Hess, “The Genealogies of Genesis 1–11 and Comparative Literature,” in “*I Studied Inscriptions Before the Flood: Ancient Near Eastern, Literary, and Linguistic Approaches to Genesis 1–11*,” ed. Richard S. Hess and David Toshio Tsumura (Winona Lake, IN: Eisenbrauns, 1994), 58–72. Hess has shown that there are various sub-genres of genealogies, and the genre of the genealogies in Gen 5 and 11 is very different than the ANE genealogies, with very different formal characteristics, functions, and orientation. According to Hess, the genealogies in Gen 5 and 11 seem to reveal a different view of history than the ANE parallels, tending to emphasize the forward thrust of history, with attention to specific historical-chronological data concerning each

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(and in fact often do) contain gaps, the “chronogenealogies” of Gen 5 and 11 have indicators that they are to be taken as complete genealogies without gaps. These unique interlocking features indicate a specific focus on chronological time and reveal an intention to make clear that there are no gaps between the individual patriarchs mentioned. A patriarch lived  $x$  years, then begat a son; after he begat this son, he lived  $y$  more years, and begat more sons and daughters; and all the years of this patriarch were  $z$  years. These tight interlocking features make it virtually impossible to argue that there are significant generational gaps. Rather, they purport to present the complete time sequence from father to direct biological son throughout the genealogical sequence from Adam to Abraham.

To further substantiate the absence of major gaps<sup>71</sup> in the genealogies of Gen 5 and 11, the Hebrew grammatical form of the verb “begat” (*yālad* in the *Hifil*) used throughout these chapters is the special causative form that always elsewhere in the OT refers to actual direct physical offspring, i.e., biological father-son relationship (Gen 6:10; Judg 11:1; 1 Chr 8:9; 14:3; 2 Chr 11:21; 13:21; 24:3). This is in contrast to the use of *yālad* in the simple *Qal* in many of the other biblical genealogies, in which cases it can refer to other than direct physical fathering of immediately succeeding offspring. In Gen 5 and 11, there is clearly a concern for completeness, accuracy, and precise length of time.<sup>72</sup>

There are several different textual versions of the chronological data in these two chapters: MT (Hebrew text) LXX (Greek translation), and Samaritan Pentateuch. The scholarly consensus is that the MT has preserved the original figures in their purest form, while the LXX and Samaritan versions have intentionally schematized the figures for theological reasons. But regardless of which text is chosen, it only represents a difference of about a thousand years or so.<sup>73</sup>

Regarding the chronology from Abraham to the present, there is disagreement among Bible-believing scholars whether the Israelite sojourn in Egypt was 215 years or 430 years, and thus whether to put Abraham in the early second millennium or the late third millennium B.C.; but other than this minor differ-

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person mentioned in the genealogy (life span and age at which the next name bearer is begotten) which is never given in other ANE genealogies.

<sup>71</sup> I do acknowledge the possibility of minor gaps (or duplications) in Gen 5 and 11, due to such factors as scribal omissions or additions. An example is the mention of a second Canaan in the LXX of Gen 5 and in Luke 3, as opposed to only one Canaan in the MT. In light of the scholarly consensus that the MT more likely approximates the original, the second Canaan is probably a secondary addition, although there is the possibility that a second Canaan has been inadvertently dropped out of the Hebrew text.

<sup>72</sup> This is contra, e.g., Cottrell, 203; and Lawrence Geraty, “The Genealogies as an Index of Time,” *Spectrum* 6 (1974): 5–18, who both fail to recognize the differences between the genealogies of the Bible and other ANE literature, on one hand, and the unique chronogenealogies of Gen 5 and 11 on the other.

<sup>73</sup> If following the MT, the period of history from Adam to the Flood is 1656 years and from the Flood to Abraham 352 years, for a total of 2008 years. For the LXX, the total from Adam to Abraham is 3184 years, and for the Samaritan Pentateuch the total is 2249 years.

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ence, the basic chronology from Abraham to the present is clear from Scripture, and the total is only some 4000 (+/- 200) years.<sup>74</sup>

Thus the Bible presents a relatively recent creation (of life on this earth) a few thousand years ago, not hundreds of thousands or millions/billions. While minor ambiguities do not allow us to pin down the exact date, according to Scripture the six-day creation week unambiguously occurred *recently*. This recent creation becomes significant in light of the character of God, the next point in our outline. We can already say here that a God of love surely would not allow pain and suffering to continue any longer than necessary to make clear the issues in the Great Controversy. He wants to bring an end to suffering and death as soon as possible; it is totally out of character with the God of the Bible to allow a history of cruelty and pain to go on for long periods of time—millions of years—when it would serve no purpose in the cosmic controversy against Satan. Thus the genealogies, pointing to a recent creation, are a window into the heart of a loving, compassionate God.

### **II. The “Who”: “In the Beginning God”**

The Creation accounts of Gen 1–2 emphasize the character of God. While accurately presenting the facts of creation, the emphasis is undoubtedly not so much upon crea-*tion* as upon the Creat-*or*. As Mathews puts it, “‘God’ is the *grammatical* subject of the first sentence (1:1) and continues as the *thematic* subject throughout the account.”<sup>75</sup>

#### **A. Elohim and Yahweh—the Character of God**

In Gen 1–2, two different names for God appear, not as supports for the Documentary Hypothesis, but in order to emphasize the two major character qualities of the Creator.<sup>76</sup> In Gen 1:1–2:4a, He is Elohim, which is the generic name for God, meaning “All-powerful One,” and emphasizing His transcendence as the universal, cosmic, self-existent, almighty, infinite God. This emphasis upon God’s transcendence is in accord with the universal framework of the first creation account, in which God is before and above creation and creates effortlessly by His divine Word. In the supplementary creation account of Gen 2:4b–25, another name for the deity is introduced along with Elohim. He is here also Yahweh, which is the biblical God’s covenant name; He is the immanent, personal God who enters into intimate relationship with His creatures. Just such a God is depicted in this second creation account: One who bends down as a Potter over a lifeless lump of clay to “shape” (*yāṣar*) the man and breathes into

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<sup>74</sup> See SDABC (1953 ed.), “The Chronology of Early Bible History,” 1:174–196. For the date of the Exodus as ca. 1450 B.C., see especially, William Shea, “Exodus, Date of,” *ISBE* (rev. 1982 ed), 2:230–238.

<sup>75</sup> Mathews, 113.

<sup>76</sup> See below, in our discussion of the “what” of creation, for bibliography supporting the unity and complementarity of Gen 1 and 2.

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his nostrils the breath of life (2:7); who plants a garden (2:8); who “architecturally designs/builds” (*bānah*) the woman (2:22) and officiates at the first wedding (2:22–24). Only the Judeo-Christian God is both infinite and personal to meet the human need of an infinite reference point and personal relationship.

Any interpretation of the biblical account of origins must recognize the necessity of remaining faithful to this two-fold portrayal of the character of God in the opening chapters of Scripture. Interpretations of these chapters which present God as an accomplice, active or passive, in an evolutionary process of survival of the fittest, millions of years of predation, prior to the fall of humans, must seriously reckon with how these views impinge upon the character of God. I would argue that perhaps the greatest reason to reject (theistic) evolution or progressive creation is that it maligns the character of God, making Him responsible for millions of years of death/suffering, natural selection, survival of the fittest, even *before* sin.

### **B. Other Considerations**

There are a number of other considerations related to the “who” of creation, including, among others, the following points, which we can only summarize here:

1. No proof of God is provided, but rather from the outset comes the bold assertion of His existence.

2. God is the ultimate foundation of reality. As Ellen White expresses it: “‘In the beginning God.’ Here alone can the mind in its eager questioning, fleeing as the dove to the ark, find rest.”<sup>77</sup>

3. The portrayal of God in the creation account provides a polemic against the polytheism of the ANE with its many gods, their mankind-like moral decadence, the rivalry and struggle between the deities, their mortality, and their pantheism (the gods are part of the uncreated world-matter).

4. There are intimations of the plurality of the Godhead in Creation, with mention of the “Spirit of God” (*rûah ’elohîm*) in Gen 1:2;<sup>78</sup> the creative Word throughout the creation account (ten times in Gen 1); and the “let us” of Gen 1:26, most probably a “a plural of fullness,” implying “within the divine Being a distinction of personalities, a plurality within the deity, a ‘unanimity of intention

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<sup>77</sup> Ellen G. White, *Education* (Mountain View, CA: Pacific Press, 1903), 134.

<sup>78</sup> Elsewhere in Scripture this Hebrew phrase always (18x) refers to “Spirit of God,” not “mighty wind.” Further, in the rest of Gen 1, Elohim always refers to God, and is not used as a marker for the superlative. Also, note the adverb describing the Spirit’s work of *m’rahepet* “hovering,” which in the only other occurrence of the word in the Pentateuch refers to the protective hovering of the eagle over its young (Deut 32:11). For full canvassing of the options and argumentation supporting the translation “Spirit of God,” see especially Hamilton, 111–115.

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and plan'. . . ; [the] germinal idea . . . [of] intra-divine deliberation among 'persons' within the divine Being."<sup>79</sup>

5. The "who" of creation also helps us answer the "why" of creation. With intimations of a plurality of persons within the deity (point 4 above), and the character of God being one of covenant love (as Yahweh), it would be only natural for Him to wish to create other beings with whom He could share fellowship. This is implicit in the creation account of Prov 8, where Wisdom is "rejoicing" (literally, "playing, sporting"! ) both with Yahweh and with the humans that have been created (vv. 30–31). It is explicit in Isa 45:18: "He created it [the earth] not to be empty [*tohû*], He formed it to be inhabited."

### III. The "How": "In the Beginning God Created"

Many would claim that the biblical creation accounts are not concerned with the "how" of creation, but only with the theological point that God created. It is true that Gen 1–2 provide no technical scientific explanation of the divine creative process. But there is a great deal of attention to the "how" of divine creation,<sup>80</sup> and this cannot be discarded as the husk of the creation accounts in order to get at the theological kernel of truth that God was the Creator. It seems that the six days of creation "are told from the perspective of one who is standing on the earth's surface observing the universe with the naked eye."<sup>81</sup>

#### A. By Divine *bārā*

According to Gen 1, God creates by divine *bārā* (= "create" Gen 1:1, 21, 27; 2:4a). This Hebrew verb in the *Qal* describes exclusively God's action; it is never used of human activity. It is also never used with the accusative of matter: what is created is something totally new<sup>82</sup> and effortlessly produced. By employing this term, the Genesis account provides an implicit polemic against the common ANE views of creation by sexual procreation and by a struggle with the forces of chaos.

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<sup>79</sup> Gerhard F. Hasel, "The Meaning of 'Let Us' in Gen 1:26," *AUSS* 13 (1975): 65; see 58–66 for further discussion and critique of other views. Cf. Kidner, *Genesis*, 33; Hamilton, 133–134; Sailhamer, *Genesis Unbound*, 146–147; and the "Angel of the Lord" passages later in Genesis: Gen 16:7–13; 18:1–2 & 19:1; Gen 31:11–13; 32:24, 30; 48:15–16; Hosea 12:3–6 (on the latter, see Kidner, *Genesis*, 33).

<sup>80</sup> So Freitheim, 32: "While the central concern [in Gen 1] is in questions of 'why,' Israel is also interested in questions of 'how' the world came into being, and herein the ancient author integrates them into one holistic statement of the truth about the world."

<sup>81</sup> Mathews, 144. The description of the earth's luminaries as light bearers for the earth (Gen 1:15–16) illustrates this geocentric perspective.

<sup>82</sup> However, by itself the term does not indicate *creatio ex nihilo* (see Ps 51:12 [10 Eng.]), as has been sometimes claimed.

**B. By Divine Fiat**

Creation in Gen 1 is also by divine fiat—“And God said, Let there be . . .” (Gen 1:3, 6, 9, 11, 14, 20, 24, 26). The Psalmist summarizes this aspect of how God created: “By the word of the Lord were the heavens made, and all the host of them by the breath of his mouth . . . For He spoke, and it was done; He commanded, and it stood fast” (Ps 33:6, 9). According to Gen 1, the universe and this earth are not self-existent, random, or struggled over. The Genesis account is in stark contrast with the Mesopotamian concept of creation resulting from the cosmogonic struggle between rival deities or the sexual activity of the gods, and also in contrast with Egyptian Memphite theology, where the creative speech of the god Ptah is a magical utterance.<sup>83</sup> In biblical theology, the “word” of God is concrete; it is the embodiment of power. When God speaks, there is an immediate response in creative action. Part of God’s word is His blessing, and in Hebrew thought God’s blessing is the empowering of the one/thing blessed to fulfill the intended function for which (s)he/it was made. God’s creation by divine fiat underscores the centrality of the Word in the creation process.

**C. As a Polemic**

Specific terminology is used (or avoided) by Moses that appears to be an intentional polemic against the mythological struggle with a chaos monster and the prevalence of polytheistic deities found in the Mesopotamian creation texts.<sup>84</sup> We have noted some examples of these already above. As an additional example, the word *tēhôm* “deep” in Gen 1:2 is an “unmythologized” masculine rather than the mythological feminine sea monster Tiamat. Again, the names “sun” and “moon” are (vv. 14–19) replaced by the generic terms “greater light” and “lesser light” because the Hebrew names for these luminaries are also the names of deities. As a final example, the term *tannînim* (“sea monsters,” vv. 21–22), the name for both mythological creatures and natural sea creatures/serpents, is retained (as the only vocabulary available to express this kind of animal), but this usage is coupled with the strongest term for creation *bārā* (implying something totally new, no struggle), a term not employed in Gen 1 since v. 1, to dispel any thought of a rival god.<sup>85</sup>

The “how” of creation was no doubt penned by Moses under inspiration with a view toward exposing and warning against the polytheistic Canaanite environment in which Israel would soon find themselves. But the omniscient Divine Author certainly also inspired this creation account in order to be a polemic for all time against views of creation that might violate or distort the true

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<sup>83</sup> See Mathews, 117.

<sup>84</sup> See especially, Gerhard F. Hasel, “The Polemic Nature of the Genesis Cosmology,” *Evangelical Quarterly* 46 (1974): 81–102.

<sup>85</sup> The term *bārā* is reserved for the pivotal moments in the first creation accounts when God’s effortless transcendence are to be emphasized (Gen 1:1, 21, 27; 2:4a); the normal word for “make” (*‘āśah*) is used elsewhere in the narrative (Gen 1:7, 16, 25, 26; 2:2, 4b).

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picture of God’s creative work. Does the inspired description of God’s effortless, personal, rapid creation by divine fiat protect modern humanity from accepting naturalistic, violent, random components into one’s picture of creation?

**D. Dramatically and Aesthetically**

God is portrayed in Gen 1–2 as a Master Designer, creating dramatically and aesthetically. We have already noted in the previous section how God “formed” the man like a potter and “designed/built” the woman like an architect. When He made this world, He surely could have created it completed in an instant if He had chosen to do so, but He instead dramatically choreographed the creation pageant over six days. Note the aesthetic symmetry of the very structure of God’s creation in space and time, similar to the Hebrew aesthetic technique of synthetic parallelism, in which a series of words/acts/scenes are completed by a matching series.

**Introduction (Gen 1:1)**

Gen 1:2	<i>tohû</i> (“unformed”)	<i>bohû</i> (“unfilled”)
Gen 1:3ff.	Forming	Filling
	a. light	a <sup>1</sup> . luminaries
	b. sky and waters separated	b <sup>1</sup> . inhabitants of sky and water
	c. dry land and vegetation	c <sup>1</sup> . inhabitants of land, animals and man

Conclusion (Gen 2:2–3):  
The Sabbath—A Palace in Time!

God is both scientist and artist!

**E. In the Span of Six Days**

We have already discussed the literal six-day creation week under the section of the “when” of creation, but this concept is also an important component of the “how” of creation. On one hand, according to Gen 1, God’s method of creation is not an instantaneous “timeless” act in which all things described in Gen 1–2 in one momentary flash suddenly appeared. Contrary to the suppositions of Greek dualistic philosophy, which controlled the worldview of early Christian thinkers such as Origen and Augustine (and still underlies the methodology of Catholic, Protestant, and modern thought), God is not essentially “timeless” and unable to enter into spatio-temporal reality.<sup>86</sup> Gen 1–2 underscores that God actually created in time as well as in space, creating the raw materials of the earth during a period of time before creation week, and then deliberately and dramatically forming and filling these inorganic, pre-fossil materials throughout the six-day creation week. Thus Gen 1–2 serves as a strong bulwark against Greek dualistic thought and calls the contemporary interpreter

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<sup>86</sup> See, e.g., Fernando L. Canale, “Philosophical Foundations and the Biblical Sanctuary,” *AUSS* 36 (1998): 183–206, for further elaboration.

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back to radical biblical realism in which God actually enters time and space, creates in time and space, and calls it “very good.”

On the other hand, the method of creation in Gen 1–2 is also a powerful witness against accepting the creation week as occupying long ages of indefinite time, as claimed by proponents of progressive creationism. We have found that Gen 1:3ff. clearly refers to the creation week as six literal, historical, contiguous, creative, natural twenty-four-hour days. We have further concluded that all life on planet earth was created during this creation week (days three through six), and not before. Any attempt to bring long ages into the creation week, either through some kind of progressive creation or some other non-literal, non-historical interpretation of the creation week of Gen 1, is out of harmony with the original intention of the text. We have cited numerous quotations from both critical and conservative scholars that acknowledge this fact. Likewise, we have seen that Gen 1 demands an interpretation of rapid creation for the life forms on this planet—plants on day three, fish and fowl on day five, and the other animals and humans on day six. There is no room in the biblical text for the drawn-out process of evolution (even so-called “rapid evolution”!) to operate as a methodology to explain the origin of life during creation week.

**IV. The “What”: “In the Beginning  
God Created *the Heavens and the Earth*”**

**A. “The Heavens and the Earth”—The Universe: Gen 1:1**

Some have taken the phrase in Gen 1:1 “the heavens and the earth” to refer to this earth and its surrounding heavenly spheres (i.e., the atmosphere and beyond to include the solar system). This interpretation is following the contextual lead of the usages of the terms “heaven” and “earth” later in Gen 1, and cannot be absolutely ruled out as a possible way of understanding this phrase.<sup>87</sup> However, significant differences may be noted between the use of the phrase “the heavens and the earth” in the opening verse of Gen 1 compared to the use of the two terms “heavens” and “earth” separately later in the chapter. In Gen 1:1, both “the heavens” and “the earth” contain the article, whereas when these are named in Gen 1 (vv. 8 and 10), they do not have the article. More importantly, in Gen 1:1 one encounters a dyad of terms (“the heavens and the earth”), whereas later in Gen 1 one finds a triad: “heavens,” “earth,” and “sea” (vv. 8, 10).

There is wide recognition among Genesis commentators that when used together as a pair in the Hebrew Bible, the dyad of terms “the heavens and the earth” constitute a merism for the totality of all creation, i.e., the entire universe, and that such is the case also in Gen 1:1.<sup>88</sup> As Sailhamer puts it, “By linking

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<sup>87</sup> Until recently, I have interpreted the phrase in this way. See e.g., William Shea, “Creation,” in *Handbook of Seventh-day Adventist Theology*, ed. Raoul Dederen (Hagerstown, MD: Review and Herald, 2000), 420.

<sup>88</sup> A merism (or merismus) is a statement of opposites denoting totality. The usage of this compound phrase to indicate “the all” of the universe is explicit in such OT texts as Isa 44:24 and



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these two extremes into a single expression [‘the heavens and the earth’], the Hebrew language expresses the totality of all that exists.”<sup>89</sup> I am persuaded that this observation is valid. Thus Gen 1:1, as we have already intimated in an earlier section of this paper, refers to the creation of the entire universe, which took place “in the beginning” prior to the six-day creation week of Gen 1:3ff.

We repeat here, for emphasis, that this implies *creatio ex nihilo*, creation out of nothing; God is not indebted to pre-existing matter. We also repeat here for emphasis that the whole universe was not created in six days, as some ardent creationists have mistakenly claimed. Furthermore, if the “passive gap” interpretation is correct (as I have argued above), then the creation of “the heavens and the earth” during the span of time termed “in the beginning,” encompassed the whole galactic universe, *including* the planet earth in its “unformed and unfilled” condition (Gen 1:2).<sup>90</sup>

The whole process of creating “the heavens and the earth” is finished or completed at the end of the creation week. This is indicated by the author by repeating the merism “the heavens and earth” twice again at the conclusion to the first creation account: “Thus the heavens and the earth and all their host were finished” (Gen 2:1). “This is the history of the heavens and the earth when they were created” (Gen 2:4a). The creation of the whole universe is finally completed when the creation week of this earth is finished! The fact that the creation

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Joel 3:15–16; and implicit in such passages as Gen 14:19, 22; 2 Kgs 19:15; 1 Chr 29:11; 2 Chr 2:12; Ps 115:15; 121:2; 124:8; 134:3; Jer 23:24; 32:17; 51:48. Cf. the precise parallel to Gen 1:1 in John 1:1–3, where it seems to clearly refer to all created things in the universe. Among the preponderance of commentators who see “the heavens and the earth” as a merism for “universe” in Gen 1:1, see, e.g., G. Ch. Aalders, *Genesis*, Bible Student’s Commentary, trans. William Heynen (Grand Rapids, MI: Zondervan, 1981), 1:52; Cassuto, 20; Hamilton, 103; Keil, 1:47; Leupold, 41; Mathews, 140, 142; Sailhamer, *Genesis Unbound*, 55–56; Nahum M. Sarna, *Genesis*, The JPS Torah Commentary (Philadelphia, New York, Jerusalem: Jewish Publication Society, 1989), 5; von Rad, *Genesis*, 48; Waltke, *Genesis*, 59; and Wenham, 15. This is contra, e.g., Cottrell, 197, who claims that the phrase “the heavens and the earth” refer only to “the atmospheric heavens, or sky, and to the surface of the earth” and never to “the universe beyond our solar system or to the earth as a planet as we understand them today.”

<sup>89</sup> Sailhamer, *Genesis Unbound*, 56.

<sup>90</sup> It has been widely suggested that the term “the heavens and earth” always refers to a *completed* and *organized* universe in Scripture, and thus cannot include the creation of an “unformed and unfilled” earth (so, e.g., Waltke, *Genesis*, 60). But several recent studies have shown that the essential meaning of “the heavens and earth” is not completion and organization, but totality. See, e.g., Wenham, 12–15; Rooker, 319–320. Thus, while the term “heavens and earth” may indeed refer to an organized, finished universe elsewhere in Scripture, this need not control the unique nuance here in Gen 1:1. Mathews, 142, clarifies: “Although the phrase ‘heavens and earth’ surely points to a finished universe where it is found elsewhere in the Old Testament, we cannot disregard the fundamental difference between those passages and the context presented in Genesis 1 before us, namely, that the expression may be used uniquely here since it concerns the exceptional event of creation itself. To insist on its meaning as a finished universe is to enslave the expression to its uses elsewhere and ignore the contextual requirements of Genesis 1. ‘Heavens and earth’ here indicates the totality of the universe, not foremostly an organized, completed universe.”

week is depicted as the “finishing touch,” as it were, of the process of creating the whole universe, may hint at the special significance attached by God to the creation of this particular planet. This would further illuminate the special attention given to the creation of this planet by all the onlooking “sons of God” and “morning stars” (unfallen inhabitants of the universe, Job 38:7).

**B. “Heaven, Earth, and Sea”—The Global Habitats of Our Planet:  
Gen 1:8–11; Exod 20:11**

By contrast to the spotlight on the entire universe in Gen 1:1 (and again in Gen 2:1, 4a), using the dyad “the heavens and the earth,” in v. 2 the reference to “the earth” by itself (in fact, placing the noun “the earth” in the emphatic position of first word in the Hebrew clause) moves the focus of this verse and the rest of the chapter to this planet.<sup>91</sup> The use of the triad “heavens,” “earth,” and “seas” in Gen 1:8–11 describes the basic three-fold habitat of our planet: sky, water, and land. This three-fold habitat was the object of God’s creative power during the six days of creation. Likewise, Exod 20:11 indicates that in six days God created “the heavens and earth and the sea”—the habitats of this planet, not the galactic universe.<sup>92</sup> Thus Gen 1:1 refers to God’s creation of the whole universe, while the remainder of Gen 1 and Exod 20:11 describe the creation of the three habitats of Planet Earth.

Sailhamer insightfully points out the distinction between Gen 1:1 (where the dyad “heavens and earth” refers to the entire universe) and the shift to this earth in the remainder of Gen 1. Unfortunately, however, he then goes astray when he suggests that the term *hā’āreṣ* “the earth” in Gen 1:2 and throughout the account of the six-day creation (some 20 times in Gen 1:2–2:1) and the fourth commandment (Exod 20:11) be translated “the land,” and that it refers only to the localized promised land for Israel, and not to the whole planet’s land

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<sup>91</sup> So Mathews, 142: “The term ‘earth’ (*ereṣ*) in v. 1 used in concert with ‘heaven,’ thereby indicating the whole universe, distinguishes its meaning from ‘earth’ (*ereṣ*) in v. 2, where it has its typical sense of ‘terrestrial earth.’”

<sup>92</sup> Sailhamer is to be credited with highlighting the difference between the dyad (“the heavens and the earth”) in Gen 1:1 and the triad “heavens, earth, seas” in the remainder of Gen 1, and pointing out that the former has reference to the whole universe. (See, Sailhamer, *Genesis Unbound*, 47–59.) However, as noted below, Sailhamer takes a restricted, localized view of the meaning of the triad (which he translates as “sky, land, and seas”), a view which I argue is not supported by the context. In a private conversation, Randy Younker first pointed me to this distinction between the dyad and triad of terms and suggested (with Sailhamer) that the dyad (“heavens and earth”) of Gen 1:1 refers to the entire universe, but (against Sailhamer) that the triad (“heavens,” “earth,” and seas,”) mentioned later in Gen 1 refers to the world-wide creation of Planet Earth’s three habitats during creation week. He further pointed out that Exod 20:11 utilizes the triad, not the dyad, and thus refers to the creation of the habitats on this planet, and not to the creation of the whole universe. See now, Randall W. Younker, *God’s Creation: Exploring the Genesis Story* (Nampa, ID: Pacific Press, 1999), 33–35. I would add that Exod 31:17, which only contains the two terms “the heavens and the earth,” is undoubtedly to be taken as a shortened form of the full triad in the fourth commandment to which this passage clearly alludes.

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surface. Likewise, he strays when he maintains that the term *haššāmayim* “the heavens” in the Gen 1 account of creation week should be translated “the sky” and refer only to the region above the localized promised land.<sup>93</sup>

I am convinced that the context, replete with global (i.e., planet-wide) terms throughout Gen 1, makes Sailhamer’s restricted interpretation of this chapter highly unlikely. It seems extremely arbitrary, and in fact virtually impossible, to limit the descriptions of creation week in Gen 1:3ff. to the land between the Euphrates and the River of Egypt. How can the dividing of the light from the darkness (v. 3) occur only in the promised land? How can the waters be divided from the waters (v. 6) only over the land promised to Israel? How can the waters be gathered into one place called “Seas” (v. 10) in the promised land? How can the greater light rule the day and the lesser light the night only in a localized area? How can the birds fly across the sky (v. 17) only above the promised land? How can the creation of the sea creatures be for the localized area of the future boundaries of Israel? How can the command given to humans to “fill the earth” and their charge to have dominion over “all the earth” be limited only to one localized area? All of this language is clearly global, not just limited to a small geographical area.

That the language of creation in Gen 1:3ff. is global in extent is confirmed in succeeding chapters of Gen 1–11. The trajectory of major themes throughout Gen 1–11—creation, Fall, plan of salvation, spread of sin, judgment by Flood, God’s covenant with the earth—are all global in their scope. Elsewhere I have shown the many occurrences of global terms in the Flood narrative, including several intertextual linkages with Gen 1.<sup>94</sup> Moreover, after the Flood, the precise command given to Adam is repeated to Noah: “Be fruitful and multiply and fill the earth” (Gen 9:1, 7; cf. Gen 1:28). Noah was not even in the promised land when this command was given, and the following chapter of the Table of Nations (Gen 10) indicates that this command was to be fulfilled globally, not just in a localized area (see especially 10:32, “the nations were divided *on the earth* after the flood”). This global language continues in Gen 11, where the “whole earth” involves all the languages of the earth (11:8–9). There can be little doubt that throughout Gen 1–11 these references, and many others, involve global, not localized language, and the creation of “the earth” in Gen 1:3ff. must perforce also be global in extent.

This conclusion is also substantiated by comparing the creation account of Gen 1 to its parallel account in Prov 8:22–31. References to *hā’āreš* (“the earth”) in Prov 8:23, 26, 29 are in context clearly global in extent (e.g., “foundations of the earth,” v. 29), and this is demonstrated by the parallelism between

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<sup>93</sup> Sailhamer, *Genesis Unbound*, 47–59.

<sup>94</sup> Richard M. Davidson, “Biblical Evidence for the Universality of the Genesis Flood,” *Origins* 22/2 (1995): 58–73; revised edition, in *Creation, Catastrophe, and Calvary: Why a Global Flood is Vital to the Doctrine of Atonement*, ed. John T. Baldwin (Hagerstown, MD: Review and Herald, 2000), 79–92.

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*hā'āreš* (“the earth”) and the indisputably global term (*tēbēl*) “globe” in v. 26. Thus, we cannot accept Sailhamer’s suggestion that “the earth” and “the heavens” should be translated “land” and “sky” in Gen 1:2ff. and refer to less than a global creation.

**C. The Two Creation Accounts in Gen 1–2:  
Identical, Contradictory, or Complementary?**

Sailhamer has also mistakenly identified the global creation week of Gen 1 with the creation of the localized Garden of Eden in Gen 2:4bff.<sup>95</sup> Contra Sailhamer, it should be recognized that in the complementary creation account of Gen 2:4b–25, the introductory “not yet” verses (5 and 6) continue the global usage of “the earth” of the Gen 1 account in describing the four things that had not yet appeared on the surface of the planet before the entrance of sin (thorns, agriculture, cultivation/irrigation, and rain). Then Gen 2:7, describing the creation of the man, gives the time frame of the Gen 2 creation account, i.e., corresponding with the sixth day of the creation week of Gen 1. The rest of Gen 2 depicts in more detail the activities of God on the sixth day of creation week.

Others have gone to the opposite extreme from Sailhamer and have posited that Gen 1–2 present radically different and contradictory accounts. Such a position often betrays a belief in the Documentary Hypothesis and two different redactors at work in the two accounts. Jacques Doukhan’s dissertation and William Shea’s literary analysis, among other important studies, provide evidence that Gen 1 and 2 are the product of a single author and present complementary theological perspectives on the creation of this world, with Gen 1 providing a portrayal of the global creation as such, and Gen 2 focusing attention on humanity’s personal needs.<sup>96</sup> Randy Younker discusses in detail alleged contradictions between the Gen 1 and Gen 2 creation accounts and shows how the supposed contradictions actually constitute complementarity in presenting a unified and integrated portrayal of creation.<sup>97</sup>

**D. Light, the “Greater” and “Lesser” Lights, and the Stars**

On the first day of Creation God said, “Let there be light,’ and there was light” (1:3). However, on the fourth day of Creation week God ordered into existence “lights in the firmament of the heavens to give light on the earth . . . to rule over the day and over night, and to divide the light from the darkness” (1:15, 18). What was the source of the light that illumined our planet before the fourth day?

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<sup>95</sup> Sailhamer, *Genesis Unbound*, 69–77.

<sup>96</sup> Doukhan, *The Genesis Creation Story*, *passim*. See also William H. Shea, “The Unity of the Creation Account,” *Origins* 5 (1978): 9–38; idem, “Literary Structural Parallels between Genesis 1 and 2,” *Origins* 16 (1989): 49–68.

<sup>97</sup> See Randy Younker, “Genesis 2: A Second Creation Account?” in *Creation, Catastrophe, and Calvary*, 69–78.

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One possibility is that God's presence was the source of light on the first day of Creation. This is already hinted at in the literary linkage between Gen 1:4 and Gen 1:18. In v. 4 God Himself is the One who "divided the light from the darkness," while in v. 18 it is the luminaries that are "to divide the light from the darkness." By juxtaposing these two clauses with exactly the same Hebrew words and word order, the reader is invited to conclude that God Himself was the light source of the first three days, performing the function which He gave to the sun and moon on the fourth day. Another implicit indicator of this interpretation is found in comparing Gen 1 with Ps 104, a stylized account of the creation story following the same order of description as in the creation week of Gen 1. In the section of Ps 104 paralleling the first day of creation (v. 2), God is depicted as covering Himself "with light as with a garment," thus implying that God is the light source of the first days of creation week.<sup>98</sup> During the first three days, God Himself could have separated the light from the darkness, just as He did at the Red Sea (Exod 14:19–20). God Himself being the light source for the first part of the week emphasizes the theocentric (God-centered), not heliocentric (sun-centered) nature of creation, thus forestalling any temptation to worship the sun or moon that might have been encouraged if the luminaries were the first object created during the Creation week.

A second option suggests that the sun was created before the fourth day, but became visible on that day (perhaps as a vapor cover was removed). This would explain the evening/morning cycle before day four. John Sailhamer argues that the Hebrew syntax of Gen 1:14 differs from the syntactical pattern of the other days of creation, in that it contains the verb "to be" (in the jussive) plus the infinitive, whereas other days have only the verb without the infinitive. Thus, he suggests that verse 14 should read, "Let the lights in the expanse be for separating. . ." (not as usually translated, "Let there be lights in the expanse. . ."). Such a subtle but important syntactical shift may imply, Sailhamer suggests, that the lights were already in existence before the fourth day.<sup>99</sup> The "greater" and "lesser" lights could have been created "in the beginning" (before Creation week, v. 1) and not on the fourth day. On the fourth day they were given a purpose, "to separate the day from the night" and "to mark seasons and days and years."<sup>100</sup>

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<sup>98</sup> Doukhan, *The Genesis Creation Story*, 83–90.

<sup>99</sup> "The construction of the Hebrew sentence in verse 14 does not imply that God made the heavenly lights on the fourth day. It does not say, 'and God said "Let there be lights in the expanse to divide between the day and the night. . ."' Rather, it says, 'And God said, "Let the lights in the expanse be fore dividing between the day and night. . ."' Do you see the difference? The text does not say God *created* the lights in verse 14, but rather that God *explains why* He created the lights in the expanse—to divide between the day and night, etc." (*Genesis Unbound*, 252).

<sup>100</sup> For further discussion, see Sailhamer, "Genesis," 2:33–34; idem, *Genesis Unbound*, 129–135. Sailhamer cites Gesenius-Kautzsch-Cowley *Hebrew Grammar*, ¶114h in support of this possible difference in syntactical nuance.

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Sailhamer's suggestion does rightly call attention to a possible difference of syntactical nuancing with regard to the wording of the fourth day, but is not without its own difficulties.<sup>101</sup> Most serious is that Sailhamer views v. 16 as not part of the report of creation, but as commentary pointing out that it was God (and not anyone else) who had made the lights and put them in the sky. I find this objection overcome if one accepts a variant of this view in which v. 16 is indeed part of the report and not just commentary. According to this variant, the sun and moon were created before Creation week (v. 1), as Sailhamer suggests, but (unlike Sailhamer's view) they were created in their *tohû* ("unformed") and *bohû* ("unfilled") state as was the earth (cf. v. 2), and on the fourth day were further "made" (*āśah*) into their fully-functional state (v. 16).

Perhaps a combination of the above two options is possible. The sun and moon may have been created (in their *tohû-bohû* "unformed-unfilled" state) before creation week, but God Himself was the light source until day four.

What about the stars? Were they created on the fourth day, or before? In the second option mentioned above, we noted how the Hebrew syntax of Gen 1:14 seems to indicate that the sun and moon were already in existence before the fourth day and thus could have been created "in the beginning" (before Creation week, v. 1). The same would also be true of the stars. Furthermore, the syntax of Gen 1:16 doesn't require the creation of the stars on day 4, and in fact, as no function is assigned to the stars, such as given to the sun and moon, their mention may be seen as a parenthetical statement added in this verse to complete the portrayal of the heavenly bodies—"he made the stars also"—without indicating when.

Colin House has argued that in Gen 1:16 the stars are presupposed as already in existence before creation week, and that this is indicated by the use of the Hebrew particle *w'ēt*, which he suggests means "together with." Thus the Hebrew of Gen 1:16c should read: "the lesser light to rule the night *together with the stars*."<sup>102</sup> Several passages of Scripture suggest that celestial bodies and intelligent beings were created before life was brought into existence on this planet (Job 38:7; Ezek 28:15; 1 Cor 4:9; Rev 12:7-9; etc.), and this would correlate with the implications that emerge from Gen 1:16.

### E. Death/Predation before Sin?

Do the Genesis creation accounts allow for the possibility that death/predation existed on planet earth before the Fall and the entrance of sin

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<sup>101</sup> See e.g., Shaw, 211-212, for a critique of Sailhamer's view.

<sup>102</sup> See Colin House, "Some Notes on Translating אֵת הַכּוֹכָבִים [w'ēt *hakōkabîm*] in Gen 1:16," *AUSS* 25 (1987): 241-248. This latter view is appealing, but has some (not unsurmountable) syntactical obstacles. Another view suggests that the "stars" here in Gen 1:16 actually refer to the planets, which were created on the fourth day. However, it does not seem likely that the Hebrew Bible distinguishes between the stars and planets, since there is only one Hebrew word for all these heavenly bodies.

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described in Gen 3? In answer to this question, we first must reiterate our conclusion regarding the “active gap” (or “ruin-restoration”) theory discussed under the “when” of creation. This theory, which allows for long ages of predation and death before the creation week described in Gen 1:3ff., cannot be grammatically sustained from the Hebrew text. Gen 1:2 simply cannot be translated, “The earth *became* without form and empty.” As we have seen above, there is room in the text for (and I believe the text actually favors) a “passive gap” in which God created the universe (“the heavens and the earth”) “in the beginning” before creation week (Gen 1:1); and the earth at this time was *tohû* (“unformed”) and *bohû* (“unfilled”) and “darkness was on the face of the deep.” But such description does not imply a negative condition of “chaos,” as has often been claimed, only that creation was not yet complete.<sup>103</sup> Furthermore, the terms *tohû* (“unformed”) and *bohû* (“unfilled”) in Gen 1:2 imply a sterile, uninhabited waste, with no life, including birds, animals, and vegetation.<sup>104</sup> So not only is there no death on this world before creation week, but there is no life! Gen 1:1–2 thus make no room for living organisms to be present upon planet earth before creation week, let alone death and predation.

According to Gen 1–2, death<sup>105</sup> is not part of the original condition or of God’s divine plan for this world. Jacques Doukhan’s insightful discussion of death in relation to Gen 1–2 reveals at least three indicators that support this

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<sup>103</sup> See especially Mathews, 140–144, for cogent arguments from the text that the flow in Gen 1:1–2:1 is from incomplete to complete and not from a chaos that opposes God to the conquering of these hostile forces. This flow is clear from the conclusion in Gen 2:1, where “the heavens and the earth” are now seen to be “finished” or “completed” [Heb. *klh*]. Mathews, 132, shows that the terms used in Gen 1:2 are not negative ones; darkness is not a symbol of evil in this context, but an actual entity that is later named (Gen 1:5). Mathews, 143, concludes, “the earth’s elements [Gen 1:2] are not portraying a negative picture, but rather a neutral, sterile landscape created by God and subject to his protection.” This uninhabitable landscape is incomplete, “awaiting the creative word of God to make it habitable for human life.” For an even more detailed defense of this position, see the three-part series of articles by Roberto Ouro, “The Earth of Genesis 1:2: Abiotic or Chaotic?” *Andrews University Seminary Studies* 36/2 (Autumn 1998): 259–276; 37/1 (Spring 1999): 39–53; 38/1 (Spring 2000): 59–67.

<sup>104</sup> See Tsumura, 42–43, 155–156.

<sup>105</sup> When we refer to death in the biblical sense, it is death in the animal and human world that is in view. The Hebrew Scriptures do not use the word “death” to refer to plants, and thus for the author of Genesis and his contemporaries, such experiences as the human (and animal) consumption of, for example, fruit, before the entrance of sin would not be seen to involve the death of the fruit. The issue of whether plant cells “died” when they were eaten before the Fall is a modern issue, not one dealt with by the biblical account. It is possible, however, that the creation account makes a distinction between the edible plants mentioned in Gen 1–2 and the “herb of the field” that was cultivated after sin (Gen 2:5; 3:18), the first being those plants from which fruit could be eaten while the plant itself continued to grow (i.e., our fruits, grains, nuts), and the second being the plants whose eating necessitated the termination of the growth of the plant itself (i.e., many of our vegetables).

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conclusion.<sup>106</sup> First, at each stage of creation, the divine work is pronounced “good” (Gen 1:4, 10, 18, 21, 25), and at the last stage it is pronounced “very good” (Gen 1:31). Humanity’s relationship with nature is described in positive terms of “dominion” (Heb. *rdh*), which is a covenant term without suggestion of abuse or cruelty.<sup>107</sup> The text explicitly suggests that animal or human death and suffering are not a part of the original creation situation, as it indicates the diet prescribed for both humans and animals to be the products of plants, not animals (Gen 1:28–30). This peaceful harmony is also evident in Gen 2, where animals are brought by God to the man to be named by him, thus implying companionship (albeit incomplete and inadequate) of the animals with humans (Gen 2:18).

A second indicator that death is not part of the picture in Gen 1–2 is the statement in Gen 2:4b–6 that at the time of creation the world was “not yet” affected by anything not good. Younker has shown that the four things that were “not yet” in these verses were all situations that came into the world as a result of sin: “(1) the need to deal with thorny plants, (2) the annual uncertainty and hard work of the grain crop, (3) the need to undertake the physically demanding plowing of the ground, and (4) the dependence on the uncertain, but essential life-giving rain.”<sup>108</sup> Doukhan points to a number of other terms in the Genesis creation narratives that constitute a prolepsis—the use of a descriptive word in anticipation of its being applicable—showing what is “not yet” but will come. Allusions to death and evil, which is “not yet,” may be found in the reference to “dust” (Gen 2:7; to which humans will return in death; cf. 3:19); the mention of the tree of knowledge of good and evil (Gen 2:17, in anticipation of the confrontation with and experiencing of evil; cf. 3:2–6, 22); the human’s task to “guard” (*šāmar*) the garden (Gen 2:15, implying the risk of losing it; cf. 3:23, where they are expelled and the cherubim “guard” *šāmar* its entrance); and the play on words between “naked” and “cunning” (Gen 2:25; 3:1; cf. 3:7, the nakedness resulting from sin).<sup>109</sup> Though alluded to by prolepsis, the negative “not good” conditions, including death, are “not yet.”

A third indicator that death was not prior to sin and part of the divine plan is that Gen 3 portrays death as an accident, a surprise, which turns the original picture of peace and harmony (Gen 1–2) into conflict. Within Gen 3, after the Fall, we have all of the harmonious relationships described in Gen 1–2 disrupted: between man and himself (guilt, a recognition of “soul nakedness” that cannot be covered by externals; Gen 3:7–10); between humans and God (fear; Gen 3:10), between man and woman (blame/discord; Gen 3:12, 13, 16, 17), between humans and animals (deceit, conflict; Gen 3:1, 13, 15), and between

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<sup>106</sup> Jacques Doukhan, “Where did Death Come From? A Study in the Genesis Creation Story,” *Adventist Perspectives* 4/1 (1990): 16–18.

<sup>107</sup> See Ps 68:28; 2 Chr 2:10; Isa 41:2. It is clear that no cruelty is implied in this term, because when one is said to have dominion with cruelty, the term “with cruelty” is added (Lev 25:43, 46, 53).

<sup>108</sup> Younker, “Genesis 2,” 76–77.

<sup>109</sup> Doukhan, “Where Did Death Come From?” 17.



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humans and nature (decay; Gen 3:17–19). Now death appears, immediately (as an animal must die to provide covering for the humans' nakedness, Gen 3:21), and irrevocably (for the humans who have sinned, Gen 3:19). The upset of the ecological balance is directly attributed to the humans' sin (Gen 3:17–18). The blessing of Gen 1–2 has become the curse (Gen 3:14, 17).

A number of commentators have pointed out that one of the major reasons for God's judgment upon the antediluvian world with the Flood was the existence of violence on the earth: "The earth also was corrupt before God, and the earth was filled with violence [*hāmās*]" (Gen 6:11). The earth's being "filled with violence [*hāmās*]" is repeated again in v. 13. The use of the term *hāmās* undoubtedly includes the presence of brutality and physical violence, and with its subject being "the earth," probably refers to the violent behavior of both humans and animals (note the post-Flood decrees that attempt to limit both human and animal violence, Gen 9:4–6). Divine judgment upon the earth for its violence (*hāmās*) implies that predation, which presupposes violence, and death, the all-too-frequent result of violence, were not part of the creation order.

Intertextual allusions to Gen 1–2 later in Genesis confirm that death is an intruder coming as a result of sin, and not occurring before the Fall. Doukhan points to the striking intertextual parallels between Gen 1:28–30 and 9:1–4, where God repeats to Noah the same blessing as to Adam, using the same terms and in the same order. But after the Flood, instead of peaceful dominion (as in creation), there would be fear and dread of humans by the animals, and instead of a vegetarian diet for both humans and animals (as in creation), humans were allowed to hunt and eat animals. The juxtaposing of these two passages reveals that the portrayal of conflict and death is not regarded as original in creation, but organically connected to humanity's fall.

Perhaps the most instructive intertextual allusions to Gen 1–2 occur in the Old Testament Hebrew prophets and in the last prophet of the New Testament (the book of Revelation); these messengers of God were inspired to look beyond the present to a future time of salvation, pictured as a re-creation of the world as it was before the Fall. This portrait, drawn largely in the language of a return to the Edenic state, explicitly describes a (re)new(ed) creation of perfect harmony between humanity and nature, where once again predation and death will not exist:

The wolf also shall dwell with the lamb,  
The leopard shall lie down with the young goat,  
The calf and the young lion and the fatling together,  
And a little child shall lead them.

The cow and the bear shall graze;  
Their young ones shall lie down together;  
And the lion shall eat straw like the ox.

The nursing child shall play by the cobra's hole,

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And the weaned child shall put his hand in the viper's den.  
They shall not hurt nor destroy in all My holy mountain.  
For the earth shall be full of the knowledge of the Lord  
As the waters cover the sea. (Isa 11:6–9)

He will swallow up death forever,  
And the Lord God will wipe away tears from all faces;  
The rebuke of His people  
He will take away from all the earth;  
For the Lord has spoken. (Isa 25:8)

I will ransom them from the power of the grave;  
I will redeem them from death.  
O Death, I will be your plagues!  
O Grave, I will be your destruction! (Hos 13:14)

For behold, I create a new heavens and a new earth;  
And the former shall not be remembered or come to mind. (Isa 65:17)

For as the new heavens and the new earth  
Which I will make shall remain before Me, says the Lord,  
So shall your descendants and your name remain. (Isa 66:22)

I am He who lives, and was dead, and behold I am alive forevermore,  
Amen.  
And I have the keys of Hades and Death. (Rev 1:18)

Then Death and Hades were cast into the lake of fire. (Rev 20:14)

And I saw a new heaven and a new earth,  
For the first heaven and the first earth had passed away,  
And there was no more sea. . . .  
And God will wipe away every tear from their eyes;  
There shall be no more death, nor sorrow, nor crying;  
And there shall be no more pain,  
For the former things have passed away. (Rev 21:1, 4)<sup>110</sup>

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<sup>110</sup> For recent studies of these and related passages, discussing the return to the Gen 1–2 paradise without death, see especially several chapters in William P. Brown and S. Dean McBride, Jr., ed., *God Who Creates: Essays in Honor of W. Sibley Towner* (Grand Rapids: Eerdmans, 2000). For example, Gene M. Tucker, “The Peaceable Kingdom and a Covenant with the Wild Animals,” 215–225, discusses Isa 11:6–9 and Hos 2:18 [2:20]; note his statement regarding Isa 11 (216): “The text presumes a negative evaluation of the world as it is, filled with predators and prey, violence and death. One implication of the passage, to put it bluntly, is that there will be a time when the world will be made safe for domestic animals and children.” Again, David L. Bartlett, “Creation Waits with Eager Longing,” 229–250, deals with such Pauline passages as 1 Cor 15:20–28; 2 Cor 5:16–21; Gal 5:1–6; Rom 5:12–14; and 8:18–25. Note his comment on the last mentioned passage (243–4): “Again, this is a reading of the Genesis story in light of Paul’s questions. . . . Creation before Adam’s disobedience was not subject to bondage, to futility, to decay; it was free, purposeful, spared the threats of mortality . . . The lost good of creation is (will be) restored purer and brighter than before.” A final chapter by John T. Carroll, “Creation and Apocalypse,” 251–260, discusses the new

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creation and paradise restored in the book of Revelation. Note his reference to the end of death (255): “John’s visionary excursion to the eschatological Jerusalem is in important respects a return to Paradise. The ‘new heaven and new earth’ fashioned by God who ‘makes all things new’ (Rev 21:1, 5, echoing Isa 43:19; 65:17; 66:22) still works with the raw materials of the old cosmos. The new creation improves the old but does not substitute one cosmos for another. . . . Several features of the old order are conspicuous by their absence. Death will no longer exist (and with it, crying or pain: Rev 21:2), a reality symbolized by the presence of the tree and water of life.”

Other contemporary theologians refer to these passages to undergird their conclusion that the “new creation” will return to a state without death. See, e.g., John Polkinhorne, *The God of Hope and the End of the World* (New Haven: CT: Yale UP, 2002), 62–63: “We are even told that at this great feast [at the end of the world] God will ‘swallow up death for ever’ (Isaiah 25:8).” Again (115): “Yet it seems a coherent hope to believe that the laws of its nature [the new creation] will be perfectly adapted to the everlasting of that world where ‘Death will be no more; mourning and crying and pain will be no more, for the first things have passed away’ (Revelation 21:4), . . .” As a last sample (123): “If that is the case, lionhood will have also to share in the dialectic of eschatological continuity and discontinuity, in accordance with the prophet vision that in the ‘new heavens and the new earth . . . the wolf and the lamb shall feed together, the lion shall eat straw like the ox’ (Isaiah 65:17 and 25).”

There are numerous other concerns related to the “what” of creation in Gen 1–2, about which I have written elsewhere, and will only list here. These include, among others:

1. Humankind in the image of God, both in outward form and inward character. (Richard M. Davidson, “The Theology of Sexuality in the Beginning: Genesis 1–2,” *AUSS* 26 [1988]: 8–9);
2. The equality of man and woman in Gen 1 and 2 (*ibid*, 7, 13–19);
3. A theology of marriage (“leave,” “cleave,” “become one flesh”) in Gen 2:24 (*ibid*, 20–22);
4. The character of the Garden of Eden as a sanctuary-temple, with Adam and Eve as the priestly officiants “to serve” (*abad*) and “to guard” (*šamar*) (Gen 2:15) their environment—seventeen different lines of biblical evidence (Davidson, “Cosmic Metanarrative,” 108–111);
5. The Sabbath as a holy institution rooted in, and a memorial of, the six-day Creation (Gen 2:1–3)—see *idem*, *A Lovesong for the Sabbath* (Hagerstown, MD: Review and Herald, 1988).

## **Bits and Particles: Information and Machines Sufficient to Infer an Intelligent Designer**

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### **Stories**

*We live in the Age of Science. Scientism is our world view, our mythic story about who we are, where we came from, and where we are going. As such, scientists are our preeminent storytellers, the myth-makers of our epoch.<sup>1</sup>—Michael Shermer*

It's the end of the story, and—after many adventures turning back stampeding cattle, fighting villains, and rescuing helpless children—our cowboy hero canters on his faithful horse toward a small log cabin. At the cabin door a raven-haired beauty watches his approach. A warm smile spreads across her face and green eyes sparkle in evening sunlight. Above the rider a light begins to glow, growing rapidly brighter until, in a blinding flash, a small meteor vaporizes horse and rider, leaving only a crater and a wisp of smoke near the cabin door.

Most people find the culmination of this story unsatisfying. They want the cowboy and beauty to ride off into the sunset and blissful domestic life together. Heroes should live long prosperous lives, but in reality that does not always happen. Real stories frequently end in tragedy. Sometimes villains end up with peaceful, affluent lives and real heroes are left, like Jeremiah, asking why the wicked prosper.<sup>2</sup> The stories we like reflect what we want, but reality is not always so kind. To a large degree science involves constructing stories about the way reality is. When doing this, it is always tempting to construct these stories in a way that reflects more our wishes about reality than the way things actually are.

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<sup>1</sup> M. Shermer, "Darwin's Duomo and Gould's Pinnacle." *E-skeptic* for April 14, 2002.

<sup>2</sup> Jeremiah 12:1

## STANDISH: BITS AND PARTICLES

Stories have tremendous power to explain reality and have been used for this purpose in all cultures and by proponents of all worldviews. The way reality is viewed can be subdivided into two major categories reflecting the worldviews from which they spring: views that exclude supernatural influence on the material world and views that welcome involvement of the supernatural. For convenience, belief that the material world is all that exists and natural laws account for all of reality may be called either materialism or naturalism, while belief that reality transcends nature may be called supernaturalism. In modern Western culture, the story of evolution is used as a way of explaining reality while excluding God from involvement in the material world. The word evolution is loaded with much baggage, so it requires careful definition. In this case, the story of evolution means that matter, associating together by chance and obeying natural laws, resulted in the universe and life; in short, all of reality. The explanatory power of this story is strongly promoted by a small intelligentsia and is not a new phenomenon. The Roman poet and popularizer of Epicurean philosophy Titus Lucretius Carus eloquently outlined this story of evolution c. 55 BC:

The atoms did not intend to intelligently place themselves in orderly arrangement, nor did they negotiate the motions they would have, but many atoms struck each other in numerous ways, carried along by their own momentum from infinitely long ago to the present. Moving and meeting in numerous ways, all combinations were tried which could be tried, and it was from this process over huge space and vast time that these combining and recombining atoms eventually produced great things, including the earth, sea, and sky, and the generation of living creatures.<sup>3</sup>

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<sup>3</sup> This is my own translation of the original Latin as printed in Titus Lucretius Carus, circa 55 B.C., *De Rerum Natura*, Book 5, lines 416-31. *Lucretius: On the Nature of Things*, trans. W. H. D. Rouse, rev. Martin F. Smith (Cambridge, MA: Harvard UP, 1992). The Latin text is reproduced below:

416 Sed quibus ille modis coniectus materiai  
417 fundarit terram et caelum pontique profunda,  
418 solis sunai cursus, ex ordine ponam.  
419 nam certe neque consilio primordia rerum  
420 ordine se suo quaeque sagaci mente locarunt  
421 nec quos quaeque darent motus pepigere profecto,  
422 sed quia multa modis multis primordial rerum  
423 ex infinito iam tempore percita plagis  
424 ponderibusque suis consuerunt concita ferri  
425 omnimodique coire atque omnia pertemptare,  
426 quacumque inter se possent congressa creare,  
427 propterea fit uti magnum volgata per aevom,  
428 omne genus coetus et mortus experiundo,  
429 tandem convenient ea quae convecta repente  
430 magnarum rerum fiut exordia saepe,

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To be sure that his readers understood that everything, including the living creatures, resulted from natural and not supernatural causes, Lucretius explicitly stated this several times in his epic philosophical poem *De Rerum Natura*: “Nature can be seen to be free of overlords. Everything she does is completely by herself, without help from gods.”<sup>4</sup>

In its modern iteration, both scientists and theologians have acknowledged the explanatory power of evolution. For example, in a recent open letter to British Prime Minister Tony Blair condemning questioning of evolution in schools, a group of church leaders and scientists wrote, “Evolution is a scientific theory of great explanatory power, able to account for a wide range of phenomena in a number of disciplines.”<sup>5</sup>

But the evolution story is not unique in its explanatory power. Bible-believing Christians also have a story with power to explain the origin of life. This story invokes a supernatural intelligent cause for the origin of life and interaction of the Creator God with nature and humanity throughout the course of earth history. The explanatory power of this story runs deep and broad, providing a framework for understanding the origin of life, nature, man’s current condition, and future salvation. This gospel story has become the single most widely held view of reality.<sup>6</sup> Some might attribute this to wishful thinking—after all, the creation/salvation story has a very happy ending for believers. But the saga

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431 terrain maris et caeli generisque animantium.

<sup>4</sup> My own translation from the same source as above. Book 2, lines 190-192:

190 Natura videtur

191 Libera continuo, dominis privata superbis,

192 ipsa sua per se sponte omnia dis agere espers.

<sup>5</sup>This open letter was dated March 22, 2002, and signed by the following Church leaders and scientists: The Rt Revd Richard Harries, Bishop of Oxford; Sir David Attenborough FRS; The Rt Revd Christopher Herbert, Bishop of St Albans; Lord May of Oxford, President of the Royal Society; Professor John Enderby FRS, Physical Secretary, Royal Society; The Rt Revd John Oliver, Bishop of Hereford; The Rt Revd Mark Santer, Bishop of Birmingham; Sir Neil Chalmers, Director, Natural History Museum; The Rt Revd Thomas Butler, Bishop of Southwark; Sir Martin Rees FRS, Astronomer Royal; The Rt Revd Kenneth Stevenson, Bishop of Portsmouth; Professor Patrick Bateson FRS, Biological Secretary, Royal Society; The Rt Revd Crispian Hollis, Roman Catholic Bishop of Portsmouth; Sir Richard Southwood FRS, Past Biological Secretary, Royal Society; Sir Francis Graham-Smith FRS, Past Physical Secretary, Royal Society; Professor Richard Dawkins FRS.

<sup>6</sup> According to Adherents.Com (<http://www.adherents.com/>), approximately 2 billion people are Christians, making up 33 % of humanity. When Christians are combined with Muslims (1.3 billion, 22 %), who share a similar view of life’s origin, this group constitutes a simple majority of people living today. Even compensating for liberal traditions that may not subscribe to specific scriptural claims, it seems reasonable to suggest that creation is still the single most widely held view. Other religions, e.g., the 14 million adherents of Judaism, also hold to the creation tradition. In contrast, approximately 840 million (14 %) non-religious individuals—agnostics, secular humanists, and atheists—are currently living.

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of human history from creation to fall to redemption is not simply another “just so” story,<sup>7</sup> but the product of God’s revelation to mankind.

Because both creation and evolution provide explanations of reality, both can be checked to one degree or another against nature. The scientific method has proven to be a powerful tool for studying nature, resulting in numerous benefits to humanity. Science has proven its practical worth and, as a consequence, is held in high regard. Unfortunately, the authority of science has occasionally been hijacked to promote one worldview over another. Science may serve as a check when evaluating the credibility of stories that make claims about reality, but when doing this, the tentative nature of good science can never be ignored. Scientists do not reason from authority, but rather from empirical investigation of nature. When what some scientists extrapolate from discoveries made using the scientific method is interpreted as authoritative, confused understandings of nature can result. For example, the Bishop of Oxford recently responded with the following to critics of a radio broadcast he made condemning schools that teach creation along with evolution as part of their science curriculum:

The evidence for evolution is in general so overwhelming, in all sorts of overlapping areas of science, that the literalist creationist is forced to postulate a God who deliberately faked it in order to deceive us (tempt us?) into thinking that evolution happened. To the true believer, isn't it an insult to God to suggest that He is a charlatan, a faker? And isn't literalist creationism therefore a form of blasphemy?<sup>8</sup>

Interestingly, these words are not actually the Bishop’s: Richard Dawkins, Britain’s leading atheist, penned them at the Bishop’s request. While the Bishop of Oxford is perhaps to be commended for recruiting Richard Dawkins to bravely defend God against charges of charlatanism, both are confused about the evidence science provides. The evidence for evolution is not overwhelming, and it is not blasphemy to acknowledge God as the Creator.<sup>9</sup>

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<sup>7</sup> Rudyard Kipling wrote a collection of stories for his daughter that was published in 1902 as a volume entitled *Just So Stories*. In this collection of fanciful tales he explains how the camel got his hump as a result of saying “Humph” when asked to work. Similarly fanciful tales describe how the leopard got its spots, the whale got its throat, and so on. While just so stories provide explanations of the origin of things in nature, they have no basis in historical reality.

<sup>8</sup> The quoted material was sent out under the imprimatur of the Rt. Rev. Richard Harries, Bishop of Oxford. In a private communication with the Bishop’s office, the following reference was given: Richard Dawkins (2002) Unpublished letter to the Bishop of Oxford.

<sup>9</sup> Blasphemy is the act of putting one’s self in the place of God or in some way showing contempt or irreverence to God or some sacred thing. It is hard to understand why Dawkins chose this word, other than for its pejorative power. Whether God is a charlatan or not, assigning his creative power to the material world that He created clearly can be rightly defined as a form of blasphemy.

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**Logic**

*"Facts are meaningless. You could use facts to prove anything that's even remotely true!"<sup>10</sup> –Homer Simpson*

The logical foundation of science cannot be overemphasized if scientific evidence is to be viewed appropriately. Two types of reasoning are utilized in the scientific method. The first is inductive reasoning, in which theories that make sense of the information at hand are logically inferred from data. The theories that data suggest to individual scientists may be strongly influenced by beliefs that lie well outside the realm of empirical science. In addition, data can be picked and chosen to support any theory. Due to these two factors, inductive reasoning alone can be very misleading. For example, the theory that all humans are male can be supported by a data set of close to three billion men, but this does not make the theory true.

Deductive reasoning involves drawing logical testable hypotheses from theories previously generated using inductive reasoning. Logically reasoning from the "all humans are men" theory, residents of the Sisters of Mercy Convent in Auburn, California, must all be men. This hypothesis can be tested by traveling to Auburn and checking to see if the Sisters of Mercy are actually men. Based on the empirical outcome of this test, the theory that all humans are men would be disproved and could be removed from the list of possible ideas about the nature of humanity.

A single exception to the predictions of a theory is generally not enough to invalidate it. In the words of Karl Popper:

We say that a theory is falsified only if we have accepted basic statements which contradict it. This condition is necessary but not sufficient; for we have seen that non-reproducible single occurrences are of no significance to science. Thus a few stray basic statements contradicting a theory will hardly induce us to reject it as falsified.<sup>11</sup>

The very fact that science, as defined by Popper, must be falsifiable emphasizes the tentative nature of this endeavor. But a single anomalous datum or a few deviations from the predictions of a theory are not enough to cause its rejection. Falsification of theories requires significant deviations from what the theory predicts. As a consequence of this, ideas in science tend to change either slowly or rapidly, but not at a steady rate. The evolving concept of normal human body temperature illustrates gradual changes in understanding. Physicians and mothers once universally believed that 37°C (98.6°F) was the normal healthy human body temperature. Careful measurement, though, has revealed

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<sup>10</sup> This quote appears in many places on the internet and in print. <http://www.gdargaud.net/Humor/QuotesScience.html>

<sup>11</sup> Popper KR. 1968. *The Logic of Scientific Discovery*. Harper and Row, New York, 87.



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that healthy humans vary in temperature depending on the time of day, gender, age, and where on the body temperature is measured.<sup>12</sup> 37°C represents neither a mean nor mode of body temperatures measured orally or anally in healthy humans. Thus the old idea of a single ideal temperature has been modified to recognize a range of normal temperatures.

It is only when a large data set contradicts a theory that it should rightly be rejected in a Kuhnian paradigm shift.<sup>13</sup> A recent example of this is early termination of the Heart and Estrogen/progestin Replacement Study (HERS).<sup>14</sup> Much evidence was necessary to convince authors of the study that Hormone Replacement Therapy (HRT) does more harm than good. The study was continued for almost 3 years after an initial analysis of data indicated that HRT does little to protect against coronary heart disease, one of the main reasons for postmenopausal women to take hormones. To reject the theory that replacing estrogens after menopause would improve the health of women, significant evidence was necessary, evidence both indicating the expected therapeutic benefit does not occur and evidence indicating increased risk of problems due to blood clotting and cancer. In short, significant evidence was necessary to overwhelm the wish that the HRT story would have a positive ending with happier, healthier aging women.

#### Necessary or Sufficient?

*He holds a plainly false opinion who says that it makes no difference to the truth of faith what someone's opinions about creation are so long as he holds the right opinion about God . . . because an error about creation flows back into a false opinion about God.<sup>15</sup> –St. Thomas Aquinas*

When Richard Dawkins, writing for the Bishop of Oxford, refers to “overwhelming” evidence, a naive reader could be excused for thinking that scientists have evidence sufficient to confirm the evolution story and falsify other potential causes for life. In reality, the “overwhelming” evidence for evolution can only overwhelm those who don’t understand that some evidence consistent with a theory does not prove that theory true. For example, apparent close similarities

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<sup>12</sup> Mackowiak PA, Wasserman SS, Levine MM. 1992. A critical appraisal of 98.6°F, the upper limit of the normal body temperature, and other legacies of Carl Reinhold August Wunderlich. *Journal of the American Medical Association* 268(12):1578-1580. And Hirschmann JV. 1992. Normal Body Temperature. *Journal of the American Medical Association* 267(3):414.

<sup>13</sup> Thomas Kuhn suggested that changes in scientific thought occur suddenly when the current paradigm collapses under the weight of contrary evidence and is replaced by a new paradigm. He outlined this idea in: Kuhn TS. 1996. *The Structure of Scientific Revolutions* 3rd edition University of Chicago Press, Chicago.

<sup>14</sup> Petitti DB. 2002 Hormone replacement therapy for prevention: more evidence, more pessimism. *Journal of the American Medical Association* 288(1):99-101.

<sup>15</sup> St. Thomas Aquinas, *Summa Contra Gentiles*, 2.3

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between ape and human DNA is evidence consistent with the theory that humans and apes share a common ancestor. This evidence and other similarities between apes and humans at best adds to the data set from which one can inductively reason to common ancestry, but it is not sufficient to prove common ancestry true, just as collecting billions of men is not sufficient evidence to prove all humans are men. Similarities between organisms are, in the parlance of philosophers, necessary causes when reasoning to common ancestry, but not sufficient causes for one to conclude that common ancestry is true. In other words, similarities must be present if the theory of evolution from common ancestors is to be true, but they are not sufficient to prove it.

The logical difference between sufficient and necessary causes can be illustrated by imagining a hypothetical charge of plagiarism brought by novelist Tom Clancy against the estate of Mark Twain. The central complaint in the suit is that Twain stole Clancy's *The Hunt for Red October* and used it for his novel *A Connecticut Yankee in King Arthur's Court*. The "overwhelming" evidence that Twain used Clancy's material could include the fact that almost all the words used in Twain's book are identical to those used in Clancy's. Literally hundreds of words are identical. It would not be surprising if several sentences were essentially identical. The problem is that while using the same words is *necessarily* true if Twain stole Clancy's work, *sufficient* evidence exists to exonerate Twain; he died before Clancy was born.

The story of creation and salvation outlined in Scripture is, like the evolution story, ancient and unprovable using the scientific method. Huge data sets can be collected as evidence consistent with either account, much of it necessarily true if the stories truly reflect reality, but ultimately marshalling data is insufficient to definitively show one or the other to be true. However, evidence may be sought that is not consistent with one of the theories. In other words, it should be possible to use deductive reasoning to eliminate the possibility of either creationism or evolutionism. In fact, proponents of both naturalism and supernaturalism have attempted this. Quoting again from Lucretius:

The nature of the universe confirms it cannot have been created for us  
by divine power: it has so many faults.<sup>16</sup>

This argument from imperfection has been recycled in many different forms. For example, Stephen J. Gould wrote an entire book, *The Panda's Thumb*, in which he claimed, "Imperfection carries the day for evolution."<sup>17</sup> The problem is that this argument is simply a debating tactic in which definitions are contorted to ensure the victory of one point of view. In this particular iteration, a

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<sup>16</sup> Lucretius, book 2, lines 180, 181: Nequaquam nobis divinitus esse creatam naturam mundi: tanta stat praedita culpa.

<sup>17</sup> Gould SJ. 1980 *The Panda's Thumb: More Reflections on Natural History*. W. W. Norton, New York. p 37.

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very specific view of the Creator is required in which He may do nothing that in the writer's opinion is not optimal. In addition, the assumption is made that we are in a good position to make adequate judgments about what is perfectly designed and what is not. The history of science lays out a long series of "imperfections" that upon closer examination turned out to be brilliantly functional. Scientists declared them useless before exerting the effort to understand them. Vestigial organs, once thought to be remnants of organs useful in the evolutionary past, but not the present, have now been thoroughly discredited as evidence of evolution. As Scadding noted, "Since it is not possible to unambiguously identify useless structures, and since the structure of the argument used is not scientifically valid, I conclude that 'vestigial organs' provide no special evidence for the theory of evolution."<sup>18</sup> More recently, "junk DNA" has been presented and discredited as molecular evidence of evolution.<sup>19</sup> Declaring parts of organisms to be functionless and thus vestiges of the evolutionary past amounts to no more than an argument from ignorance in which ignorance of function is used as evidence of lack of function. This is true whether the old argument about vestigial organs is used or the more recent molecular argument about "junk DNA."

In general, arguments about what data support evolution versus what data are more consistent with creation do not change in any profound way when transitioning from the macroscopic to molecular levels. What does change is that appeals to unknown or complex ill-defined processes are harder to make at the molecular level. This is because laws governing behavior of molecules and atoms from which they are composed are well understood. Understanding the chemical workings of cells precludes them from being treated as "black boxes," as Michael Behe calls them,<sup>20</sup> in which unknown processes somehow produce known outcomes by unknown means. Unaware of the complex machinery inside cells, Darwin's contemporary and enthusiastic supporter Ernst Haeckel wrote:

The Monera [bacteria] . . . which consist only of this primitive protoplasm, and which arise by spontaneous generation from these inorganic nitrocarbonates, may thus have entered upon the same course of evolution on many other planets . . .

We now know that the "inorganic nitrocarbonates" within cells are not accurately described in the term "primitive protoplasm." There is no substance in cells or outside of cells that spontaneously comes together to make bacteria and then all the other life forms we know today. We understand to a greater degree

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<sup>18</sup> Scadding SR. 1981. Do "Vestigial Organs" Provide Evidence for Evolution? *Evolutionary Theory*, 5:173-176.

<sup>19</sup> For a review of the way "junk DNA" has been used as evidence of evolution, see: Standish, TG. 2002. Rushing to Judgment: Functionality in non-coding or "junk" DNA. *Origins* 53:7-30.

<sup>20</sup> Behe, MJ. *Darwin's Black Box: The Biochemical Challenge to Evolution*. Free Press, New York.

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with each passing day what the molecular machinery within cells is and what it does. The more cells, the fundamental building blocks of all life, are studied, the more complex and elegant they appear to be. No wonder Nobel laureate and dedicated materialist Francis Crick once wrote, "Biologists must constantly keep in mind that what they see was not designed, but rather evolved."<sup>21</sup>

**Inferring an Intelligent Cause**

*I said I thought it no more likely that I should be right in nearly all points, than that I should toss up a penny and get heads twenty times running.*<sup>22</sup> –Charles Darwin

Within cells two lines of evidence strongly point to origin through the creative act of an intelligent being rather than chance coupled with the forces of nature. The first is the information content of cells; the second is the way molecular machines which do the cell's work are constructed. Even the simplest cells contain incredible amounts of meaningfully functional information. Certain molecules in cells, specifically the nucleic acids, function as libraries of information. Complex mechanisms exist to retrieve that information and translate the DNA "blue print" into protein machines. William Dembski has written extensively about the nature of information, particularly biological information, and how intelligence can be rigorously inferred when information is present.<sup>23</sup> This is not a difficult inference to understand: information is a product of intelligence, and thus intelligence can be inferred from the presence of information.

The metaphors of a code, cipher, or written language may not be perfect when referring to information stored in DNA, but they provide a logical inference to the intelligent cause behind the information DNA encodes and the mechanism through which it is stored. The chemical nucleotide "letters" of the genetic code are specifically arranged in DNA sequences to store information defining the primary structure, the amino acid sequence, of proteins. Other information is also stored by specific sequential arrangement of nucleotides. This information includes where and when specific proteins should be produced. Just as printed words have no intrinsic meaning in the absence of an intelligent mind,

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<sup>21</sup> Crick FHC. 1988. *What Mad Pursuit: A Personal View of Scientific Discovery*. Penguin, London: p 138.

<sup>22</sup> Darwin, CR. Letter to Charles Lyell December 12, 1859 in Darwin F. ed. 1959. *The Life and Letters of Charles Darwin: Including an Autobiographical Chapter* Vol. II. Basic Books, New York. p36.

<sup>23</sup> For examples of Dembski's writings on information and the design inference, see: Dembski, WA. 1999. *Intelligent Design: The Bridge Between Science and Theology*. Intervarsity Press, Downers Grove, Illinois; Dembski, WA. 1998. *The Design Inference: Eliminating Chance Through Small Probabilities (Cambridge Studies in Probability, Induction and Decision Theory)*. Cambridge University Press, New York; Dembski, WA. 2001. *Signs of Intelligence: Understanding Intelligent Design*. Brazos Press, Grand Rapids, Michigan; Dembski, WA. 2001. *No Free Lunch: Why Specified Complexity Cannot Be Purchased Without Intelligence*. Rowman & Littlefield, Lanham, Maryland.

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information in DNA has no meaning if it does not interact with numerous protein and RNA molecules.

As is the case with letters of the alphabet, there are no known natural laws that produce specific nucleotide sequences defining useful proteins. In the absence of already existing information-rich sequences, newly formed DNA is gibberish with no functional information value. An intelligent designer may order nucleotides as meaningful sequences, just as an intelligent writer may arrange letters to have meaning, but natural laws or chance will not produce meaningful sequences. To be fair to evolutionary theory, it is important to emphasize that it does not claim natural laws or chance sequence arrangements alone account for information stored in DNA. Current evolutionary theory claims that the law-like behavior of natural selection, selecting sequences most efficiently passed on to the next generation, coupled with chance mutations in DNA sequences producing variability in organisms, is a two-part mechanism which produced life as we know it. The catch is that to be selected, a sequence must first have meaning. In the absence of a natural law that generates information in DNA sequences, the question then becomes: What are the odds that chance alone can produce meaningful sequences upon which natural selection can act?

Aside from DNA, cells may also contain information in the way chemicals are spatially distributed within them. For example, the endoplasmic reticulum is an organelle that is active in production of new membrane. To achieve this function it must contain specific proteins on its surface that signal for production and transport across the membrane of proteins which will become part of the growing membrane or will be contained in membrane bound vesicles which bud off the endoplasmic reticulum and travel to other parts of the cell. Clearly, those proteins that function in moving new proteins into or across the membrane are also proteins that themselves must be produced and inserted into the membrane before more membrane can be made. Thus, these proteins present a hen-and-egg type situation: Proteins in the membrane that allow proteins to be inserted into the membrane must be present before new membrane containing these proteins can be made. Thus, fully formed membrane must be present before fully formed membrane can be made. As a consequence of this, functional membranes must be passed on to offspring just as a complete set of genetic information in the form of DNA must be passed on. DNA alone cannot mediate the *de novo* construction of new endoplasmic reticulum membrane. Additional examples of information other than that coded in DNA may also exist in cells.

#### **Endothelin-1: An Information-rich Example**

*The irony of the whole wretched thing is this: In the SETI quest we are looking for evidence of something that is artificial - a signal. Yet when we look at the natural world, we won't accept that the engi-*

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*neering that's there, and the information that's there in the universe,  
is artificial.*<sup>24</sup>—Frank Stootman, Director of SETI Australia

The presence of information in cells along with machine-like protein complexes can best be understood when looking at specific examples, of which there are many. One relatively simple example is the coding and production of the endothelins. These small proteins are potent vasoconstrictors and have also been shown to play several other important physiological roles.<sup>25</sup> At the molecular level, endothelin proteins function by binding very specifically to receptors located on the surface of cells. When endothelin binds in a lock-and-key-like manner with its receptor, the receptor changes shape. This change in receptor shape signals “G” proteins within cells, and these proteins then transmit the signal on to other proteins in a cascade of events, which ultimately causes contraction of smooth muscle cells within blood vessels. Without receptors and the rest of the proteins involved in transmitting the signal inside cells, endothelins would have no impact. Clearly the receptors recognize endothelins with great precision, as vasoconstriction in response to other molecules would very likely be disastrous.

Information coding for construction of endothelin proteins is contained in DNA genes. The gene for human preproendothelin-1 (preproET-1) is found on the short arm of chromosome 6.<sup>26</sup> It is the protein product of this gene, diagrammed in Figure 1, from which endothelin-1 will be made (several other endothelins are coded for elsewhere). The final product of the endothelin-1 gene is only 21 amino acids long. Coded for in DNA, these 21 amino acids represent only 63 nucleotides, which in terms of functional information content can be represented as 17 bits.<sup>27</sup> This does not seem like a large amount of information, and may well be a conservative estimate,<sup>28</sup> but it serves the purpose of allowing comparison with the information content of larger stretches of DNA.

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<sup>24</sup> Frank Stootman, Director of SETI Australia quoted in: Linnell G. 1999. Heaven Only Knows. *The Bulletin* 117(6181):34.

<sup>25</sup> The following is an excellent review of the biology and clinical importance of endothelins: Hunley TE, Kon V. 2001. Update on endothelins-biology and clinical implications. *Pediatric Nephrology* 16:752-762.

<sup>26</sup> GenBank accession number J05008. Inoue A, Yanagisawa M, Takuwa Y, Mitsui Y, Kobayashi M, Masaki T. 1989. The human preproendothelin-1 gene: Complete nucleotide sequence and regulation of expression. *The Journal of Biological Chemistry* 264(25):14954-14959.

<sup>27</sup> The term “bits” used here has the same meaning as the bits of information processed by computers. Eight bits are equivalent to one byte.

<sup>28</sup> Shannon (Shannon CE. 1948. A mathematical theory of communication. *Bell System Technical Journal*, vol. 27, pp. 379-423 and 623-656) proposed information (H) in bits per symbol is described by  $H = -\sum p_i \log_2 p_i$ , where  $p_i$  is the probability of the  $i$ th configuration and K is an arbitrary constant. If we assume the probability of each symbol is approximately equal, and if we set  $K = 1$ , then H simplifies to  $\log_2 N$ . Solving this equation for H yields theoretical maximal information content for a sequence with possible combinations N. But nucleic acid sequences representing amino acid sequences in proteins represent a special problem because information contained in a sequence

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Information is intuitively associated with intelligence and is not known to be the product of natural laws. For example, natural processes in space produce a wide range of radio waves that can be detected using radio telescopes. The Search for Extra Terrestrial Intelligence (SETI)<sup>29</sup> scans these radio waves from outer space looking for information carrying signals. If information were found in these radio signals, it would serve as *prima facie* evidence of an intelligent cause: Intelligent space aliens sending information-rich radio signals.

Sometimes information is confused with highly ordered phenomena. Natural laws readily produce simple repeating patterns like those found in crystals, but crystals are not good repositories of information, as the same pattern of atoms repeated over and over again has very little capacity to store information. The kind of information stored in DNA coding for endothelin-1 is very ordered, yet also complex, not simply the same short sequence repeated many times. But, as already mentioned, the information contained in the endothelin-1 protein is small, only 17 bits. If DNA of random sequence was produced and then scanned for a sequence coding for this protein, it would be expected to occur  $1/2^{1730}$  or 0.0008 % of the time. That is a small number, but not so impossibly small that it could not have happened by chance. In the 3 billion base human genome, assuming a random sequence of nucleotides, sequences for functional endothelin-1 would be expected to appear 22,888 times. To give the appearance of design, the endothelin-1 gene would have to contain significantly more information than just that coding for the 21 amino acid mature protein, and this is the case.

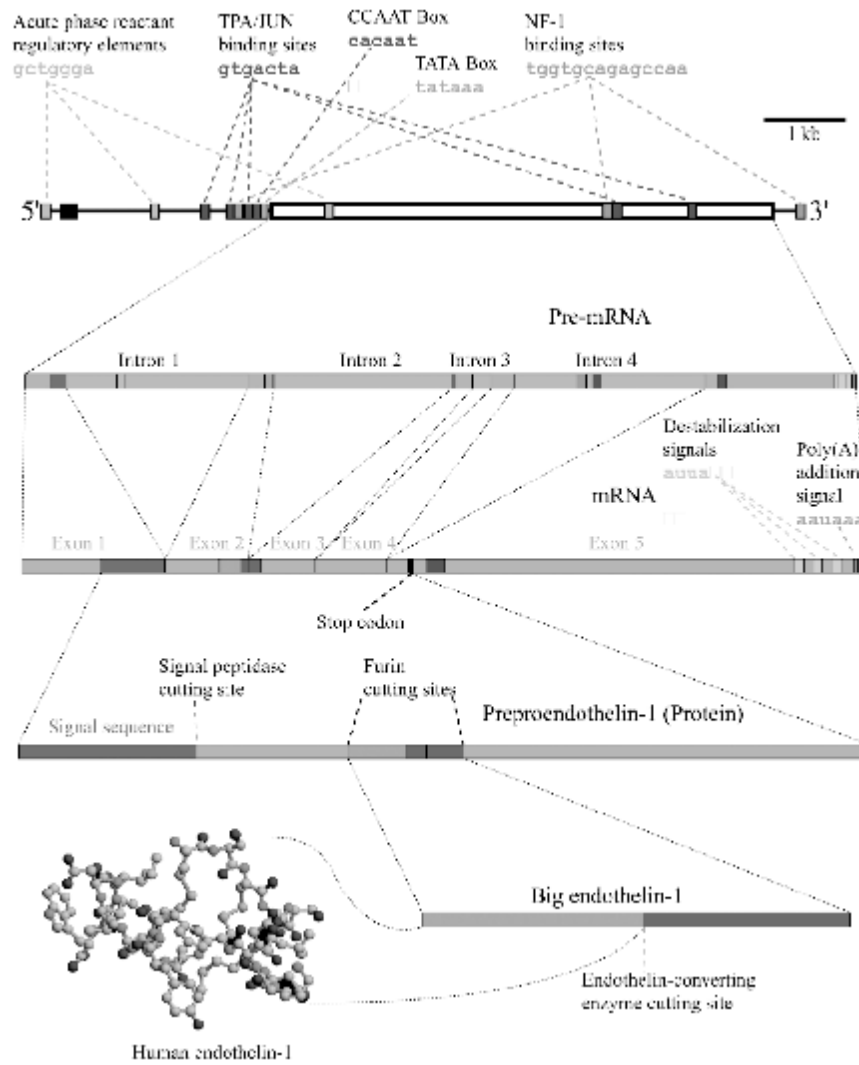
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must fall within a functional range. Functionality of proteins is determined in a large degree by the amino acid sequence; not all sequences are equally “meaningful” for a given function. Durston (personal communication, 2002) has symbolized this functional information as  $I_f = H - H_f$ . Inserting values for  $H$ ,  $I_f = \log_2 N - \log_2 N_f$  which simplifies to  $I_f = -\log_2(N_f/N)$ . Accurate determination of the range within which a protein remains functional,  $N_f$ , is almost impossible without checking each of the possible sequence combinations. The rough and very conservative estimate given here is based on Taylor et al. (Taylor SV, Walter KU, Kast P, Hilvert D. 2001. Searching sequence space for protein catalysts. Proc. Natl. Acad. Sci. USA. 98 (19):10596–10601), in which it was demonstrated that generation of a moderately active 95 amino acid enzyme would require a library of  $5 \times 10^{23}$  members, thus  $N_f/N = 2 \times 10^{-24}$ , so  $I_f = 79$  bits for this protein, or 79 bits/[3 nucleotides/amino acid]x95 amino acids]=0.28 bits per nucleotide. Assuming this to be a reasonable estimate for all proteins (acknowledging the scarcity of relevant empirical data at present), the information content of the 21 amino acid (63 nucleotide) endothelin-1 is 63 nucleotides x 0.28 bits/nucleotide=17.64 bits. Seventeen bits was used in this discussion to be as conservative as possible.

<sup>29</sup> <http://www.seti-inst.edu/>

<sup>30</sup> A bit represents a binary state of either 1 or 0; thus, as there are two states, the probability of a specific number of bits of information is equal to the inverse of 2 raised to the number of bits.

**Figure 1**  
The Human Endothelin-1 Gene



The human endothelin-1 gene is located on the short arm of chromosome 6 and covers approximately 8,000 nucleotides. The top of this figure shows the whole gene, while lower layers deal with specific sections involved with the expression of the gene, each of which is progressively smaller, until the molecular structure of the 21 amino acid endothelin-1 final product is shown in the lower left-hand corner.



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### Information Controlling Gene Expression

*To the powerful theories of chemistry and physics must be added a late arrival: a theory of information. Nature must be interpreted as matter, energy, and information.*<sup>31</sup> –Jeremy Campbell

As a potent vasoconstrictor, endothelin-1 is both a very useful protein and at the same time an extremely dangerous one. Without appropriate vasoconstriction, blood would not be distributed appropriately, and thus death or severe impairment would result. Excessive vasoconstriction would have a similar effect. Thus much of the information contained in the endothelin-1 gene is there not only for dictating the primary amino acid sequence of the protein, but also for the purpose of controlling expression and activity of the gene product. Step one in controlling gene expression is at the point of transcribing the gene as an RNA copy of the DNA master. This control is achieved by a complex system of proteins that interact with signals encoded in DNA. These signals are not yet fully understood, but some of them are indicated at the top of Figure 1. Acute phase reactant regulatory elements with the nucleotide sequence CTGGGA<sup>32</sup> signal that the endothelin-1 gene should be transcribed during acute physical stress. Other sequences that are known to interact with proteins regulating transcription are the TPA/JUN and NF-1 binding sites. More as yet uncharacterized signals encoded both within and outside the transcribed part of the gene are likely to be present, as levels of the RNA transcript of this gene are known to be regulated by thrombin, angiotensin II, vasopressin, transforming growth factor- $\beta$ ,  $\text{Ca}^{2+}$  ionophores, and hemodynamical shear stress.<sup>33</sup> Thus it is evident that information independent of the actual amino acid sequence of the protein is coded in the DNA.

Another form of information is represented by two sequences that lie just upstream of the transcription start site. These sequences, CACAAT and TA-TAAA, provide very specific information to the RNA polymerase II complex that copies the DNA as an RNA transcript. The first sequence, CACAAT, starting 97 nucleotides prior to the start of the RNA transcript, plays a major role in determining how swiftly RNA copies of the gene will be produced. The TATAA

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<sup>31</sup> Campbell J. 1982. *Grammatical Man: Information, Entropy, Language and Life*. Penguin Books: Harmondsworth, Middlesex UK, 1984, reprint, p.16

<sup>32</sup> Four different nucleotides are used to code information in DNA, much as 26 letters are used to code information in written English. The only difference between the four different nucleotides is a nitrogen-containing base that is part of each one. The four bases are adenine, cytosine, guanine and thymine, each of which is commonly symbolized using the first letter of its name. Thus, sequences of nucleotides are represented using the letters A, C, G, and T. The sequence CTGGGA symbolizes a sequence of nucleotides with bases cytosine, thymine, guanine, guanine, guanine and adenine in that order.

<sup>33</sup>Inoue A, Yanagisawa M, Takuwa Y, Mitsui Y, Kobayashi M, and Masaki T. 1989. The human preproendothelin-1 gene: Complete nucleotide sequence and regulation of expression. *Journal of Biological Chemistry* 264(25):14954-14959.

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sequence starting 30 nucleotides upstream from the transcription start site gives very precise information about where to start transcribing the DNA.<sup>34</sup>

**Information About Processing mRNA**

*I can hardly imagine to myself a more distinguishing mark, and, consequently, a more certain proof of design, than preparation, i.e. the providing of things beforehand, which are not to be used until a considerable time afterwards, for this implies a contemplation of the future, which belongs only to intelligence. –William Paley*

The RNA transcript includes some of the sequences mentioned earlier that are known to play a role in determining when to turn on transcription of the endothelin-1 gene, but also contains additional information. One important set of information delineates junctions between exons and introns. Exons contain sequence information that determines the protein sequence, while introns fall between exons and must be removed before the information encoded in nucleotide bases can be translated into protein. Thus, if functional proteins are to be made, accurate delineation is necessary of introns to be cut out and exons to be spliced together. Aside from cutting signals at each end, introns contain additional sequences clearly marking them as introns.

At the 3' end (the right-hand end in Figure 1) of the RNA transcript is a sequence signaling for addition of adenine nucleotides. Once these nucleotides are added, introns are removed, and a cap is placed on the 5' end of the RNA transcript, it is officially known as mRNA. Now it is ready for export from the nucleus to the cytoplasm where the protein, based on information encoded in the mRNA, will be produced. To arrive at this point, many different kinds of information were required: Information about when to produce the RNA, how many copies to make, where to start (and stop) making it, what parts to remove or retain, and where to add adenosine nucleotides.

Another interesting set of signals lies at the 3' end of endothelin-1 mRNA. Three AUUA destabilization signals in this region, each approximately 9 bases apart, signal for destruction of the mRNA following translation. These signals turn the mRNA into something like the self-destructing messages sent to spies in movies and television shows produced during the 1960s. Once the message is read, it is destroyed so that it can't be read again. This is a vital feature of the endothelin-1 mRNA that allows very tight control of endothelin-1 production. Stray copies of mRNA do not linger around to be translated in an uncontrolled manner.

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<sup>34</sup> Lewin B. 1997. *Genes VI*. Oxford University Press, New York.

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### Information Encoding the Protein

*... the natural selection of a meaningful minority of changes in DNA generates spectacularly complex structures, which seem in retrospect—but only in retrospect—to be the result of an intelligent plan.<sup>35</sup>*  
—Robert Pollack

The protein encoded on endothelin-1 mRNA is not just the 21 amino acid mature product. Endothelin-1 starts out as a 212 amino acid protein called preproendothelin-1. Assuming that each amino acid on average represents the same amount of information as those in the mature endothelin-1 protein, the part of endothelin-1 mRNA encoding the protein represents 178 bits. This much information is readily produced as a result of intelligent causes, but is not known to result from physical or chemical laws. Repeating the logic used to argue that the 21 amino acid mature endothelin-1 protein is not necessarily remarkable and may be produced by chance, the probability of stringing together the nucleotides to code for a functional preproendothelin-1 is  $2.6 \times 10^{-54}$ .<sup>36</sup> This is a very small number and would not be expected to happen as a result of chance processes. A sequence coding for a functional preproendothelin-1 would be expected to occur once in a random string of  $3.8 \times 10^{53}$  nucleotides.<sup>37</sup> This random string would have a mass close to that of the sun<sup>38</sup> and would stretch an unimaginable one hundred thousand trillion trillion light years in length.<sup>39</sup>

It is important to remember that any randomly generated string of nucleic acids long enough to code for 212 amino acid preproendothelin-1 has the theoretical capacity to store more information than is present in the actual 636 nucleotides that encode it. But this is information defined in a very generic way. The kind of information that is stored in the endothelin-1 gene, functional information, constitutes only a very small part of the possible generic information that could be stored. Imagine a situation where the fabled Swiss archer William Tell is going to shoot an arrow through an apple balanced on the head of his son. Most people would be impressed by his skill if he were able to hit the apple from 50 paces away. This would be an even more impressive feat if it could be repeated several or many times. Now imagine the outcome if Mrs. Tell was provided with the bow, blindfolded, and then asked to shoot the apple. Anyone within range of the arrow would be well advised to take cover. Any spot that

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<sup>35</sup> Pollack R. 1995. *Signs Of Life: The Language And Meanings Of DNA*. Mariner Books, Boston p. 38.

<sup>36</sup>  $1/2^{178}$

<sup>37</sup> The probability of stringing together the nucleotides to code for a functional preproendothelin-1 =  $2.6 \times 10^{-54}$ , divided into one.

<sup>38</sup> The average molecular weight of a nucleotide is approximately 337g/mol, thus:  $(3.8 \times 10^{53} \text{ nucleotides}) \times (337 \text{ g/mol}) \times (1 \text{ mol} / 6.02 \times 10^{23} \text{ nucleotides}) \times (1 \text{ kg} / 1,000 \text{ g}) = 2.1 \times 10^{29}$  which is on the order of  $1.99 \times 10^{30}$ , the mass of the sun.

<sup>39</sup>  $(3.8 \times 10^{53} \text{ nucleotides}) \times (0.338 \text{ nm/nucleotide}) \times (10^{-9} \text{ m/nm}) \times (1.06 \times 10^{16} \text{ light years/m}) = 1.36 \times 10^{28}$  light years.

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Mrs. Tell's arrow hits is just as improbable as the apple, but skill is evident, intelligent handling of the bow and arrow, only when the apple is hit, not when it misses and hits something else. The incredible thing about information stored in DNA is not that there is potential for great quantities of information to be stored, but that the information is functional; it has meaning in terms of real proteins that make living things function to useful ends.

When we see William Tell hit the apple every time, we are impressed that a master is at the bow. When we see that the "apple" is hit every time in terms of information stored in DNA, we can be equally impressed that a Master played a hand in its production. This is particularly so when we consider the child on whose head the apple rests. If William Tell could only get the arrow within a meter of the apple, an impressive feat at 50 paces, observers would most likely sign with relief if the arrow went high, but be horrified should the arrow hit below the apple. Biological information must frequently be extremely accurate, as even slight deviations can result in dire consequences. In other words, having William Tell supplying the blindfolded Mrs. Tell with arrows and hints—something like the children's game of hot and cold—as she shot arrows closer to or further away from the apple would do little to avert disaster. In fact, it would be much better to have Mrs. Tell shooting arrows randomly than close to the apple. As previously mentioned, to be selected, a sequence must be functional, but the case of endothelin-1 illustrates why all the control information must be in place before the protein can be functional. Near misses, the protein produced in an uncontrolled manner, stand a high chance of being detrimental and thus being selected against. In the case of at least some proteins, selection may very well be against near misses.

The best alternative to design as the cause of functional information in the endothelin-1 gene is mutation, generating variation in DNA sequences, coupled with natural selection. The problem with invoking mutation and natural selection is that nature has not been shown to skillfully generate functional information, particularly when that information is tightly constrained. The kind of functional information commonly found in DNA is an example of what Dembski has called specified complexity.<sup>40</sup> Dembski has proposed an explanatory filter (Figure 2) outlining how this type of complexity is recognized and the inference from it to design. One might infer an intelligent cause behind the production of radio waves encoding information (as SETI hopes to do), or hieroglyphics on an obelisk in the Egyptian desert. The author of information may not be known, and the exact meaning of the information may not be known, but the presence of information is a reliable indicator of an intelligent cause.

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<sup>40</sup> For a brief discussion of specified complexity, see: Dembski WA. 1998. Redefining science. p 93-112 in *Mere Creation*. WA Dembski ed. InterVarsity Press, Downers Grove, Illinois.

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### The Genetic Code

*Our conclusion is based on two facts that we would think would be entirely uncontroversial: language shows signs of complex design for the communication of propositional structures, and the only explanation for the origin of organs with complex design is the process of natural selection.<sup>41</sup> –Steven Pinker and Paul Bloom*

The molecular machines from which cells are made represent another kind of meaningfully specified complexity. An example of this kind of machine can be illustrated by following production of endothelin-1 beyond export of mRNA from the nucleus. After transcription from the DNA gene and processing to remove introns, the endothelin-1 mRNA travels out of the nucleus to the cytoplasm. Here the small subunit of protein factories called ribosomes recognize the 5' end of the mRNA and slide along the mRNA until they encounter a start codon. This codon, which always codes for the amino acid methionine, can be thought of as the capitalized word at the beginning of a sentence. Codons are groups of three nucleotides strung together in sequence on mRNA, each of which represents a specific amino acid. The job of ribosomes is to translate the meaning of each codon to that of the amino acid it codes for. As already mentioned, the first codon in any gene is one that codes for methionine. In human preproendothelin-1 the next codon, GAU,<sup>42</sup> codes for aspartic acid, then UAU for tyrosine, and so on for another 209 codons (627 nucleotides), representing a specific sequence of 209 amino acids. The codon following the last one coding for an amino acid is a stop codon, UGA. This codon acts like the period at the end of a sentence, telling ribosomes that they have reached the end of the part of an mRNA that codes for the protein.

The genetic code is another example of apparent design at the molecular level. Because of the way amino acid meanings are assigned to codons in the genetic code, the impact of mutations is minimized. A specific example involves the impact of changes to the middle base of the three-base codon. If the mutation is of the most common type, called a transition,<sup>43</sup> slightly over half the time the chemical class of the amino acid specified in the new codon will be in the same chemical class as the one coded for by the original codon prior to mutation. Thus, slight changes in the DNA sequence coding for a gene are less likely to have a deleterious impact on the gene's meaning than they would if codons had

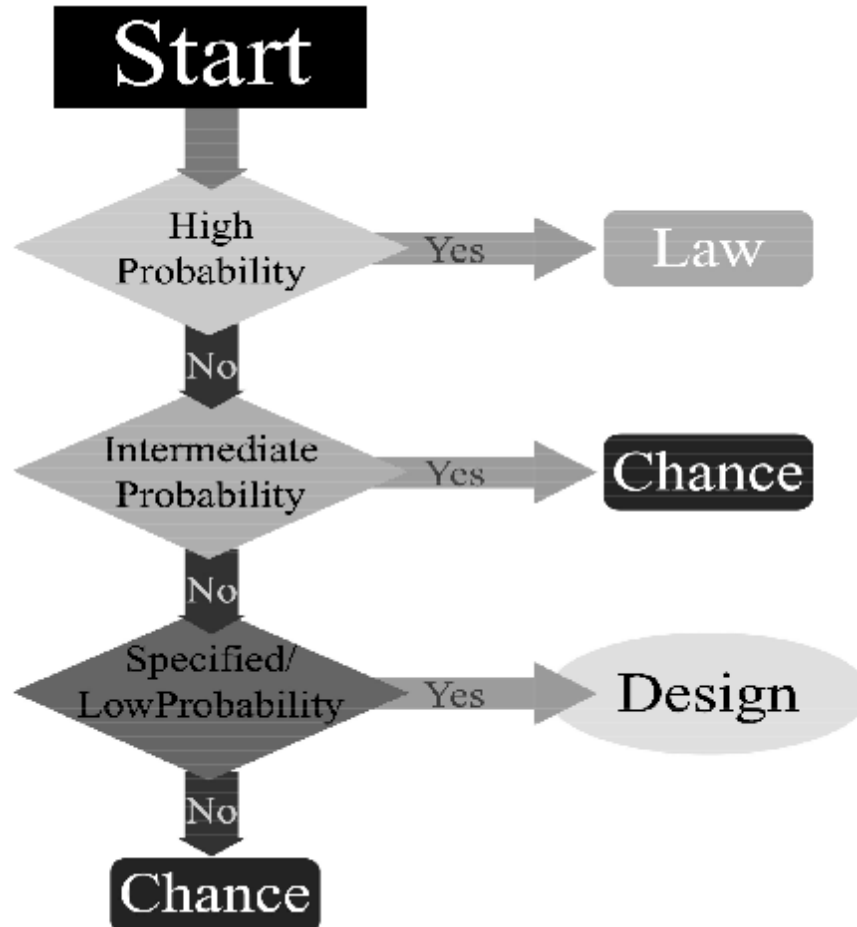
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<sup>41</sup> Pinker S, Bloom P. 1990. Natural language and natural selection. *Behavioral and Brain Sciences* 13 (4): 707-784.

<sup>42</sup> In the nucleotides used to make RNA, a very slightly different base called uracil is used instead of the thymine used in DNA. Thus, wherever the symbol T would be used to represent thymine in DNA, U is substituted in RNA.

<sup>43</sup> Transitions involve changing from one purine to another, for example, from an adenine to a guanine, or a pyrimidine to another pyrimidine. Transversions, for example, from pyrimidine to purine, or vice versa, are generally more serious, but are also more easily detected and repaired; thus they are less commonly observed.

Figure 2  
William Dembski's Explanatory Filter



Dembski's filter provides an algorithm for determining whether design can be inferred from an object or event. The three nodes proceeding from top to bottom represent questions to be addressed with yes or no answers. Events or objects that are highly probable, like stones falling to the ground when dropped or salt forming crystals, can be attributed to physical laws. Events equivalent to flipping a coin and getting heads 5 or ten times in a row are improbable, but not so improbable that chance can be ruled out as the cause. Highly improbable events or objects that also represent specified outcomes, for example, William Tell hitting the apple as opposed to his son, suggest design. Low probability alone is not sufficient to infer design; specification is also necessary.<sup>44</sup>

<sup>44</sup> Dembski, WA. 1998. "Redesigning Science" pp 93-112 in *Mere Creation: Science, Faith and Intelligent Design*. InterVarsity Press, Downers Grove, IL p 99.

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been assigned meanings randomly.<sup>45</sup> This is only one of several possible examples of the brilliant matching of codons with amino acid meanings in which nature “hits the apple.” Four theories may explain why the genetic code is so good: 1) luck, 2) coevolution, in which the genetic code evolved as new metabolic pathways for amino acid synthesis evolved, 3) the code started sub-optimally and evolved to its current optimum, and 4) the code was created by a very intelligent designer.

Luck in getting the optimal genetic code now used in cells would be something like the blindfolded Mrs. Tell shooting an arrow from the other side of the universe and hitting the apple on her son’s head.<sup>46</sup> Coevolution is a complicated and vague idea that has been discredited.<sup>47</sup> This leaves two theories for serious consideration: 1) Evolution from sub-optimal to the current very good code and 2) brilliant design of the genetic code when life was created.

The impossibility of evolving from one genetic code to another is illustrated by a conversation between Alice and Humpty Dumpty in British mathematician and novelist Lewis Carol’s book *Through the Looking Glass*. Alice can’t understand what Humpty Dumpty is saying. The root of her confusion is summed up in the following: “‘When I use a word,’ Humpty Dumpty said in rather a scornful tone, ‘it means just what I choose it to mean—neither more nor less.’” For information to be communicated, both the sender and recipient must agree on the meaning of the symbols used, be they sounds, words, radio waves, or any other medium. If the sender of a signal suddenly decides to change the meaning of the signal without informing the recipient, either the wrong signal will be received, or no signal will be received. The ribosome and the molecules that work with it to translate RNA codons, the genetic signal, into proteins constitute a breathtaking information processing system, but if it or its helper molecules somehow changes the meaning of one codon to another, the genetic signal will be garbled. Instead of the proteins specified in DNA genes, far less functional, in

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<sup>45</sup> During the Nature of Nature conference held at Baylor University during 2000, eminent evolutionist Simon Conway-Morris summed up the genetic code in the following words: “The genetic code is not very good.” And then, following a long pause for effect, “It is absolutely fantastic.” He was specifically referring to the work of Freeland and Hurst, who demonstrated the incredible optimization of the genetic code. Freeland SJ, Knight RD, Landweber LF, Hurst LD. 2000. Early fixation of an optimal genetic code. *Molecular Biology and Evolution* 17(4):511-8. Also, Freeland SJ, Hurst LD. 1998. The genetic code is one in a million. *Journal of Molecular Evolution* 47(3):238-48.

<sup>46</sup> As each codon is 3 nucleotides long and there are 4 bases (A, C, G and T)  $4^3=64$  codons are possible. These 64 codons code for 20 amino acids and stop for a total of 21 meanings. The total possible combinations of codons and meanings is thus  $21^{64}=4.2 \times 10^{84}$ . This number is higher than some estimates of the number of particles in the universe. The probability of getting the genetic code we have assuming it was randomly generated is thus  $(1/21)^{64}=2.4 \times 10^{-85}$ , a number so small that it is virtually zero.

<sup>47</sup> Ronneberg TA, Landweber LF, Freeland SJ. 2000. Testing a biosynthetic theory of the genetic code: fact or artifact? *Proceedings of the National Academy of Sciences, USA*. 97(25):13690-5.

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many cases functionless, proteins will be produced. Changing the genetic language will lead to certain death of any organism that tries it.<sup>48</sup> The theory that evolution of the genetic code accounts for the current apparently optimal code must thus be viewed skeptically, as evolution of the genetic code appears to be a recipe for certain disaster

Theory 4, that the genetic code was intelligently designed, is consistent with two observations, the first that the genetic code is very good, the second that certain small variations in the genetic code are known. If mutation and selection do not present a realistic path to optimization and variation in the genetic code, intelligent design does. Variation in the genetic code is evidence consistent with a polyphyletic origin of life, that life began as many different ancestors rather than the single common ancestor (monophyletic origin) suggested by Darwinism. In short, the optimal genetic code is not well accounted for by the neodarwinian mutation selection mechanism, and slight variation in the code is inconsistent with the Darwinian belief in common descent of all life from a single ancestor.

### Molecular Machines

*Biology is the study of complicated things that give the appearance of having been designed for a purpose. —Richard Dawkins*

The ribosome, where information encoded in mRNA is translated into proteins, is not yet completely understood. For the purposes of this discussion we will avoid the details of its workings and look at a molecular machine with which it is associated. As the information in preproendothelin-1 mRNA is translated into a string of amino acids, the growing protein begins to exit the ribosome. Here it encounters the Swiss Army knife of the molecular machine world—Signal Recognition Particle (SRP). SRP has been described as a “remarkable cellular machine,”<sup>49</sup> and like a Swiss Army knife, SRP contains multiple protein and RNA tools, each designed to fulfill a specific function; each tool plays a vital roll in the greater purpose of the machine.

In eukaryotic cells<sup>50</sup> proteins destined for export, like endothelin-1, are inserted into the endomembrane system as a first step in the secretory pathway.

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<sup>48</sup> It is true that certain strains of *E. coli* have been developed which have specific changes in the genetic code. These bacteria are extremely delicate and require intense careful maintenance to survive. This is something they can only do under laboratory conditions with lots of human help. For an example, see Rogers MJ, Adachi T, Inokuchi H, Söll D. 1992. Switching tRNA<sup>Gln</sup> identity from glutamine to tryptophan. *Proceedings of the National Academy of Sciences, USA.* 89:3463-3467.

<sup>49</sup> Keenan RJ, Freymann DM, Stroud RM, Walter P. 2001. The signal recognition particle. *Annual Review of Biochemistry* 70:755-75.

<sup>50</sup> Two fundamentally different kinds of cells are recognized. Eukaryotic cells have a nucleus in which the genetic material is sequestered, separated from the rest of the cell by a nuclear membrane.



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Here they are processed and distributed to membrane-bound vesicles that fuse with the cell membrane, releasing their contents outside the cell. Signals encoded into proteins destined for export serve like zip codes on letters as they pass through the cell's intricate sorting and packaging system. The first step in this sorting process occurs as the protein is being produced via translation of the mRNA in ribosomes.

The first 17 amino acids<sup>51</sup> of preproendothelin-1 constitute a "signal peptide"<sup>52</sup> to which SRP binds in a very clever way. The signal peptide binding site is very selective about which proteins it will bind and at the same time recognizes a wide variety of different signal sequences. This flexibly selective system will accept many different signal sequences that start with a series of basic amino acids followed by uncharged amino acids. This is achieved by an elegant mechanism in which a protein called SRP54 forms a groove lined with methionine amino acids. Methionine side chains provide a flexible hydrophobic surface for interaction with other hydrophobic nonpolar amino acids in the signal sequence. The SRP54 protein also binds with the RNA component of SRP, and it is the negatively charged phosphate groups of the RNA that provide a binding site for positively charged basic amino acids at the end of the signal sequence. So, to achieve signal peptide binding that is both flexible and selective, SRP utilizes both protein and RNA components.

Not only must preproendothelin-1 be transported to the right place in the cell, but it must also arrive in a form that is capable of crossing the endoplasmic reticulum membrane at a place on the membrane where passage across is possible. If preproendothelin-1 arrived already folded into a globular shape, as proteins tend to do spontaneously, it could not cross the membrane. In an elegant solution to this problem, when the first part of preproendothelin-1 is recognized as a signal sequence, SRP switches off further production of the protein until the complex of partially produced protein, SRP, ribosome and mRNA are transported as a unit to the endoplasmic reticulum. Once this translation complex arrives at the endoplasmic reticulum, SRP ensures that it is handed off to the correct set of pore-forming proteins embedded in the membrane. This protein pore complex contains a component that both recognizes the SRP and is recognized by the SRP. Once recognition is achieved, both SRP and the protein that recognizes it change in shape, releasing the translation complex to the custody of the pore-forming proteins through which preproendothelin-1 is threaded as the ribosome resumes protein production.

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The other kind of cell is found in bacteria. These cells lack a nucleus and are commonly referred to by the unfortunately prejudicial term "prokaryotic."

<sup>51</sup> Fabbrini MS, Valsasina B, Nitti G, Benatti L, Vitale A. 1991. The signal peptide of human preproendothelin-1. *FEBS (Federation of European Biochemical Societies)* 286(1,2):91-94.

<sup>52</sup> Amino acids are linked together by a specific kind of covalent bond called a peptide bond. Thus, short chains of amino acids are sometimes simply referred to as "peptides," while long chains are called "polypeptides." Proteins may be made up of one or more polypeptide chains.

### Processing Preproendothelin-1

*At first sight the biological sector seems full of purpose. Organisms are built as if purposefully designed, and work as if in purposeful pursuit of a conscious aim. But the truth lies in those two words 'as if'. As the genius of Darwin showed, the purpose is only an apparent one.*<sup>53</sup> –Julian Huxley

Once inside the endoplasmic reticulum, the signal sequence is cut from preproendothelin-1, leaving a protein 195 amino acids long. This task is done by a signal peptidase enzyme that recognizes specific information in the protein telling where the signal sequence ends and the rest of the protein begins. Much of the remaining protein may be involved with ensuring preproendothelin-1 is routed correctly through the secretory pathway.

Before endothelin-1 is released outside the cell, 35 more amino acids are cut off one end and 122 off the other, leaving a 38 amino acid protein called “big endothelin-1.” Repeating the pattern already noted for the signal sequence, vital information about where the cuts should be done is contained in the protein. The best evidence indicates that furin-like enzymes, possibly furin itself, are the machines that both recognize the cutting site and make the cut.<sup>54</sup> Furin is a very busy enzyme involved with processing many proteins in addition to endothelin-1. The signal for furin cutting is fairly simple: two arginine amino acids separated by any two other amino acids. At both cutting sites endothelin-1 uses the sequence arginine-serine-lysine-arginine.

The interesting thing about this signal is that it is simple enough that in random sequences of amino acids it would appear once every 400 amino acids.<sup>55</sup> The design challenge with information of this type is exactly the opposite of the challenge of hitting a small target. If a signal to cut a protein appears in the wrong position, the resulting cut could very well destroy protein function. The furin cutting signal can be thought of as the side of a barn that the blindfolded Mrs. Tell, standing only a few paces away, is trying to miss rather than hit with an arrow. A skilled marksman with his eyes open would have no trouble missing even a large target. Using the same reasoning, a skilled designer could easily ensure that the furin cutting signal did not appear in the wrong place. Avoiding

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<sup>53</sup> Huxley JS. 1953. *Evolution in Action*. Penguin: Harmondsworth, Middlesex UK, 1963, reprint, p.16.

<sup>54</sup> Kido T, Sawamura T, Masaki T. 1998. The processing pathway of endothelin-1 production. *Journal of Cardiovascular Pharmacology* 31(Suppliment 1):S13-S15.

<sup>55</sup> Twenty amino acids are commonly used to construct proteins. Assuming that any position in a random sequence of amino acids has one chance in twenty of getting arginine, the probability of getting arginine in position 1 is 1/20 and the probability in position 4 is 1/20. Thus, the net probability is  $(1/20)^2=1/400$ .

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an inappropriately placed cutting signal within the relatively short 40 amino acid big endothelin-1 may be attributable to luck, but avoiding it in all proteins that furin plays a role in processing is suggestive of design.

Another factor suggestive of design is the way in which cutting signals are presented in the three dimensional structure of preproendothelin-1. To act, the signal must be accessible to furin, and this is by no means guaranteed in proteins. As mentioned earlier, proteins tend to spontaneously fold into globular structures, and a signal buried somewhere deep within the protein would not be available to signal for cutting. Thus, systems must be in place to either ensure that the protein does not fold, or alternatively that it folds in a way that ensures the signal is available. Proteins called heat shock proteins and chaperons are known to assist with folding of many other proteins, but their exact role, if any, in the folding of endothelin-1 has not yet been elucidated.

The 38-amino-acid-long big endothelin-1 is released from cells. In this form, endothelin-1 has essentially no biological action, and this is important. Endothelin-1, as a potent inducer of vasoconstriction, is an extremely dangerous molecule. Like nitroglycerine, the body does not want it to go off in the wrong place or at the wrong time. Big endothelin-1 is a safe form of endothelin-1, just as dynamite is a safe form of nitroglycerine. The trigger that then converts this endothelin-1 to its 21 amino acid active form is an enzyme called Endothelin Converting Enzyme-1a (ECE-1a). Information is encoded first in DNA, then amino acids of big endothelin-1 signal the cutting site for ECE-1a to produce endothelin-1.<sup>56</sup>

The part of big endothelin-1 that is cut away by ECE-1a then curves around endothelin-1 in such a way that endothelin-1 is protected from interacting with receptor proteins on the surface of smooth muscle cells in blood vessels.<sup>57</sup> This system is elegantly flexible and yet precise. Multiple components are involved in activation of endothelin-1 and transmission of the signal it conveys into the action of vasoconstriction. ECE-1a is a membrane bound protein that may be present close to the site of action of endothelin-1. Big endothelin-1 is converted to active endothelin-1 only where it is needed. Because of this, receptors in other parts of the body will not be exposed to endothelin-1, and it will not cause vasoconstriction where it is not needed or wanted. Each step along the pathway from initial DNA gene transcription to endothelin-1 receptor binding provides a potential control site allowing extremely delicate management of this very small, very potent protein.

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<sup>56</sup> Brooks C, Ergul A. 1998. Identification of amino acid residues in the C-terminal tail of big endothelin-1 involved in processing to endothelin-1. *Journal of Molecular Endocrinology* 21:307-315.

<sup>57</sup> Peto H, Corder R, Janes RW, Wallace BA. 1996. A molecular model for human Big-Endothelin-1 (Big ET-1). *FEBS (Federation of European Biochemical Societies) Letters* 394:191-195.

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Despite its small size, endothelin-1 is a good example of the ways information may be stored in biological molecules. Classes of information in the endothelin-1 gene include signals controlling transcription, signals controlling removal of introns, signals controlling how many times the mRNA can be translated, information encoding the protein sequence of preproendothelin-1 within which information about where to translate the protein is encoded, information about where to deliver the protein, and signals controlling when the protein is activated to its active form. Endothelin-1 draws our attention to the remarkable amount of information that may be stored even for a very small protein. From the presence of information it is reasonable to infer design. Thus, the endothelin-1 gene, along with thousands of others, suggests an intelligent cause rather than an origin due to natural forces or laws. But this is only part of the bigger picture suggesting intelligent causes behind the molecules that make up cells.

### **Signal Recognition Particle**

*But now hath God set the members every one of them in the body, as it hath pleased him. And if they were all one member, where were the body?*<sup>58</sup> –The Apostle Paul

During its production, endothelin-1 is processed in one way or another by several machine-like proteins, including enzymes that cut away various parts of the protein after their function has been completed, but before they are a hindrance to the ultimate purpose of the protein. One of the most spectacular machines is SRP. Machines, like information, are typically the product of intelligent creators, not natural laws. SRP is a particularly interesting machine, as one version or another of it is found in every known living thing.<sup>59</sup>

Because all organisms appear to have SRP, it has been suggested that it was inherited from a single common ancestor shared by all organisms. The simplest known version of SRP is found in bacteria, where it is composed of a single large protein and a relatively small RNA molecule. Reasoning from the Darwinian assumption of common ancestry, phylogenetic trees have been constructed based on variation in the sequence of amino acids in SRP proteins. The SRP provides data suggesting a “universal tree of life” that contradicts data generated from other ubiquitous proteins.<sup>60</sup> In other words, different proteins suggest different phylogenetic trees.

To one degree or another, molecular data indicating no single logically consistent tree of life can be explained away by invoking *ad hoc* explanations. These may include differing rates of evolution between genes and biological

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<sup>58</sup> 1 Corinthians 12:18, 19

<sup>59</sup> Lütcke H. 1995. Signal recognition particle (SRP), a ubiquitous initiator of protein translocation. *European Journal of Biochemistry* 228:531-550. Also see Keenan et al cited in XL.

<sup>60</sup> Philippe H, Forterre P. 1999. The rooting of the universal tree of life is not reliable. *Journal of Molecular Evolution* 49:509-523.

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groups or the increasingly popular Lateral Gene Transfer (LGT). In a few exceptional cases, passing off deviations from what common descent would predict may be reasonable, but molecular data increasingly forces the question of how much data counter to the theory of common descent is needed before its general acceptance should be reevaluated. For example, it has been suggested that about 40 genes have moved into the human genome directly from bacteria rather than passing through millions of ancestors prior to the evolution of *Homo sapiens*.<sup>61</sup> This seems incredible.

Discovery of large numbers of genes that appear where they are not expected to be on the basis of common descent has led some prominent thinkers to abandon the idea that all life came from a single organism. In her most recent book, Lynn Margulis and her son, Dorian Sagan, claim, “We show here that the major source of inherited variation is not random mutation. Rather the important transmitted variation that leads to evolutionary novelty comes from the acquisition of genomes.”<sup>62</sup> Essentially, what Margulis and Sagan are saying is that there is no single common ancestor, but rather all organisms are chimeras made up of more than one simpler organism. Carl Woese and others have expressed similar ideas.<sup>63</sup> At the molecular level, organisms do not appear to have descended from a single common ancestor with the family histories of different groups following single slowly branching trajectories until they reached their present state. When design is arbitrarily eliminated from consideration, molecular data suggests a complicated story of life best represented by a bush with many interconnecting twigs, rather than a tree with a single trunk and gradually branching taxonomic groups. If design is not forbidden before the data is considered, molecular data is consistent with the idea of a Designer who combined standard parts—genes—in novel ways to create different kinds of organisms.

One of the most startling things about SRP is that its components seem to be interchangeable between very different organisms. The SRP proteins from human cells, which by themselves show no activity, will form fully functional SRPs when combined with the RNA component of SRP from *Xenopus laevis* (frogs) or *Drosophila melanogaster* (fruit flies).<sup>64</sup> Equally startling, when components of *Canis familiaris* (dog) SRPs are reconstituted with one of the major

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<sup>61</sup> Salzberg SL, White O, Peterson J, Eisen JA. 2001. Microbial genes in the human genome: Lateral transfer or gene loss? *Science* 292:1903-1906. And Andersson JO, Doolittle WF, Nesbø CL. 2001. Are there bugs in our genome? *Science* 292:1848-1850.

<sup>62</sup> Margulis L, Sagan D. 2002. *Acquiring Genomes: A Theory of the Origins of Species*. Basic Books, New York. p12

<sup>63</sup> Woese, CR. 2002. On the evolution of cells. *Proceedings of the National Academy of Sciences USA*. 99(13):8742-8747. Sapp J. 1994. *Evolution by Association: A History of Symbiosis*. Oxford University Press, New York. Williamson DI. 2001. Larval transfer and the origin of larvae. *Zoological Journal of the Linnean Society* 131:111-122. Williamson DI. 1992. *Larvae and Evolution: Toward a New Zoology*. Chapman and Hall, New York. And many others.

<sup>64</sup> Walter P, Blobel G. 1983. Disassembly and reconstitution of signal recognition particle. *Cell* 34:525-533.

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components replaced by the single large protein from the bacteria *Escherichia coli* SRP, an SRP results functional in all respects except for binding to the endoplasmic reticulum receptor.<sup>65</sup> The same dog SRP protein replaced by the *E. coli* protein can in turn bind to the RNA portion of *E. coli* SRP.<sup>66</sup> The amazing thing about these proteins, called SRP54 in mammals and Ffh in *E. coli*, is that they only share 38 % amino acid identity, and yet their three-dimensional structures contain similar structural elements.<sup>67</sup> In addition, dramatic differences exist between dog and *E. coli* SRP RNA.<sup>68</sup> That both proteins and both RNAs would have evolved so dramatically in sequence in such radically different organisms and yet remained so similar in structure and function beggars the imagination. Invoking some kind of design teleology is consistent with what is known. Random mutation coupled with selection seems like a very unlikely explanation.

### Conclusions

*Darwin convinced the world of the historical fact of evolution. This we owe him. What more need we ask? He was the apostle who converted the Christians, or a large body of them. Did he not devote almost all his life to this tremendous task? And was he not as successful in this mission in partibus fidelium [in the land of the faithful] as any apostle has ever been?*<sup>69</sup> –Cyril Darlington

Living systems are full of amazing machines. At the macro level the heart pumps blood, the kidneys filter it, the diaphragm acts as a bellows to pump air into the lungs, and so on. Charles Darwin recognized that natural selection was not adequate to create any one of these machines in a single step. Instead, he suggested:

If it could be demonstrated that any complex organ existed, which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down.<sup>70</sup>

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<sup>65</sup> Bernstein HD, Zopf D, Freymann DM, Walter P. 1993. Functional substitution of the signal recognition particle 54-kDa subunit by its *Escherichia coli* homolog. Proceedings of the National Academy of Sciences USA. 90:5229-5233.

<sup>66</sup> Romisch K, Webb J, Lingelbach K, Gausepohl H, Dobberstein B. The 54-kD protein of signal recognition particle contains a methionine-rich RNA binding domain. Journal of Cell Biology 111:1793-1802. And Zopf D, Bernstein HD, Johnson AE, Walter P. 1990. The methionine-rich domain of the 54 kd protein subunit of the signal recognition particle contains an RNA binding site and can be crosslinked to a signal sequence. EMBO Journal 9(13):4511-4517.

<sup>67</sup> Bernstein HD, Poritz MA, Strub K, Hoben PJ, Brenner S, Walter P. Model for signal sequence recognition from amino-acid sequence of 54K subunit of signal recognition particle. Nature 340:482-486.

<sup>68</sup> Larson N, Zwieb C. 1991. SRP-RNA sequence alignment and secondary structure. Nucleic Acids Research 19(2):209-215. And Zwieb C. 2002. Personal communication.

<sup>69</sup> Darlington CD. 1959. *Darwin's Place in History*. Basil Blackwell, Oxford p.59.

<sup>70</sup> Darwin CR. 1958. *The Origin of Species by Means of Natural Selection or the Preservation of Favoured Races in the Struggle for Life*. Penguin Books, New York p 171.

## STANDISH: BITS AND PARTICLES

While laying the burden of essentially proving a negative on those who disagreed with his theory, Darwin recognized the necessity of effecting change in small steps; a principle stated repeatedly in *The Origin of Species*: “Any change in function, which can be effected by insensibly small steps, is within the power of natural selection.”<sup>71</sup> Darwin used the eye to illustrate how change might be effected using what appeared to him to be small steps as eyes evolved from light detecting spots to fully formed camera type eyes of the kind seen in humans and octopuses. The problem was that Darwin was ignorant of the mechanisms within cells that allow eyes to work. Molecular biology has shown that organisms are not only made up of machines at the macroscopic level. The cells from which organs are made contain numerous machines as well. SRP demonstrates that these machines perform complex functions. Intelligent humans can design complicated machines. Along with information, machines—whether they be boomerangs, stone tools, cars or aircraft—are readily recognized as products of intelligence.

Michael Behe has argued convincingly that some molecular machines are irreducibly complex.<sup>72</sup> In other words, there is a point at which no more parts can be removed before the machine no longer works. Imagine removing parts from the engine of a car. It may be possible to remove some of the bolts or the air filter and still have an engine that, under ideal conditions, will run. However, there are some parts that cannot be removed without destroying the function of the engine. For example, removing the crankshaft may turn the engine into an effective anchor, but the function as an engine will no longer exist. Molecular machines can behave in exactly the same way. SRP demonstrates this. Some parts can be removed, making it less effective at moving proteins to the endoplasmic reticulum surface, but removal of other parts completely destroys the function. None of the six proteins and single RNA molecule that make up the mammalian SRP has any known function other than its role within the SRP. However, simpler SRP complexes are known.

The bacterial *E. coli* SRP, as noted earlier, is composed of an RNA molecule much shorter than the one found in mammals. In addition, instead of six proteins, *E. coli* only uses one (Ffh). This less complex SRP may not do some of the things mammalian SRP does, but it can still bind to signal sequences, transport the protein to a membrane (the cell membrane in the case of *E. coli*), bind to a membrane bound receptor—thus ensuring the protein is at a pore where it can be released outside the cell—then let go of the protein, then repeat the cycle. To achieve this, both parts of the *E. coli* SRP are needed: the RNA and the protein.

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<sup>71</sup> Darwin CR. 1958. *The Origin of Species by Means of Natural Selection or the Preservation of Favoured Races in the Struggle for Life*. Penguin Books, New York p 422.

<sup>72</sup> Behe M. 1996. *Darwin's Black Box: The Biochemical Challenge to Evolution*. Free Press, NY.

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On the surface it looks like a relatively simple irreducibly complex machine. How simple it is in absolute terms is a matter of judgment.

Another factor to take into consideration is that SRP is irrelevant unless two things are present: 1) A signal sequence on the proteins it is to recognize and mediate the transport of and 2) a receptor on the surface of the membrane it is to transport them to. In other words, the SRP is part of a much larger system. Because of its machinelike qualities, SRP appears to be designed. Because it is part of a much larger system with a teleological objective—export of proteins from the cell and insertion of proteins into membranes—presence of SRP suggests that this system has elements of design in it. Endothelin-1, because of its signal sequence designed to interact with SRP as well as the information content of the gene that codes for it, also suggests design.

The two examples given in this paper, information in endothelin-1 and machine-like SRP, do not compel belief that every system of the cell is designed or that every organism composed of cells is designed. However, what is known about organisms at the molecular level is consistent with the creation/salvation story contained in Scripture in which a benevolent Creator seeks to save his creation currently suffering under the curse of sin.

### **No Miracles**

*By coupling undirected purposeless variation to the blind, uncaring process of natural selection, Darwin made theological or spiritual explanations of the life processes superfluous.<sup>73</sup> –Douglas Futuyma*

The car engine example demonstrates that irreducibly complex machines can be a product of human intelligence. What has not been demonstrated is that natural forces, unguided by intelligence, can produce machines of this sort. The short steps Darwin suggested are not adequate to account for machines with multiple parts coming together with no precursors. The evolution story may be salvaged with appeals to unknown or hypothetical functions for individual components—like using the engine block as an anchor—but these functions are beyond the scope of empirical science and thus become simple articles of faith. Multiple parts appearing at the same time and interacting with each other in precise and complex ways—what Dembski would call highly specified ways—is not a little step: it is a miracle.

“I would give nothing for the theory of natural selection, if it requires miraculous additions at any one stage of descent.”<sup>74</sup> Darwin used these words in a letter to Charles Lyell shortly after publication of the *Origin of Species*. Darwin

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<sup>73</sup> Futuyma D. 1986. *Evolutionary Biology*, 2nd ed. Sinauer Associates Inc. Sunderland, MA. p. 2.

<sup>74</sup> Darwin, CR. Letter to Charles Lyell October 11 1859 in Darwin F. ed. 1959. *The Life and Letters of Charles Darwin: Including an Autobiographical Chapter* Vol. II. Basic Books, New York. p. 7.



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set up an arbitrary rule in his creation story—no miracles allowed—revealing a dogmatic commitment to materialism. There is nothing very logical about this precondition on how species may come into existence. In fact, the mechanism of mutation and selection as formulated in the modern evolutionary synthesis does not in any way logically exclude the existence of miracles or a role for miracles in the creation of species. What biology does show, at the molecular and every other level, is that natural selection does not adequately explain all of nature. In addition, the monophyletic origin of life suggested by Darwinism is not consistent with molecular data unless special miracles are allowed, like lateral gene transport, an evolving genetic code, and simultaneous appearance of parts engineered to very fine specifications to fit together into complex molecular machines.

The story of the origin of life and its development until the present is clearly a long and complex one in which natural forces have played a major role; however, the explanatory power of stories that only invoke natural causes is not sufficient to account for what is observed in nature. Design is logically inferred from at least some of the data, particularly that data dealing with life at the molecular level. Molecular data does not tell us who the Designer is, but it is sufficient to tell us that He exists. Like Moses asking God's name,<sup>75</sup> nature gives a clear answer, "I Am."

The molecules of life suggest no need for Christians to become sycophants to materialistic philosophy posing as science. On the contrary, science liberated from the artificial constraints of materialism provides an elegant mechanism for study of the creation and logically points to a wonderful Creator. In the words of Johan Kepler, "To God there are, in the whole material world, material laws, figures and relations of special excellency and of the most appropriate order . . . Those laws are within the grasp of the human mind; God wanted us to recognize them by creating us after his own image so that we could share his own thoughts."<sup>76</sup>

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<sup>75</sup> Exodus 3:14

<sup>76</sup> Kepler, J. (1599). Letter to Herwart von Hohenburg reprinted in *Johannes Kepler: Life and Letters*. Carola Baumgardt, 1951. Philosophical Library, New York. p 50.

## **What Are the Limits of Death in Paradise?**

Leonard Brand  
Loma Linda University

In the original earth as it was created and in the new earth, was there and will there be no decay and no death of animals or plants? Do all living things live forever in a perfect world? To attempt to answer this question may seem arrogant or presumptuous, and in fact it would be, since we haven't been there and we have been given very little information on the subject. Thus my goal will not be to answer the question, but to clarify the issues so we will be less likely to settle for superficial answers. The discussion will cite the biblical and E. G. White accounts of the original creation and the recreated new earth, as commonly understood, and will evaluate what those accounts say and do not say and whether our common ideas about paradise are actually supported by these sources.

I am aware that some of these citations may not be meant as literalistically as they are often interpreted. For example, Isaiah 11:6–9 was actually part of a prophecy of the fall and restoration of Israel and uses a lot of figurative language. However, I will use the most conservative reading of these texts, and if they were not meant that conservatively, this will strengthen, rather than weaken, most of my conclusions.

One danger that I will try to avoid is the acceptance of a new idea or approach just because it is new and tantalizing. The other danger that is just as necessary to avoid is the persistent, unquestioning acceptance of an old idea just because it has been around so long.

In a previous paper (Brand 1985, *Origins* 12:71–88) I suggested that the best way for Scripture and science to interact is for science to challenge us to consider new ideas and then let Scripture be the standard to help us evaluate those ideas. I will use that approach in this paper, with scientific information suggesting a variety of options that can be compared with what God has told us about the original creation and the new earth. It could be argued that we should give equal weight to science and revelation and be willing to recognize that science can show us that revelation is wrong. However, the more experience I have

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in science and the more Jesus becomes real to me, the more naive that approach appears. For instance, in the topic under discussion in this paper, our experience with death has been limited to one ecological system that involves death for every creature. Our ability to scientifically analyze the issues is limited to that one ecological system. We can suggest some of the implications of a different system, but we have no ability to determine whether or not God could make such a system work.<sup>1</sup>

We will also examine several hypotheses and evaluate the factors for and against each one. This multiple hypothesis approach helps us avoid superficial reasoning; e.g., if the evidence is against one hypothesis, there is a tendency to jump to an opposite hypothesis without realizing that there might be several other possibilities along the way that need to be considered.

**The Revealed Information about Paradise**

The following sentences from the Bible (NIV) and E. G. White are often cited by Adventists who comment on this question:

*Steps to Christ* 9. “The fair earth, as it came from the Creator’s hand, bore no blight of decay or shadow of the curse.”

*Patriarchs and Prophets* 62. “As they witnessed in drooping flower and falling leaf the first signs of decay, Adam and his companion . . . The death of the frail, delicate flowers was indeed a cause of sorrow; but when the goodly trees cast off their leaves, the scene brought vividly to mind the stern fact that death is the portion of every living thing.”

*Early Writings* 18 [in a vision in which she seemed to be on the new earth]. “I saw another field full of all kinds of flowers, and as I plucked them, I cried out, ‘they will never fade.’ Next I saw a field of tall grass, most glorious to behold; it was living green and had a reflection of silver and gold, as it waved proudly to the glory of King Jesus. Then we entered a field full of all kinds of beasts—the lion, the lamb, the leopard, and the wolf, all together in perfect union. We passed through the midst of them, and they followed on peaceably after.”

Isaiah 11:6–9. “The wolf will live with the lamb, the leopard will lie down with the goat, the calf and the lion and the yearling together; and a little child will lead them. The cow will feed with the bear, their young will lie down together, and the lion will eat straw like the ox. The infant will play near the hole

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<sup>1</sup> Some might claim that God, because He is God, can do anything, so He can make any system we may imagine work the way we think it should work. However, the more scientists accrue evidence revealing the astonishing extent to which we are “fearfully and wonderfully made,” the clearer it becomes that everything about God’s creation was carefully planned to be “good.” In a multitude of instances organisms work within very close tolerances, and if those tolerances are exceeded in some way, the organisms fall sick or die. This suggests that while there may be many ways God might devise to make a system work, there are many more ways that wouldn’t work. God chose none of *those* ways, but only the “good” ways.

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of the cobra, and the young child put his hand into the viper's nest. They will neither harm nor destroy on all my holy mountain, for the earth will be full of the knowledge of the Lord as the waters cover the sea."

Isaiah 65:25. "The wolf and the lamb will feed together, and the lion will eat straw like the ox, but dust will be the serpent's food. They will neither harm nor destroy on all my holy mountain, says the Lord."

*Patriarchs and Prophets* 68. "To Adam, the offering of the first sacrifice was a most painful ceremony . . . It was the first time he had ever witnessed death, and he knew that had he been obedient to God, there would have been no death of man or beast."

*Counsels on Diet* 396. "One animal was not to destroy another animal for food."

Revelation 21:4. "He will wipe every tear from their eyes. There will be no more death or mourning or crying or pain, for the old order of things has passed away."

*Great Controversy* 676 (commenting on Isaiah 11:6, 9). "Pain cannot exist in the atmosphere of heaven. There will be no more tears, no funeral trains, no badges of mourning."

Several specific conditions in paradise are described above:

Several mammals are listed that will not hurt each other or us.  
Poisonous snakes will not harm us.  
Lions will eat vegetable matter.  
Animals will not destroy each other for food.  
Serpents will eat dust.<sup>2</sup>  
There will be no pain or tears.  
Flowers will not fade.  
There will be no decay.

We sometimes interpret this to mean that no creatures of any sort or plants will ever die in the new earth, and there will not even be any decay of vegetable matter. Is this conclusion the only one consistent with the brief prophetic comments, or have we read too much between the lines? Several issues will be considered in this article:

I) Will there be a decay process that recycles nutrients?

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<sup>2</sup> In Gen 3:14 the serpent's eating dust and in Mic 7:17 the serpent's licking dust "like the crawling things of the earth" [NRSV] seem metaphorical rather than literal. Creatures with their mouths close to the ground necessarily end up with dust in their mouths, whether or not they deliberately eat it. In Gen 3:14 this eating of dust is a punishment. Does this mean serpents will still be punished in the renewed paradise? One might suggest that worms eat dirt, so perhaps serpents will be more like worms. However, more accurately, worms enrich soil by eating and digesting decaying matter, and they don't thrive in dust. What's more, the biblical references to worms seem more likely to be referring to maggots than to earth worms.

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II) Will no animals at all be eaten, or might this apply only to higher animals?

III) Will mammals and other animals not only be free from predation, but also live forever?

For each of these issues we will outline several options, then evaluate each option in relation to revealed information.

This discussion will assume that the new earth will be a recreation of the original earth and its biological realm as it was before sin. If this is indeed the case, then it is fair to compare our biological world with the biblical statements about the new earth and evaluate the implications of the changes that may have occurred as the result of sin. I am also assuming that God did not completely overhaul the nature of life after sin, but that the biological world now is approximately as it was at creation, except for the degenerative effects of sin. Thus, even though there may have been a lot of change, the changes that occurred will not be totally mysterious but will be at least potentially understandable as our scientific knowledge improves. It should be possible for us to suggest plausible genetic mechanisms for at least some of the changes. Our task here will be to ascertain the nature of those degenerative changes in terms of decay and death.

What follows is not frivolous. We have been far too ready to make assumptions about life in paradise that are based more on our theological speculations or our fantasies than on serious consideration of the magnificent and intentional order of God's creation.

### **I. Decay**

What became of apple cores in the Garden of Eden? It does not seem reasonable to suggest that they accumulated and lasted forever. Do the statements indicating no decay in Eden refer to the decay involved in recycling nutrients, or is that trying to make them mean much more than was intended? In *Patriarchs and Prophets* (62) the first signs of decay are given as falling leaf and drooping flower, indicating changes in the plant world, and these were the beginning of the spread of death to things that did not previously die. The falling leaves reminded Adam and Eve that they too would die. Does the use of the term "decay" in these references and others like them refer to the bacterial breakdown and recycling of organic refuse (apple cores; dung; fallen twigs), or is this more likely a general reference to the intrusion of death and suffering into the creation? Perhaps we tend to read our specific, technical definitions into words that were used with a more general meaning.

If we interpret the statements discussing decay as referring to the specific process of bacterial recycling, this has a number of implications that should not be ignored. The original diet of man included fruit and grain. All fruit begins with flowers, and the flower petals die and fall off to make room for the fruit.

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Then, after the fruit is eaten, there is usually some waste part of the fruit that is not edible. An analogous process is involved in the growth and eating of grain.

If “flowers never fading” means that each individual flower will last forever, then there could never be any fruit or grain. If flower petals do fall they will need to be recycled or they will accumulate indefinitely. There likely would be other organic waste matter as well. Will nobody ever accidentally break a twig from a tree? Or will there be twigs that need to be recycled? Today trees lose small twigs and lower branches as the tree grows. All trees also make new leaves to replace old ones. Deciduous trees do this each year, but conifers are continuously replacing needles with new ones. Did this begin only after sin, or did trees always have a renewal process like conifers have? The same process occurs with animal hair (including human hair). Did animal hair never wear out in Eden, or were animals made to renew their fur coats periodically? What became of the old hair? Did every cell in our bodies live forever, or were there continual renewal processes, as is presently true, with replacement of old cells, and phagocytes that remove damaged cells?

Dung beetles have a life cycle that is designed around the recycling of dung. They form balls of dung that they bury in the ground, and then they lay their eggs in them. There are countless types of insects that live by recycling dung, dead wood, dead organisms, or other types of organic waste. Either they were designed for that function, or those adaptations have developed (evolved) since sin.

This paper will explore the following options:

1) There was literally no decay, and thus there were no animal wastes, no organism ever died, and each flower, plant, leaf, twig, and mosquito lived forever.

2) There was generally no decay, but there were biological mechanisms to care for the occasional fallen twig or leaf or flower.

3) The flower to fruit cycle, the replacement of leaves and hair, the production of animal wastes, the continual replacement of old or damaged cells in organisms (including scavenging of these cells by other cells designed to do so), and the recycling of these were normal processes in Eden.<sup>3</sup>

4) Scripture has nothing to say on this issue.

### **II. The Limits to Predation**

The Biblical statements indicating that mammals will not eat each other are certainly consistent with an absence of pain and suffering. Mammals and birds

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<sup>3</sup> Do the E. G. White statements referring to changes that occurred after sin fit best with Webster’s first definition of decay—gradual loss of strength, soundness, health, or beauty—or with the second definition—to rot or decompose? After sin began to affect the earth, did trees begin to lose more leaves than required for normal replacement, and did flowers begin to wilt and look ugly before falling off to make way for fruit? Might the statements about fading flowers mean that there will always be beautiful flowers, rather than that each individual flower will last forever?

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give indication of fear, pain, and suffering associated with predation. Also, those mammals and birds that have long-lasting pair bonds sometimes show evidence of a sense of loss after a mate or a parent dies. Does this mean that no animals ever will eat each other? What about bats and anteaters, which have very specialized adaptations for catching and eating insects? Will they still eat insects; did they eat insects in the garden of Eden; or were they originally quite different, and have their insect-eating adaptations developed (evolved) since sin?

One way to examine this question is to consider the highest level of life that can be eaten by other organisms without results that are evil in a moral sense: without causing pain and suffering.

Man	highest level of intelligence; spiritual nature
Mammals	intelligent behavior; some with strong bonds to mother or mate (love); some act like they have some ability to perceive death
Birds	much more instinctive (automatic) behavior than mammals, but more intelligent than reptiles; some have bonds to a specific mate
Reptiles, Amphibians	more intelligent than fish, but without bonds to other specific individuals (love); no concept of death
Fish	vertebrates, but with largely instinctive behavior
Invertebrates	organisms with power of movement, but no intelligent thought or appreciation of pain or fear
Sessile Animals	invertebrates that do not move around
Plants	sessile organisms; no brain or sense organs
Fruits	periodically renewed resource; produced in excess

What is it about death by being eaten that is evil? Since eating fruit was a part of God's original plan for us, it must be all right to eat some types of living tissue. The question is, what feature defines the limit of what can be eaten without introducing evil into nature? Animals move and plants generally do not—is the ability to move the dividing line? Probably not, since some plants have at least some parts that move, and it seems like it would take more than movement to define the limit of what can be eaten. If a bat eats an insect, is that a morally evil action, or were insects designed to fill a role in nature equivalent to mobile plants? Insects and other invertebrates will instinctively try to escape from predators, but this does not mean they understand death, or that they suffer when caught like higher animals do. Invertebrates certainly do not have any sense of what death is, nor is it likely that they feel any loss at the death of another insect. Death of any kind now reminds us of our own mortality, but when humans have immortality in the new earth perhaps we will look at things more objectively and recognize that the death of insects has no moral significance and causes no suffering to the insect.

In contrast to insects, the death of mammals has much more significance. Since baby mammals are very dependent on their parents for a time, the death of a mother results in the slow and painful death of her young. Some mammals

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have very strong bonds between mother and young and between mates, and when a mate or parent dies, at least some mammals act as if they perceive something of the meaning of death. The pain and suffering caused by predation of mammals by other animals is certainly difficult to reconcile with a perfect creation, and all of the examples mentioned in the Scripture texts quoted above are mammals. Perhaps mammals were created with behavioral controls that prevented them from attacking each other, and these controls broke down as the result of sin.

If insects were subject to predation in Eden, where, between insects and mammals, was the limit of predation? The specific animals that are listed in the revealed descriptions of paradise are mammals, except for the statement that “one animal was not to destroy another animal for food.” In this statement was the word “animal” used in the precise zoological sense of animals as compared to plants? Or was the common layman’s use of the word “animal” to mean “mammal” closer to what she had in mind?

Some birds also have strong pair bonds, and according to Konrad Lorenz some even react to the death of a mate in much the same way as a human would. Reptiles, amphibians, and fish are much more instinctive in their behavior, so perhaps their death does not have the moral significance of intelligent, warm-blooded animals. However, the killing and eating of reptiles by other animals is still difficult to reconcile with a world of peace and love.

Some of the possible options are:

1) Only plants could be eaten; no animals were ever eaten, including invertebrates. Animals that are specialized for eating insects, like anteaters and bats and spiders, have developed those adaptations since sin; baleen whales have also developed their baleen structures and the rest of their filter feeding mechanism; all filter-feeding invertebrate animals (a filter that catches food items, including other animals, out of the water) have changed from their original structure to become filter-feeders. Insect-eating plants, such as the pitcher plants and Venus fly traps, have also evolved those adaptations since sin.

2) Insects and other invertebrates were part of the food chain, along with plants. No vertebrate animals were ever eaten by other animals. Behavior patterns that maintained this limit of predation began to break down after sin, along with man’s predation on animals. If invertebrates were originally a source of food for other animals, this eliminates the need to evolve all of the filter-feeding and other mechanisms involved in the eating of invertebrates.

An important question that still remains is how much change is required to develop, from the created animals, the vertebrate predators that exist now? It is often assumed that this requires a lot of anatomical changes, but that is not necessarily true for many vertebrates. Possibly the change to a predatory life style involved largely behavioral changes, with limited anatomical change. A common objection to this idea is the observation that in mammals there is considerable difference between the digestive systems of carnivores and herbivores. It is



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sometimes claimed that this difference between carnivore and herbivore digestive tracts would have to have developed since the beginning of sin. Closer inspection doesn't seem to support this conclusion. Mammals can be grouped roughly into four categories, based on what they eat:

a. Grass, leaves	b. Fruit, roots, fungi, seeds, invertebrates, occasional meat	c. Carrion	d. Mostly live animals
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The big difference in digestive tracts is between group a and b, not between b and c, or between c and d. The herbivores in group a (cow family [Bovidae], deer family [Cervidae], horses and their relatives, rabbits and hares, rodent subfamily Microtinae, etc.) have specialized features for dealing with the indigestible plant cell walls in grass and leaves. These features include longer intestines, and generally some type of fermentation system where bacteria and protozoa break down the plant material into substances that mammals can use as an energy source. Some also chew the cud—chew and swallow the products from the fermentation chamber—including the Bovidae, Cervidae, and rabbits and hares. Perhaps the animals in groups b to d were originally all vegetarian (but not grass-eaters), and those that were anatomically capable of changing to meat eating made the change. The shearing and stabbing teeth of carnivores have perhaps been accentuated by natural selection, but their original function was the dismantling of fruit, etc. Some mammals that eat very little meat have large and powerful canine teeth. Also pet African lions and other carnivores have been raised on vegetarian diets and remained healthy—carnivores don't necessarily need meat.

3) This option is like the last one, but includes some lower vertebrates on the menu. Perhaps cold-blooded vertebrates could be eaten by other animals in Eden—at least those types that do not exhibit any parental care or other bonding-like behaviors. And perhaps the carrion feeders like vultures have always been the garbage clean-up crew.

**III. Death**

The issue of the limits of death in paradise needs to be considered in its own right, aside from the question of predation. Some individuals believe that on the new earth, if we are about to accidentally step on an ant, an angel will be sure to move the ant aside. I have no doubt that angels are capable of being that alert, but is that really the way it will be? The discussion under the subject of predation is also pertinent here, in the sense that death has a different significance for invertebrates than it has for thinking, loving mammals. But there are other issues involved as well. What does the tree of life mean for humans? We will need to eat of the tree of life in order to live forever. In *Patriarchs and Prophets* it says, "In order to possess an endless existence, man must continue to partake of the tree of life. Deprived of this, his vitality would gradually diminish until life

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should become extinct” (60). Is the tree of life just symbolic, or does it have some real function? My favorite hypothesis is that the fruit of the tree of life contains a set of enzymes that activate a renewal or replacement mechanism in the cells of our bodies that prevents aging.

What about mice, lizards, and bluejays—do they live forever without eating from the tree of life? Perhaps the mice and other small animals gather from around the world periodically to eat from the tree of life, but that doesn’t seem highly probable. Was there an alternate source of the “tree of life enzymes” for non-human animals? Otherwise it would seem quite inconsistent that humans would have to eat from the tree of life, but other animals would live forever without doing so. On the other hand, another possibility is that man’s relationship to the tree of life is different from other animals, for the same reason that man has to use intelligence to accomplish many things that other animals do instinctively. If that is true, then perhaps humans need the tree of life, but other (non-rational, non-spiritual) animals live forever without the tree of life.

There are other implications, as well, if animals were originally intended to live forever. If that were true, then either the universe would have to expand forever, exponentially, so the excess animals could be moved to new homes, or else reproduction would have to stop when the earth was adequately supplied with animals. Of course this problem exists for humans no matter how other animal populations were controlled. If humans had not sinned, at some point human reproduction would have to have stopped unless the universe is forever expanding.

The most direct statement pertinent to this question is in *Patriarchs and Prophets*—“It was the first time he [Adam] had ever witnessed death, and he knew that had he been obedient to God, there would have been no death of man or beast” (68). It would be helpful if we had been given a definition of just what was meant here by “beast.” Did it mean domestic animals, mammals, or what? The part of the statement that says he had not witnessed death does not necessarily mean that no death of lower animals ever occurred down in their nests or burrows, and if Adam had not become subject to death he may have had quite a different perspective on the death of an insect or even a mouse.

Some of the options for the limits of death are:

1) Not only was there no predation, but no animals ever died. No insects will ever get accidentally stepped on, and even mice live forever.

2) Humans and other vertebrate animals (at least the higher, warm-blooded vertebrates) live forever. Plants and invertebrates all have a genetically determined life span (as is currently true), after which they die and are replaced by new offspring.

3) Humans (in addition to heavenly beings) live forever, and they do so because they eat from the tree of life. Higher vertebrates (perhaps all vertebrates) are not subject to predation, but all plants and most non-human animals have a genetically defined life span (as is currently true) and then quietly die and are

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recycled. Some mammals—and perhaps all—do not die. Carefully designed behavioral mechanisms limit predation to animals that do not suffer because of being killed, and death is limited to animals that do not understand the meaning of life and death. Synchrony in length of life within any given species reduces or eliminates the emotional pain of an animal losing a mate. Population control mechanisms are highly efficient and prevent overpopulation.

4) As in number 3, but all non-human animals are subject to death. They live out their genetically programmed life cycle, then quietly die and are recycled.

**Conclusions**

What do Scripture and E. G. White's writings tell us about these options, at least if we accept the more conservative interpretations?

A. The following hypotheses seem to be favored by many Christians. They are *consistent* with a literal reading of what has been revealed, but may not be *required* by the prophetic writings unless we read something between the lines of those statements that is not really there or insist on a literalistic meaning that may have never been intended by the authors. I don't see any biblical reason to accept these hypotheses. The term decay can readily be understood as meaning the gradual degenerative effects of sin, not bacterial recycling. E. G. White's exclamation (*Early Writings* 18) upon being shown flowers in the new earth that "they will never fade" doesn't sound like a theological revelation, but rather sounds like her spontaneous, exuberant reaction to the beauty before her.

- I. (option 1) There was literally no decay, and thus there were no animal wastes, no organism ever died, and each flower, plant, leaf, twig, and mosquito lived forever.
- II. (option 1) Only plants could be eaten; no animals were ever eaten, including invertebrates. Insect-eating plants and animals that are specialized for eating invertebrates, like anteaters and bats, spiders, and filter feeders, have developed those adaptations since sin.
- III. (option 1) Not only was there no predation, but no animals ever died. No insects will ever get accidentally stepped on, and even mice live forever.

B. The following hypotheses, in my current opinion, are not clearly refuted by even the most conservative, literal reading of the prophetic writings. We can only judge them according to our subjective concepts of what is morally evil about death and/or predation at various levels of life.

- I. (option 2) There was generally no decay, but there were biological mechanisms to care for the occasional fallen twig or leaf or flower.
- I. (option 3) The flower to fruit cycle, the replacement of leaves and hair, the production of animal wastes, the continual replacement of old or

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damaged cells in organisms (including scavenging of these cells by other cells designed to do so), and the recycling of these were normal processes in Eden. After sin began to affect the earth there was a gradual loss of strength, soundness, health, or beauty; trees began to lose more leaves than the normal replacement, and perhaps flowers began to wilt and look ugly before falling off to make way for fruit. Or perhaps the statements about fading flowers means that there will always be beautiful flowers, not that each individual flower will last forever.

- II. (option 2) Insects and other invertebrates were part of the food chain, along with plants. No vertebrate animals were ever eaten by other animals. Behavior patterns that maintained this limit of predation began to break down after sin, along with man's predation on animals.
- II. (option 3) Some lower vertebrates, in addition to the invertebrates, were eaten by other animals—at least those types that do not exhibit any parental care or other bonding-like behaviors. And perhaps the carrion feeders like vultures have always been the garbage clean-up crew.
  
- III. (option 2) Humans and other vertebrate animals (at least the higher, warm-blooded vertebrates) live forever. Plants and invertebrates all have a genetically determined life span and then die and are replaced by new offspring.
- III. (option 3) Humans (in addition to heavenly beings) live forever, and they do so because they eat from the tree of life. Higher vertebrates (perhaps all vertebrates) are not subject to predation, but all plants and most non-human animals have a genetically defined life span and then quietly die and are recycled. Some mammals—and perhaps all—do not die. Carefully designed behavioral mechanisms limit predation to animals that do not suffer because of being killed, and death is limited to animals that do not understand the meaning of life and death and have largely instinctive behavior. Population control mechanisms are highly efficient and prevent overpopulation.

C. The following hypotheses do not seem to be compatible with at least some Scripture and/or E. G. White statements, at least with our common understandings of these statements.<sup>4</sup>

I. (option 4) Scripture has nothing to say on this issue.

II. (option 4) All non-human animals, including the higher mammals, are subject to death in a perfect world.<sup>5</sup>

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<sup>4</sup> It may be that these statements were always meant metaphorically rather than literally, but this is a matter for literary analysis. I have been considering the question as a scientist while assuming a basically literal meaning.

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We cannot realistically expect to know the answers to the questions raised in this paper until we get to heaven, and it is not important for us to have those answers. The benefit of going through this discussion is that it may help us to avoid making claims that are not supported by a careful study of the writings that God has given through His prophets. Perhaps the tentative conclusions reached here will also stimulate biblical scholars to analyze the pertinent texts in ways that I am not qualified to do, thus providing more light on the subject.

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<sup>5</sup> This would require understanding Rom 5:12—“Therefore, just as sin entered the world through one man, and death through sin, and in this way death came to all men, because all sinned”—to be referring only to human death being a result of Adam’s sin, because among all creatures God has created on this world, only humans sin. That in turn would mean that death, decay, and recycling of what has decayed have always been part of God’s creation, His way of designing—except for humanity, to whom He gave a way to rise above the rest of His creation by obeying His commands and receiving eternal life. Accepting this would require us to accept a rather startling definition of the word “good” so often used in Gen 1. It would mean accepting that “good” is whatever God actually did, rather than imposing our own definition of “good” on God and insisting on His inability to act in a way contrary to our human definition. However, this would also seem to contradict the literal meaning of the inspired comments considered in this article.

## The “Kinds” of Genesis 1: What Is the Meaning of *Mîn*?

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### Introduction

The pervading influence of Charles Darwin’s theory of evolution tends to obscure the reasons for its acceptance and power today. Darwin was not initially opposed to the creation story in the Bible, but the evidence he acquired over many years seemed to be absolutely at odds with Genesis. However, upon closer examination of his growing uneasiness with creation, one finds that it was built upon an incorrect interpretation of the Bible. In Darwin’s day, fixity of species was considered a fact, supported by the phrase “after its kind” (*l’mînāh* [מִיָּנָה] and with other suffixes) in Genesis, Leviticus, and Deuteronomy. In other words, the species present today must have continued exactly as they were since God created them.<sup>1</sup> Not only that, but individuals of each species were thought to “increase in number . . . like the coinage of dimes, no variation.”<sup>2</sup>

Even though Darwin had some training for the clergy, he apparently accepted the interpretation of his day without looking at the original language to discover the meaning of *mîn* [מִן]. Darwin’s discovery of microevolution and his

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<sup>1</sup> See Leona G. Running, “A Study of Hebrew Words in the Creation Record,” *The Ministry* (Sept 1964): 19; Frank L. Marsh, “Variation and Fixity Among Living Things: A New Biological Principle,” *Creation Research Society Quarterly* 15 (1978): 115. Even in 1930, fixity of species was thought to be true by many creationists. Byron C. Nelson wrote, at that time, “While the Bible allows that new varieties may have arisen since the creative days, it denies that any new species have arisen, using the term species to denote natural rather than systematic species”; *After Its Kind: The First and Last Word on Evolution* (Minneapolis: Augsburg, 1930), 21. (All dogs are one natural species to Nelson, while the fox-terrier would be a systematic species produced by man. Seemingly, the term species could refer to broader categories than today).

<sup>2</sup> Frank L. Marsh, “The Genesis Kinds in the Modern World,” in Walter E. Lammerts, ed. *Scientific Studies in Special Creation*, 136–155 (Phillipsburg, NJ: Presbyterian and Reformed, 1971), 142.

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propagation of the idea of macroevolution—an idea he believed was implied by microevolution, though he had no proof of it—as well as the finding of multitudes of fossils from animals extinct today, completely undermined the then current “extreme interpretation of” the Biblical creation account.<sup>3</sup> Eventually, Genesis and much of the Pentateuch came to be seen as mythical or simply theological in meaning. Although this issue has been discussed for many decades, the controversy continues. Many people today, including influential biblical commentators, still believe the Bible refers to fixity of species in the creation story and beyond. For example, a well-recognized Old Testament scholar recently wrote, concerning the meaning of Genesis 1, that “each type reproduces after its own kind, so . . . there is no possibility of creating new species through mutation.”<sup>4</sup> Due to the large number of new species being found,<sup>5</sup> this assumption increases skepticism regarding the historicity and authenticity of the Bible.

The interpretation of *mîn*—what is meant by a “kind”—is thus fundamental to a proper understanding of the relationship between science and religion. The chief purpose of this article will be to consider the word *mîn* in Genesis, Leviticus, and Deuteronomy. My working assumptions include the unity of the Pentateuch under the authorship of Moses.<sup>6</sup> Many others have attempted to solve the *mîn* problem only within Leviticus (or even within Genesis alone), but the later references in Leviticus and Deuteronomy refer to Genesis intertextually, and Genesis must first be examined for the clearest picture. Jiří Moskala links Genesis and Leviticus on numerous grounds, including key terminology, universal taxonomy, three habitats for living creatures, four categories of living creatures, and similar rules for reproduction.<sup>7</sup>

The steps of exegesis that are pertinent to the question at hand will be followed in dealing with Genesis 1:11–25. This initial study will attempt to elucidate whether *mîn* is tied to the reproduction of the animals or not. Does the phrase refer to God’s creation of a multiplicity of (“all kinds of”) animals, or does it set specific boundaries and limits to the “kinds” of animals so that their ability to vary is severely limited? If the latter, are these boundaries linked with the animals’ abilities to breed with each other? Further, if Genesis links the “kinds” with reproduction, is this linkage permanent, or only initially at God’s creation?

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<sup>3</sup> Marsh, “Variation and Fixity,” 116.

<sup>4</sup> Robert R. Wilson, “Creation and New Creation: The Role of Creation Imagery in the Book of Daniel,” in William P. Brown and S. Dean McBride, Jr., eds, *God Who Creates: Essays in Honor of W. Sibley Towner*, 190–203 (Grand Rapids: Eerdmans, 2000), 201.

<sup>5</sup> Neil A. Campbell, *Biology*, Fourth edition (Menlo Park, CA: Benjamin/Cummings, 1996), 438–450.

<sup>6</sup> For evidence, see Gleason L. Archer, Jr., *A Survey of Old Testament Introduction* (Chicago: Moody, 1994), 99–126.

<sup>7</sup> Jiří Moskala, *The Laws of Clean & Unclean Animals in Leviticus 11: Their Nature, Theology, & Rationale* (Berrien Springs, MI: Adventist Theological Society Publications, 2000), 199–211.

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Since Genesis discusses broad categories, it cannot alone be expected to define the boundaries of *mîn*, and thus the lists of clean and unclean animals in Leviticus and Deuteronomy must also be considered. Time and space do not permit an examination of each animal in these lists to find the category referred to: variety, species, genus, family, order, etc. Also, the meaning of many of the terms for the animals in these chapters is obscure and cannot be defined precisely. However, much work has been done in this area, and based on previous word studies and a review of the different animals found in Palestine today and in the past, several animals may be identified with a reasonable degree of certainty. From these identifications, the limits of *mîn* will be estimated. This paper cannot hope to be comprehensive, but I will undertake a broad overview of the term and its usages.

Another crucial working assumption of mine is that science and Scripture are in harmony with each other when interpreted correctly,<sup>8</sup> and I will attempt to explore how the Bible and science can be unified when the terms and phrases of the Bible are studied in the original language and context. Since microevolution has been clearly demonstrated, it should be included—possibly even expected—in a discussion of the Biblical understanding of the reproduction and populations of animal types.

### Definition and Current Application of *Mîn*

The word *mîn* is used 31 times in the Hebrew Bible, always with the same basic grammatical construction: *l*<sup>e</sup> (לְ, particle preposition of specification) + *mîn* (מִן, defined here as “kind” or “variety”) + pronominal suffix. The usage of the phrase is always “in the sphere of what moderns would call the natural sciences, referring to groups of plants or animals united by common characteristics.”<sup>9</sup> The *TDOT* even refers to the phrase as “a classification term.”<sup>10</sup> J. Barton Payne calls *mîn* a “term for technical enumeration; and it is used in no other, more conversational, way in Scripture.”<sup>11</sup>

But *mîn* always occurs in the singular,<sup>12</sup> even when the type of life referred to is plural, meaning that it must be translated “kinds,” as a collective noun.<sup>13</sup>

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<sup>8</sup> Others also see this harmony between theology and science. See Frank L. Marsh, *Evolution, Creation, and Science* (Washington, DC: Review and Herald, 1944), 267–271; Leonard Brand, *Faith, Reason, and Earth History* (Berrien Springs, MI: Andrews UP, 1997), 90.

<sup>9</sup> Mark D. Futato, “מִן,” in Willem A. Van Gemeren, ed., *New International Dictionary of Old Testament Theology & Exegesis* (Grand Rapids: Zondervan, 1997), 2:934.

<sup>10</sup> P. Beauchamp, “מִן,” in G. Johannes Botterweck, Helmer Ringgren, and Heinz-Josef Fabry, eds., *Theological Dictionary of the Old Testament* (Grand Rapids: Eerdmans, 1997), 8:289.

<sup>11</sup> J. Barton Payne, “The Concept of ‘Kinds’ in Scripture,” *Journal of the American Scientific Affiliation* 10 (1958): 19.

<sup>12</sup> However, a plural pronominal suffix ending occurs once (in Gen. 1:21), and the third masculine singular ending *l'mînû* [לְמִינֵי] occurs four times (Gen 1:11; Lev 11:5, 22; Deut 14:14), rather than the usual *l'mînêhû* [לְמִינֵיהֶם] (occurs twelve times). Victor R. Hamilton sees the former as



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The *Brown-Driver-Briggs Hebrew and English Lexicon* defines *mîn* as a “kind, species . . . of plant; usually of animal (beast, bird, fish, insect).”<sup>14</sup>

The etymology of *mîn* is generally considered to be unknown, although several hypotheses have been presented. The root may have arisen from the Arabic etymon *myn*, carrying connotations of creation, bearing fruit, and reproduction of species. The Akkadian roots *minu* or *minutu* are also possibilities, referring to portioning, numbering, and counting.<sup>15</sup>

There are two basic views regarding the best meaning of *mîn* in the Hebrew Bible. The first focuses on the “multiplicity” of kinds, where *mîn* has nothing to do with the “capacity of a living being to reproduce itself in a continuing sequence of generations.”<sup>16</sup> The reasons for this view are varied. Some argue that if *mîn* had to do with reproduction, then it would be applicable to humans as well as animals.<sup>17</sup>

In support of this position, Leona Running’s crucial study has found that the preposition *l’* often “enumerate[s] classes and subdivisions of classes.”<sup>18</sup> When this usage is intended, “by” is usually the translation, not “after” or “according to.” Running claims that “by kind” or “by variety” would actually mean “the kinds of” or “all sorts of.” She considers the uses in Leviticus and Deuteronomy as more important because they are more numerous, and in light of these occurrences does not link *mîn* to reproduction.<sup>19</sup>

The second view suggests that even though an initial reading of *mîn* would seem to refer to “all kinds of animals,” yet God blessed the animals with the gift of procreation. He even commanded them to “be fruitful and increase in number” (Gen. 1:22, NIV). This implies that *mîn* involves reproduction and limitations for each group of animals. These reproductive limits, if implied by *mîn*, do not necessarily involve any limitations to a specific biological category; they simply indicate the fact that there are limitations. An example of this view would be the concept held by Duane T. Gish, where a “basic animal . . . kind

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“anomalous . . . representing an old accusative ending” (*The Book of Genesis: Chapters 1–17*, The New International Commentary on the Old Testament. [Grand Rapids: Eerdmans, 1990], 124).

<sup>13</sup> Payne, “The Concept of ‘Kinds’ in Scripture,” 17–18. Another scholar sees *mîn* as either a collective or a distributive singular, with most usages being distributive singular, rather than the “collective of collectives” (Pete J. Williams, “What does *min* Mean?” *Creation Ex Nihilo Technical Journal* 11 [1997]: 345–346). More study is needed on this phenomenon of distributive singular usage in Hebrew and with regards to *mîn*.

<sup>14</sup> F. Brown, S. R. Driver, and Charles A. Briggs, *The Brown-Driver-Briggs Hebrew and English Lexicon*, Fifth printing (Peabody, MA: Hendrickson, 2000), 568.

<sup>15</sup> *TDOT*, 8:288. For other etymological suggestions, see Williams, 348–349.

<sup>16</sup> *Ibid.*, 8:290.

<sup>17</sup> *Ibid.*

<sup>18</sup> Running, 20.

<sup>19</sup> *Ibid.*

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would include all animals or plants which were truly derived from a single stock . . . [and share] a common gene pool.”<sup>20</sup>

A view mediating between these two basic views is that of Payne, suggesting that *mîn* refers to “subdivisions within the types of life described and not to the general quality of the types themselves.” He does not link *mîn* to reproduction, but also does not believe that “all kinds of” is the best translation, since creative units seem to be intended. Payne thinks Moses is referring to “every different type of bird ordinarily distinguished,” even though “scientific precision” was not used.<sup>21</sup>

The Term *Mîn* in Genesis 1–7

The views mentioned above are present already in scholarly discussions of Genesis 1–7. Running looks at the Flood account in Genesis 6 and 7 and suggests that the usual translation of “fowls after their kind, and of cattle after their kind . . . two of every sort shall come unto thee, to keep them alive” (Gen. 6:20, KJV) should be changed. According to her aforementioned hypothesis, the verse should read, “the various kinds of fowls, and the different sorts of cattle . . . will come to the ark in pairs.”<sup>22</sup> She sees Gen. 1:21 in a similar light, arguing that the verse speaks of “how God caused the waters to bring [creatures] forth,” not of how procreation was to continue from then on.<sup>23</sup>

Running correctly notes that the *earth* receives God’s command to “bring forth the living creatures” in Gen. 1:24. The animals themselves are not commanded [*wayyōmer* <sup>lōhîm tôšē’</sup> *hā’āreš nepeš hayyāh l’mînāh*; נָשָׂא תְּהִיָּה לְמִינָהּ; [וַיֹּאמֶר אֱלֹהִים הוֹצֵא הָאָרֶץ]]. This seems to imply that the translation should be, “Let the earth bring forth the various kinds of living creatures.”<sup>24</sup>

The word *mîn* does not occur within the blessing of the birds and fish in Gen. 1:22 that enables them to be fruitful and multiply.<sup>25</sup> These creatures were to continue to reproduce creatures similar to themselves, but “kind” (*mîn*) does not appear to be involved in this process.

In support of this same view, Kenneth Matthews points out that it is not the plants that are commanded to reproduce according to their kind (that is, with a fixity of species). Rather, the earth is commanded to produce plants according to their kinds. When the term *mîn* occurs in vs. 11 and 12, the word *tôšē’* (הוֹצֵא; “Let . . . bring forth”) refers to the earth’s bringing forth, not the plants’ bringing forth. What is to be brought forth according to their kinds is further defined as two major groups of vegetation: <sup>‘ēšeb mazrîa’</sup> *zera’* (עֵשֶׂב מְזַרְיָע וְרֵעַ); “seed-bearing

<sup>20</sup> Duane T. Gish, *Evolution? The Fossils Say NO!* (San Diego: Creation-Life, 1978), 32. See also Marsh’s entire book, *Evolution, Creation, and Science*.

<sup>21</sup> Payne, “The Concept of ‘Kinds’ in Scripture,” 19.

<sup>22</sup> Running, 21.

<sup>23</sup> Ibid.

<sup>24</sup> Ibid.

<sup>25</sup> Ibid., 22.

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plants”) and  $\text{עֵץ פְּרִי}$  (עֵץ פְּרִי; “fruit trees”).<sup>26</sup> These categories are obviously broad, seemingly intended to cover all of the plants that God made. However, it is not reproduction that is involved with *mîn*, but the *original production*, although non-reproductive limitations on *mîn* seem to be implied.<sup>27</sup>

In contrast to this first interpretation (“multiplicity” with no connection to reproduction), other scholars find that Gen 1:24 is talking about each animal reproducing “according to its kind,” and that *mîn* “designates classifiable biological beings that are capable of reproducing.”<sup>28</sup> The preceding evidence, however, shows that a direct linkage of *mîn* to reproduction is not present.

But this does not mean that *mîn* is without boundaries. The context of creation by separations and divisions still implies boundaries, just not reproductive ones. God created the world not as a “disorganized mass, but a well-ordered subdivided whole, each individual plant and animal fitting into its own ‘kind’ which in turn fits into a larger group.”<sup>29</sup> Moskala also calls creation a “process of separation, division, and distinction,” characterized by the Hebrew word *bdl* (בדל; “to separate, divide”), which occurs eleven times in the creation account and the dietary laws.<sup>30</sup>

Payne’s mediating view seems to fit this picture almost perfectly: *mîn* is not tied to reproduction, but limitations are inherent in the full understanding of this term. This view would allow for subdivisions to develop within the kinds of animals, but the boundaries of the kinds would never be broken. In other words, microevolution could occur, but not macroevolution.

In order to correlate with the fossil record, many theistic evolutionists arbitrarily define *mîn* boundaries in Genesis as referring to phyla and classes. Paul Seely, however, tries to examine what *mîn* would mean to the original author

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<sup>26</sup> Kenneth A. Matthews, *Genesis 1–11:26*, The New American Commentary (Broadman & Holman, 2001), 152. However, some see three categories of plants, including *deše’* (עֵשׂוֹ) as grasses. See Henry M. Morris, *The Genesis Record: A Scientific and Devotional Commentary on the Book of Beginnings* (Grand Rapids: Baker, 1976), 62.

Brown, Driver, and Briggs also seem to suggest this by defining *deše’* as grass (206). But the verb *dš’* (דָּשַׁן) means to “sprout, shoot, grow green,” which can refer to all plants, not just grass (Brown, Driver, and Briggs, 205–206). Grasses produce seeds also, so the association by Morris of only “bushes and shrubs” with the seed-bearing category is not well-founded.

<sup>27</sup> Hamilton would disagree, however, since “God’s creative design is that both the plants and the trees will reproduce themselves by bearing seed ‘each according to its kind’” (126). The element of the seed does tempt one towards the linkage of *mîn* with reproduction, but all other cases in Genesis and Leviticus point to the reading as “all kinds of seed-bearing plants,” instead of the translation proposed by Hamilton.

<sup>28</sup> Gordon R. Lewis and Bruce A. Demarest, *Integrative Theology: Three Volumes in One* (Grand Rapids: Zondervan, 1996), 2:40.

<sup>29</sup> Futato, *NIDOTTE*, 2:934. “Order, not chaos, is the hallmark of God’s activity,” and Genesis 1 is “[concerned] with definitions and divisions” (Gordon J. Wenham, *Genesis 1–15*, Word Bible Commentary [Waco, TX: Word, 1987], 21). “The great Architect of the universe does not permit the colors of his canvas to run together” (Matthews, 157).

<sup>30</sup> Moskala, 212.

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and audience within a proto-scientific culture. He studies various proto-scientific peoples today, finding that they often classify animals in four major groups: fish, bird, mammal, and reptile. The Old Testament groupings would basically fit these categories. According to Seely, “the larger and more observable the animal, the more likely that its ‘kind’ was defined at the species level.”<sup>31</sup> Another plausible related hypothesis is that the Bible uses the “language of appearance” to group animals. This is not a scientific schema, because birds and flying insects are categorized together, for example,<sup>32</sup> but would correlate with the view of Genesis being written by a nontechnical observer, not a scientist.<sup>33</sup> The classifications would correspond to the ways in which the Israelites understood and related to the various plants and animals.

### The Term *Mîn* in Leviticus 11/Deuteronomy 14

All the kinds and subdivisions of animals were made by God. Even though *mîn* is not linked to reproduction in Genesis, order in the creation account seems to be implied. Genesis does not give very many clues as to what *mîn* refers to, especially since it is not dealing with fixity of species. On the other hand, Leviticus and Deuteronomy offer potential clues as to what *mîn* involves, since they include lists of animals, punctuated with *l'mînēhû* (לְמִינֵהוּ); or with other similar pronominal suffixes). If some of these animals can be properly identified, the range of boundaries of *mîn* can be deciphered.

Many of these names occur very few times in the Bible, making them hard to identify. Also, the common names for certain animals differ in various dialects, and this could be reflected in the confusion and multiple names for some birds.<sup>34</sup> Since the meaning of many of the animal names is quite uncertain, this paper will only consider the animals for which there is a majority consensus on the identification of the animal.<sup>35</sup> In addition, *mîn* is used only in connection with the birds, insects, and swarming things in Lev 11, and only with the birds in

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<sup>31</sup> Paul H. Seely, “The Meaning of *Min*, ‘Kind,’” *Science and Christian Belief* 9 (1997): 55. Other studies on proto-scientific peoples and their classification systems have been done. See George Morren, Jr., *The Miyanmin: Human Ecology of a Papua New Guinea Society* (Ann Arbor: UMI Research Press, 1986), 113–130; Cecil H. Brown, “Folk Zoological Life-Forms: Their Universality and Growth,” *American Anthropologist* 81 (1979): 791–813. Some people groups were able to distinguish between most organisms considered separate species by biologists today. Jared M. Diamond, “Zoological Classification of a Primitive People,” *Science* 151 (1966): 1102–1104.

<sup>32</sup> Futato, *NIDOTTE*, 2:934.

<sup>33</sup> This idea is hinted at by Richard Whitekettle (“Where the Wild Things are: Primary Level Taxa in Israelite Zoological Thought,” *Journal for the Study of the Old Testament* 93 [2001]: 17–37). See also William H. Shea, “Creation,” in Raoul Dederen, ed., *Handbook of Seventh-day Adventist Theology* (Hagerstown, MD: Review and Herald, 2000), 420.

<sup>34</sup> Ralph Bulmer, “The Uncleaness of the Birds of Leviticus and Deuteronomy,” *Man* n.s. 24 (1989): 306.

<sup>35</sup> In fact, most relevant authors have pages of reasons for their own identification, mostly very interesting, but there is not time and space to consider all of these. It is beyond the scope of this article to break new ground in the identification of the various animals.

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Deut 14. So the focus will be upon these animals, as they can perhaps elucidate the boundaries of *mîn*.

Although his research on the word *kol* (כָּל; “all,” “every”) is inconclusive due to the fact that not all the animals in Lev 11 can be identified, Pete Williams brings out an interesting point that I have found mentioned nowhere else. He compares the animals in Lev 11 that actually have the *mîn* phrase following them to those that are by themselves. He also considers the significance of the use of *kol* before certain animals. Although his research is inconclusive, he has found that most usages of *mîn* differentiate between the names followed by *mîn* and those that are alone.<sup>36</sup> The significance of these observations will become apparent in the discussion that follows.

According to Ralph Bulmer, it seems that the largest, most powerful birds, the vultures and eagles, come first (1 and 2) in the bird list of Leviticus 11. The next three are probably other diurnal raptors. The raven group is next, followed by three uncertain birds, and then the small hawks and a kind of owl. After four more uncertain ones, the Egyptian vulture, stork, herons, hoopoe, and the bat finish the bird list.<sup>37</sup> However, even those that seem undisputed to Bulmer are given different identifications by others.

The *nešer* (נֶשֶׁר; Lev 11:13; Deut 14:12) has often been identified as an eagle,<sup>38</sup> but the griffon-vulture of the desert seems to be a better choice, as it feeds on carrion and is bald-headed.<sup>39</sup> This term can also be “generic for large vultures and eagles” in a few verses.<sup>40</sup> The *mîn* phrase does not follow this single species.

Another bird “whose identification has never been questioned”<sup>41</sup> is the *‘ōrēb* (עֹרֵב; Lev 11:15; Deut 14:14), translated as ravens and other corvids, “generic for the whole tribe of crows, ravens, rooks, jackdaws, and jays, all of

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<sup>36</sup> Williams, 344–352.

<sup>37</sup> Bulmer, 318.

<sup>38</sup> Walter W. Ferguson, *Living Animals of the Bible* (New York: Charles Scribner’s Sons, n.d.), 50. See also George Cansdale, *All the Animals of the Bible Lands* (Grand Rapids: Zondervan, 1970), 142–143.

<sup>39</sup> Jacob Milgrom, *Leviticus 1–16*, The Anchor Bible (New York: Doubleday, 1991), 662. Several others agree with this position: Arthur Jones, “Boundaries of the Min: An Analysis of the Mosaic Lists of Clean and Unclean Animals,” *Creation Research Society Quarterly* 9 (1972): 115; David N. Freedman, ed., *Eerdmans Dictionary of the Bible* (Grand Rapids: Eerdmans, 2000), 188; G. R. Driver, “Birds in the Old Testament: Part I,” *Palestine Exploration Quarterly* 86 (1955): 8–9. Much corroborating evidence for the identification with the griffon vulture is given in J. G. Wood, *Bible Animals* (Guelph, Ontario: J. W. Lyon, 1877), 404–416; H. B. Tristram, *The Natural History of the Bible* (London: SPCK, 1880), 174–180; Brown, Driver, and Briggs, 676.

<sup>40</sup> Bulmer, 307. See also Ferguson, 50; Edwin Firmage, “Zoology,” in David N. Freedman, ed., *The Anchor Bible Dictionary*, (New York: Doubleday, 1992), 6:1155. Some find this term always ambiguous in reference to eagles or vultures. Geoffrey W. Bromiley, ed., *The International Standard Bible Encyclopedia* (Grand Rapids: Eerdmans, 1979), 2:1.

<sup>41</sup> Cansdale, 181.

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which occur in Israel.”<sup>42</sup> The literal translation is “the black one,” and “all kinds of ravens and crows” are included here.<sup>43</sup> The name covers “large, black scavenging Passeres and their allies.”<sup>44</sup> G. R. Driver notes that this name is onomatopoeic, “based on the cry of the bird which they represent.”<sup>45</sup> The *mîn* phrase does follow this group of birds.

*Dûkîpat* (דוקיפת; Lev 11:19; Deut 14:18) is almost always translated as the hoopoe, another onomatopoeic name, sounding like the bird’s call, “bu-bu pou-pou.”<sup>46</sup> This bird “feeds on dunghills, has a filthy nest, and the smell of its flesh is rank.”<sup>47</sup> This bird is referring to a single species, not a group of birds,<sup>48</sup> and the *mîn* phrase does not follow this term.

The last term in the bird list is *ʿallēp* (עללעפ; Lev 11:19; Deut 14:18), almost universally translated as the bat.<sup>49</sup> This animal is actually a common mammal in Palestine, and there is no *mîn* phrase following this term.

The terms for insects are numerous, even within the Bible, and could perhaps refer to different stages in the life-cycles, such as larvae, caterpillar, etc.<sup>50</sup> However, a couple of terms are more readily identifiable. *ʿArbeh* (ארבה; Lev 11:22) apparently refers to the locust. Since these insects do so much harm to the land around them, the term’s translation is little debated.<sup>51</sup> *Hāgāb* (חגב; Lev 11:22) is usually translated as a grasshopper, although early translations render it a small form of the locust, due to Num 8:31–33 and other such passages.<sup>52</sup> The *mîn* phrase follows both of these terms, as it does the other two groups of insects

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<sup>42</sup> Ferguson, 62. See also *Eerdmans Dictionary of the Bible*, 1111. *ISBE* (4:48–49) sees this term as generic here, but states that it can refer to a single member of this group elsewhere in the Bible.

<sup>43</sup> Milgrom, 663. See also Wood, 509–519; Brown, Driver, and Briggs, 788.

<sup>44</sup> Jones, “Boundaries of the Min,” 116.

<sup>45</sup> Driver, 12.

<sup>46</sup> *Ibid.*, 18.

<sup>47</sup> Milgrom, 664. See also Wood, 460–463; Cansdale, 187–188; Tristram, 208–210; Brown, Driver, and Briggs, 189; Firmage, *ABD*, 6:1155.

<sup>48</sup> See *Eerdmans Dictionary of the Bible*, 604; Jones, “Boundaries of the Min,” 117; *ISBE*, 2:751.

<sup>49</sup> See Jones, “Boundaries of the Min,” 121; Bulmer, 307; Driver, 18; Wood, 43–50; Tristram, 45–46; Ferguson, 11; Cansdale, 135; Milgrom, 664; Firmage, *ABD*, 1155; Brown, Driver, and Briggs, 742; *Eerdmans Dictionary of the Bible*, 155; *ISBE*, 1:438.

<sup>50</sup> Ferguson, 74.

<sup>51</sup> See Ferguson, 74; Wood, 672–682; Tristram, 308; Milgrom, 665; Brown, Driver, and Briggs, 916; Firmage, *ABD*, 6:1155; *ISBE*, 3:149. Cansdale sees this as a particular species, the migratory locust (239). Others believe this term refers to the “desert locust.” *Eerdmans Dictionary of the Bible*, 818; Jones, “Boundaries of the Min,” 117.

<sup>52</sup> See Ferguson, 74; Wood, 676. Cansdale thinks this term refers to a “smaller kind [of grasshopper], perhaps a non-gregarious grasshopper, of which there are many species” (238). Milgrom also translates the term as a grasshopper (666), along with *ISBE* (3:149). Brown, Driver, and Briggs define this item as a locust and/or grasshopper (290), as do *Eerdmans Dictionary of the Bible* (527) and Jones (“Boundaries of the Min,” 118). One scholar defines it solely as a locust (Firmage, *ABD*, 6:1156).

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that are considered clean to eat. Deuteronomy appears to be an abbreviated list, however, because the insects and swarming creatures are not mentioned by name.<sup>53</sup>

Scholars are much less certain of the identification of the swarming creatures, and not much agreement exists between translators. ‘*Akbār* (אֲכָבָר; Lev 11:29) is usually translated as a mouse, rat, or a general term for such small rodents occurring throughout Israel.<sup>54</sup> Milgrom calls it a collective term, but the *mîn* phrase does not follow it.<sup>55</sup>

*Hōled* (חֹלֵד; Lev 11:29) is often translated weasel or polecat, but the root of *hōled* means to dig, and neither of these animals dig at all. There are no moles in Israel, so the mole-rat is now the “accepted translation.”<sup>56</sup> Others disagree, however, and define the mole-rat as being mentioned only in Isaiah 2:20.<sup>57</sup> The *mîn* phrase does not follow this term, either.

The above animals are the only ones whose identification is mostly agreed upon by scholars. However, *mîn* occurs in conjunction with several other uncertain identifications, and these must be separately mentioned as well.

At least twenty species of smaller birds that eat flesh and carrion exist in Palestine today. However, only four or five names are listed in the Hebrew Bible. One hypothesis for this discrepancy is that “these may have been the only names in common use, but the compilers had evidently observed the strikingly different birds in this group . . . [and] solved this difficulty by adding the phrase ‘after its kind’ to *ayyah* and *nets*.”<sup>58</sup> However, this does not solve all difficulties. Only certain birds were chosen to receive the *mîn* phrase. Since identifications are doubtful at best, there seems to be no certain reasons for the choices within this explanation.

After much consideration, I have tentatively concluded that the best hypothesis is that the chosen terms which precede *mîn* each represented many species or genera of birds, and it was simply easier to group them all together rather than list each one. This explanation also seems more plausible than the idea that

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<sup>53</sup> See Kim-Kwong Chan, “You Shall Not Eat These Abominable Things: An Examination of Different Interpretations on Deuteronomy 14:3–20,” *East Asia Journal of Theology* 3 (1985): 93–94; W. L. Moran, “The Literary Connection Between Lv. 11:13–19 and Dt. 14:12–18,” *Catholic Bible Quarterly* 28(1966): 271–277.

<sup>54</sup> See Ferguson, 39; Wood, 131–136; Tristram, 122–124; Brown, Driver, and Briggs, 747; *Eerdmans Dictionary of the Bible*, 925; Firmage, *ABD*, 6:1154; *ISBE*, 3:428. Jones (“Boundaries of the Min,” 118) lists at least fifteen families of rodents that this term could refer to.

<sup>55</sup> Milgrom, 671.

<sup>56</sup> Ferguson, 38. See also *Eerdmans Dictionary of the Bible*, 1372–1373; Firmage, *ABD*, 6:1154. Some disagree with this interpretation, however, and call the weasel identification “widely thought” (Cansdale, 127). See also Tristram, 151; Brown, Driver, and Briggs, 317. *ISBE* (4:1043) does not attempt to make a meaning certain, leaving several possibilities open. Milgrom defines this term as a rat (671).

<sup>57</sup> See Wood, 128; Cansdale, 135; Tristram, 120–122; Jones, “Boundaries of the Min,” 118.

<sup>58</sup> Alice Parmelee, *All the Birds of the Bible: Their Stories, Identification and Meaning* (New York: Harper & Brothers, 1959), 109.

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the *mîn* phrase was a summary after a certain number of birds, referring collectively to all the ones before it. If this were the case, the *mîn* phrase would occur at the end of the list, as a conclusion, but two birds occur after the last mention of *mîn* in the bird list, and five creeping animals after the last *mîn* in Lev 11:30. With the identifications for which we have a consensus, *mîn* does seem to correspond to groups, such as the diurnal raptors,<sup>59</sup> the smaller hawks,<sup>60</sup> the raven group,<sup>61</sup> the heron group,<sup>62</sup> and the locust group.<sup>63</sup> Even within Deuteronomy, the same birds are followed by the *mîn* phrase, except for the first, where *dayyâh* (דַּיִּיָּהּ) replaces *ʿayyâh* (עַיִּיָּהּ), although both are considered large diurnal raptors.

The insect identifications also match with this hypothesis, as each one mentioned has the *mîn* phrase after it, possibly referring to the great number of these kinds of insects in Palestine, even though not all are named or unclear.

Three possible exceptions to this interpretation of the placement of *mîn* exist. One would be the Hebrew word *ʿakbār* (עַכְבָּר). There is no *mîn* phrase following it, but it is almost universally translated as a generic term referring to small rodents. However, an attempt has been made to link this term to the Black Rat, which is a “specific [carrier] of dangerous diseases.”<sup>64</sup> So the term was probably often used in a broad sense, but here in Leviticus it might have a specific meaning.

Secondly, *mîn* also follows *ṣāb* (צָב) in Lev 11:29. However, this term is under much dispute and has been translated as a tortoise, the dhubb lizard, the large monitor lizards, and as a generic term for lizards.<sup>65</sup> Since the identification

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<sup>59</sup> See Cansdale, 146; Tristram, 188; *Eerdmans Dictionary of the Bible*, 454; *ISBE*, 2:635. Jones (“Boundaries of the Min,” 115) lists at least fifteen birds that could be referred to by this term *ʿāh* (עָה).

<sup>60</sup> See Ferguson, 53; Wood, 430–435; Cansdale, 146; Tristram, 189; *Eerdmans Dictionary of the Bible*, 558; *ISBE*, 2:635. Jones (“Boundaries of the Min,” 116) lists eleven species of hawks present in Palestine today.

<sup>61</sup> See Tristram, 198–201; *Eerdmans Dictionary of the Bible*, 1111. Jones (“Boundaries of the Min,” 116) lists eleven species of the raven order.

<sup>62</sup> This translation is disputed by some, but seems to refer to the group of large, long-legged, long and sharp beaked, fish-eating water birds without webbed feet. See Cansdale, 174–178; *Eerdmans Dictionary of the Bible*, 188. “As the expression ‘after her kind’ is added, the prohibition was evidently generic, extending to all birds of the Heron kind” (Tristram, 241). *ISBE* (2:699) has a similar statement and lists birds that might be included. Jones (“Boundaries of the Min,” 117) lists at least twenty-eight species likely referred to here, in addition to at least four other genera.

<sup>63</sup> *ISBE* (3:149) lists at least three species of locusts that live in Palestine today.

<sup>64</sup> Cansdale, 132–134.

<sup>65</sup> Tristram (256–257) identifies this as a tortoise, along with Ferguson (71). Wood (586) finds that it might be the dhubb lizard, agreeing with Cansdale (199). *Eerdmans Dictionary of the Bible* (818) does not attempt to define the term beyond some type of lizard. Brown, Driver, and Briggs (839) and *ISBE* (3:147) suggest the same idea. Jones (“Boundaries of the Min,” 119) insists on it being a generic term for lizard, since tortoises would have been included among the water swimmers. Milgrom finds that this term is “generic for a wide range of lizards and should not be identified with a particular one” (671).



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of this term is uncertain, it seems likely that it may be a generic term for lizards, as this would fit the pattern seen so far with *mîn*.

Lastly, the term for bat is not followed by the *mîn* phrase, yet there are many species of bats in Palestine.<sup>66</sup> However, George Cansdale has proposed an interesting explanation. “Only experts distinguish most of these species [of bats], especially in the field, and though bats would be known to the Hebrews, one would certainly not expect them to have more than one or two names.”<sup>67</sup> This could imply that perhaps all bats were as one kind to the Israelites, and they did not distinguish any as different from each other.

The usage of *mîn* in Leviticus and Deuteronomy is obviously referring to groups and subdivisions of animals. Based on the intertextuality between Genesis and Leviticus, as explored by Moskala, this order can be inferred in Genesis as well, even though the link to reproduction was not found convincing. Key terms, such as *mayim* (מים), *ḥayyâh* (חיה), *nepeš* (נפש), and *b<sup>e</sup>hēmâh* (בהמה), to name a few, lend support to the interdependency of the two passages. Leviticus 11 is also built upon “the universal view of creation (Gen 1) . . . [and] in Lev 11 the Hebrew word כֹּל [*kōl*] ‘all,’ ‘everything,’ ‘everyone’ occurs thirty-six times.”<sup>68</sup> The three habitats of land, air, and water are found in both the creation account and Lev 11, in the same sequence. The four categories of creatures made to fill these habitats are also identical: animals, fish, birds, and swarmers. Although the exact terminology is not used, the structure remains constant.<sup>69</sup>

So it seems that in Leviticus and Deuteronomy, when *mîn* is not used following an organism’s name, a biological species or close equivalent is intended. *Mîn* is usually used to delineate larger groups like genera or families, where several kinds are implicated. However, until each animal can be identified precisely, these limitations for *mîn* can only be regarded as a hypothesis.

#### Theological and Scientific Conclusions and Implications

I would agree with Payne in his mediating view of *mîn*. According to this proposal, *mîn* refers to a “multiplicity” of animals and denotes boundaries between basic kinds of animals, but is not linked directly to reproduction.

Again, this view is substantiated by the Hebrew syntax of Gen 1. There, *mîn* does not refer to reproduction at all (since *tôšē’* refers to the earth or sea producing, not the animals themselves). Also, God’s command to reproduce never mentions the word *mîn*. Therefore, *mîn* seems to be solely a classification term, based on what can be observed in animal behavior and morphology. However, if

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<sup>66</sup> Jones (“Boundaries of the Min,” 121) lists thirty-six species of bats (within eight families and seventeen genera) present in Palestine today. Ferguson states that “all are lumped together under the single generic name” (11).

<sup>67</sup> Cansdale, 135.

<sup>68</sup> Moskala, 202.

<sup>69</sup> *Ibid.*, 202–209.

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no boundaries are inherent in *mîn*, macroevolution seems to be permitted by the text.

Several theologians agree that *mîn* refers to “broad categories of animals, birds, and fish,” and that “any attempt to correlate ‘kind’ with a modern term, such as ‘species,’ is unwarranted.”<sup>70</sup>

Others even claim that “systematization and classification” are not intended in Genesis, but that it is simply “a tentative attempt to divide the animals into their principal kinds.”<sup>71</sup>

However, intertextuality between Genesis and Leviticus lends the clue that Genesis is also referring to order and hierarchy created by God. So, although reproduction is not implicated, there remain limitations to each kind, as laid out in Leviticus, Deuteronomy, and Genesis. The kind does seem to be larger than a species in most cases, if it is indeed referring only to the name directly preceding it in Leviticus and Deuteronomy. Almost all of the other birds and creeping things (those not followed by *mîn*) are often identified as a single species. This would lead one to believe that the kind might well be located somewhere between the genera and the family, or between the family and the order. This would allow for much microevolution to take place, while prohibiting macroevolution.<sup>72</sup>

Some young-earth creationists have come up with an alternative classification system that takes into consideration the limits of *mîn* as larger than species. “Phyletic discontinuities” (when two organisms appear to lack a common ancestor) are sought out.<sup>73</sup> To avoid confusion with the words “kind” and “species,” the “baramin” (based on Hebrew words meaning “created kind”) is the basic unit, and the “archaeobaramin” is the original kind that was created (mixing Greek and Hebrew).<sup>74</sup> This theory has much potential and needs to be worked out further, although one needs to be careful not to again read Scripture incorrectly and assume that the baramin is intimately associated with reproduction.<sup>75</sup>

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<sup>70</sup> Matthews, 152. Also, “there is no evidence in these texts for taking *mîn* as a technical term corresponding with precision to family, genus, or species.” Futato, *NIDOTTE*, 2: 934.

<sup>71</sup> Claus Westermann, *Genesis 1–11: A Commentary* (Minneapolis: Augsburg, 1984), 142.

<sup>72</sup> This might also help to explain how all of the kinds of animals were taken onto the ark. The dimensions of the ark do not seem to allow for this, unless the kinds referred to larger groups like genera or families. For more information, see Arthur J. Jones, “How Many Animals in the Ark?” *Creation Research Society Quarterly* 10 (1973): 103–108.

<sup>73</sup> Kurt P. Wise, “Baraminology: A Young-Earth Creation Biosystematic Method,” in Robert E. Walsh, ed., *Proceedings of the Second International Conference on Creationism*, 2:345–360 (Pittsburgh: Creation Science Fellowship, 1990), 2:346. Frank L. Marsh is the scientist who originally suggested the idea of the “baramin” (Marsh, *Evolution, Creation, and Science*, 162).

<sup>74</sup> Wise, 352.

<sup>75</sup> In the words of Frank Marsh, “there is no single category in modern taxonomy which is in all cases equivalent to the created kind . . . [because] plants and animals have been assigned to classification categories” by many different ways (Frank L. Marsh, “The Genesis Kinds,” 149). His fascination with the baramin and true fertilization, separating out “the man kind, the dog kind, the cow kind,” etc., is not sufficient, however. When considering those organisms mentioned, it works

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Interestingly, however, the baramin is often placed between the genera and family, or between the family and order, in similar positions to my proposal for *mîn*.<sup>76</sup>

Biblical classification was naturally not as precise or scientific as is the modern categorization. It seems ludicrous to expect *mîn* to follow the same lines of today's species concept. Interestingly, though, the species concept of today is not as rigid as many scientists make it out to be. "It may not be exaggeration if I say that there are probably as many species concepts as there are thinking systematists and students of speciation."<sup>77</sup> All of these definitions work when looking at certain communities or groups of animals, but most fail when looking at others. The one often thought most correct is the biological species concept, which is defined as reproductive isolation from another species. However, this concept has been threatened by incidences of distinct species interbreeding.<sup>78</sup> For instance, many species of rodents thought to be reproductively isolated were actually only geographically isolated, and could interbreed when brought into proximity to each other.<sup>79</sup>

Since the concept of species can be so broad, this can allow even more room for microevolution to be possible within the truth of the Bible. "Our modern taxonomic system . . . is merely a convenient device for indicating similar or dissimilar" organisms.<sup>80</sup> Creationists usually allow for variation and microevolution within broader categories, or kinds (defined by this paper as larger than the modern species), but deny the "evolutionary origin of basically different types of plants and animals from common ancestors."<sup>81</sup>

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beautifully, but plants often interbreed and hybridize, even amongst themselves, without the help of a breeder. Also, a double standard must not be applied, where man is considered a separate kind from apes, even if hybridization might be possible (Frank T. Awbrey, "Defining 'Kinds'—Do Creationists Apply a Double Standard?" *Creation/Evolution* 5/2 [1981]: 1–6).

<sup>76</sup> Hilbert R. Siegler, "A Creationist's Taxonomy," *Creation Research Society Quarterly* 15 (1978): 38. Siegler states that "the position would vary with each plant and animal species" (38). Leviticus seems to indicate that it would always be above a species, however, and likely between species and genera. Genesis seems to divide only to families, "subdivisions of zoological orders" (J. Barton Payne, "Theistic Evolution and the Hebrew of Genesis 1–2," *Bulletin of the Evangelical Theological Society* 8 [1965]: 88).

<sup>77</sup> Marsh, *Evolution, Creation, and Science*, 156.

<sup>78</sup> *Ibid.*, 152.

<sup>79</sup> Campbell, 442–444. Different species within the same genus can often reproduce with each other to produce viable offspring (although not always, due to gametic isolation, etc.), but they would choose members of their own species first, if at all possible. This is often due to habitat isolation, temporal isolation, and/or behavioral isolation. Plants are also known to interbreed frequently between species, constantly combining genetic material to produce new species without geographic isolation. This speciation accounts for "25% to 50% of plant species" (Campbell, 440–444).

<sup>80</sup> Marsh, 152.

<sup>81</sup> Gish, 34. However, some creationists claim that "the Bible does not require . . . that all the animals of one *mîn* are related by descent" (Jones, "Boundaries of the *Min*," 122).

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However, the limitations of microevolution have never been well established, and more work needs to be done on the scientific end of defining the boundaries of *mîn*. The “biological principle of Limitation of Variation” must be demonstrated, so that the meaning of *mîn* can be enhanced and verified.

A final theological implication results from the term *mîn* never being used in regards to humans, but only animals and plants. Indications are that humans are not capable of larger microevolution. We are God’s crowning creation, made in His image. The animals can change in small or even large ways to adapt to their surroundings, but humans were created as God’s perfect climax to all that had thus far been created.

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## Days of Genesis 1: Literal or Nonliteral?

Walter M. Booth

An important issue in biblical exposition is whether the days of Genesis 1 should be regarded as literal twenty-four-hour days.<sup>1</sup> Interest in this issue shows no promise of subsiding.<sup>2</sup>

The writer's purpose herein is to discuss this issue, arguing that the author of Gen 1 understood these days as literal days. In pursuing this purpose he will discuss (1) reasons for belief both in literal and in nonliteral days; (2) the Day-Age theory; (3) the Days-of-Revelation Theory, and; (4) nonchronological interpretations—especially the Framework Hypothesis. The issue is *not* the date of creation or the age of the earth<sup>3</sup>—belief in creation in six days is compatible with belief in either recent or remote creation. The phrase “literal days” refers herein to twenty-four-hour days and “nonliteral days” to other periods of time for which “day” might be used. “Literalist” and “nonliteralist” are used in similar ways. The historicity and Mosaic authorship of Genesis are assumed.

### History of Interpretation<sup>4</sup>

There has been a strong literalist trend among Christian expositors as far back as the early church and including most of the church fathers and the Protestant reformers. Jordan and Pipa hold, respectively, that before the modern era few questioned the literalist position, and that, “in 2000 years of exegetical history” no one argued until recently that the text taught that the days were long

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<sup>1</sup> For a discussion of several perspectives on this issue see Raymond F. Surburg, in Paul A. Zimmerman, ed. *Darwin, Evolution, and Creation* (St. Louis: Concordia, 1959), 57–64.

<sup>2</sup> Robert V. McCabe, “A Defense of the Literal Days in the Creation Week,” *Detroit Baptist Seminary Journal* 5 (Fall, 2000): 97. McCabe reported that during the previous decade there had been a “proliferation” of articles on the literal-day issue.

<sup>3</sup> The writer believes in a remote date for the creation of the cosmos and a recent date for the creative acts of Gen 1:3ff.

<sup>4</sup> For summaries of the history of the interpretation of “day” in Gen 1 see Gerhard Hasel, “The ‘Days’ of Creation in Genesis 1,” *Origins* (Loma Linda University) 21:1 (1994): 6–10; J. Ligon Duncan III and David W. Hall (47–52, 99–106), and Hugh Ross and Gleason L. Archer (68–70), in David G. Hagopian, ed. *The G3n3s1s [sic] Debate* (Mission Viejo, CA: Crux, 2001).

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ages.<sup>5</sup> Recently, literalists have included many Christian scholars—conservatives and liberals—and scientists who accept creationism. The recent renewal of interest in creationism has included reaffirmations of the literalist view.

As Hasel notes, reasons for nonliteralist views have been related mostly to extra-biblical concerns, such as a tendency in early Christianity to interpret the Scriptures in terms of Greek philosophy, and in the last 200+ years a “need” to harmonize Gen 1 with inferences of scientists and naturalists regarding the age of the earth and the origin of biological species. In 1994 Hasel reported that during the previous decade, “broad concordists” had been increasingly trying to interpret the days nonliterally.<sup>6</sup>

The question of literal days is an issue more among conservatives—who accept the creation account as historical but differ among themselves on the time element—than between conservatives and liberals. Those not committed to a creationist credo have no “need” to harmonize Gen 1 with science and can ignore the issue or accept a literalist position.<sup>7</sup>

### **The Meanings of *Yôm* (“Day”) in the Old Testament**

The meanings of *yôm* in the OT include literal day, the sunlit portion of a day, and various defined or undefined periods of time. According to Stambaugh, while *yôm* can be used of long periods of time, its meaning in any passage must be determined by its context, not only by its semantic range. He asserts also that *yôm* in the plural could be used of periods of time such as “a few thousand years.”<sup>8</sup>

The meaning of *yôm* in many cases is modified, as by a prefixed preposition. Thus *b<sup>e</sup>yôm*—“in the day”—has an adverbial force, and in many cases can be translated “when,” as in Gen 2:4: “when God created.” When referring to non-determinate future events, it can be translated “if” or “if ever,” as in Gen 2:17: “if you ever eat,” as in the CEV, the Living Bible, and a few other versions. The time referent of *b<sup>e</sup>yôm* is not in every case a literal day. In Num 7:10, e.g., it refers to a twelve day period.

It should be noted that with or without a preposition, *yôm* can also refer to a period of time other than a normal day. *Yôm* is used in at least two and probably three senses in Gen 1 and 2.

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<sup>5</sup> John B. Jordan, *Creation in Six Days* (Moscow, ID: Canon, 1999), 17; Joseph A. Pipa, in Pipa and David W. Hall, *Did God Create in Six Days?* (Taylors, SC: Southern Presbyterian, 1999), 192.

<sup>6</sup> Hasel, 9.

<sup>7</sup> As Jordan, 22, also noted.

<sup>8</sup> James Stambaugh, “The Days of Creation—a Semantic Approach,” *Creation Ex Nihilo Technical Journal* 5 (1991), 75, 73.

## BOOTH: DAYS OF GENESIS I: LITERAL OR NONLITERAL?

### Arguments for the Literal Day View

The procedure here is (1) to discuss reasons advanced for the literal-day position; (2) to reply to several nonliteralist counter-arguments; and (3) to support the literalist arguments by appeal to lexicons, theological dictionaries, and commentaries.<sup>9</sup>

**1. The Hermeneutical Principle Involved.** According to a “widely accepted hermeneutical principle,” any passage in the Bible should be interpreted literally unless there is a good reason to interpret it figuratively. That is, it “should be taken literally if it makes sense and figuratively if the literal makes no sense.” Baker, Surburg, and Jordan find no reason in Gen 1 for figurative interpretation.<sup>10</sup>

**2. Wording of the Text.** A straightforward reading of Gen 1 suggests that literal days are intended. That Moses repeatedly used “day” instead of another word or phrase, such as “year” or “thousands of years,” indicates his belief in literal days.

According to Cassuto and Huston, the wording of Gen 1 suggests that each creative fiat was followed immediately by its implementation. In comments on 1:3, Cassuto holds that the fiat and the statement of its implementation were given the “tersest form” to show that the fiat was implemented “as soon as He commanded.” In comments on v. 11, he writes: “it was so instantly.”<sup>11</sup> This argument is somewhat weakened by the possibility that it was the certainty, not the immediacy, of the implementation that was emphasized.

**3. Lack of Qualifiers of *Yôm*.** When *yôm* refers to a period of time longer than a day, Hasel maintains, it is qualified by a preposition, a compound construction, or in some other way. “In other words, extended, nonliteral meanings” of *yôm* “have special linguistic and contextual connections which indicate clearly that a nonliteral meaning is intended.” When qualifiers are absent, as in Gen 1, *yôm* refers to a day of twenty-four hours.<sup>12</sup>

**4. Creation Week and the Sabbath.** It seems clear from Exod 20:11 that the work of creation was distributed over six days in order to provide for the week and the Sabbath. Would the wording of 20:11 make sense if the days were not real days? Gunkel held that the institution of day seven as the Sabbath would be “superfluous” if the days were not to be understood literally.<sup>13</sup>

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<sup>9</sup> For other discussions of the literal-day view see Hasel, 5–38; Terence Fretheim, in Ronald Youngblood, ed., *The Genesis Debate* (Grand Rapids: Baker, 1990), 12–35; Stambaugh, 70–78; John M. Huston. *Origins in Genesis: Day-Ages or Six Literal Days?* MATS Thesis, Biola University, 1986; Duncan and Hall, with critical responses, in Hagopian, 21–119; McCabe, 97–124.

<sup>10</sup> William H. Baker, *In the Image of God* (Chicago: Moody, 1991), 25; Surburg, in Zimmerman, 59; Jordan, 111.

<sup>11</sup> Umberto Cassuto, *A Commentary on the Book of Genesis*, Israel Abrahams, trans. (Jerusalem: Magnes, 1961, 1989), 1:26, 41; Huston, 29–30.

<sup>12</sup> Hasel, 23, 24.

<sup>13</sup> Hermann Gunkel, *Genesis*. Mark E. Biddle, trans. (Macon, GA: Mercer UP, 1997), 108. For similar statements see Surburg, in Zimmerman, 61, and John Benjamin Shaw, in Pipa and Hall, 217.

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The literalist force of Exod 20:11 cannot be destroyed by appealing to a parallel passage, Exod 31:17, which adds to 20:11 the idea that God was “refreshed” after creation. Some nonliteralists argue that because God never needs rest, “refreshed” must be considered as figurative, and the remainder of the passage and 20:11 must also be considered figurative. The “refreshing” could refer, however, not to needed rest, but to God’s delight in contemplating a completed creation<sup>14</sup> or to His communion with beings newly created in His image.

Some nonliteralists hold that Exod 20:8–11 expresses the relation between ordinary days and “days” of creation as one not of identity, but of analogy. According to Collins, “The text [of Exod 20:8–11] in no way sets up any identity between the length of our work week and the length of God’s. . . .”<sup>15</sup> Surburg, however, points out that six days of work followed by a day of rest by God “alone can furnish a consistent analogy” for working six days and resting on the seventh day.<sup>16</sup>

The idea is clear that human beings, by working six days and resting on the seventh, are to imitate the creative work and rest of God. Note that the identical pattern—work six days, abstain from work on the seventh day—and the idea of imitating God are displayed in the account of the creative work of giving, and the human work of gathering, the manna (Exod 16).

Last, it may be asked if Moses, in one short passage, would have used the word “days” in two radically different senses.

**5. Days Defined as “Evening/morning.”** Baker and Hasel agree that the “evening/morning” clause cannot be made to mean anything other than a literal day.<sup>17</sup> Steinmann shows that *yôm ’eḥād* [“one day”] in Gen 1:5 should be seen as a definition of “evening and morning.” He translates the verse as follows: “God called the light ‘day,’ and the darkness he called ‘night.’ There was an evening and there was a morning: one day.”<sup>18</sup> Stambaugh holds that “day,” when used with “evening and morning,” always means a literal day.<sup>19</sup>

Bradley, however, maintains that this argument cannot be used for literal days because if the days can be nonliteral days, the evening and morning can be other periods of time.<sup>20</sup> In reply, it may be said not only that the “evening/morning” clause refers to literal days, but that Moses used it to emphasize that each day was a literal day. Arguably, had Moses believed that the days were nonliteral days, he would not have used this clause.

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<sup>14</sup> Pipa, in Pipa and Hall, 171.

<sup>15</sup> John Collins, in Pipa and Hall, 142.

<sup>16</sup> Surburg, in Zimmerman, 61.

<sup>17</sup> Baker, 25; Hasel, 28; see also August Dillmann, *Genesis Critically and Exegetically Expounded*. Wm. B. Stevenson, trans. (Edinburgh: T. and T. Clark, 1897), 1:64.

<sup>18</sup> Andrew E. Steinmann, “אֶחָד as an Ordinal Number and the Meaning of Genesis 1:5,” *Journal of the Evangelical Theological Society* 45/4 (December 2002): 577–584; quotation from 583.

<sup>19</sup> Stambaugh, 72.

<sup>20</sup> Walter L. Bradley and Roger Olsen, in Earl D. Radmacher and Robert D. Preus, eds. *Herme- neutics, Inerrancy, and the Bible* (Grand Rapids: Zondervan, 1984), 299–300.



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**6. The Use of *Yôm* with a Numeral.** *Yôm*, when modified by an ordinal numeral, refers to a literal day. Only Hos 6:2, Zech 14:7, and Amos 4:4 have been cited as exceptions to this practice, which is always followed, according to Pipa and Whitcomb, in, respectively, the Pentateuch and historical books.<sup>21</sup> According to Newman, “no clear counter-example” of *yôm* with a numeral indicating a long period of time can be cited.<sup>22</sup> Fretheim holds that in a series of numbered days, as in Num 29, *yôm* always refers to “a normal day.”<sup>23</sup>

**7. Views of Lexicographers, Expositors, etc.** Hasel declares that many scholars have held the literalist view and that no lexicographers have departed from it.<sup>24</sup> Inspection of lexicons, dictionaries, etc., confirms Hasel’s statement: none of about ten such works consulted by the writer argues against the literalist position—except for TWOT, which holds that the length of the days is “indeterminable.”<sup>25</sup> Koehler and Baumgartner (HALOT),<sup>26</sup> *Dictionary of Classical Hebrew* (DCH),<sup>27</sup> and *Theological Lexicon of the Old Testament* (TLOT)<sup>28</sup> define *yôm* in Gen 1:5, and DCH and TLOT in the parallel passages also, as a day of twenty-four hours. The *New International Dictionary of Old Testament Theology and Exegesis* (NIDOTTE) indicates that *yôm* is used in 1:5 of “the complete cycle that includes both daytime and nighttime.”<sup>29</sup>

Literal expositors include von Rad, Dillmann, Gunkel, Dods, Leupold, and Wenham. Von Rad maintains that “the seven days are unquestionably to be understood as actual days.” Dillmann agrees: “In truth, Moses thought of nothing else than days.”<sup>30</sup> According to Dods, if “day” in Gen 1, 2 does not refer to a normal day, “the interpretation of Scripture is hopeless.”<sup>31</sup>

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<sup>21</sup> Pipa, in Pipa and Hall, 183; John C. Whitcomb, *The Early Earth* (Grand Rapids: Baker, 1972), 27.

<sup>22</sup> Robert C. Newman and Herman J. Eckelmann, Jr., *Genesis One & the Origin of the World* (Downers Grove, IL: InterVarsity, 1979), 63, 61.

<sup>23</sup> Fretheim, in Youngblood, 19.

<sup>24</sup> Hasel, 22.

<sup>25</sup> *Theological Wordbook of the Old Testament*, R. Laird Harris, ed. (Chicago: Moody, 1980), 1:371.

<sup>26</sup> Ludwig Koehler and Walter Baumgartner, *The Hebrew and Aramaic Lexicon of the Old Testament*, rev. Baumgartner and Johannes J. Stamm, trans. and ed. M. E. J. Richardson (Leiden: Brill, 1995), 2:399.

<sup>27</sup> *The Dictionary of Classical Hebrew*, David A. Clines, ed. (Sheffield: Sheffield Academic Press, 1998–), 4:166.

<sup>28</sup> *Theological Lexicon of the Old Testament*, Ernst Jenni and Claus Westermann, eds. (Peabody, MA: Hendrickson, 1997), 2:528. English trans. of *THAT*.

<sup>29</sup> *New International Dictionary of Old Testament Theology and Exegesis*, Willem A. van Gemmeren, ed. (Grand Rapids: Zondervan, 1997), 2:420.

<sup>30</sup> Gerhard von Rad, *Genesis: A Commentary*, J. H. Marks, trans. (Philadelphia: Westminster, 1961), 63; Dillmann, 1:64; see also Gunkel, 108.

<sup>31</sup> Marcus Dods, *Genesis (Expositor’s Bible)* (Grand Rapids: Eerdmans, 1948), 1:4. See also H. C. Leupold, *Exposition of Genesis* (Grand Rapids: Baker, 1936), 1:56; Gordon Wenham, *Genesis 1–15 (Word Biblical Commentary)*, (Waco, TX: Word, 1987), 19.

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Those arguing for literal days as the textual intention have also included many university professors. According to Surburg, Arthur Custance asked qualified professors at nine leading universities, including Oxford and Harvard, how *yôm* in Gen 1 should be translated. All those who replied said: “as a day as commonly understood.”<sup>32</sup> James Barr reports that he knows of no “professor of Hebrew or Old Testament at any world-class university” who does not believe that the writer of Gen 1 intended to say “creation took place in six days of 24 hours.”<sup>33</sup> Barr himself appears to have accepted the literal position: “In fact, the only natural exegesis is a literal one in the sense that this is what the author intended.” He states, nevertheless, that it is only “extreme fundamentalists” who assert that a literal interpretation is “obligatory or even desirable.”<sup>34</sup> Last, Huston lists by their last names fifty-one scholars and scientists, of whom thirty accepted the literal-day view and twenty-one the Day-Age Theory.

### Arguments for the Nonliteral View

The nonliteral position is stated effectively by Dick Fischer: “Any thoughtful person who would examine the Scriptural evidence alone should be able to conclude that a day in God’s creation week was not intended to be interpreted as a 24-hour period.”<sup>35</sup> Also of interest is Norman Geisler’s statement that there are “many indications” in Scripture that the days were not literal days.<sup>36</sup>

The collective attempt to discover in the Scriptures a rationale for the nonliteral position has been thoroughgoing.<sup>37</sup> Several nonliteral arguments are discussed here.

1. **Literary Genre.** Hasel discusses attempts to interpret Gen 1 in terms of a “literary genre.” He states that the use of this approach to Gen 1 “is meant to restrict the meaning of Genesis 1 to a thought-form which does not demand a factual, historical reading of what took place.” He reviews several genres proposed for Genesis and concludes that “there is no consensus on the literary genre of Genesis 1” and that this lack of consensus “makes the literary genre approach for a nonliteral reading of Genesis suspect of special pleading.” When Gen 1 is compared to the hymns, parables, poems, cultic liturgies of the Bible, he concludes, it proves to be none of these. Nor is it, he says, a metaphor or story, but rather “a historical-prose record, written in rhythmic style, recording factually

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<sup>32</sup> Surburg, in Zimmerman, 61, citing Arthur C. Custance, *Between the Lines* (Ottawa, 1957), 36.

<sup>33</sup> “Creation Interview,” *Creation Ex Nihilo* 7:1 (August, 1984), 28.

<sup>34</sup> Huston, 15; James Barr, *Fundamentalism* (London: SCM, 1977), 42.

<sup>35</sup> Dick Fischer, *Origins Solution* (Lima, OH: Fairway, 1996), 162.

<sup>36</sup> Norman Geisler, *Baker Encyclopedia of Christian Apologetics* (Grand Rapids: Baker, 1999), 272.

<sup>37</sup> For further discussion of the non-literal view see Fischer, *Origins Solution*, 147–163; Hugh Ross, *The Fingerprint of God* (Orange, CA, Promise, 1991), 141–160; and R. Clyde McCone in Youngblood, 12–35, and others.

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and accurately” the creation of the heavens and the earth and when it took place.<sup>38</sup>

Young supports Hasel, asserting that Genesis 1 is not poetry, saga, or myth, but straightforward, trustworthy history.<sup>39</sup>

**2. Appeal to 2 Peter 3:8 and Psalm 90:4.** Those accepting a nonliteral view typically appeal to 2 Pet 3:8, which echoes Ps 90:4 when it states that “one day is with the Lord as a thousand years, and a thousand years as one day.” A critique of this position involves two points: (1) neither passage has a creation context; (2) each has a comparative particle—the relation between a day, or “an evening,” and “a thousand years” is a term of analogy, not of identity: a day is said to be like, not equal to, a thousand years.<sup>40</sup> Hasel holds, also, that “From contextual as well as grammatical-syntactical and semantic points of view the application of Psalm 90:4 to Gen 1 does not work. Appropriate linguistic and phraseological criteria of comparison are lacking.”<sup>41</sup>

**3. Account of Day Three.** Arguments for nonliteral days based on the account of day three have emerged. Norman Geisler argues for nonliteral days on the basis that the text says that vegetation not only was created, but also grew to maturity on this day.<sup>42</sup> But because plants may have been created in various stages of growth, this argument should not be pushed vigorously. Meredith Kline also found difficulties in the account of the third day. These are discussed below in connection with the Framework Hypothesis.

**4. Account of Day Four.** To argue that days one through three were nonliteral days because the sun was not created until day four misses two points.

**a.** First, the text explicitly states that each of these days was evening and morning. Since light—however it may be explained—was created on day one, I see no problem with the statements regarding the evening-morning of days one through three.

**b.** Second, the length of a day can be determined with reference to a visible star.

**5. Account of Day Six.** The argument is that the events recorded in Gen 1 and 2 for day six could not all have taken place in one literal day. Day six and the other days, therefore, were not literal days.<sup>43</sup> Since this argument is obviously a “big gun” in the nonliteral arsenal, it is considered here at length.

How much time did these activities require? Arguably, God would have taken as little time for His activity as His purposes required. His instructions to

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<sup>38</sup> Hasel, 15–21; see also Edward J. Young, *Studies in Genesis One* (Philadelphia: Presbyterian and Reformed, 1964), 82–83.

<sup>39</sup> Young, 82–83.

<sup>40</sup> Fretheim, in Youngblood, 17; Hasel, 11, 12.

<sup>41</sup> Hasel, 12.

<sup>42</sup> Geisler, 272.

<sup>43</sup> P. J. Wiseman, *Creation Revealed in Six Days* (London: Marshall, Morgan, and Scott, 1956), 124; Ross, *Fingerprint*, 150.

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Adam and Eve obviously took little time. The only human activity mentioned in the text (but not by all nonliteral expositors<sup>44</sup>) is the naming of animals by Adam. The concern, then, is with the time required for the naming. How long this took is not stated. A brief analysis suggests that it may have been only a short time.

**a.** First, the text suggests that the animals referred to in 2:19 were created specifically for the naming,<sup>45</sup> instead of being brought in from various regions in a time-consuming operation.

**b.** Second, the number of animals named was probably relatively small. There are three (overlapping) reasons for this belief:

**(1)** The purpose in the naming did not require a large number of animals. This purpose, almost certainly, was to drive home to Adam a sense of his solitariness strong enough that he would come to feel deeply the need of a companion and would accept and appreciate her when she was presented to him.<sup>46</sup> The realization of this purpose would require perhaps a few hundred animals, if that many. There is no indication that Adam was called upon to formulate a comprehensive taxonomy of the animal kingdom.

**(2)** The animals named were restricted to certain kinds: birds, “cattle,” and “beasts of the field.” These categories included, certainly, birds, large land mammals, and probably bats and large land-dwelling and amphibious reptiles, such as tortoises, crocodilians, and dinosaurs. Excluded were marine and aquatic animals, invertebrates, and probably animals small enough to elude observation in the vegetation.

**(3)** The animals named may have been representatives of a relatively small number of basic kinds originally created, not the wide variety now existing, as biologist Frank Marsh has suggested.<sup>47</sup> (Arguably, the Creator would not have found it necessary to create, say, the 300+ species of parrots and hundreds of thousands of species of insects now recognized.) Some students, for various reasons, have tried to determine which modern taxon might correspond to the basic “kind” of Gen 1. Woodmorappe reviews a number of studies and concludes that “the preponderance of evidence” indicates that the created kind corresponds to the family of modern taxonomy, especially in the case of birds and

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<sup>44</sup> Gleason Archer, for example. See Archer, in Radmacher and Preus, 325–27. Archer argues that the events of day six extended over many days.

<sup>45</sup> Cassuto, 1:129.

<sup>46</sup> Cassuto, 1:128, and other expositors, going back at least 145 years, have accepted, or allowed for, this explanation.

<sup>47</sup> Frank L. Marsh, *Studies in Creationism* (Washington: Review and Herald, 1950), 239. According to this concept, the animals were created as a small number of basic kinds and were divinely preadapted at creation with the capacity for limited adaptive change. As a consequence of this capacity, through natural processes, such as mutation and hybridism, many new forms of animals have come into existence, giving rise to more than a million species now recognized. This view is shared by other creationists.

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mammals.<sup>48</sup> If this conclusion and the related assumptions are correct, Adam named not more than a few hundred animals—there are now about 300 recognized families of mammals and birds, including some forms not said to have been named.

c. Adam named the animals quickly on the basis of their obvious gross anatomical features: size, color, prominent markings, etc. Given the purpose in the naming, careful, prolonged scrutiny of each animal to ensure that its name would be appropriate or permanent would not be necessary. Slowly-moving animals would not necessarily have caused delay.

d. If Adam had been informed that the naming would be followed by something superbly delightful, he would have tended to complete the naming as quickly as possible.

e. The Creator, certainly more interested in the reception to be accorded to Eve than in the names given to the animals, accepted each name immediately and may have kept things moving.

f. Regardless of all other factors, the naming may have been terminated if it became obvious before all of the designated animals had been named that its purpose had been realized.<sup>49</sup>

The writer suggests, with support from Van Bebbber and Taylor, that the naming may have taken only a few hours. Jordan allows eight hours, but thinks this “probably far too long.”<sup>50</sup>

Other attempts to “lengthen” day six beyond the limits of a literal day are no more convincing than the one just discussed. The writer sees no reason, therefore, to deny that all the events of day six could have been shoehorned into one day.

**6. Alleged Indeterminate Length of the Seventh Day.** Some argue that day seven of creation week was not a literal day, but a long period of time—God’s “long and as yet unended Sabbath of cessation from creative work.”<sup>51</sup> This argument is based on the absence of the “evening/morning” clause from the account of day seven in Gen 2:2, 3. Since day seven was not a literal day but a long period of time, so the argument goes, the other days were also long periods. Unless, as McCone suggests, God intended to resume the work of creation, week by week, after the seventh day, His cessation from creative work would have continued beyond that day.<sup>52</sup> McCone’s point is discussed below.

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<sup>48</sup> John Woodmorappe, *Noah’s Ark: A Feasibility Study* (Santee, CA: Institute for Creation Research, 1996), 7. Harold Clark (*Creation Speaks* [Oakland: Pacific Press, 1950], 39) and Henry Morris (*The Biblical Basis of Modern Science* [Grand Rapids: Baker, 1984], 129) also hold that the family may be an equivalent of the original “kind.”

<sup>49</sup> This conclusion is supported by Mark van Bebbber and Paul S. Taylor, *Creation and Time* (Mesa, AZ: Eden, 1996), 81.

<sup>50</sup> Van Bebbber and Taylor, 82; Jordan, 47.

<sup>51</sup> John B. Davis, *Genesis and Semitic Tradition* (Grand Rapids: Baker, 1980, rpt.), 17.

<sup>52</sup> McCone, in Youngblood, 30–31.

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There are several objections to the idea that the seventh day of Gen 2:2 was of indeterminate length:

a. Arguably, the length of day seven was determined by the length of the other days. Surely the repeated “evening/morning” clause is a more convincing reason for believing that the days, including day seven, were literal days, than the absence of this clause with respect to day seven is for the view that day seven and therefore the other days were not literal days. As Fretheim notes, Gen 2:2, 3 seems to refer to a literal day: “In Genesis 2:3 God blesses and hallows that day, clearly indicating that it is a specified day that is set aside as a special holy day.”<sup>53</sup> Dillmann explains the omission of the “evening/morning” clause: “the narrative is at an end, there is no transition made to a further day . . .” He holds that day seven “cannot possibly be thought of as a day stretching on *in infinitum*.”<sup>54</sup>

b. If day seven were a long period, it “would lose its character” as a type of the Sabbath, as maintained above.

c. McCone suggests that after “resting” from work on day seven, God may have resumed creative work in connection with another world. There are many stars in the local galaxy, and many galaxies. Conceivably, God has been engaged, and may still be engaged, in creative work on other worlds. If such is the case, His rest did not continue beyond the seventh day, and the nonliteralist argument from Gen 2:2 would have no force.<sup>55</sup>

If God concluded His work of creating the cosmos with the creative work of Gen 1, as 2:1 possibly indicates, His “rest” from creative work would continue, regardless of whether or not the days of Gen 1 were literal days. We may then understand that God rested on a literal seventh day and sanctified it as a recurring rest day for human beings. Day seven could then be regarded not only as a literal day and a prototype of the Sabbath for human beings, but also as introducing God’s desistance from creative work until He creates “new heavens and a new earth”—in much the same way that January 1, 2001, was both a literal day and the beginning of a new millennium. This extended period of desistance from creative work—after day seven—would have no Sabbath significance.

**7. Arguments from Gen 2:4.** Hugh Ross and Fischer maintain that the use of the Hebrew words *tôl’ dôt*—“generations” (KJV)—and *b’yôm* in Gen 2:4 indicates a long time span for creation week. They hold that *tôl’ dôt*, because of the translation “generations,” must refer to a long period of time.<sup>56</sup>

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<sup>53</sup> Fretheim, in Youngblood, 20.

<sup>54</sup> Dillmann, 1:90–91, 92.

<sup>55</sup> The idea that God may have resumed creative work after day seven does not necessitate belief either in “a mythological concept of cyclical time” or that the work of creation would continue eternally. (Meredith G. Kline, “Space and Time in the Biblical Cosmogony,” *Perspectives on Science and Christian Faith [PSCF]* 48:1 [March, 1996]: 10).

<sup>56</sup> Hugh Ross, *Creation and Time* (Colorado Springs: NavPress, 1994), 52; *Fingerprint*, 150–51; Fischer, *Origins Solution*, 151.

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It has been pointed out, however, that “generations” is a “misleading,” “inaccurate” translation of *tôl’dôt*.<sup>57</sup> Dictionaries list the following meanings for *tôl’dôt* in general: “generations,” “account of a man and his descendants,” “line of descendants,” “origin,” “begettings.”<sup>58</sup> In 2:4 *tôl’dôt* has been translated as follows: (a) the LXX has “*biblos geneseōs*,” that is, “account of origin”; (b) HALOT defends “the usual rendering”: “the history of the origin of heaven and earth”;<sup>59</sup> (c) Waltke has “the account of the heavens and the earth.”<sup>60</sup> The time referent of *tôl’dôt* in any of its occurrences is determined by the context—*tôl’dôt* does not determine this time referent. Obviously, we cannot, without prior acceptance of a nonliteral position, get long periods of time out of *tôl’dôt* in 2:4.

With reference to *b’yôm*, Fischer holds that since it includes the previous six days, it cannot be interpreted as a literal day—it is used figuratively, as “a time of indefinite length,” and equals six shorter periods of indefinite length.<sup>61</sup>

As noted above, *b’yôm* in some cases refers to periods of time longer than a day. Fischer ignores the fact that any period of time longer than a day consists necessarily of a number of literal days. That *b’yôm* does not refer to a literal day in 2:4 hardly means that *yôm* does not in chapter 1.

**8. The Concept of “Heavenly Time” or “Days.”** Some nonliteralists have argued for the existence of heavenly time, or days, as contrasted to earthly time, or days; the idea being that the days of creation week were “heavenly days” and not to be understood as literal days. Typically, support for this idea is drawn from 2 Pet 3:8, discussed above.

One argument for “heavenly days” is that, as the sanctuary of Israel was “a copy and shadow of what is in heaven” (Heb 8:5), so literal, solar days “are copies and shadows of the days distinguished by God in the Genesis creation record.”<sup>62</sup> Few, if any, surely, would find this argument convincing.

In response to the idea of “God’s time,” Henry Morris holds that “If man’s ‘days’ are not the same as God’s ‘days,’ then language becomes meaningless,” and the use of “day” when something else was intended would involve God in using an “inept pun.” Hasel points out that “Genesis 1 is not interested in depicting how God reckons time.”<sup>63</sup>

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<sup>57</sup> TWOT, 1:380; H.C. Leupold in *The Biblical Expositor*, Carl F.H. Henry, ed. (Philadelphia: Holmes, 1960), 1:56; Wenham, 55.

<sup>58</sup> Francis Brown, S. R. Driver, and Charles A. Briggs, *Hebrew and English Lexicon* (Peabody, MA: Hendrickson, 1979), 410; NIDOTTE, 2:459; *Theological Dictionary of the Old Testament*, G. Johannes Botterweck and Helmer Ringgren, eds. (Grand Rapids: Eerdmans, 1974), 6:79.

<sup>59</sup> HALOT, 4:1700.

<sup>60</sup> Bruce R. Waltke, “Creation and Chaos” (Unpublished), 32. Lectures delivered at Western Conservative Baptist Seminary, 1974.

<sup>61</sup> Dick Fischer, “The Days of Creation: Hours or Eons?” *PSCF* 42:1 (March, 1990), 16–17.

<sup>62</sup> Ross, *Creation and Time*, 60.

<sup>63</sup> Morris, In Radmacher and Preus, 340; Hasel, 12.

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It may be pointed out also that the nonliteralist position flies in the face of the testimony of lexicographers, referred to above, that the days of Gen 1 were intended to be seen as literal days.

### The Day-Age View

Because many who accept the nonliteral position maintain that the days of creation were, in reality, eons, it is necessary to discuss the Day-Age Theory here.<sup>64</sup> The question may be raised: If all arguments for the literalist position were to fail, would accepting the Day-Age Theory be justified?

Actually, this theory faces difficulties—hermeneutical, logical, and scientific. Several of these are discussed here:

**1. Hermeneutical Problem.** Some expositors, including John Skinner, have criticized this theory on hermeneutical grounds. Interpreting *yôm* as eon, Skinner maintains, “is opposed to the plain sense of the passage, and has no warrant in Heb [*sic*] usage (not even in Ps. 90:4).” “If the writer had had aeons in his mind,” Skinner held, “he would hardly have missed the opportunity of stating how many millenniums each embraced.”<sup>65</sup>

**2. Logical Difficulty.** The Day-Age Theory requires extrapolations of impermissible magnitude. Obviously, even if the days of Gen 1 were not literal days, it would not follow that they were periods of time long enough to satisfy the requirements of evolutionists. It clearly will not do, for example, to imagine, with Blocher, that if day seven is thousands of years long, the other six can cover “millions of centuries of cosmogony.”<sup>66</sup> Obviously, periods of a thousand years each (according to the nonliteral argument from 2 Pet 3:8), without huge expansion, would be inadequate for biological evolution as commonly understood. It cannot be asserted too frequently nor emphasized too strongly that even if arguments for nonliteral days are valid, none of them, without impermissible expansion, would yield sufficient time for the purpose of harmonizing Gen 1 with science.

**3. Time Required for Divine Actions.** It may be stated that God takes no more time for any operation than His purpose in that action requires. That He can create by fiat and *ex nihilo* suggests that He can create instantaneously. The belief that creation required eons seems to represent a compromised view of the transcendence of God. As Allis notes, “limitless time is a poor substitute for that

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<sup>64</sup> J. J. Davis, *Paradise to Prison* (Grand Rapids, Baker, 1975), 53. For a further discussion of the Day-Age view, with critical responses, see Ross and Archer, et al., in Hagopian, 123–214; see also Morris, *Biblical Basis*, 117–21.

<sup>65</sup> John Skinner, *A Critical and Exegetical Commentary on Genesis (ICC)*, (Edinburgh: T. & T. Clark, 1930), 21.

<sup>66</sup> Henri Blocher, *In the Beginning*, David G. Preston, trans. (Downer’s Grove, IL: InterVarsity, 1984), 44.



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Omnipotence which can dispense with time.”<sup>67</sup> And Dillmann argues (1) that short periods of time suffice for divine causality and “are alone suitable” and (2) that Moses, in order to provide a rationale for the Sabbath, “embraced the process of creation in the framework of seven *days*.” Otherwise Moses would have allowed less time, but not more, for creation.<sup>68</sup> Those who believe that God could have created the world in a few days or in an instant but chose to use eons to do so should by all means come forward with a convincing rationale for their position. Hugh Ross suggests such a rationale, but the writer regards it as unconvincing.<sup>69</sup>

**4. Scientific Problem.** Unless Day-Age theorists are willing to relinquish belief in the sequence of events of Gen 1, their theory involves problems, for this sequence does not match the accepted evolutionary sequence. For example, according to the latter, birds and whales (created on day five), evolved, respectively, from dinosaurs and land mammals (created on day six).

Morris, indeed, listed more than twenty “contradictions” between the sequence of Gen 1 and the accepted evolutionary sequence.<sup>70</sup>

We may agree, then, with statements by Dillmann and Weeks that (1) the reasons given for construing the days as eons are inadequate; and (2) the “whole context” of Gen 1 is against the idea of interpreting the days as ages.<sup>71</sup>

#### The Days-of-Revelation Theory

Some scholars have proposed that the six days were indeed literal days but that the periods of creative work were eons. One of these views is considered here.<sup>72</sup>

This theory holds that the six days were not days of creation, but days when God revealed to human beings, one day at a time, the work of creation. Wiseman, a leading proponent of this theory, maintains that much of creation “had been accomplished in the long ages past,” and that “*There is no suggestion that the acts or processes of God had occupied those six days.*”<sup>73</sup>

Wiseman builds much of his case on the use of the Heb verb *‘āśā* in Exod 20:9–11, where, in the KJV, it is translated “do” in vv. 9 and 10, “made” in v. 11. In about two-thirds of its OT occurrences *‘āśā* is translated “do” or “make” in the KJV. Wiseman maintains that since it is occasionally translated “show” in the KJV, it can be so translated in Exod 20:11. His idea is that in six days, God

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<sup>67</sup> Oswald T. Allis, *God Spoke by Moses* (Philadelphia: Presbyterian and Reformed, 1951), 11. See also *The Interpreter’s Bible*, George Arthur Buttrick, ed. (Nashville: Abingdon, 1952), 1:471.

<sup>68</sup> Dillmann, 1:64–65.

<sup>69</sup> Ross, *Creation and Time*, 141–42.

<sup>70</sup> Morris, *Biblical Basis*, 119–120.

<sup>71</sup> Dillmann, 1:64; Noel Weeks, *The Sufficiency of Scripture* (Edinburgh: Banner of Truth, 1988), 117.

<sup>72</sup> For discussions, pro and con, of other views, see Pipa and Hall, and Jordan.

<sup>73</sup> Wiseman, *Creation Revealed*, 124; *Clues to Creation* (London: Marshall, Morgan, and Scott, 1977), 137.

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“showed,” or revealed, to human beings the work of creation. He maintains that in v. 11, *‘āśâ* “necessarily means no such thing” as “created.”<sup>74</sup> According to Hasel, however, there is no Hebrew-English dictionary that supports “show” as a translation of *‘āśâ*.<sup>75</sup> The word is translated “show” (shew) 43 times—but never “reveal”—in the KJV. In most cases the reference is to the manifestation of a positive emotional quality, but in no case to the revelation of truth or communication of knowledge.

Regarding the use of *‘āśâ* in Exod 20:9, 11, it appears (1) that neither its semantic range nor the context justifies the translation “showed” or “revealed” (“show” certainly does not do in v. 9); (2) that *‘āśâ* can be, and should be, translated “made” or “created” in v. 11.<sup>76</sup>

Exodus 20:8–11 cannot be used, then, to support the Days-of-Revelation Theory. For this reason and others, this theory should be considered invalid.

Perspectives advanced by Hayward, Newman and Eckelmann, Bradley and Olsen, and Sailhamer cannot be considered here.<sup>77</sup> None of these schemas appears to have attracted many followers.

### Non-chronological Views

Some scholars have maintained that Gen 1 should be understood non-chronologically—that the author of Gen 1 was dedicated to a high-level purpose, such as formulating a theology of the Sabbath, and was not interested in details of chronology. Clouser, indeed, goes so far as to consider it improper to question whether the six days were either literal twenty-four-hour days or geological eras. Surprisingly, he states that “the text shows not the slightest hint of any concern” with either the processes used by God or the time involved.<sup>78</sup> In other words, the question of literal vs. nonliteral days is not an issue. This concept is here discussed, first in general terms, and second, with reference to a specific formulation of it—the Framework Hypothesis.

**In General.** The purposes of Moses in writing Gen 1 were surely high-level purposes, and *may* have included, in addition to narrating the creation story: (1) providing a theology of (a) creation, (b) the Sabbath,<sup>79</sup> and (c) humanity, and (2) combating idolatry and mythological cosmogonies.<sup>80</sup>

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<sup>74</sup> Wiseman, *Creation Revealed*, 32–34.

<sup>75</sup> Hasel, “Days of Creation,” 14. HALOT (revised ed. of 1995), NIDOTTE, and TLOT support Hasel here.

<sup>76</sup> TLOT, 2:949, supports this conclusion.

<sup>77</sup> Alan Hayward, *Creation and Evolution* (Minneapolis: Bethany, 1995), 170–71; Newman and Eckelmann, 83–86; Bradley and Olsen, in Radmacher and Preus, 288–90, 299–301. John A. Sailhamer, *Genesis Unbound* (Sisters, OR: Multnomah, 1996) presents a radically different view—see especially 14, 41–44. For a critical appraisal of Sailhamer’s schema, see Jordan, 131–169.

<sup>78</sup> Roy A. Clouser, “Genesis on the Origin of the Human Race,” *PSCF* 43:1 (March 1991), 6.

<sup>79</sup> Blocher, 50.

<sup>80</sup> See, for example, Hasel. “The Polemical Nature of the Genesis Cosmology.” *Evangelical Quarterly* 46:2 (April–June, 1974), 81–102.

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In response, we should note the following: (1) that an interest in details would be a necessary part of the realization of the writer's purpose; (2) providing an account of creation would certainly involve a concern for chronological details. That creation was distributed over six literal days with cessation from work on the seventh is obviously a component of a theology of the Sabbath. It may also be said (3) that the idea that Moses would not be interested in details is gratuitous; and (4) that the notion of reading purposes into the mind of an author and then drawing expository inferences from the assumed purpose seems to me exegetically unsafe.

Against proponents of a non-chronological arrangement of Gen 1, Pipa presents four arguments for a chronological approach: "First, a genre and literary analysis suggests sequential narrative." "Second, the text has the grammatical mark of sequential narrative," namely, the repeated use of the waw-consecutive feature. Pipa reports that Moses uses this Hebrew construction fifty-five times in Gen 1. "Third, the use of 'day' with the ordinal number demands a sequential reading." Pipa holds that there is not one example in the OT of *yôm* with an ordinal number used "non-sequentially." Fourth, Biblical usage elsewhere, as in Psalm 104, parallels the creation account.<sup>81</sup>

Young also opposes the idea of a non-chronological arrangement of Gen 1. He asserts "that everything in the text militates against" "a non-chronological view of the days."<sup>82</sup>

**The Framework Hypothesis.** The Framework Hypothesis is clearly defined by Meredith Kline: Moses uses "the anthropomorphic figure of a week" as a frame on which to arrange the creation story and as a framework for a theology of the Sabbath. With this purpose in mind, adherents of the hypothesis maintain, Moses is not interested in details of chronology or in the processes of creation.

According to Mark Ross, this hypothesis "argues, *on exegetical grounds*, that the organizing principle of the creation account is topical rather than chronological. It denies, *on exegetical grounds*, that the seven-day week is intended as a chronological unfolding of the separate acts of creation limited in duration to one calendar week."<sup>83</sup>

As noted above, Dillmann holds that Moses "embraced the process of creation in the framework of seven *days*," in order to provide a rationale for the Sabbath.<sup>84</sup> S. R. Driver holds much the same view.<sup>85</sup> Kline appears to be the most persistent defender of this hypothesis. It is his version of this hypothesis that is

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<sup>81</sup> Pipa, in Pipa and Hall, 182–186.

<sup>82</sup> Young, 100.

<sup>83</sup> Mark Ross, in Pipa and Hall, 114.

<sup>84</sup> Dillmann, 1:64–65.

<sup>85</sup> S. R. Driver, *The Book of Genesis* (Westminster Commentary), (London: Methuen, 1943),

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considered here.<sup>86</sup> Because of limitations of space, only selected aspects can be discussed.

For the writer's purposes, the main supports for Kline's Framework Hypothesis are (1) his version of the concept of God's time vs. human time; (2) his interpretation of Gen 2:5-7; (3) alleged difficulties with a sequential understanding of Gen 1. (The second and third of these overlap.)

**1. Kline's Concept of God's Time and Man's Time.** In his concept of "Upper-Register Time and Lower-Register Time," Kline has provided a more sophisticated version of the concept of "God's time and man's time." From the mention of a space bifurcated, according to Gen 1:1, into a "higher" heavens and a "lower" earth, Kline posits the existence of a "higher-register" ("heavenly") time and a "lower-register" ("earthly") time. He holds that "The six evening-morning days" marked by divine fiats were "upper register" days "not identifiable in terms of solar days" and "relate to the history of creation at the upper register of the cosmos."<sup>87</sup>

It does not appear to the writer that Kline's inference from the idea of a bifurcated space to that of a bifurcated time is valid. He agrees with Jordan's statement that Kline has not shown that there is any such thing as an upper register time or that upper-register time would differ from lower-register time.<sup>88</sup>

**2. Kline's Interpretation of Gen 2:5.** The phrase "exegetical grounds" used above refers to Kline's interpretation of Gen 2:5, 6. According to Kline, the "scenario conjured" by the literal interpretation of Gen 1 is at odds with 2:5; involves a conflict between science and Scripture; and pits Scripture against Scripture.<sup>89</sup> In reality the literal interpretation is at odds with Kline's interpretation of 2:5, or vice versa. Duncan and Hall characterize Kline's understanding of Gen 2:5, 6 as a "*sine qua non*" of the Framework interpretation. If he is wrong on this count, they maintain, "the whole theory falls."<sup>90</sup>

From the statement in 2:5 that there was no shrub of the field because there had been no rain, Kline infers that the *modus operandi* of preserving what God had created was normal, non-miraculous providence. Genesis 2:5 refers, then, not to creation, but to subsequent history, to the preservation of what God has brought into existence.<sup>91</sup> He recognizes that "Acts of supernatural origination did initiate and punctuate the creation process."

For Kline, two problems arise with relation to 2:5:

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<sup>86</sup> Kline's views may be found in two articles: "Because It Had Not Rained." *Westminster Theological Journal* 20/2 (May, 1958), 146-157; and "Space and Time in the Genesis Cosmogony," with Lee Irons as co-author and with critical responses, in Hagopian, 217-303.

<sup>87</sup> Kline, "Space and Time," 10.

<sup>88</sup> Jordan, 67.

<sup>89</sup> Kline, "Space and Time," 14, 13.

<sup>90</sup> Duncan and Hall, in Hagopian, 263.

<sup>91</sup> Kline, "Space and Time," 11, 12.

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a. He maintains, with reference to day 3 of creation week, that land that had recently emerged from beneath the sea could not have become dry land covered with vegetation in one day by the normal process of evaporation and growth. He states that according to “the principle revealed in Genesis 2:5 the process of evaporation at that time was the ordinary one.”<sup>92</sup>

Kline seems to have overlooked the possibility that dry land appeared as the result of geological activity as well as evaporation. The intended contrast in the account of day three, further, is not between dry soil and wet soil but between continents and seas. And he seems to forget his own statement that Gen 2:5 relates not to creation, but to preservation. The work of day 3, however, was clearly a work of creation.

This idea of geological work on day three is supported by Whitcomb and Morris: “Especially on the third day there was a tremendous amount of geological work, including orogeny,” and “erosion and redeposition of surface materials.”<sup>93</sup>

b. Kline alleges a contradiction between Gen 2:5 and the literalist interpretation of Gen 1. According to 2:5, there was no vegetation because there had been no rain. According to Gen 1, the earth was covered with vegetation at the end of day three. Kline “discovered” this contradiction—a contradiction that cannot be resolved if the days are literal days—by identifying the “shrub of the field” and “the plant of the field,” which, according to 2:5 were not yet in existence, with the vegetation in general of 1:11, 12. Kline is quite explicit: “Absent then were all plants, whether belonging to the uncultivated wilderness or to cultivated areas.”<sup>94</sup>

Kline concludes that the contradiction between the literalist interpretation of Gen 1 and his interpretation of 2:5–7 means that the creative events are not represented as chronologically arranged. If his interpretation of 2:5 were correct, 2:5 would reflect a situation “that has obviously lasted for a while; it assumes a far more leisurely pace on the part of the Creator” and would suggest that the work of creation could not have been accomplished in a few days.<sup>95</sup> Kline apparently believes that creation occupied “aeons.”<sup>96</sup>

In response to Kline’s argument from 2:5, 6, it should be pointed out that other interpretations of Gen 2:5, 6 have emerged.<sup>97</sup> The writer accepts, and fol-

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<sup>92</sup> Kline, “Had Not Rained,” 151.

<sup>93</sup> John C. Whitcomb and Henry M. Morris, *The Genesis Flood* (Philadelphia: Presbyterian and Reformed, 1961), 214, 215.

<sup>94</sup> Kline, “Space and Time,” 12.

<sup>95</sup> Kline, “Space and Time,” 13.

<sup>96</sup> Kline, “Had Not Rained,” 152, 154; “Space and Time,” 14, 13, 12.

<sup>97</sup> For other interpretations of Gen 2:5, 6 see Young, 58–65, and Jacques B. Doukhan, “The Literary Structure of the Genesis Creation Story,” ThD Dissertation, Andrews University, 1978).

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lows here, that of Cassuto followed by Younker, and with additions by Jordan<sup>98</sup> and himself:

(1) Gen 2:5, 6 posits a situation that was not part of God's plan for human beings, but which, as Jordan suggests, was reserved for remedial judgment upon them should they sin. The shrub of the field and plant of the field and tilling the soil came in as results of their sin (Gen 3:17–19). Before they sinned the work of Adam and Eve was to tend the orchard of Eden, not to cultivate field crops. Rain came later.

(2) The shrub of the field and plant of the field of 2:5 correspond not to vegetation in general, but, respectively, to (a) the thorns and thistles of 3:18, desert plants that, on rare occasions of rain, spring up from seeds preserved in the dry soil; (b) the plants of the field of 3:18, grain-bearing plants that require cultivation.

(3) Rain had not fallen, and would not fall for some time, because the conditions required to produce it, especially the presence in the atmosphere of particles required as condensation nuclei for the formation of raindrops,<sup>99</sup> were not all present. Because the earth was watered by a "mist," rain was unnecessary.<sup>100</sup>

This interpretation, if valid, removes the basis for belief in a contradiction between 2:5, 6 and a literal interpretation of Gen 1. I agree with Jordan's statement that Meredith Kline's argument from 2:5 is "without merit."<sup>101</sup>

**3. Kline's Allegations of Problems of Sequence.** In arguing for the Framework Hypothesis, Kline seeks to show that impossible sequences are involved in the traditional positions on Gen 1. This section may be introduced with Kline's statement: "In short, if the narrative sequence were intended to represent the chronological sequence, Genesis 1 would bristle with contradictions of what is revealed in Gen. 2:5."<sup>102</sup> Obviously, these "contradictory sequences" must be true of both the literal and the Day-Age positions if they can be relied on to support the non-chronological Framework Hypothesis. Three of these sequences are considered here:

1. Kline points out that vegetation, created on day three, would not have survived without the sun, created on day four. Since most vegetation survives daily periods of darkness, Kline's criticism would apply only to the Day-Age Theory.

2. Kline points out, against the Day-Age Theory, that if the earth were in place on day-age one, and the stars were created on day-age four, "All the vast

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<sup>98</sup> Cassuto, 1:100–104; Randall W. Younker, *God's Creation* (Nampa, ID: Pacific Press, 1999), 50–58; Jordan, 54. Kline either was unaware of Cassuto's interpretation or chose to ignore it.

<sup>99</sup> See R. G. Barry and R. J. Chorley, *Atmosphere, Weather, and Climate*, 6th ed. (London: Routledge, 1992), 70.

<sup>100</sup> The Hebrew word for "mist" is of uncertain meaning. In the absence of rain, there may have been a heavy dew.

<sup>101</sup> Jordan, 55.

<sup>102</sup> Kline, "Space and Time," 14.

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universe whose origin is narrated on day 4 would then be younger (even billions of years younger) than planet earth.<sup>103</sup>

In reply to this argument, the writer suggests that because of the ambiguity of the Heb morpheme *'et* in the phrase “and the stars also” in Gen 1:16, this passage should probably be regarded as noncommittal regarding the time of the creation of the stars.<sup>104</sup> As a consequence of this ambiguity, the latter part of 1:16 can be translated “the lesser light, with the stars, to rule the night.” This translation, adopted by Spurrell, Moffatt, and as a possibility by House,<sup>105</sup> (and with support from Ps 136:8, 9), “removes the anomaly of the stars being created on the fourth day.”<sup>106</sup> Kline can hardly use this passage to support his hypothesis against the literalist position or the Day-Age Theory.

3. Kline points out also that plants that depend on symbiotic relationships with animals would not have been able to survive if created long before animals. Because these relationships were not necessarily in place at creation, this argument cannot be used to negate the literal position. These relationships may have arisen long after animals were created.

Whatever effect these allegations of contradiction may be held to have on the validity of the Day-Age Theory, they leave the literal view virtually untouched and cannot be used, therefore, to validate the Framework Hypothesis against the literal view.

The Framework Hypothesis has not escaped heavy criticism. Jordan holds that it appears to be “devoid of any sound foundation” and that it has been “thoroughly refuted over and over again,” but has more adherents than ever. Young asks if “serious exegesis of Genesis 1 would in itself lead anyone to adopt” it and says that “everything in the text militates against it.” Pipa holds that the hypothesis “does not work.”<sup>107</sup>

In view of the preceding analysis and these criticisms, the writer regards the Framework Hypothesis as untenable.

### **Conclusions**

Citations from several who have studied the literal-day issue serve, with a comment by the writer, as conclusions:

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<sup>103</sup> Kline, “Space and Time,” 13.

<sup>104</sup> For a discussion of this ambiguity, without reference to Gen 1:16, see Bruce K. Waltke and M. O'Connor, *An Introduction to Biblical Hebrew Syntax* (Winona Lake, IN: Eisenbrauns, 1990), 177. Colin L House, “Some Notes On Translating *וְאֵת הַכּוֹכָבִים* in Genesis 1:16.” *AUSS* 25:3 (Autumn, 1987), 241–248, discusses this ambiguity with explicit reference to Gen 1:16.

<sup>105</sup> George J. Spurrell, *Notes on the Text of the Book of Genesis* (Oxford: Clarendon, 1896), 12; and James Moffatt, *The Bible* (New York: Harper's, 1954); House, 244.

<sup>106</sup> House, 248.

<sup>107</sup> Young, 100; Jordan, 69, 82; Pipa, in Pipa and Hall, 173. For further discussion of the Framework Hypothesis see, in addition to Kline, the following: Ross (in Pipa and Hall, 113–130) argues for the hypothesis; Pipa, (in Pipa and Hall, 154–179); Young (44–76); Jordan (51–69) and Duncan, Hall, H. Ross, and Archer in Hagopian (257–277) argue against it.

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Hasel, after considering “key” nonliteralist arguments, concludes that on the basis of genre investigation, literary considerations, grammar and syntax, and semantic connections, these arguments are wanting. “The cumulative evidence,” he says, “converges on every level, leading to the singular conclusion that the designation *yôm*, ‘day,’ in Genesis 1 means consistently a literal 24-hour day.” He adds, “The author of Genesis could not have produced more comprehensive and all-inclusive ways to express the idea of a literal ‘day’ than the ones that were chosen.”<sup>108</sup>

Duncan and Hall maintain that “compelling exegetical evidence for reading the creation days as anything other than normal days is lacking.” They affirm also that “All these purely exegetical considerations [which they discuss] taken together compel the 24-hour [day] interpretation.”<sup>109</sup>

Last, according to Stambaugh, “The only reasonable choice which remains is that Moses meant to communicate that God created in a series of six consecutive twenty-four hour days.” “God, through the ‘pen’ of Moses, . . . is going out of His way to tell us that the ‘days’ of creation were literal solar days.” Stambaugh concludes by saying that **“the only meaning which is possible is that the ‘days’ of creation were 24-hour days.”**<sup>110</sup>

The writer is persuaded (1) that the work of creation was distributed over six consecutive literal days and that Moses so represented it; (2) that attempts to get nonliteral “days” out of the days of Gen 1 have failed and are exegetically unsound; (3) that interpreting these days as nonliteral involves questionable procedures; and (4) that interpreting these days as eons in order to harmonize Gen 1 and science (a) involves major extrapolation and (b) represents a compromised view of the transcendence of God and an unnecessary concession to the naturalistic bias of contemporary scientism.

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<sup>108</sup> Hasel, “Days of Creation,” 30, 31.

<sup>109</sup> Duncan and Hall, in Hagopian, 23, 98.

<sup>110</sup> Stambaugh, 75, 77.



## **The Integration of Faith and Science**

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Faith and science—can they live in the same house? There are many who say that scholars, especially scientists, must leave all religious influences out of their scholarly pursuits because to do otherwise would compromise the search for truth. Even many Christians are nervous about attempts to find a harmony between Scripture and science. Is this concern justified? This depends partly on how we understand the nature of inspiration and partly on our understanding of the scientific data.

I am well aware of the diversity of views on the nature of inspiration and of the variation in degree of confidence in the history of life given in Genesis. Even in some seemingly conservative Christian circles there seems to be the conviction that we can only be worthy scholars if we move away from acceptance of Bible history as describing literal events, such as the six-day creation and perhaps even a literal second coming. However, the approach I will take in this paper is based on an understanding of inspiration well summarized by E. G. White: “The language of the Bible should be explained according to its obvious meaning, unless a symbol or figure is employed” (GC 599). “It [the Bible] was designed for the common people, and the interpretation given by the common people, when aided by the Holy Spirit, accords best with the truth as it is in Jesus (5T 331). “A sense of the power and wisdom of God, and of our inability to comprehend His greatness, should inspire us with humility, and we should open His word, as we would enter His presence, with holy awe. When we come to the Bible, reason must acknowledge an authority superior to itself, and heart and intellect must bow before the great I AM” (SC 110).

This approach accepts the events described in the Bible as actual historical happenings, including creation in seven literal days, a global flood, Jesus’ miracles, and God’s literal communication of ideas and facts to at least some Bible writers, such as Moses, Daniel, Paul, and John (not through verbal inspiration, but communication of thoughts). This approach must be used with wisdom, prayer, and careful thought, or it can lead to such simplistic ideas as the common

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fundamentalist belief in verbal inspiration of Scripture (which some SDAs have also tried to apply to E. G. White).

I have both spiritual reasons (which I will not discuss here) and scholarly reasons for taking this position, arguing that biblical insights can open our eyes to new insights in science (Brand 1997). The God of the Bible is the greatest scholar of all time, and Scripture deals in the highest levels of scholarship, not just in comforting inspirational themes. (When God arranged to have Genesis written, He knew vastly more about radiometric dating than we will ever know.)

The application of this concept can be valuable not only in biology but even in what may seem like the most unlikely disciplines—paleontology and geology. My own area of training and research is in evolutionary biology and paleontology, and I will discuss the integration of faith and science mainly in these fields. I will not attempt in this paper to defend my conservative view of biblical interpretation, but will only discuss the application of that concept in integrating faith and scholarship. Scholarly thinking based on confidence in a high view of scripture does not need to be inferior to more liberal scholarship, and in fact can give us advantages. We benefit from insights from the Creator of the universe—insights that others ignore.

### **Challenges to Be Overcome**

The attempt to integrate faith and scholarship introduces a tension. Can religion interject a bias into our scholarly search for truth? The answer, clearly, is yes: it can introduce a bias. Some conservative Christians believe dinosaurs never existed, even though numerous dinosaur skeletons have been found, and they think this opinion is based on the Bible. One suggested solution is to leave the Bible out of our scholarly pursuits, so religious biases will not trouble us and we can be more objective. An episode in the history of geology illustrates the shallowness of that solution.

The pioneering geologist Charles Lyell wrote a book (Lyell 1830-1833) that defined the field of geology for over a hundred years. Lyell rejected all the catastrophist geological interpretations common in his day and replaced them with the theory that all geological processes occurred very slowly and gradually over eons of time (gradualism). Historical analysis of Lyell's work has concluded that the catastrophists were the more unbiased scientists, while Lyell imposed a culturally derived theory upon the data (Gould 1984). Gould and others are not agreeing with the biblical views of some of the early geologists, but they have concluded that Lyell's colleagues were more careful observers than Lyell, and their catastrophist views were realistic interpretations of the data.

Lyell's strictly gradualistic theory was very bad for geology, because it closed geologists' minds to any interpretations that suggested rapid, catastrophic geologic processes (Gould 1965; Valentine 1966). The authors just cited still prefer to explain geology in a "millions of years" scenario, but they recognize the evidence that many sedimentary deposits are catastrophic in nature. Now

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that Lyell's serious bias has been recognized and at least partially abandoned, the minds of geologists have been opened to recognize more evidence for catastrophic processes. That evidence was there in the rocks before, but was not recognized because of Lyell's bias. If the prevailing paradigm says it isn't true, it will probably not be noticed.

This episode reveals that bias is not a religious problem. It's a problem that we all have to contend with, no matter what philosophy we adopt. Biases such as these can persist because of the inadequacy of our information on complex topics, and a continued search for new evidence can help to reveal them, *if we have the right state of mind to notice them*. The idea that religion introduces biases, but scholarship that leaves religion aside is objective, is naive (Plantinga 1997). It is true that we often read our pet ideas into the Bible, between the lines, and misunderstand how to relate Scripture to nature. But those who do not take Scripture seriously have their own problems with other biases, and these are no less significant than the biases that can result from religion.

Testing a theory is easier in some fields than in others. Questions about whether faith and science can productively interact may seem almost irrelevant to those in biochemistry or physiology or engineering, because there is no conflict between their faith and their science. Another consideration is that those disciplines work with currently active biological, chemical, and physical processes, while paleontology, geology, and parts of evolutionary biology study historical events which we cannot observe, but must try to reconstruct from the meager evidence they have left behind. These disciplines, as practiced by most professionals, are heavily dependent on certain assumptions—especially the worldview of millions of years of evolutionary history without any Divine intervention. This naturalistic worldview can introduce extremely pervasive biases into scientific inquiry.

Nevertheless, the nervousness of Christian thought leaders about the idea of seeking a relationship between science and religion cannot be lightly brushed aside. It could arise for several reasons, and any method for integrating faith and science must have an answer for these (Brand 2000a & b). In addition to the possibility of bias addressed above, the issues most relevant here are 1) the possibility that if we try to integrate our science and our faith, science may disprove our belief system, and 2) religious explanations (“God did it”) may seem to answer all questions and thus discourage scientific investigation.

#### **An Approach to Relating Faith and Science that Doesn't Work**

One response to this challenge that some find attractive is to simply keep science and faith separate (e.g., Gould 1999). This method can work fine in many disciplines that do not deal with the history of life or of the earth, because Scripture may not speak to the issues those disciplines address. As I have observed the results of this approach as used by people I know (and by Stephen Gould), it is evident to me that when they begin to study earth history, where the

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Bible and science sometimes say opposite things, they in reality switch to a different approach. They then either take Scripture as more reliable than historical science, or they go the other direction and decide that science gives us facts, and Scripture only provides the spiritual meaning of those facts. This latter approach leaves me with one nagging question. If God can't keep His facts straight, or at least doesn't know how or doesn't bother to communicate them to us, why should I care what He has to say about spiritual meanings? Why should I trust what He has to say? This can be expressed as a strictly scholarly question: if a book claims to speak for some individual, and much of what the book says is mythical or just not true, is there reason to believe the rest of the book or to trust the person behind the book? There must be a better answer to the problem of relating faith and science.

Perhaps then we should just solve the problem by being sure to keep an open mind as we pursue our scholarly study. That is a worthy goal, but as our discussion of Lyell's theory suggests, we often don't have nearly enough facts to know what a truly open mind would be thinking. This is truer in geology, paleontology, and evolutionary science than is commonly recognized.

**A Productive Approach to Relating Faith and Science**

Another solution is to know God as a personal friend, learn to trust His Word, and use it to assist us in our scholarly thinking. Meanwhile, if we interact with other scholars with various views, that interaction can help us avoid simplistic attempts to relate Scripture to the natural world. There are many creationists who write books or pamphlets on evolution or geology that are clearly an embarrassment even to a conservative Christian who is informed on these subjects. It may be that the problem isn't their use of biblical concepts, but a lack of scientific knowledge, combined with a lack of peer review of their ideas.

This, I believe, leads us to an approach that is tried and proven (Brand 1997, ch. 5-6), using the following steps: 1) Allow new scientific findings to challenge our interpretation of Scripture, and vice versa (Fig. 1); 2) actively search for and utilize insights from Scripture pertinent to our discipline, allowing these to help us devise hypotheses that can be tested with the methods of science, especially in areas of seeming conflict between science and Scripture (Moreland 1994, ch. 1); 3) be aware of the work and thinking of those who have a different world view; 4) whenever feasible, submit our work for publication and peer review; and 5) become friends with those in a different world view, and perhaps even do collaborative work with them. This requires the confidence and independence of thought to not accept whatever our collaborators think, while maintaining a constructive dialogue that can reduce the likelihood of superficial thinking.

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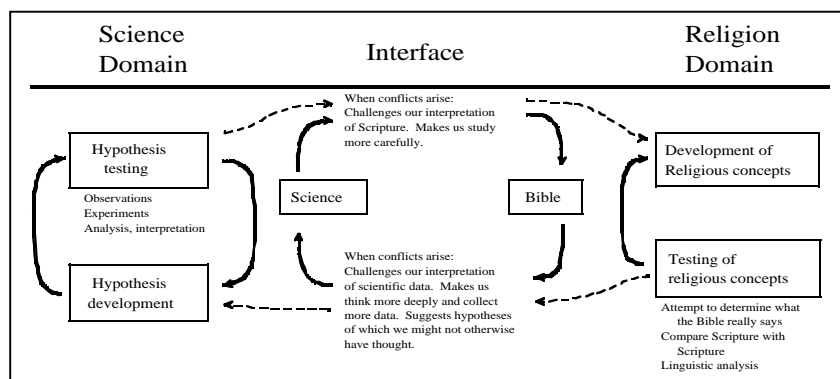


Figure 1. A working relationship between science and religion. The methods of science are used in science, but not to test religious ideas, and vice versa. The interface is a thought process where each domain is allowed to challenge the other and cause us to think more carefully about both science and religion. This process will encourage, not discourage, continuing research. (from Brand 1997)

**Scientific Challenges to Scripture and Scriptural Challenges to Science**

Progress in the integration of faith and science often begins with a new scientific finding that challenges our understanding of Scripture. At that point we may be tempted to bar the doors against all new ideas and defend our personal beliefs against all challenges. A more constructive answer to the challenge (Fig. 1) is to use the methods of science to pursue the challenging area (science domain), while using the methods in the religion domain to dig deeper in Scripture to determine if it actually says what we thought it says. As we do this, it may become evident that Scripture surely does disagree with accepted scientific interpretations, thus challenging us to think of new hypotheses that can explain the scientific data. This method differs from Gould’s method (Gould 1999), because it maintains a continuous mental interaction between the religion and science domains, as they each challenge the other to more careful thought. Another difference from Gould is that in my approach Scripture contributes not just pleasant pastoral counsel, but also truths about events of earth history.

This approach does not discourage research, but can stimulate more careful research in both science and religion. In this process Scripture can suggest hypotheses to be tested by the methods of science. For example, the biblical framework predicts that the fossil-rich portion of the geological record formed in a much shorter time frame than most geologists think. This can be translated into specific testable scientific hypotheses about individual rock formations.

This may sound good on paper, but do we have evidence that it can truly work? In the examples below, I will show that the process does work, has stimulated productive scientific research, and has also resulted in responsible reevaluation of some interpretations of Scripture. One common belief held by

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many conservative Christians about geological history is now revealed as a strictly human assumption that is not present in Scripture. We will return to this point later.

**Biblical Anchor Points**

Application of the above described integration process leads me to the following list of earth history concepts (biblical anchor points) that I believe are supported by Scripture:

1. In a literal week of six consecutive, twenty-four hour days, God prepared the earth's surface and created living things (Genesis 1, 2).

2. At the end of that creation week, a complete ecosystem was in place, including invertebrates (creeping things), birds, aquatic animals, mammals (cattle), and plants (Genesis 1). Not much detail is given as to exactly what animals and plants were present, but the list includes some that do not appear until fairly late in the fossil record, like fruit trees (angiosperms) and humans. Thus the list of organisms present at creation week includes both invertebrates and also "higher forms" of life. This indicates that the major life forms were created and did not result from evolution.

3. At some time since the creation there was a catastrophic flood of global proportions.

4. The creation week occurred only a few thousand years ago. There are uncertainties about the completeness of genealogical lists and differences between ancient biblical manuscripts, but although we don't know the exact time span, I conclude that Scripture clearly portrays a short history of life on this earth, measured in thousands, not millions of years. It is evident that many Bible writers accepted the creation, the flood, and the early biblical record of human history as accurate. Many biblical passages make no sense whatever if the fossil record represents millions of years of time.

5. Jesus demonstrated in His miracles that God is very capable of instantaneously creating animal or plant tissue, or in restarting the biochemical processes in tissue that is no longer living. This is demonstrated in the turning of water to wine (John 2:1-10), creating food to feed several thousand people from a handful of fish and bread (Mark 6:30-44, 8:1-10), raising someone who had been dead for several days (John 11:38-44), restoring sight to blind eyes (John 9:1-11), restoring tissue destroyed by leprosy (Luke 17:11-17), and restoring a withered hand (Mark 3:1-6). This shows that God is very capable of creating life as described in Genesis.

6. After sin the biological world began to change (Genesis 3:14-19). Thorns and thistles began to appear, and apparently some large mammals became carnivorous that were not carnivorous before (Isaiah 11:6-9).

From study of E. G. White's writings on this topic (1864, 1890), I add the following items to the list:

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7. A strong reaffirmation of the literal creation week, a few thousand years ago.

8. In connection with the flood, mountains disappeared, new mountains appeared, coal and oil were formed, and in fact the entire crust of the earth was changed.

**Examples of Research Resulting from Biblical Insights**

The following are a few examples—and more could be given—of successful scientific research that used insights from Scripture to suggest new questions to be asked or hypotheses to be tested.

**1. Grand Canyon Geology.** Dr. Arthur Chadwick of Southwestern Adventist University has been studying the Tapeats Sandstone near the bottom of the Grand Canyon. I will not attempt to explain the details of his research in this brief paper, but he and his collaborators found a geological deposit that clearly changes the interpretation of the Tapeats Sandstone in the Grand Canyon area (Kennedy et al. 1997). Others have interpreted the Tapeats Sandstone as an accumulation of sand in shallow water along an ocean shore, with the water level and sand deposit gradually rising along an existing cliff face over eons of time. The findings of Chadwick and Kennedy require accumulation of the sand in deep water, by very different processes from those that would occur in shallow water (these deep water processes possibly were also much more rapid, but that is another issue). They presented their data and conclusions to a professional meeting of geologists, including some who had done much of the previous research on that formation, and these geologists concluded that Chadwick and Kennedy's conclusions were correct. One geologist asked Dr. Chadwick afterwards why he had seen these things that other geologists have missed? The answer is that our worldview prompts us to ask questions that others are not asking, to question conclusions that others take for granted, and it opens our eyes to see things that are likely to be overlooked by a geologist working within a conventional naturalistic scientific theory. The questions a scholar asks have a strong controlling influence on what features of rocks or fossils will catch their attention, for example, and what data they will collect.

Careful scientists who allow Bible history to inform their science will not use a different scientific method from the method used by other scientists. When we are at a rock outcrop we all use the same scientific method, the types of data potentially available to us are the same, and we use the same scientific instruments and logical processes to analyze data. The differences are in 1) the questions we tend to ask, 2) the range of hypotheses we are willing to consider, and 3) which of the potential types of data are likely to catch our attention.

If we start from what we believe to be a more correct beginning point (like starting with divinely revealed history), that starting point does not guarantee that the hypotheses we develop will be correct, since God has not given us that much detail. It just initiates a search in a particular direction, and we may need

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to make a number of course corrections (based on scientific data) before we find the right answer. The advantage in beginning from a more correct starting point is that it can greatly speed up the process by eliminating gross errors in our interpretations. A God who has witnessed all of earth history can give us insights about history that would be difficult or impossible for us to discover by science alone, at least in a time frame consistent with the human life span. My point is that if we trust Divine insights, they can help us improve our progress in some areas of science by opening our eyes to things we would otherwise be much less likely to see.

**2. Fossil Whales of the Miocene/Pliocene Pisco Formation of Peru.** A few years ago I first visited the Pisco Formation in Peru, a diatomite deposit containing numerous well preserved fossilized whales. Microscopic diatoms are organisms that float near the surface of lakes and oceans. Upon death their silica skeletons sink, and in modern oceans they form accumulations of diatomite a few centimeters thick in a thousand years. It is assumed that ancient (fossil) diatomite deposits formed at the same slow rate—a few centimeters per thousand years.

There are publications in scientific research journals on the geology of the Pisco Formation and on the systematics and evolution of the whales. But apparently no one has previously asked how it can be that sediment accumulating at the slow rate of a few centimeters per thousand years can contain complete, well-preserved whales, which would seem to require rapid burial for their preservation. This was another case in which our worldview opened our eyes to see things that others have not noticed. This was an opportunity to test whether my working hypothesis (derived initially from Scripture) of a shortened geological time scale could be applied to the Pisco Formation. Such slow diatom accumulation does not seem compatible with well-preserved whales, and further research could evaluate this. Our research there during three summers, with graduate student Raul Esperante and other geologists and paleontologists, has indicated that the whale carcasses were not in any type of special situation that could favor preservation of animals over extended time periods before burial. Our evidence points to rapid burial, probably within a few weeks or months for any given whale, or a few years at an extreme maximum, and suggests some processes that can help to explain how ancient diatomites may have accumulated much more rapidly than is usually assumed. Other scientists are studying decay and disarticulation of modern whale carcasses on the ocean floor, and their data provide information on the timing of decay and disarticulation of modern whales.

In this research we presented papers at the annual meetings of the Geological Society of America (Esperante-Caamano et al. 1999, 2000), interacting with other scientists who deal with these phenomena, and have published one article (Esperante-Caamano et al. 2002), and more manuscripts are in preparation. The best scientists in the field have opportunity to evaluate our work and will be



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eager to point out our mistakes. That is a powerful incentive to keep us from being careless. Of course we do not discuss biblical insights at the geology meetings or in our publications, as that would not be appropriate. We discuss scientific work only, and if the data support our conclusions, our work will stand up to the criticisms of scientific reviewers.

In this research and other similar research projects, I have spent time in the field with, and even collaborated with, other paleontologists and geologists who have a non-creationist worldview. I find there is value in working with someone from a different point of view. I discover things they would probably never even consider, and they notice things I would likely overlook. This can help each of us to not be misled by our inherent biases. The LLU researchers found data that raise serious questions about applying the radiometric time scale to these geologic formations, and these questions exist in other formations as well—there are geological reasons to think there is something wrong with the radiometric time scale. But on the other hand, our findings indicate that the sediment in these formations apparently could not have accumulated in a few weeks or months, and thus it could not have formed in a one-year global flood—it was deposited rapidly, but the sedimentary data are consistent with a time frame of perhaps tens to hundreds of years, not a few weeks or months. We will come back to this point later.

**3. Fossil Vertebrate Trackways in the Permian Coconino Sandstone, Northern Arizona.** The Coconino Sandstone is generally interpreted as a deposit of wind-blown desert sand, and its only fossils, vertebrate trackways, have been considered supporting evidence of this interpretation. Because I wondered how this desert interpretation could fit into a biblical earth history model, and because of superficialities in previous research on the fossil trackways, I have been doing research on these tracks for some years (Brand 1979, 1983, 1992, 1996; Brand and Tang 1991). At present it is not clear what the ultimate conclusion from this research will be. The trackways have features that seem virtually impossible to explain unless they were made with the animals completely underwater, while the sedimentary evidence, as interpreted by sedimentologists, seems to point to wind-blown sand. This seeming contradiction indicates there are some unknown pieces of the puzzle that remain to be discovered. When these pieces are found they may provide new insights into processes of sand deposition or new insights into how trackways are made under unique conditions. Whatever the outcome will be, our understanding of the Coconino Sandstone and its fossil tracks will be on a stronger footing (no pun intended) because of my questioning of the accepted interpretation of these tracks. We will then know what course corrections are needed in sedimentological interpretations of cross-bedded sand deposits or in our understanding of some extra-biblical details of earth history.

**4. Biological Origins and Intelligent Design.** The application of naturalism to the origin of life and of the diversity of organisms is being challenged by

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scholars in the Intelligent Design movement, led by Phillip Johnson and others (Behe 1996; Dembski 1998, 1999, 2002; Moreland 1989, 1994; Johnson 1991, 1995, 1997). There is much opportunity for significant scholarly work in this area. Darwinian theory is very successful in explaining biological change in species or subspecies of organisms, but quite unsuccessful in accounting for the origin of larger novelties like the origin of life or new classes or phyla of plants or animals. It is time for a different approach to have a hearing. If science is going to be an openminded search for truth, it cannot arbitrarily exclude some hypotheses. Advances in molecular biology make it increasingly difficult to justify excluding the hypothesis that life requires an intelligent inventor—that idea at least must be open for candid discussion. Phillip Johnson is probably right in his conviction that our primary task is to get the philosophy of naturalism onto the table for open discussion. If naturalism can be openly discussed and challenged, its weaknesses and arbitrariness will become evident.

Behe (1996) has been applying the hypothesis of intelligent design in his study of molecular biology. He finds biomolecular structures (biomolecular machines) that seem to require construction and assembly of several complex parts before they can work at all (irreducible complexity), just like a mousetrap must have all its parts before it will work. He presents this as evidence requiring a designer, since natural selection will only work in evolving complex structures if it can gradually “invent” one part at a time. Others attempt to challenge Behe’s conclusions, but his work is like other scientific research programs—his initial attempt is unlikely to once and for all disprove the opposing view. We can now all watch the interaction between different viewpoints as they pursue research attempting to support or disprove the implications of biomolecular complexity for intelligent design.

**Implications for Science and for Faith**

These are just a few examples of what must certainly be a wide field of opportunities for constructive integration of religious insights and scholarly work. Wolfe (2000) concluded an article on intellectual contributions by Christians by stating, “There are not, and in all likelihood there never will be, similar developments (a serious intellectual contribution by conservative Christians) in the natural sciences.” If that prediction can be proved wrong, science as well as religion will benefit.

How scientists get their ideas cannot be analyzed objectively and is irrelevant to the scientific process (Cromer 1993, 148; Popper 1959, 31, 32). No matter where their ideas come from (even from the Bible), those ideas and hypotheses are valid science if they can be tested against data. Science, of course, has nothing to contribute to evaluating much of the content of Scripture. Whether Jesus actually changed water to wine or bodily raised Lazarus from the dead is beyond scientific scrutiny. Many scholars will claim it is very unscientific to believe such things, but that conclusion is based solely on untested and

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untestable philosophical assumptions (biases), and in reality has nothing to do with science. What experiment would you do to test those biblical miracles? Unless science can conduct such a test, science cannot properly claim to have anything to say about such matters.

When a biblical worldview can suggest testable hypotheses, those are valid contributions to science. This claim is supported by the examples from geology and paleontology given above and from personal experience or the work of close friends. Other examples could be given. It is also interesting to see certain general trends in the geological sciences and in biology that are going in the direction predicted by a conservative reading of Scripture. Examples would be the trend of increasing recognition of catastrophic processes in geology and the growing number of voices who doubt that Darwinian processes can produce life from non-living material or can produce major new life forms. The latter example still involves a minority of individuals (a well-entrenched theory like abiogenesis or Darwinian macroevolution dies hard), but growing knowledge of the intricacies of molecular mechanisms in living cells makes belief in a naturalistic origin of life forms increasingly difficult, and the usual lack of fossil intermediates between phyla and classes of organisms compounds the difficulty.

A point made earlier needs to be emphasized: the research cited above does not use a different scientific process from that used by other scientists. We have access to the same types of data, we use the same observation techniques and laboratory instruments for analyzing rock or fossil samples. Everyone uses X-ray diffraction (XRD) to identify minerals and scanning electron microscopy or polarized light microscopy for close examination of rocks and small fossils. We use the same type of logic in deriving conclusions from data.

So what is different? The differences are in 1) the questions that we tend to ask, 2) the types of hypotheses we are willing to consider, and 3) which of the potential types of data are likely to catch our attention. Biblical insights indicate there are important scientific discoveries to be made if we ask questions about, for example, how much time it really took to form various rock formations with their fossil deposits, instead of assuming the standard geological time scale is correct.

The research examples described above all resulted in new scientific insights because we allowed biblical insights to open our minds to see things that had previously not been noticed. This gives us reason to believe there are many more such discoveries awaiting the biology or earth science researcher who uses this approach. This also gives us reason to be skeptical about judging the book of Genesis on the basis of current scientific interpretations.

#### **The Other Side of the Coin**

Earlier I stated that being aware of the thinking of those who disagree with us and collaborating with such persons can help us notice things that we would otherwise be likely to overlook in religion as well as in science. Geological

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study, as in the examples cited above, has made some of us aware of conflicts on both ends of the spectrum of geological interpretations. There are many situations in which it is difficult to reconcile the actual data in the rocks and fossils with millions of years of geological time. That theory fits well in a general way, but problems arise when we give careful attention to detail. The devil is in the details!

On the other hand it is equally difficult to see how the details of many deposits can be reconciled with the theory that most of the geological record was produced in a one-year flood (the devil is still in the details). This has led to our recognition that most theories of “flood geology” over the last hundred years, attempting to explain how the flood formed the rocks and fossils, have made one big assumption that is not found in the Bible (or in E. G. White). That is the assumption that most of the geological record was produced in the one-year Genesis flood (perhaps with some forming after the flood, as catastrophic conditions gradually settled down to the more stable conditions of today), with no geological processes forming rocks and fossils between creation and the flood. Genesis tells us that there was a creation week and a flood that heavily impacted life on earth, but it does not tell us what parts of the geological record formed during that event (and I am speaking only of the fossil-rich part of the geological record—the origin of the earth and of the universe is a different question altogether). All of our explanations of such things are extra-biblical theories.

Perhaps the Phanerozoic portion of the geological record began forming in ocean basins or lowland areas after sin, and continued before, during, and after the flood. If the geological record, from Cambrian to the present, took several thousand years to form instead of much of it forming in one year, that is a very different type of geological challenge—orders of magnitude different, from trying to put it all in one year. The rocks and fossils seem to indicate a genuine series of consecutive events that took some time, but there is also evidence of much catastrophe and rapid sedimentary processes. The choice is not only between 1) the geological record forming in one year, or 2) 540 million years for the geological column with its fossil record of complex organisms. There are other options that need to be considered, and I predict that allowing Scripture as well as science to open our eyes to things that others overlook will continue to lead to productive science as we search for answers to the big questions about origins. This type of interaction between science and Scripture can yield insights in other fields as well.

### **Living with Unanswered Questions**

As we pursue research aimed at answering the give and take of challenges between science and religion we will continue to live with many unanswered questions (and so do those who do not accept Scripture, if they honestly face the conflicts between data and theory). It is not realistic to think science will prove or disprove either creation or the flood. Christians have trusted too much in sci-

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ence to prove these events from the distant past; we did not observe them, and science can investigate hypotheses about such ancient historical events, but not provide proof. God has also given us evidence on which to base faith, but not proof. If we had proof we would probably be much too arrogant anyway!

Our faith cannot be based on science, but must be based on knowing Jesus and learning to trust Him, even when we have questions without answers. He knows much more than we do about earth history, and if we know Him and trust His Word we can benefit from the insights in Scripture. All will at some point decide (consciously or unconsciously) which worldview they will accept and live by. We can't be continuously evaluating all beliefs, but if we maintain a constructive interaction between science and faith (Fig. 1), we can test whether our faith is based on Scripture or on our personal biases.

While we depend on our faith, it will not be helpful to ignore science. Even though we experience conflict between our interpretations of Scripture and our interpretations of science, the two sources will not ultimately contradict each other. Willingness to learn from science, understanding science's limits (Ratzsch 2000), and a commitment to the highest quality of science are important complements to our faith. Elton Trueblood (1958, 170) set an inspiring objective before us when he stated that "the religious scientist has more reason to be careful of his evidence than has the nonreligious scientist, because he is handling what is intrinsically sacred. Shoddiness, for him, is something to spurn because it is a form of blasphemy."

One who accepts the Bible as a reliable record of events is not hampered by that worldview, as many would claim, but actually has an advantage. Most scientists are only familiar with one basic understanding of earth history and do not actively ask critical questions of their paradigm. That is not true of a scientist who accepts Bible history and is also active in the biological or earth sciences. He/she cannot escape becoming knowledgeable about the prevailing theories of earth history, as well as his/her own, and thus is constantly evaluating the options. What we want to know is truth. We don't need to be afraid of data, but there is also no virtue in naively accepting whatever interpretations of the data conventional science gives us, including a liberal interpretation of Scripture that is ultimately dependent on the prevailing scientific theory of the history of life in contrast to the Genesis account.

#### **Answers to Challenges**

Earlier I introduced three concerns about the effort to integrate faith and science that must be answered by any valid integration method. First is the concern that if we try to integrate faith and science, we expose our belief system to possibly being disproven by science. But are we really afraid of that? If we believe something that is false, wouldn't we want to know that? And are we so unsure of our Christian beliefs that we are afraid they will be disproved? We may believe some things that are not truly biblical—such as the assumption that

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all geological formations must be explained by the one-year flood. If we hold such non-biblical beliefs, it is better to find out. On the other hand, truly God-given truths will not be disproved.

It is important to understand that science is a human activity, all scientific interpretations are subject to correction and change, and a willingness to readily abandon basic religious beliefs because of science will not be constructive. We may at times need to hold on to our spiritual commitments in spite of unresolved conflicts and wait for more evidence. Non-religious scientists must do that frequently—trust that data yet to be discovered will provide better answers. A balanced approach will be willing to learn from science, but not be over-awed by it.

The second concern is that religious answers (God did it) will discourage research. The discussion above illustrates that the method for integrating faith and science outlined in Fig. 1 and in the research examples does not discourage research, but in fact stimulates more careful research in both science and in religion, yielding insights and hypotheses that can benefit research in both domains.

The third concern is the possible introduction of bias into science by the effort to integrate faith and science. The answer is that any philosophical approach can introduce biases. Avoiding integration is not an answer and just introduces its own serious biases. The integration method described here encourages both science and religion to constantly challenge each other, raising our awareness of possible biases. The other important antidote to superficial thinking and biases is awareness of the thinking of others and working with those who disagree with us. We will each see things that the other is likely to miss, and this acts as an important quality control process.

**Summary**

Religion can introduce biases into our science, but so can any other philosophical approach. The answer is to be aware of the problem, consciously analyze our thinking to try to see if we are not being objective, and communicate with others regarding our ideas and take seriously their criticisms. That doesn't mean we will always agree with our critics, but we can evaluate whether their criticisms are based on good evidence or just on their personal opinions. Awareness of different points of view on an issue generally improves our ability to reach a defensible conclusion. The reverse of this is also true—if we *do not* seek to integrate science and faith it is unlikely that we will adequately understand the areas where science and religion seem to be in conflict. If we do not put forth serious effort, including original field and laboratory research, to challenge conventional thinking and develop a positive synthesis of science and faith, we are likely to accept conventional thinking without knowing whether or not it is based on a solid foundation.

The effort to integrate our faith and science will work best if we: 1) Allow new scientific findings to challenge our interpretation of Scripture, and vice

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versa; 2) develop and carefully evaluate our biblical anchor points; 3) utilize insights from Scripture to open our minds to ask new questions, open our eyes to see things that others don't see, and devise hypotheses that can be scientifically tested, especially in areas of seeming conflict between science and Scripture; 4) be aware of the work and thinking of those who have a different worldview; 5) use the scholarly methods of quality control whenever feasible—publication in scholarly journals and working with friends whose worldview differs from ours; and 6) above all, remember that none of this is important unless we maintain our personal friendship and trust in the greatest and most knowledgeable biologist and geologist of all time—Jesus Christ.

In every case where the approach I have described has been diligently pursued, with biblically motivated questions, we have made progress in our attempts to reconcile Genesis and geology.

The church in the Middle Ages accepted Greek science and made aspects of it, like the geocentric universe, part of its belief system. Then Copernicus and Galileo changed what science understood about nature, and the church was left behind, with some beliefs based on out-of-date science. If we adjust our theology to fit today's science, I predict that in time new scientific discoveries will change the picture, and we will be left wondering what happened.

This prediction doesn't result from naivety on my part about the scientific data. I am well aware of the data and am aware that my view of earth history requires the prediction of major new discoveries that would change such things as our understanding of dating methods, including radiometric dates.

Some may predict that my approach will fail. Or, they may predict that this type of feedback between faith and science will lead me gradually down the slippery slope to belief in the evolution of life over 540 million years. The reason why that won't happen is because of my confidence in the biblical anchor points and my belief that the God of Genesis knows much more about earth science than any of us will ever know.

We will continue to live with many unanswered questions. Faith cannot be based on science, but on knowing and trusting Jesus. It will also not be wise to ignore science or do sloppy science.

Just reading the geological literature and taking field trips to look at the rocks will not give us reliable answers. We will not discover geological truth unless we are immersed in original geological research and publishing and actively using biblical insights to challenge accepted wisdom with the highest quality of research.

Why do we put our time and energy into this work? If a friend gives us some clues to the location of a buried treasure, will we search for the treasure? The answer will depend on how much confidence we have in that friend. If a Friend gives us clues to the nature of geological history, will we use those clues to help us make discoveries that will improve our understanding of geological history? It depends on how well we know this Friend, and how much we trust

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Him. In this research we are following up leads from a dear Friend who personally loves each of us—loves each of us enough to die to save us, and consequently the search is irresistible!

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## **Contributions to Creation Theory from the Study of Nature**

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The study of nature and the study of special revelation have a long history of interaction. Others have noted<sup>1</sup> the contributions that Christianity has made to the study of nature, and I will not review them here, but only point out that many scholars consider that Christianity has had a beneficial impact on efforts to study nature systematically. Our consideration here is the contributions that the study of nature has made to our understanding of special revelation.

First, it may be useful to note that the approach to the study of nature has changed, and with it, its relationship to special revelation. Humans have studied nature from the dawn of history, but not always with the same approach taken by modern scientists. Modern science can be taken as starting<sup>2</sup> with the development of mathematical physics in the 17<sup>th</sup> century by such men as Galileo, Descartes, and Newton. Although the founders of modern science generally saw nature as an expression of God's wisdom, modern science has tended to separate God from the study of nature. By focusing exclusively on the relationship between matter and energy, science has become increasingly secular, so that it is now considered inappropriate to mention God when one is trying to explain events in the cosmos. The change in approach may be recognized by distinguishing between "the study of nature" and "science." The trend toward the secularization of science has distanced the study of nature from divine activity, effectively reducing science's potential to contribute to creation theory.

This paper will have four main parts. First, I will review what I believe to be the general experience of the SDA Church in attempting to relate science and

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<sup>1</sup> For example, Christopher B. Kaiser, *Creation and the History of Science* (Grand Rapids: Eerdmans, 1991).

<sup>2</sup> Gary B. Deason, "Reformation Theology and the Mechanistic Conception of Nature," in *God and Nature: Historical Essays on the Encounter Between Christianity and Science*, ed. David C. Lindberg and Ronald L. Numbers (Berkeley: U of California P, 1986), 167–191.

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Scripture. I draw heavily from my own experience because I think it is shared by many others in our Church. Hopefully, there are lessons to be learned from our history. In the second part, I will review three familiar, classical examples of how creation theory has been impacted by science and attempt to identify the sources of the problems illustrated in these experiences. Next, I will briefly mention some more recent examples in which scientific research has been helpful in developing creation theory. Finally, I will suggest some lessons and principles we might find useful as we consider our present situation.

#### **Part 1. An Adventist's Experience in Relating Faith and Science**

My personal experience, and I believe it is shared by many others, is that expectations of harmony between science and Scripture have failed more frequently than expected. I would like to explore some reasons for this unexpected conflict.

**What Did We Expect?** Many Seventh-day Adventists, myself included, have been educated to expect harmony between science and Scripture. This expectation is based upon certain statements from the Bible, and especially from Ellen White. I quote an example of each to illustrate:

The heavens declare the glory of God, and the firmament shows His handiwork. . . . Their voice goes out through all the earth, and their words to the end of the world. (Psalm 19:1, 4)

God is the author of science. . . . Rightly understood, science and the written word agree, and each sheds light on the other. (*Counsels to Teachers*, 426)

Presumption of harmony led me, and others, to suppose that conflict between science and Scripture was only superficial—scientific research by dedicated Christians would uncover the truth hidden by the anti-religious bias of godless scientists. And it is true that anti-religious bias has a significant impact on the attitudes of many scientists. An example cited by Phillip Johnson is quoted below:

It is not that the methods and institutions of science somehow compel us to accept a material explanation of the phenomenal world, but, on the contrary, that we are forced by our *a priori* adherence to material causes to create an apparatus of investigation and set of concepts that produce material explanations, no matter how counter-intuitive, no matter how mystifying to the uninitiated. Moreover, that materialism is absolute, for we cannot allow a Divine Foot in the door. The eminent Kant scholar Lewis Beck used to say that anyone who could believe in God could believe in anything. To appeal to an

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omnipotent deity is to allow that at any moment the regularities of nature may be ruptured, that miracles may happen.<sup>3</sup>

Many scientists truly have an anti-religious bias.<sup>4</sup> However, the situation is much more complex than mere anti-religious bias. Even dedicated Christian scholars have been unable to develop satisfactory explanations for some of the challenges that science presents to faith in Scripture. The conflict is much more than superficial.

**Why Did Our Expectations Fail?** How can we account for this situation? How can there be conflict when we have been told by special revelation that there should be harmony? What is a proper response to the conflict?

Many of us draw on our scholarly training to address this problem. We may say something like, “The Bible is not a textbook of science.”

The implication of this statement often seems to be something like the following: “The Bible talks about spiritual things, while science studies the real world. Therefore we can ignore the Bible when considering earth history.”

Many Christians find this approach unsatisfactory. One problem with this approach is that the Bible talks about the real world, too. Much of what the Bible discusses deals with God’s interaction with the world, both animate and inanimate. If God has been intimately involved in earth history, what confidence can we have that science can find the truth by excluding any reference to the supernatural? If God has not been involved, what motivation do we have for making any effort to find harmony between science and Scripture?

Before going further, perhaps we should reconsider what inspiration has to say on the topic. Could we have misunderstood? Perhaps we have focused on the quotations that affirm our ability to discover truth, failing to balance them with quotations that point out the inadequacy of our efforts to understand the world and our tendency to place our own opinions above the information God has revealed to us.

For example, Romans 1 points out that we are inclined to refuse to accept the evidence that God has plainly shown us in nature:

Ever since the creation of the world His invisible nature, namely, His eternal power and deity, has been clearly perceived in the things that have been made. So they are without excuse; for although they knew God they did not honor him as God or give thanks to Him . . .

The accuracy of this statement is reflected in the quotation cited above from Richard Lewontin.

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<sup>3</sup> Richard Lewontin, “Billions and Billions of Demons” (review of *The Demon-haunted World: Science as a Candle in the Dark*, by Carl Sagan), quoted by Phillip Johnson in *First Things* 77 (November 1997).

<sup>4</sup> E. J. Larson and L. Witham, “Scientists Are Still Keeping the Faith,” *Nature* 386 (1997): 435-436; E. J. Larson and L. Witham, “Leading Scientists Still Reject God,” *Nature* 394 (1998): 313.

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But this is not the only problem. Consider the following quotations from Ellen White (who has much more to say about God and nature than I can discuss here):

The most difficult and humiliating lesson that man has to learn is his own inefficiency in depending on human wisdom, and the sure failure of his efforts to read nature correctly. Of himself, he cannot interpret nature without placing it above God. (8T 247)

This does not sound as though we should expect harmony between science and Scripture. Maybe we need to revisit her writings to see if we have correctly understood what she is trying to tell us.

When Ellen White wrote about science agreeing with Scripture, she was using “science” with a meaning different from the way it is commonly used today. Today, “science” is understood as referring strictly to material causes. Spiritual or non-material causes are specifically, explicitly excluded. Ellen White had a term for such an approach to the study of nature—“false science”: “False science is something independent of God” (MYP 190).

Since modern science is, by majority definition, independent of any explanation involving God, it does not represent the approach that Ellen White meant when she said science and Scripture should agree. Thus, we cannot legitimately apply Ellen White’s statements of expected harmony to the current practice of science. We need to look further into her statements to find a more realistic expectation.

**What Should We Expect?** Many of us have expected science and Scripture to be in harmony, and we have quoted Ellen White in support, but this is based on a highly selective reading of her messages. Due to the nature of modern science itself, conflict seems inevitable.

I have been warned that henceforth we shall have a constant contest. Science, so-called, and religion will be placed in opposition to each other, because finite men do not comprehend the power and greatness of God. (*Evangelism*, 593)

Such quotations have forced me to re-evaluate my expectation that science and Scripture will agree. I now recognize that conflict is to be expected, especially when science attempts to explain an event in which God acted in direct ways with which we are unfamiliar. Since Scripture emphasizes such divine activity, we can expect frequent conflict between science and Scripture regarding purposeful, divinely directed events such as those described in Genesis. This problem greatly complicates the potential of science to contribute to creation theory.

**Part 2. Three Classic Cases**

Despite the difficulties noted above, the study of nature has revealed much that has contributed to our understanding of Scripture. One way this has been accomplished is by clarifying certain terms in Scripture by narrowing the range of possibilities that seem consistent with observation. I will mention three famous examples in which Biblical interpretation has been clarified through study of nature.

**1. The Flat Earth Myth.** Some scholars have claimed that the Bible teaches the earth is flat, although this claim has been refuted.<sup>5</sup> The Bible does use language that permits the interpretation that the earth is flat. For example, Isaiah 11:12 and Revelation 7:1 refer to the earth as though it has four corners. On the other hand, Isaiah 40:22 refers to the circle of the earth. It seems the Biblical text is ambiguous on the question of the shape of the earth. (No circle has four corners, though neither is a circle necessarily spherical.)

According to Russell, the notion that the Bible teaches the earth is flat was popularized by the overtly anti-Biblical writing of Washington Irving and Andrew Dickson White in the 19<sup>th</sup> century. According to these authors, Columbus had to fight against this biblical error in order to gain approval for his voyage to the New World. This legend is false. Very few scholars of the Middle Ages actually believed the earth was flat, and neither Columbus nor his contemporaries were among them. A few early Christians held a view of a flat earth, but the leading Christian and Greek thinkers from the 4<sup>th</sup> century AD and onward have favored a spherical earth.

In the case of the shape of the earth, science has contributed to our understanding of creation by clarifying a point the Bible left ambiguous.

**2. The Geocentric Universe Error.** A second example is the famous story of Galileo and the geocentric universe.<sup>6</sup> In this case, Bible believers actually did claim that the Bible teaches the centrality of the earth. This belief was apparently supported by texts describing the sun as “going down” (e.g., Genesis 15:12), standing still (Joshua 10:13), or moving backward (Isaiah 38:8). These texts, and others, seemed to suggest the interpretation that the earth is the center of the universe.

Science has shown otherwise—the earth is not even the center of our solar system, much less the center of the universe. The popular interpretation of the text was shown to be incorrect. (The earth does function as the center of existence for observers living on its surface. Technically, one can choose any point of reference one wishes for the center of the universe, but the earth makes a very awkward and inconvenient choice from the standpoint of studying the cosmos.)

The solution to this problem is to recognize that the Bible writers recorded events as they appeared to their eyes, sometimes without the broader perspective

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<sup>5</sup> Jeffrey Burton Russell, *Inventing the Flat Earth* (New York: Praeger, 1991), 117.

<sup>6</sup> William R. Shea, “Galileo and the Church,” in Lindberg, 114–135.

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available to people living today. In this case, science has contributed to our understanding that the language of the Bible may be phenomenological rather than analytical.

**3. The Extra-biblical Error of Fixity of Species.** A third example concerns the notion of fixity of species. Some creationists have taught that species do not change appreciably, but are relatively fixed in their structure and characteristics. Although this concept is not taught in Scripture, the phrase “according to their kinds” (e.g., Genesis 1:24) has been used in its support.

Darwin, who was trained in theology at Cambridge, was apparently taught fixity of species. In an 1844 letter to Joseph Hooker, he commented that admitting that species might change was like “confessing a murder.”<sup>7</sup> The inference that species were fixed was justified theologically by arguing that to admit that species have changed would be to imply that God’s creation was so imperfect that He had to make adjustments from time to time.

However, the idea of fixity of species is not derived from the Bible. There is nothing in the Bible to teach either that the creation is now in the same condition as when it was created, or that species cannot change. What really happened in this case was that an idea from secular Greek philosophy, Plato’s typological thinking, was incorporated into Christian theology,<sup>8</sup> and the Bible was then interpreted as teaching it. Thus, it could be claimed that science supports the Bible. Later changes in scientific thinking resulted in what appeared to be conflict between science and Scripture, but was actually conflict between old science and new science.

In this case, science has contributed to our understanding of creation by showing that species are not immutable, but can change. This example provides a strong warning against incorporating non-Biblical ideas into Christian theology and then claiming they are taught by the Bible. Although we welcome harmony between the two approaches to knowledge, the Bible does not depend on scientific support.

In each of these three examples, science has corrected or clarified ideas that were claimed to be Biblical. In the first case, the problem was largely invented by anti-Biblical writers and has been debunked. In the second case, the problem was real, but a satisfactory solution has been found in the realization that Bible writers may have used ordinary language, not technical language, to describe what they saw or to illustrate their point. In the third case, the problem was caused by incorporation of extra-Biblical ideas into Christian doctrine. We

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<sup>7</sup> Frederick Burkhardt, ed., *Charles Darwin’s Letters: A Selection, 1825–1859* (Cambridge: Cambridge UP, 1996), 81.

<sup>8</sup> The significance of Platonic thinking for biology is lamented in Ernst Mayr, *The Growth of Biological Thought* (Cambridge: Belknap, 1982), e.g., 304–305. The influence of Greek thinking on Christianity is discussed in David C. Lindberg, “Science and the Early Church,” in Lindberg, 19–48. Aristotle’s idea of “soul” also influenced thinking on fixity of species, as shown in Jacques Roger, “The Mechanistic Conception of Life,” in Lindberg, 277–295.

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would be wise to remember these examples as we study the relationship of science and Scripture today. Some problems may be spurious, some resolvable, and some legitimate.

**Part 3. Contributions to Creation Theory from Scientific Discoveries**

The idea that nature shows signs of a purposeful creation is an old one. Many Bible writers saw God's hand in nature. Today, this concept may be expressed in the term, "intelligent design."<sup>9</sup> Several discoveries in science have been interpreted as examples of intelligent design. I will not describe them in detail, but will list several of the better-known examples.

**Fine-tuning of the Universe.** The continued existence of a habitable universe depends on the specific properties of matter and energy.<sup>10</sup> For example, the fundamental forces are balanced against each other in such a way that complex molecules can form and persist, yet they can also react and undergo chemical changes. The chemical bonds are strong enough to preserve molecules, yet weak enough to permit them to change. If the strength of chemical bonding forces were not balanced properly, life as we know it would be impossible.

Numerous other examples could be given to illustrate the precise balance of the fundamental forces and physical constants. A number of authors have discussed this topic.<sup>11</sup> The point is that nature is so finely tuned that intelligent design seems a much more plausible explanation than chance. This finding of science supports the literal interpretation of Biblical texts that state the heavens were created by God for a purpose.

**The Temporality of the Universe.** Science has discovered evidence that seems to indicate that the universe is not eternal, but that it had a beginning.<sup>12</sup> This raises the question as to how the universe began. Experimental evidence does not produce any answer to this question. Especially when one takes into account the fine-tuning mentioned above, the possibility of intelligent design is a reasonable hypothesis to account for the origin of the universe. This discovery supports the literal interpretation of Biblical texts that claim God created the starry heavens.

**Irreducible Complexity of Life.** Living organisms are exceedingly complex. This complexity extends to the smallest unit of life, the cell. The simplest living cell contains hundreds of complex molecules of specific composition,

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<sup>9</sup> Michael Behe, *Darwin's Black Box* (New York: Free Press, 1996); William Dembski, *Intelligent Design* (Downer's Grove, IL: InterVarsity, 1999).

<sup>10</sup> John D. Barrow and Frank J. Tipler, *The Anthropic Cosmological Principle* (Oxford: Oxford UP, 1986).

<sup>11</sup> Numerous other sources exist, e.g., Michael Denton, *Nature's Destiny: How the Laws of Biology Reveal Purpose in the Universe* (New York: Free Press, 1998); Hugh Ross, *The Creator and the Cosmos* (Colorado Springs: NavPress, 1993).

<sup>12</sup> Numerous sources could be cited, e.g., Fred Heeren, *Show Me God*, rev. ed. (Wheeling, IL: Day Star, 2000). See also Steven Weinberg, *The First Three Minutes*, rev. (Cambridge: Perseus, 1993).



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none of which have been observed to form in abiotic systems. Living cells are irreducibly complex<sup>13</sup> in that there exists some minimum complement of molecules required for life. This complement is irreducible because it cannot be reduced without killing the cell.

The origin of life is universally recognized as an unsolved problem for a materialistic worldview.<sup>14</sup> Many books and papers have been written about this problem. The irreducible complexity and specified information found in living cells are characteristics of intelligent activity. The discovery that cells are extremely complex, information-rich systems has contributed to creation theory by supporting the inference drawn from the Bible that all life owes its origin to God's creative activity.

**Polyphyly.** Polyphyly means having separate ancestries. The claim of polyphyly is that living organisms have descended from numerous ancestors of independent origins. The opposite claim is monophyly, which is the claim that all organisms have descended from the same original ancestor.

I will mention two lines of evidence for polyphyly. First and, in my mind, foremost, is the evidence from selection experiments. Scientists have raised, manipulated and tested thousands of generations of bacteria, and hundreds of generations of fruit flies, mice and other species. Results show that existing anatomical structures may vary considerably, but new structures do not form. Claims by evolutionary scientists that long periods of time are sufficient to generate new body types are merely claims and do not count as evidence. The actual evidence in hand indicates limits to change and implies numerous lineages with separate ancestries.<sup>15</sup>

A second line of evidence comes from the pattern of morphological gaps in the fossil record. The morphological gap between two similar species, such as a horse and a zebra or donkey, is quite small, and the number of intermediate evolutionary steps is quite small. But the morphological gap between a horse and a grasshopper is enormous, and the number of intermediate evolutionary steps should be extremely large. The probability of finding an intermediate between species in the horse family should be quite low, since there are only a small number of intermediate steps. Yet many species of fossil horses are known, and evolutionists feel they have a fairly good record of the evolution of the horse.<sup>16</sup> In contrast, the probability of finding some evolutionary intermediates between a horse and a grasshopper seems reasonably large, since so many

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<sup>13</sup> See Behe and Dembski.

<sup>14</sup> C. B. Thaxton, W. L. Bradley, R. L. Olsen, *The Mystery of Life's Origin* (New York: Philosophical Library, 1984); George Javor, "Life: An Evidence for Creation," *Origins* 25 (1998): 5-48.

<sup>15</sup> C. Schwabe and G. W. Warr, "A Polyphyletic View of Evolution: The Genetic Potential Hypothesis," *Perspectives in Biology and Medicine* 27 (1984): 465-485; Lane P. Lester and Raymond G. Bohlin, *The Natural Limits to Biological Change* (Grand Rapids: Zondervan, 1984).

<sup>16</sup> Bruce J. MacFadden, *Fossil Horses: Systematics, Paleobiology, and Evolution of the Family Equidae* (Cambridge: Cambridge UP, 1992).

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intermediate steps are required. Yet there are no intermediates linking the two phyla—chordata and arthropoda, respectively. If chordates and arthropods have separate ancestries, as appears to be the case, there cannot be any evolutionary intermediates between the horse and the grasshopper.

The point is that fossil intermediates are most notably absent among the groups with the largest morphological differences—the phyla—and most notably present among groups with small morphological differences—within families.<sup>17</sup>

As others have noted, scientific evidence can also be used to argue for monophyly.<sup>18</sup> Patterns of similarities in DNA sequences, the near universality of the basic chemical processes in all living cells, and the sequence of fossils are all used to argue for monophyly. However, all this evidence is circumstantial rather than direct, and is consistent with polyphyly, as well. The most compelling evidence, in my view, is directly observable in the resistance to change observed in selection experiments.

Although the evidence is mixed, science has provided substantial evidence of the existence of numerous lineages with separate ancestries. This evidence has contributed to creation theory by supporting the interpretation of Genesis 1 as indicating the separate creation of numerous different groups of organisms.

**Human Uniqueness.** Humans stand apart as qualitatively distinct from the rest of creation in certain ways, principally in the development of their minds.<sup>19</sup> Humans seem to be the only species with the capacity for speech, abstract thought, religious worship, a sense of right and wrong, and, apparently, self-awareness.

Physiological and morphological similarities of humans to other creatures have been used as an argument for human descent from more primitive primates. Some circumstantial evidence is consistent with this claim, but empirical evidence does not support the notion that organisms develop capacities beyond what they need for survival. For example, natural selection does not seem capable of driving the evolution of the human mind to develop capacities that are of

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<sup>17</sup> Michael Denton made this argument in *Evolution: A Theory in Crisis* (Bethesda, MD: Adler and Adler, 1986), 191–192.

<sup>18</sup> Monophyly is more often assumed than discussed. I have found two types of evidence used to argue for monophyly. One is the commonality of the genetic code, e.g., Richard Dawkins, *River Out of Eden* (New York: Basic Books, 1995), 12. A second argument is the improbability of a complex protein evolving more than once, e.g., Christopher Wills, *The Wisdom of the Genes* (New York: Basic Books, 1989), 173.

<sup>19</sup> Some evolutionists have attempted to explain consciousness and language evolutionarily, e.g., Derek Bickerton, *Language and Species* (Chicago: U of Chicago P, 1990). The opposing argument, that evolution does not solve the problem, is given in John W. Oller and John L. Omdah, “The Origin of the Human Language Capacity: In Whose Image?” in *The Creation Hypothesis*, ed. J. P. Moreland (Downers Grove, IL: InterVarsity, 1994), 235–269. The complexity of the human mind is discussed in Roger Penrose, *The Emperor’s New Mind* (New York: Penguin, 1989).

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no immediate use, yet human intelligence seems far greater than is necessary for survival.

Scientific confirmation of the uniqueness of the human mind contributes to creation theory by supporting the interpretation of the story of human creation that holds that humans have mental capacities that may reflect the specially created quality the Bible refers to as “the image of God.”

**Catastrophism.** Scientists have discovered evidence of many extraterrestrial impacts that caused devastation on the earth.<sup>20</sup> In some cases, the devastation appears to have been global and is associated with the disappearance of large numbers of extinct species from the fossil record. Before acceptance of extraterrestrial impacts in the scientific community, the idea of global catastrophe was emphatically rejected. Now global catastrophism is recognized as part of the history of our earth.

Creationists generally regard the fossil record as largely due to the effects of a global flood. Discovery of large numbers of impact craters has brought the realization that the flood must have been much more violent and much more complex than what would be envisioned merely from the effects of ordinary storm activity.<sup>21</sup> A series of extraterrestrial impacts may have provided a major mechanism for the destruction of the earth. The intermittent nature of extraterrestrial impacts might provide a mechanism for the stepwise pattern of deposition seen in the geological record. Thus, science has contributed to creation theory by showing that the earth has been subjected to global catastrophic activity, although science does not support the biblical view of the time period involved.

Science has produced discoveries in several areas that have contributed to creation theory, in many cases supporting the biblical teaching of supernatural intelligent design. These examples make it seem more reasonable to accept other claims in Scripture of divine activity in earth history.

#### **Part 4. Conclusions and Recommendations**

This has been only a brief sampling of this topic, but perhaps enough has been said to permit some lessons to be identified. I would like to emphasize three of them.

The first point is that Seventh-day Adventists have, I believe, frequently over-emphasized the expectation of harmony between science and Scripture. We have often failed to properly recognize the contrast between the secular nature of science and the supernatural nature of biblical earth history. This has left many of us unprepared when we are faced with conflict where we expected none. We would benefit from a greater realization that science, as presently practiced, will always stand in tension with the supernatural viewpoint of Scripture. Somehow,

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<sup>20</sup> John S. Lewis, *Rain of Iron and Ice* (New York: Addison-Wesley, 1996).

<sup>21</sup> L. J. Gibson, “Extraterrestrial Impacts and the Flood,” in *Let the Earth Speak*, ed. A. A. C. Waite (Riseley, England: Mandra, 2001), 89–99.

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our church members, especially those exposed to scientific training, need a greater appreciation of this reality.

A second point is that the study of Scripture and the study of nature can shed light on each other. Science has discovered evidence that has clarified some ambiguities in Scripture, such as the shape of the earth and its relationship to the sun. Other scientific evidence indicates that nature is not a closed system. There are gaps in the economy of nature, most famously in the origin of the universe, the origin of life, and the origin of the phyla. The nature of these gaps and their relationship to known regularities in nature suggest intelligent activity. If so, then a complete view of earth history must include an awareness of supernatural activity and a willingness to go beyond materialism in developing theories of earth history.

A third point derives from history: we must be careful how we allow science and theology to influence each other. The relationship of science and faith is complex rather than simple.

We must be cautious when encountering simplistic scientific claims, either for or against the Bible. On the one hand, we should resist the temptation to use scientific discoveries as justification for rejecting Scripture. We must not permit our faith to be the hostage of science. We will always have to make some choices on faith rather than empirical evidence.

On the other hand, we should resist the temptation to use scientific discoveries as justification for believing Scripture. Science does not provide simple answers to our questions about earth history. Too often we have rushed to adopt some preliminary scientific report as proof that the Bible is true. The Bible does not depend on science to justify its statements.

I would like to emphasize this point by referring back to some specific examples mentioned earlier. Conflict arose over the geocentric universe because the major group of Christians adopted a specific view of cosmology based on extra-Biblical ideas that were culturally dominant at the time. Later, when different extra-Biblical ideas achieved cultural dominance, the view previously adopted by Christians came into conflict with the newer view. Similarly, fixity of species was a concept derived from extra-biblical sources and incorporated into Christian theology. When new extra-biblical sources gained cultural dominance, the older ideas were discarded. Since Christians had attached their theology to these old ideas, Christian theology suffered significant loss.

The lesson for today should be clear. We must not incorporate extra-biblical sources in our system of faith. For example, we should beware of incorporating into our faith any particular model of the flood. Another example is the trend among many Christians to accept evolution as God's method of creating. The evolutionary tenets of common ancestry and death before sin do not have any biblical support and have implications that undermine the basic biblical message of salvation by faith. Hopefully, we can profit from the lessons of history and

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resist any potential pressure to incorporate theistic evolution or similar theories into our theology.

In conclusion, science has at times contributed to creation theory by clarifying certain ambiguous biblical texts and by supporting the inference that God is active in nature. Yet science does not affirm everything the Bible says about nature, nor does it have the tools to do so. Our faith in Scripture must rest on our confidence that it is God's special revelation. We must not permit science to determine whether we shall or shall not accept the teachings of Scripture.

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## **Is All Death a Consequence of Sin?: Theological Implications of Alternative Models**

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The mystery of death has perturbed the human mind for ages. As a consequence, perplexing questions have constantly haunted Christian understanding. How and why did pain, suffering, and death enter the world? Is the sin of Adam the only viable explanation? Did physical death in all its forms, death in the animal kingdom, for example, come into the world exclusively as a result of the fall of man? Was there any kind of death on earth before the sin of Adam?

If death anteceded sin, what happens with the concept of the goodness of God and of his original creation? Many Christians believe God used organic evolution as his means for creating humanity. Does that belief have any negative impact on the Christian perception of humanity as created in the image of God? How are we to interpret those biblical passages that seem to indicate that there was no death in the world before the Fall? Are there any important soteriological implications involved?

Great thinkers in the records of the Judeo-Christian tradition have grappled with most of these queries. Their views reveal a significant variety of suggestions offered in answer to these and related questions through the centuries. In order to illustrate the point, a brief survey of views held by some representative figures from the intertestamental period up to modern times is now presented.

**The Relationship Between Adam's Sin and Nonhuman Physical Death Intertestamental and Early Christian Era.** In the Book of Jubilees, from the second half of the first century B.C., the effects<sup>1</sup> of the Fall are limited

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<sup>1</sup>The effects are described in 3:17ff. For Adam these included wearisome work, expulsion from the Garden, and return to the earth from which he was taken (death); for Eve, painful child-bearing and subjection to man.

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mostly to Adam and Eve themselves, as far as the lot of humanity is concerned, but include the animal kingdom, which, as a result of the sin of man, was deprived of the faculty of speech:

And on that day [‘on which Adam went forth from the Garden’ (Jub. 3:27)] was closed the mouth of all beasts, and of cattle, and of birds, and of whatever walks, and of whatever moves, so that they could no longer speak: for they had all spoken one with another with one lip and with one tongue. (vs. 28)

It is worth noticing, in this connection, that Jubilees seems to ascribe moral responsibility to the animal creation as well as to human beings.

Adam’s sin, according to 2 Enoch, did not translate into a curse and a cause of death for the nonhuman creation. And as Adam, ruler and representative of all the creation, was not cursed,<sup>2</sup> the creatures under him were not either:

But I cursed ignorance, but what I had blessed previously, those I did not curse. I curse not man, nor the earth nor other creatures, but man’s evil fruit, and his works. (2 Enoch 31:7–8)

According to Wisdom of Solomon, in the beginning “God made no death,”<sup>3</sup> and this condition of original immortality seems to apply to the natural world as well as to humanity:

For he created all things that they might have being: And the products of the world are healthsome, and there is no poison of destruction in them: Nor hath Hades royal dominion upon the earth. (Wisdom 1:13)

**Post-New Testament Christian Era.** Late in the first century A.D. the Jewish historian Josephus made comments on the effects of the Fall upon Adam, Eve, the serpent, and the earth. Apparently, Josephus believed that harmful characteristics in animals, like poison in venomous serpents, were not a natural feature in them, but were furnished by God after the Fall as a punishment for sin.<sup>4</sup> Referring to some of the consequences of the Fall, Josephus writes of God: “He moreover deprived the serpent from speech,<sup>5</sup> indignant at his malignity to

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<sup>2</sup>In this connection, 2 Enoch 58:3–6 reads: “. . . The Lord will not judge a single soul of beast for man’s sake, but adjudges the souls of men to their beasts in this world; for men have a special place. And as every soul of man is according to number, similarly beasts will not perish, nor all souls of beasts which the Lord created, till the great judgment, and they will accuse man, if he feed them ill.”

<sup>3</sup>Wisdom 1:13.

<sup>4</sup>Josephus, *Jewish Antiquities* 1.45–50.4 (Loeb Classical Library [LCL]), 4:23.

<sup>5</sup>This may be a reference to Jubilees 3:28, where the legend of animals being deprived of the faculty of speech due to man’s sin is originally found.

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Adam; He also put poison beneath his tongue, destining him to be the enemy of men.”<sup>6</sup>

Irenaeus is an early Father for whom “not only the human race fell into bondage to death by means of a virgin” and her sin,<sup>7</sup> but also, as a consequence of that sin, the creation itself was submitted to bondage. To argue his case, Irenaeus quotes the Pauline statement, “for the creature has been subjected to vanity, not willingly, but by reason of him who hath subjected the same in hope” (Rom 8: 19ff.).<sup>8</sup> For Irenaeus, the final restoration of all things will be a return to the conditions existent prior to the Fall.

By the beginning of the fifth century, Augustine, the famous bishop of Hippo, sees no problem in God’s creating harmful animals<sup>9</sup> that may occasion even death. These are not harmful because of the sin of Adam.<sup>10</sup> In Augustine’s view, men are “very foolish” when they “dare,” as the Manicheans, “to find fault with many things whose purpose they do not see.” Augustine admits that he does not know why mice, frogs, flies, or worms were created,<sup>11</sup> but he sees that nevertheless, “all things are beautiful in their kind, though on account of our sins many things seem to us disadvantageous.”<sup>12</sup> For Augustine, all living things are either useful, on one hand, or harmful or superfluous, on the other; and since God governs this universe so well, it behooves us to “make use of what is useful, watch out for what is harmful, [and] leave what is superfluous.”<sup>13</sup>

In the Middle Ages, Thomas Aquinas rather indirectly addresses the question of animal death on account of the sin of man. The sin of man did not so change the animals’ nature as to make them become savage and kill one another. So, for Aquinas, “clashes and antipathy would have been natural between certain animals,” even in the state of man’s innocence.<sup>14</sup> He considers it “altogether unreasonable” for animals to have been tame and to have lived on a vegetarian diet before the Fall.

Martin Luther addresses the issue in the sixteenth century. In his understanding, the misfortunes that followed the sin of Adam were aggravated in

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<sup>6</sup> *Antiquities* 1.45–50.4 (LCL, 4:23).

<sup>7</sup> Irenaeus, *Against Heresies* 19.1 (*The Ante-Nicene Fathers* [ANF], 1:547).

<sup>8</sup> *Ibid.*, (ANF 1:561).

<sup>9</sup> Augustine, *Against the Manichees* 1.16.25. See also Augustine, *The Literal Meaning of Genesis* 3.15 (*Ancient Christian Writers* [ACW], 41:91).

<sup>10</sup> In Augustine’s view, brute beasts inflict harm on one another not because of sin, “for there is no sin in them for which this could be a punishment,” but because “one animal is the nourishment of another.” *Ibid.*, 3.16 (ACW, 41:92).

<sup>11</sup> Augustine says, “I do not understand where all these things come from if not from the highest measure, number and order, which lies in the immutable and eternal sublimity of God.” *Against the Manichees* 1.16.25 (*The Fathers of the Church* [FC], 84:72).

<sup>12</sup> *Ibid.*

<sup>13</sup> *Ibid.*, (FC, 84:74).

<sup>14</sup> Thomas Aquinas, “The Original State or Condition with respect to Man’s Dominion,” *Summa Theologiae* 1a.96.1.



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those who came after the Flood.<sup>15</sup> The troubles appearing immediately after Adam's sin were lighter than the deterioration that followed in the aftermath.<sup>16</sup> But Luther differentiates between human death and any other kind of death. Based on Ps 90:3, he states that "the death of man is in countless ways a far greater calamity than the death of other living beings."<sup>17</sup>

Luther considers the death of humans a punishment for sin, a "genuine disaster," and in itself "truly an infinite and eternal wrath." Animals, however, "die because of a law of nature."<sup>18</sup> Animals

do not die because God is angry at them. On the contrary, for them death is, as it were, a sort of temporal casualty, ordained indeed by God but not regarded by Him as punishment. Animals die because for some other reason it seemed good to God that they should die.<sup>19</sup>

On the other hand, writing about the cause of animal death, Luther states that "Even animals do not die by accident. They die because we make them die (Gen. 1:28). Their experiences are directed by man."<sup>20</sup>

Two centuries later, John Wesley recognizes the universality of the food chain,<sup>21</sup> in virtue of which almost all creatures devour one another in a struggle for survival due to the scarcity of food. "But in the beginning it was not so," he writes. "The paradisiacal earth afforded a sufficiency of food for all its inhabitants; so that none of them had any need or temptation to prey upon the other."<sup>22</sup> Other views from more recent times will be presented as our discussion advances.

This survey of views reveals at least three things. First, that great minds in the history of Christian thought have struggled to understand the relationship between the sin of Adam and the occurrence of death and its corollaries—pain, suffering, etc.—in the natural world. Second, that those thinkers were not agreed on the subject. And third, that further investigation can still contribute to the discussion in the search for further clarification. This study approaches the issue from the theological perspective.

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<sup>15</sup>Frosts, lightning bolts, injurious dews, storms, overflowing rivers, earthquakes, things not mentioned in Gen 3, "were added to the curse of the earth," as consequence of the Flood. Martin Luther, *Lectures on Genesis* 3:17–19 (Luther's Works [LW], 1:206). Calvin would eventually make a similar point. Cf. John Calvin, *Commentaries on the First Book of Moses Called Genesis* 1.1.30 (Calvin's Commentaries, trans. Rev. John King [Grand Rapids: Eerdmans, 1948]), 99–100.

<sup>16</sup>*Ibid.*, (LW, 1:216).

<sup>17</sup>Luther, *Selected Psalms II* 90:3 (LW, 13:94).

<sup>18</sup>*Ibid.*

<sup>19</sup>*Ibid.*

<sup>20</sup>Luther, Psalm 90 vs. 3 (LW, 13:97).

<sup>21</sup>See Wesley, Sermon LX 2.3 (*Wesley's Works* [WW], 6:246–247).

<sup>22</sup>Sermon LXI 1.12 (WW, 6:212).

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**Ideological Background to the Concept of Death Before Sin**

Three major ideas are prominent in the development of the concept of death before the sin of Adam. These ideas, mentioned in chronological order according to their appearance in history, are: First, the total independence of the lot of the animal kingdom from human morality. This means that man's moral behavior in terms of obedience or disobedience to God has nothing to do with the sufferings of the animal creation. Second, the existence of pre-Adamic beings as a hypothesis to explaining the origin and differences between races. Third, the idea that periods of time far greater than the biblical record as traditionally interpreted seems to allow for were needed in order to account for the history of life on earth. Let us consider them briefly.

**Human Morality and the Animal Kingdom.** 2 Enoch, written in the intertestamental period, is perhaps the first source hinting that the lot of animals is independent of human moral behavior. According to this work, God would not curse that which he had blessed; Adam was not really cursed when he sinned; neither was the animal creation (2 Enoch 31:7–8; 58:3–6).

Throughout the Christian era several writers suggest that whatever happens to the animal creation has no relation to human moral conduct, as sampled in the preceding survey of thinkers. Literature arguing for the total independence of the animal kingdom's fate from human morality is more abundant after 1800. William Buckland, John Pye Smith, and James Orr, among others, contribute significantly to this body of literature. Buckland, theologian and Oxford lecturer in Geology and Mineralogy, declares that

throughout the brute creation death is in no way connected with the moral misconduct of the human race, and whether Adam had, or had not, ever transgressed, a termination by death is, and always has been, the condition on which life was given to every individual among the countless myriads of beings inferior to ourselves, which God has been pleased to call into existence.<sup>23</sup>

The fundamental point in Buckland's argument is that if the fate of animals is not to be made dependant on human moral behavior, it can be logically concluded that death in the animal kingdom occurred before man sinned. He argues from the uniformitarian principle that the present is the key to the past, but not from Scripture.

The theologian James Orr believes that the whole discussion of the connection between natural and moral evil is summarized in the consideration of one

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<sup>23</sup>William Buckland, "An Inquiry Whether the Sentence of Death Pronounced at the Fall of Man Included the Whole Animal Creation, or Was Restricted to the Human Race," London: John Murray, Albemarle Street, 1839, 12. A Sermon preached by Buckland on January 27, 1839, in the Cathedral of Christ Church, "before the University of Oxford."

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special and decisive issue, namely, “the relation of sin to death.”<sup>24</sup> Even though Orr opposes what he repeatedly calls the “modern view,” namely, the dissolution of any connections between sin and human death<sup>25</sup> he gives new emphasis to the idea that the sin of the original couple affected only the human but not the animal realm. Another thinker, John Pye Smith, who follows Buckland and refers constantly to him, argues in similar terms.<sup>26</sup>

**Pre-Adamic Theories.**<sup>27</sup> The affirmation that human (or prehuman) beings existed before the Adam of the Genesis record is not new. The idea is very important in connection with affirming death, the death of these pre-Adamic beings, as a historical reality before the sin of Adam.

There has been an abundant literary production on the subject of the existence of pre-Adamite beings and their significance in connection with the debate about origins.<sup>28</sup> The idea was advanced in an attempt to harmonize religion and science, particularly “upon the question of the antiquity of man and the unity of the race.”<sup>29</sup> The possibility of the existence of human races before the time of Adam was welcomed even by some who were not yet committed to the idea, as a functional means of elucidating some Bible difficulties.

Pre-Adamic theories were proposed in writing as early as 1655<sup>30</sup> by the French intellectual and diplomat Isaac de la Peyrère (1594–1676).<sup>31</sup> Since then,

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<sup>24</sup>James Orr, *The Christian View of God and the World as Centring in the Incarnation* (New York: Charles Scribner’s Sons, 1897), 196.

<sup>25</sup>*Ibid.*, 196, 198, 447.

<sup>26</sup>John Pye Smith, *On the Relation Between the Holy Scriptures and Some Parts of Geological Science* (Philadelphia: Robert E. Peterson, 1850), 198.

<sup>27</sup>The issue of Pre-Adamism is treated in this article only as it relates to the affirmation of the occurrence of death on our planet prior to the sin of Adam. For more on the subject, see David N. Livingstone, “Preadamites: The History of an Idea from Heresy to Orthodoxy,” *Scottish Journal of Theology* 40 (1987): 41–66; Herbert W. Schneider, *A History of American Philosophy* (New York: Columbia UP, 1946), 343–365; Richard Henry Popkin, “The Development of Religious Skepticism and the Influence of Isaac La Peyrère’s Pre-Adamism and Bible Criticism,” in *Classical Influences in European Culture, A.D. 1500–1700*, ed. R. R. Bolgar (New York: Cambridge UP, 1976), 271–280; *idem*, “The Pre-Adamite Theory in the Renaissance,” in *Philosophy and Humanism, Renaissance Essays in Honor of Paul Oskar Kristeller*, ed. Edward P. Maloney (Leiden: Brill, 1976), 50–57; *idem*, “Pre-Adamism in 19th Century American Thought: ‘Speculative Biology’ and Racism,” *Philosophia* 8 (1978): 205–239.

<sup>28</sup>Ellen White addresses the teaching “that the earth was populated long before the record of creation.” E. White, *Spiritual Gifts* (Washington, DC: Review and Herald, 1945), 3:92–93.

<sup>29</sup>Joseph Parrish Thompson, *Man in Genesis and Geology, or, the Biblical Account of Man’s Creation, Tested by Scientific Theories of His Origin and Antiquity* (New York: Samuel R. Wells, 1870), 106–107.

<sup>30</sup>According to Livingstone, there have been suggestions, without much objective evidence, that the idea was hinted at in the days of early Christianity by such figures as Origen and Julian the Apostate. Livingstone, “Preadamites,” 42.

<sup>31</sup>Isaac de la Peyrère, *Systema Theologicum ex Preadamitarum Hypothesis* (Amsterdam/Basel: Latin Press, 1655). That same year Peyrère also published his *Preadamitae sive exercitatio super versibus duodecimo, decimo-tertio et decimo-cuarto, capitis quinti Epistolae D. Pauli ad Romanos*. Both works were republished together in London the following year, 1656, under the title *Men Be-*

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the theory has reappeared repeatedly, gaining such significance in scholarly circles that Richard H. Popkin is convinced that

from the mid-17th century onward, pre-Adamism was the real spectre haunting Western thought, it was the most fundamental challenge to the Judeo-Christian tradition to arise from the “new science” and the “new philosophy.”<sup>32</sup>

Thus, Popkin not only highlights the lure of pre-Adamite philosophy, but points out the historical fact that it flourished in the aftermath of the Enlightenment. Popkin goes on to say that pre-Adamite theories were a greater threat to the traditional picture of nature and the destiny of man, based on the biblical account, than the Copernican theory or the mechanistic view of nature.<sup>33</sup> Popkin describes the character of the pre-Adamite theory as multifaceted, with three basic thrusts in its development:

The first was Bible criticism, presenting the existing Scripture as a human construction whose relation to Divine Truth was difficult, if not impossible to ascertain. The second was polygenesis, that mankind had multiple origins, and only some (in fact only, at the most, one) had Divine significance. And the third was the pre-historical aspect, that human history preceded the official history of the world presented in Genesis, and possibly developed independently of the Divine plan therein described.<sup>34</sup>

Even though the origin of Adam is not made altogether clear in pre-Adamic theories, his historicity is never denied. For example, Benjamin Warfield, a champion of evangelicalism, did not see any danger for Christian theology in believing that Adam was a descendent from pre-Adamic races, though these races lacked God’s image in the soul. Warfield believed that if a body is formed “by propagation from brutish parents” under the directing hand of God, it would

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*fore Adam. Or a Discourse upon the Twelfth, Thirteenth, and Fourteenth Verses of the Fifth Chapter of the Epistle of the Apostle Paul to the Romans. By Which are Prov'd, That the First Men were Created before Adam.* The work, originally designed to meet the problem of the extent of animal and human migration over the earth since the time of creation, was theologically based, allegedly, “in detailed exegesis of the book of Romans.” It was Peyrère’s intention to clarify the Pauline statement, “for before the law was given, sin was in the world. But sin is not taken into account when there is no law” (Rom 5:13). Finding conventional interpretations of the passage as referring to the Mosaic law unconvincing, Peyrère applied “the law” as law given to Adam. From this reinterpretation it logically followed that there must have been human beings on earth before Adam. Livingstone, “Preadamites,” 42.

<sup>32</sup>Popkin, “Pre-Adamism,” 206.

<sup>33</sup>Ibid.

<sup>34</sup>Ibid.

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be just and appropriate that such body be provided by God's creative energy with a soul truly human.<sup>35</sup>

David Livingstone further remarks:

Since the 1940s, right up to the present day, the preadamite theory has continued to attract those evangelicals who want to maintain their traditionally 'high' doctrine of scripture and yet remain open to the world of science.<sup>36</sup>

This means that pre-Adamism is neither dead nor foreign to evangelical theology. But, if human races lived and became extinct before the time of Adam, then death before Adam's sin becomes an "a priori" established reality.

**Evolution and "Deep Time."** A very important factor in establishing the idea of death as a reality on earth prior to humankind's fall into sin is the concept that periods of time significantly longer than those suggested by the biblical record, as normally interpreted, are needed in order to account for the history of life on the planet. Time and the geological and biological changes that take place in the course of time are two properties without which evolution would be unable to operate. In the context of an evolutionary continuity of life, those two properties bring death as a third factor in their wake.<sup>37</sup> Deep time is indispensable for evolution. If observable present-day causes do not seem to be sufficient to provide acceptable explanations for things as they are now, "one must postulate vast periods of time in the past, in order to give the causes time to produce these physical changes."<sup>38</sup>

With the rise of geology as a science and the ensuing increase in the amount and variety of fossils that were being unearthed, it seemed evident that far more time than the biblical record (as traditionally interpreted) allowed for was needed if a plausible explanation for the mysteries of the past was to be found. This was true no matter which of the two major approaches to understanding those mysteries, catastrophism or uniformitarianism, was adopted. As a result, the accepted scale of historical time was forcibly expanded from a few thousand to many million years.<sup>39</sup> Thus the truism was gaining confirmation that "basic

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<sup>35</sup>Benjamin Warfield, review of James Orr, *God's Image in Man* (New York: Charles Scribner's Sons, 1904), 557. This, for Warfield, was not equivalent to a denial of a common origin for the human race, a common origin which, in his view, the evolutionary hypothesis had established. Cf. Warfield, "On the Antiquity and the Unity of the Human Race," *Princeton Theological Review* 9 (1911): 21-22.

<sup>36</sup>Livingstone, "Preadamites," 63.

<sup>37</sup>Loren C. Eiseley, *The Firmament of Time* (New York: Atheneum, 1978), 35.

<sup>38</sup>Robert T. Clark and J. D. Bales, *Why Scientists Accept Evolution* (Grand Rapids: Baker, 1966), 12; see also Wilbert H. Rusch, Sr., *The Argument: Creationism vs. Evolutionism*, Creation Research Society Monographs Series, no. 3 (Norcross, GA: CRS Books, 1988), 51.

<sup>39</sup>Stephen Toulmin, "The Historicization of Natural Science: Its Implications for Theology" in *Paradigm Change in Theology: A Symposium for the Future*, eds. Hans Kung and David Tracy, trans. Margaret Kohl (New York: Crossroad, 1989), 235.

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conceptual changes in fact take place, which transform the theoretical basis of the natural sciences either rapidly or gradually.”<sup>40</sup>

It was becoming apparent, in the course of time, that as opponents of a uniformitarian worldview, such as that popularized by Lyell, grew silent, what Eiseley terms “point-extinction” (the extinction of individual species) had replaced the concept of mass death. “Death, in other words, was becoming natural—a product of the struggle for existence.”<sup>41</sup> And, as appropriately noted by George L. Murphy, “such acceptance was a necessary prelude to serious scientific thinking about evolution.”<sup>42</sup>

Thus, Lyell succeeded in establishing the philosophical framework (geological uniformitarianism) necessary for the acceptance of a long history of death on earth before the appearance of humans. But it was Darwin who made death biologically acceptable and, even more, indispensable.<sup>43</sup> There was no perceived need for death on earth before the advent of humankind as long as a short chronology for the history of life on the planet was almost universally accepted,<sup>44</sup> or, in the words of Bernard Ramm, “as long as the theologians reckoned humankind’s existence on this earth as no more than six thousand years and interpreted Gen. 2–3 in a literalistic and historical sense.”<sup>45</sup> However, with the development of geology, paleontology, and physical anthropology, this traditional interpretation was challenged. Thus, science was succeeding in having the chronological framework changed. Clark Pinnock points out astronomy and geology as indicators, for evangelicals, that Gen 1 and 2 should not be regarded as history. “One thing is certain,” says Pinnock about evangelicals, and that is, “they did not find out about an ancient earth from reading Genesis.”<sup>46</sup>

In other words, if long periods of time did not elapse before the advent of man, no basis remains for the claim of death occurring before the fall of Adam. Hence, claims of death before sin are usually linked with statements of a very long history of life on earth prior to the Fall.

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<sup>40</sup>Ibid., 233.

<sup>41</sup>Eiseley, 51.

<sup>42</sup>George L. Murphy, “A Theological Argument for Evolution,” *Journal of the American Scientific Affiliation* [JASA] 38 (March 1986): 23.

<sup>43</sup>David Lack observes that “the only method of evolution of which we have knowledge is natural selection, which requires a high death-rate.” David Lack, *Evolutionary Theory and Christian Belief: The Unresolved Conflict* (London: Methuen, 1957), 76.

<sup>44</sup>Ronald L. Numbers, *The Creationists* (New York: Knopf, 1992), 5, comments that Darwin used a “prodigious length” of time to soften the blow of his theory of human evolution upon human pride.

<sup>45</sup>Bernard Ramm, *Offense to Reason: The Theology of Sin* (San Francisco: Harper & Row, 1985), 113.

<sup>46</sup>Clark H. Pinnock, “Climbing Out of a Swamp: The Evangelical Struggle to Understand the Creation Texts,” *Interpretation* 43 (January 1989): 154.

## *TERREROS: IS ALL DEATH A CONSEQUENCE OF SIN?*

### **Evangelical Christian Theology and Death Before Sin**

**The Relationship between Sin and Death.** While naturalistic evolution excludes God, theistic evolution became such by retaining God in the model. There lies their fundamental difference. They concur, however, in ascribing an essential role to death in the evolutionary process. And so, as evolution as a process cannot operate without struggle and death, death remains an essential factor not only in atheistic evolution, but also in the context of an evolutionary system which claims to be theistic.

In theistic evolution, death is viewed as just the “other side” of life. In fact, death is needed as a pre-requisite if new life is to appear, which means that life is contingent upon death.<sup>47</sup> Because God intended things to be the way they are, according to many evangelical scholars, death in itself is not evil and, therefore, it has always been there, even before sin appeared.

For example, Jan Lever, who considers death as a central element in the Paradise story, thinks that the idea “that death, disease and abnormalities could have occurred in organisms only *after* the fall in Paradise” is passé; it is not believed any more.<sup>48</sup> The current fact according to the fossil record, he stresses, is that countless living forms lived and died before man was present on this earth.<sup>49</sup>

The Oxford scholar Arthur Peacocke thinks that theology will be going “along the wrong track” if it presupposes an ideal deathless past from which humans have fallen. Therefore, death, in the context of Pauline thought, can only mean “death” in some figurative sense or, perhaps, spiritual death.<sup>50</sup> John Polkinghorne, and many other evangelical scholars, reason along similar lines.<sup>51</sup>

In evangelical circles it has become a given that death was present in the world before the sin of Adam. The affirmation may take different forms. It may be either expressed directly or implied in other assumptions and theories. Different ways of justifying the belief are now presented.

### **Evangelical Justifications for Accepting the Concept of Death Before the Fall**

Bernard Ramm, leading modern proponent of progressive creation, a model with more elements of agreement than disagreement with theistic evolution, is perhaps the first outstanding contemporary evangelical scholar to reopen the

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<sup>47</sup> Arthur Peacocke, *Creation and the World of Science* (Oxford: Clarendon, 1979), 164, 165, 169. See also Pattle P. T. Pun, “A Theology of Progressive Creationism,” *Perspectives on Science and Christian Faith* 39 (March 1987), 12, 13.

<sup>48</sup> Jan Lever, *Where Are We Headed?* (Grand Rapids: Eerdmans, 1970), 20, 21; Lever’s emphasis.

<sup>49</sup> *Ibid.*, 21.

<sup>50</sup> Arthur Peacocke, “The Challenge of Science to Theology and the Church” in *The New Faith and Science Debate: Probing Cosmology, Technology, and Theology*, ed. John M. Mangum (Minneapolis, MN: Fortress, 1989), 16.

<sup>51</sup> John Polkinghorne, *Reason and Reality: The Relationship Between Science and Theology* (London: SPCK, 1991), 99. See especially chapter 8, “The Fall,” 99–104.

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discussion on death before the Fall that became so prominent in the nineteenth century.<sup>52</sup> Ramm points out that in general, the sentence of death is one of the issues related to the Edenic curse that has received the most attention.<sup>53</sup> He devotes a good deal of attention to the subject, too.

**Ideal Conditions Only Within the Garden.** Ramm suggests that the assumption that before the sin of Adam there was no death anywhere in the world and that all creatures were vegetarians is all an imposition on the biblical record.<sup>54</sup> In his view, ideal conditions, those without the presence of death, existed only within the garden of Eden.<sup>55</sup> Outside of it “there was disease, bloodshed and death throughout nature long before man sinned.”<sup>56</sup> Ramm explains:

Outside of the Garden of Eden were death, disease, weeds, thistles, thorns, carnivores, deadly serpents, and intemperate weather. To think otherwise is to run counter to an immense avalanche of fact. Part of the blessedness of man was that he was spared all of these things in his Paradise, and part of the judgment of man was that he had to forsake such a Paradise and enter the world as it was outside of the garden, where thistles grew and weeds were abundant and where animals roamed and where life was only possible by the sweat of man’s brow.”<sup>57</sup>

**Death: A Divine Institution.** A number of evangelical scholars picture death as a divine institution rather than as the result of human sin. It is their common underlying premise that death is essentially good and not evil. On this account, they resort to the overpopulation argument, according to which, “unless a very large number of certain forms of life are consumed, e.g., insects and fish, the earth would be shortly overpopulated with them.”<sup>58</sup> Death is thus perceived as an indispensable factor originally intended by God himself for preserving the balance of nature and the happiness of life.

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<sup>52</sup>James R. Moore remarks: “As for evolutionists who wish to be more intelligent Christians, they would do well to read again the ancients. Which is not to say that Christian evolutionists in the nineteenth century provided all the answers for Christian Neo-Darwinians in the twentieth, but that almost every contemporary issue was confronted or anticipated before 1900.” James R. Moore, “Evolutionary Theory and Christian Faith: A Bibliographical Guide to the Post-Darwinian Controversies,” *Christian Scholar’s Review* 4 (1975): 230.

<sup>53</sup>Ramm, *The Christian View of Science and Scripture* (Grand Rapids: Eerdmans, 1954), 334.

<sup>54</sup>*Ibid.*, 334. On the basis of the assumption that “life can live only on life,” Ramm argues that we are not to believe that the lion, the tiger, the ant-eater, and the shark were all vegetarians till Adam fell, and that the teeth of the big cats were all for vegetarian purposes only (*ibid.*, 335).

<sup>55</sup>The idea of the existence of ideal conditions only within the garden of Eden, with the presence of death outside of it, had been suggested by the middle of the nineteenth century by Edward Hitchcock in his book *The Religion of Geology and Its Connected Sciences* (1851), and by Brian P. Sutherland by the middle of the twentieth. Cf. Brian P. Sutherland, “The Fall and Its Relation to Present Conditions in Nature,” *JASA* 2 (December 1950): 14–19.

<sup>56</sup>Ramm, *The Christian View*, 334.

<sup>57</sup>*Ibid.*, 335.

<sup>58</sup>*Ibid.*, 334.



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**Death in the Garden: Spiritual Death.** The proposal here is that God's sentence of death in Gen 2:17 must have been a reference to spiritual death, while the words of the serpent in 3:4 were a reference to physical death as effected after expulsion from the Garden. This being the case, the apparent contradiction between the two passages disappears and both God and Satan are found to be in the right, which, in turn, would not rule out the existence of physical death before a historical Fall.<sup>59</sup>

It has been suggested that even "if Adam hadn't sinned and continued to live in the garden of Eden, some death would most likely have taken place"<sup>60</sup> in order to prevent unchecked growth and ensuing overpopulation. The means of achieving these objectives would necessarily be the presence of carnivora before and after the Fall. That presence, it is maintained, is attested by the fact that "some forms of life today live exclusively on other life," and by evidences from the fossil record that "some of the pre-Adamic animals were carnivores."<sup>61</sup> Therefore, the sentence of death in Gen. 3 must necessarily be a reference to spiritual death.

**The Myth of Physical Death as Evil.** For many evangelical scholars, the traditional interpretation of the reality of death as a direct consequence of human sin is a myth. Richard Doss has called it "the myth of cosmic drama," following John Hick, who calls it "the great creation-fall-redemption myth" and also "the great cosmic drama."<sup>62</sup> The myth is cosmic in scope because it includes the creation story, humanity's fall into sin, the struggle between good and evil, Christ's death (and resurrection) for the redemption of humankind, and the hope of a definitive eschatological elimination of death.<sup>63</sup>

Even though the historical validity of this "myth" is acknowledged in "conserving and communicating the basic realities of the Christian faith," its veracity is questioned.<sup>64</sup> Even if not using the term "myth" in this context, some evangelical authors treat as such the belief in the Fall as the cause of physical death. William Sanford LaSor, for example, considers the concept that nothing or no one on earth died before Adam's fall an "unrealistic teaching."<sup>65</sup> And Munday calls it "presumptuous" to affirm "that the creation was 'subjected' to creature mortality at the fall" rather than at the very beginning.<sup>66</sup>

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<sup>59</sup>Don Wardell, *God Created*, 2d ed.(Winona Lake, IN: Priv. Pub., 1984), 96–97.

<sup>60</sup>Ibid., 97.

<sup>61</sup>Ibid.

<sup>62</sup>John Hick, *Evil and the God of Love* (London: Macmillan, 1966), 283, 284; G. R. Lambert, "Was the Pre-Flood Animal Kingdom Vegetarian?" *Creation Research Society Quarterly* [CRSQ] 20 (September 1983): 16; cf. Hick, 283.

<sup>63</sup>Richard Doss, "Towards a Theology of Death," *Pastoral Psychology* 23 (June 1972), 16.

<sup>64</sup>So Hick, 284.

<sup>65</sup>William Sanford LaSor, "Biblical Creationism," *Asbury Theological Journal* 42.

(1987), 17.

<sup>66</sup>John C. Munday Jr., "Creature Mortality: From Creation or the Fall?" *Journal of the Evangelical Theological Society* 35 (March 1992), 51, 56, 63–64, 67.

**The Agency of Evil Angelic Powers.** That Satan's rebellion against God could have taken place before there was any life on the earth is seen by some evangelical authors who are devoted to a high view of Scripture as an interesting possibility for explaining the existence of death before the sin of Adam. Admitting the possible truth of the belief that animals would not die if there was no sin in the world, the suggestion has been made that animal death could be considered an effect of Satan's sin before Adam was created.<sup>67</sup>

Murphy admits that the idea of fallen angelic powers can be of some help in understanding the cosmic scope of the problem of evil.<sup>68</sup> At the same time, the idea of applying any theory of angelology and demonology to gaining an understanding of the Genesis account is opposed by some scholars like Ramm,<sup>69</sup> while favored by such others as Donald Bloesch<sup>70</sup> and C. S. Lewis.<sup>71</sup>

The foregoing discussion leads us to at least two important points. First, evangelicals justify the affirmation of death before the Fall mostly through arguments drawn from sources other than Scripture. Second, these scholars do not refer to any negative implications of the acceptance of death as a reality antecedent to Adam's sin. They fail to provide their readers with solid, biblically based theological justification for their respective proposals. The question is, what does the Bible say to evangelicals for whom the Bible is the final authority?

It must be observed, at this juncture, that another group of evangelical scholars have addressed, in fragmentary fashion, the subject of death before the Fall by pointing to its potential problems for theology. Their writings on this issue will be considered later in this study.

**Death in Animals Because of Adam's Sin?** The question of death and suffering in the animal world is one of great importance. On the one hand, as we have seen, many scholars see such death as a natural phenomenon. On the other hand, the fact of suffering in the animal world is seen by other thinkers as one of the greatest of all objections to a Christian theology about a loving, all-powerful, and compassionate God. The problem is not an easy one to explore.<sup>72</sup>

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<sup>67</sup>Wardell, 97. On the concept of the agency of fallen angels as a possible explanation of natural evil as part of the free-will defense argument, see Alvin Plantinga, *God, Freedom, and Evil* (New York: Harper & Row, 1974).

<sup>68</sup>Murphy, 25. In like fashion, David Lack considers it a "serious claim" that "the power of evil which helped to produce man's Fall was active in the world before man's appearance and produced other effects, including death" (76).

<sup>69</sup>Cf. Ramm, *The Christian View*, 205, 199 passim; so also R. J. Berry, *God and Evolution* (London: Hodder & Stoughton, 1988), 89–90.

<sup>70</sup>Donald G. Bloesch, *Essentials of Evangelical Theology*, Vol. 1: *God, Authority and Salvation* (San Francisco: Harper & Row, 1978), 106.

<sup>71</sup>After stating his personal belief in the existence of Satan and demonic powers, Lewis writes that such powers "may well have corrupted the animal creation before man appeared. . . . I say that living creatures were corrupted by an evil angelic being." C. S. Lewis, *The Problem of Pain* (New York: Macmillan, 1944), 123.

<sup>72</sup>Cf. John Hartog II, "Sin, Redemption and the Animal Kingdom," Th.D. diss. Grace Theological Seminary, 1978, 68–69; Lewis, 118–119.

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John Hick states the difficulty as follows:

Now the sufferings of animals constitute one of the most baffling aspects of the problem of evil. Although this is perhaps not the gravest and most oppressive of evil's many forms, it may nevertheless be the hardest for us to understand.<sup>73</sup>

A tension between a terrible predicament and a hopeful expectancy of liberation is said by Paul in the New Testament (cf. Rom 8:18–25) to be the lot not only of human beings but of the whole of creation, subjected to decay at the beginning, but awaiting eschatological redemption. That way of thinking is in keeping with the Old Testament theology and philosophy of nature, to which we now turn.

#### **The Old Testament Data: Man as Federal Representative of the Natural World**

A connection between human moral behavior, particularly in terms of obedience or disobedience to God, and death in the animal kingdom is evident in the Old Testament.

The close interrelation between humanity and the nonhuman order of nature is underlined in the account of the Fall in Gen 3. The passage reveals that “rebellion against God disrupts relationships among people and between people and the land.”<sup>74</sup> When the man and woman fall into sin, the earth is cursed because of them (vs. 17). Now, in order to eat from it, the earth must be tilled and harvested “through painful toil” (vs. 17b, 19a). In addition, as God says, “it will produce thorns and thistles for you” (vs. 18).<sup>75</sup> Later on, “the earth is cursed by a flood because of human sin” (cf. Gen 7–9).<sup>76</sup>

At the time of the Exodus, Pharaoh's wickedness affected not only the whole of his people, but their sinfulness was visited upon their natural world as God's judgments fell on both men and animals (Exod 8:17; 9:1–3, 9, 10, 25; 12:12; see Ps 135:8), and even on the vegetable kingdom (9:22, 25). Conversely, the Israelites by their obedience saved not only themselves, but their animals and their land (9:4–7, 26).

Psalm 107:33–34 speaks of God's turning “rivers into a desert, flowing springs into thirsty ground, and fruitful land into a salt waste,” and all of that “because of the wickedness of those who live there.” Abundant illustration of

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<sup>73</sup>Hick, 109; so Cameron, “Evil, Evolution and the Fall,” 30–32.

<sup>74</sup>William Dyrness, “Stewardship of the Earth in the Old Testament,” in *Tending the Garden: Essays on the Gospel and the Earth*, ed. Wesley Grandberg-Michaelson (Grand Rapids: Eerdmans, 1990), 55. Dyrness calls attention to “the complex of disobedience to God, oppression of the poor, and ecological disaster,” and concludes that “the one cannot be separated from the other in the Old Testament” (ibid., 60).

<sup>75</sup>Cf. ibid.

<sup>76</sup>Ibid.

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this principle is provided in the book of Jeremiah. According to Jer 9:9–10, God would desolate mountains, desert pastures, cattle, and birds, because “the people of Judah have done evil in my eyes, declares the Lord” (7:30). The question is raised in 12:4, “How long will the land lie parched and the grass in every field be withered?” The answer is in the same verse stated by means of a clear connection between human sinfulness and the death of animals in the land: “*Because those who live in it are wicked, the animals and birds have perished.*”<sup>77</sup> And in Hos 4:1–3 it is stated that because of the sin of the Israelites, all that is in the land wastes away, and “the beasts of the field and the birds of the air and the fish of the sea are dying” (cf. Zeph 1:3).

If the question is asked, Why do the land and the animals therein (that do not sin) have to suffer the same doleful lot men have to suffer because of their sin? One answer is provided in Deut 29. There the Lord Himself foresees that both the Israelites’ children and the “foreigners who come from distant lands” and “all the nations,” upon seeing calamities and disease on the world of nature (vs. 22), would wonder why. They would ask the question, “Why has the Lord done this to the land?” (vs. 24). “And the answer will be: ‘It is because this people abandoned the covenant of the Lord, the God of their fathers, the covenant He made with them when he brought them out of Egypt’” (vs. 25).<sup>78</sup> God complements this answer in Jer 27:4–5 on the basis of His creatorship:

This is what the Lord Almighty, the Lord of Israel, says: “Tell this to your masters: With my great power and outstretched arm I made the earth and its people and the animals that are on it, and I give it to anyone I please.”<sup>79</sup>

This passage indicates that God, as Creator of all that is, reserves for Himself the right of dealing with His creation as He sees best. It was God Himself who, at the beginning, constituted the human being as lord and representative of the lower created order.

Nature’s well-being was made dependent on man’s allegiance to the divine plan: “If you fully obey the Lord your God and carefully follow all His commands . . . the fruit of your womb will be blessed, and the crops of your land and the young of your livestock—the calves of your herds and the lambs of your flocks” (Deut 28:1, 4). The concept of man’s federal representation of the creation is a prominent one in Old Testament literature. God subjected the nonhuman creation to the dominion of His human creatures (Gen 1:27–28; Ps 8:3–8), and that creation was to stand or fall with them.<sup>80</sup> Animals, as already noticed,

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<sup>77</sup> Emphasis added.

<sup>78</sup> It is evident that these curses come “as a clear response to unfaithfulness” (Dyrness, 60).

<sup>79</sup> See also vs. 6. This reply, no doubt, sounds authoritative and even despotic to modern man, but it was not so to the ancient, theocentrically minded Israelite who fully recognized the supreme sovereignty of God.

<sup>80</sup> Dyrness, 60.

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would fall along with man because of human sin (cf. Ezek 14:13, 17, 19, 21; 25:13; 29:8; Zeph 1:1–3; Zech 14:13–15.),<sup>81</sup> but, conversely, animals would stand, or be restored, with man because of human repentance (Jer 31:18–19, 27–28; Joel 2:12–13, 21–22).<sup>82</sup>

Additionally, we must recognize that in a natural world affected by the calamity of sin, death became a necessity. On this point Hartog writes:

Under the present system, with higher forms feeding on lower ones, there is a balance in nature. It is based on the death of all things. The present system of death and decay is necessary in order that old generations may go as new ones come and an ecological balance may keep man from perishing from the face of the earth. He most certainly would have if the curse had not extended to death in the animal kingdom. This is one way the present system is best suited for fallen man.<sup>83</sup>

In light of this statement, it is clear that nature's solidarity with man in death was now indispensable in order to keep the new order of life in balance. Furthermore, that solidarity in death obeys a divinely ordained plan of love in facing the emergency generated by the Fall and intended, in the long run, to preserve human life on the planet. But we must keep in mind that this is a new order of things.

#### **The New Testament Data: Adam as Representative of the Creation**

A connection between human sin and death of all kinds is also present in the New Testament. This is especially true of passages in the Pauline corpus. Romans 5:12 is most notable for linking Adam's sin to the entrance of death into the world. Other important passages include Rom 6:23; 8:18–25, and 1 Cor 15:21–22.

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<sup>81</sup>F. F. Bruce states: "Man was put in charge of the 'lower' creation and involved it with him when he fell" (Bruce, *The Epistle of Paul to the Romans: An Introduction and Commentary*, The Tyndale New Testament Commentaries [Grand Rapids: Eerdmans, 1963]), 169.; So also Richard W. De Haan, *The World on Trial: Studies in Romans* (Grand Rapids: Zondervan, 1970), 96; Andre Marie Bubarle, *The Doctrine of Original Sin*, trans. E. M. Stewart (New York: Herder & Herder, 1964); E. J. Forrester, *A Righteousness of God for Unrighteous Men, Being an Exposition of the Epistle to the Romans* (New York: George H. Doran, 1926), 97.

<sup>82</sup>It is interesting to notice that even Isa 11:5–9, that classical description of eschatological bliss in the natural world, is preceded by the description of the wise ruler of Jesse's stock; the ideal conditions are evidently intended to result from the goodness of the wise ruler (cf. Moule, 7–8).

<sup>83</sup>Hartog, 114. For other ways in which this present world is best for sinful man, and for an approach to the ethical problem involved in the suffering of the animal world, see *ibid.*, 115 *passim*. Haigh expresses thus her view: "The animals too were cursed with death and, in my opinion, it may be that the fearful and violent instincts in the presence of man and their violence against creatures lower down the scale of being than themselves (snakes eat frogs, frogs eat flies, etc.) may be a kind of participation in the now fallen, unruly state of man's own passions." Paula Haigh, *Thirty Theses Against Theistic Evolution* (Louisville: Catholic Center for Creation Research Publications, 1976), 55.

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**Romans 5:12.** As sin affected the totality of the creation, human and non-human, so will the salvific work of Christ.

Exegetical considerations on Romans 5:12, as presented in my doctoral dissertation,<sup>84</sup> make clear that this passage does not mean that as sin entered the world, nonhuman creatures became sinful as man did, for, as Paul puts it, “the creation was subjected to frustration, not by its own choice” (Rom 8:20). It rather means that as man, the king of creation, became sinful, nonhuman creatures became as mortal as man did. In other words, the kingdom fell with its king. In this sense the words of Cranfield, the renowned New Testament scholar, are true, that death “followed sin like a shadow.”<sup>85</sup> This is due to the direct correlation between man’s faithfulness to the covenant with God and the welfare of nature. The same correlation exists between human unfaithfulness and death in the natural realm. This truth also implies that the Messianic eschatological restoration will include both the king and the kingdom. This will be accomplished through the resurrection of man and the recreation of the natural world (Rev 21:5; cf. Isa 65:17–25). The whole of creation will be set free (Rom 8:21). Thus, what man lost because of sin will be restored to him when sin is eliminated from the earth.

Romans 5:12 shows that death came to all humanity in a way analogous to how it came to the rest of the creation; that the means it took (one man’s sin), as well as its extension (cosmic), are similar in both cases. In this light, the passage could be thus interpreted: “As sin and death came into all creation through one man, even so death came to all men.”<sup>86</sup> This interpretation preserves the contextual parallel between Adam and Christ and highlights the universal scope of their respective roles. Other Pauline passages (e.g., Rom 7, 8) make clear that neither of the two realms (human and nonhuman) can extricate themselves from their situation and that their only hope is God’s gracious provision. The nonhuman creation will also be made free from corruption only through the work of Christ, though not through resurrection but by new creation. In what other form could Paul’s prediction in Rom 8:18–25 be fulfilled?

That *ho thanatos* is the subject of the comparison in Rom 5:12 is indicated by the fact that this is the noun that occurs in both the protasis and the apodosis (the two elements of the comparison). On the other hand, the second element in this comparison, “so death came to all men,” makes better sense if death is come before to some element other than men, an element to which death’s coming to

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<sup>84</sup>Marco T. Terreros, “Death Before the Sin of Adam: A Fundamental Concept in Theistic Evolution and Its Implications for Evangelical Theology,” Ph.D. Dissertation, Andrews University, 1994. Recently published as *Theistic Evolution and Its Theological Implications* (Medellin: MARTER Editions, 2002).

<sup>85</sup>C. E. B. Cranfield, “On Some of the Problems in the Interpretation of Romans 5:12,” *The Scottish Journal of Theology* 22 (1969), 329.

<sup>86</sup>For this wording I am indebted to Dr. Robert Johnston, New Testament Department, Andrews University.

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all men is being compared. That element is *ho kosmos*. In a point of time, after the first humans sinned, death came to the natural, nonhuman world before it came to the human world (cf. Gen 3:21). By the time the first physical human death (Abel's) actually took place, humans had observed repeatedly the death of animals, at least as sacrificial victims if not as a result of animals killing each other. As death eventually became a universal phenomenon in the subhuman realm, it likewise occurred in the human world. As a greater reality is usually illustrated by one of lesser import, so it seems that the universality of human death, which is the second element in the comparison and doubtless the more important for the apostle, is being illustrated by the universality of death in the nonhuman world. The coming of death to men is being compared to the coming of death into *ho kosmos*.<sup>87</sup>

The purpose in highlighting the universality of this cosmic predicament is just to establish the basis for the universal need of the saving work of Christ. As Adam's sin is the cause of universal death, so Christ's saving work is the cause of universal reconciliation and salvation. The point of the death of Christ as the means of human reconciliation with God has already been made in 5:1–11 (see vs. 8, 10).<sup>88</sup> Now Paul goes on to show why Christ's life-giving work is so desperately needed, i.e., because of the universality of death.

The change of verb from *eiserchomai* in the first clause to *dierchomai* in its parallel second clause, a verb that "has been interpreted in different ways according to the theological conceptions preceding the reading of the verse,"<sup>89</sup> is worth noticing. It could hint at how sin and death entered and were transmitted to the two different realms alluded to here. Because of the sin of one man (cf. v. 17), death just "came in" (*eiserchomai*) to the natural *kosmos*, as in a nonvolitive action on the part of the object of death. But regarding the human *kosmos*, death and sin not only came to, but death "passed through" and "spread" (*dierchomai*), and this, due to some kind of volitive<sup>90</sup> action, that is, *eph' hō pantes hēmarton* ("because all sinned"), an affirmation that could not be made in the former case, that of the nonhuman world. It is also important to notice that Paul says that death reigned *from* the time of Adam, not before.

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<sup>87</sup>See, John Murray, *The Epistle to the Romans: The English Text with Introduction, Exposition and Notes*, 2 vols. The New International Commentary on the New Testament (Grand Rapids: Eerdmans, 1959), 1:182.

<sup>88</sup>A. J. M. Wedderburn, "The Theological Structure of Romans 5:12," *New Testament Studies* 19 (1972–1973): 347.

<sup>89</sup>J. Cambier, "Péchés des Hommes et Pêché d'Adam en Rom. V.12," *New Testament Studies* 11 (1964–1965): 238 (my translation).

<sup>90</sup>In classical Greek and in early Christian literature, *dierchomai* also means to "go through in one's mind," to "review" (Arndt and Gingrich, *A Greek-English Lexicon of the New Testament and Other Early Christian Literature* [Chicago: U of Chicago P, 1979], 194), a meaning which, without denying the involuntary-action meaning, certainly points to the volitive character of the action of the verb.

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**Related Passages.** Romans 8:18–23 and 1 Cor 15:21–22 are passages related to Rom 5:12–21 where the issues of human sin and death (or its corollaries: pain, suffering, and decay) are associated with one another.<sup>91</sup> Thus, these pericopes are thematically connected with each other, and one of the themes that runs through all these passages is the concept of Adam (or the first human beings) as federal representative(s) of the human race and the whole of the creation.

If *ho thanatos* (death) came into the world *dia tēs hamartias* (through sin), then it follows that the presence of *ho thanatos* in the world cannot be explained apart from the presence of sin.

Because of these observations and in light of the foregoing discussion, we can conclude that Paul teaches that all forms of death (both in the human and nonhuman realms) are introduced in the world as a consequence of the sin of Adam, and that liberation from corruption (cf. Rom 8:21) equals liberation from death.

The issue of whether death is a natural or an unnatural phenomenon is fundamental for the development of a Christian theology of death.<sup>92</sup> There is in the mystery of death a paradox that must be kept in mind. There is undeniable truth in the assertion that living is a dying process. Animal tissue is systematically destroyed by use, and when the loss of tissue and energy becomes excessive, death and decay soon overtake the organism. And so, on one hand, death is “the normal end of our fleshly existence and as such is the most natural thing in the world.”<sup>93</sup> On the other hand, as pictured in the Bible, death is anything but something natural or intended by God for His creatures. Rather, the Bible pictures death as an alien, an intruder, an enemy to be overcome and not a friend. Death is “the last enemy to be destroyed” (1 Cor 15:26) at the *eschaton*.

New Testament scholar Leon Morris, after surveying a number of relevant New Testament passages, concludes:

What emerges clearly from our study of the New Testament documents is the fact that death characteristically is regarded as something completely unnatural, an alien, a horror, an enemy. It is not simply an event, but a state, and is connected very closely with sin.<sup>94</sup>

This statement highlights the unnaturalness of death, as well as its intimate connection with sin. This is not less true of death in the nonhuman realm than it is of death in the human domain.

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<sup>91</sup>William Barclay, “Great Themes of the New Testament: Romans v. 12–21,” 2 Parts, *Expository Times* 70 (1958–1959): 174.

<sup>92</sup>Doss, 18.

<sup>93</sup>Leon Morris, *The Wages of Sin: An Examination of the New Testament Teaching on Death* (London: Tyndale, 1954), 6.

<sup>94</sup>*Ibid.*, 30.



## *TERREROS: IS ALL DEATH A CONSEQUENCE OF SIN?*

### **Theological Implications of Affirming Death before the Fall**

The preceding analysis of the biblical data indicates that death, suffering, and pain in the nonhuman world may be considered as much a consequence of the Fall as is human death, and that creation as a whole groans in the expectancy of liberation. In Christian theology in general we find that the work of Christ is effective redemptively only if a causal link between sin and death is presumed.

On this point Charles Hodge writes:

The reason why death is the result of sin is, that sin deserves death. Death is due to it in justice. There is the same obligation in justice, that sin should be followed by death, as that the labourer should receive his wages.<sup>95</sup>

Thus, Christ's substitutionary atonement can liberate the sinner from death only if death is a consequence of the sin of that sinner; only if there is, in other words, a cause-effect connection between humanity's sin and death, because Jesus Christ "is the Representative of fallen humanity."<sup>96</sup> It follows that only in the light of this cause-effect connection between sin and death can theological sense be made of Christ's vicarious dying for sinners. Why? Because without the causal linkage between sin and death, Christ's death could not satisfactorily pay for the consequence of sin.

### **Early Twentieth-Century Evangelical Stance on the Issue**

By the turn of this century, a time when modernism<sup>97</sup> was making significant inroads into evangelical churches and colleges in North America, fundamentalism, one of the "subcultures"<sup>98</sup> within the broad spectrum of evangelical theology, reacted by taking a challenging stance represented by the publication of *The Fundamentals*.<sup>99</sup>

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<sup>95</sup> Charles Hodge, *Commentary on the Epistle to the Romans* (New York: A. C. Armstrong & Son, 1909), 211.

<sup>96</sup> *Ibid.*, 145.

<sup>97</sup> Ronald Nash terms this "liberalism" and "the new kid on the block," as compared with evangelicalism. Ronald H. Nash, *Evangelicals in America: Who They Are, What They Believe* (Nashville: Abingdon, 1987), 24.

<sup>98</sup> On this, Nash writes: "Typically, three evangelical subcultures are distinguished: Fundamentalism, Pentecostalism, and what, for want of a better term, can be called the evangelical mainstream" (*ibid.*, 25); cf. Robert E. Webber, *Common Roots: A Call to Evangelical Maturity* (Grand Rapids: Zondervan, 1982), 30.

<sup>99</sup> It is important to notice that *The Fundamentals* "represent the movement at a moderate and transitional stage before it was reshaped and pushed to the extremes by the intense heat of controversy" (George M. Marsden, *Fundamentalism and American Culture: The Shaping of Twentieth Century Evangelicalism, 1870-1925* [New York/Oxford: Oxford UP, 1980], 119). This means that at this point in evangelical history, according to Marsden, later distinctions between evangelicalism and fundamentalism did not yet exist. It means that "'evangelical' and 'fundamentalist' were not then separate entities," and that, "though *evangelical* may have been the more respectable word to use, few would have questioned the fundamentalist identification" (George M. Marsden, *Reforming*

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By the time these works were written, the notions of sin and death, including physical death in the nonhuman world, were understood in conservative evangelical theology as connected in a cause-effect relationship. On this point, the declaration explicitly affirms that according to Paul the apostle, “*all cosmic life, plant, animal, and human, has been made to suffer because of the presence of sin in man. Who can doubt it?*” See Rom. 5:12–14, 21; 6:21; 7:10; 8:19–25; Eph. 2:1, etc.”<sup>100</sup> This work, in which the causal link between human sin and cosmic death is acknowledged in such distinct terms, constitutes the most comprehensive single declaration of evangelical doctrinal beliefs discovered to date.

As modernism<sup>101</sup> succeeded in influencing evangelical educational institutions and churches, a significant number of evangelical thinkers reacted by doctrinally moving away from fundamentalism and the traditional belief in a literal understanding of the Genesis creation narratives. However, what initially started as a trend associated with demands for open-mindedness about evolution has resulted in what seems to us a major theological shift, namely, the moving away from affirming a causal connection between sin and physical death, as it has already been documented.

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*Fundamentalism: Fuller Seminary and the New Evangelicalism* [Grand Rapids: Eerdmans, 1987], 3). Evangelicalism’s theological break with fundamentalism began to take place in the early 1940s (ibid.). On this point, Marsden’s definition and historical description of “fundamentalism” is worth quoting: “From the 1920s to the 1940s, to be a fundamentalist meant only to be theologically traditional, a believer in the fundamentals of evangelical Christianity, and willing to take a militant stand against modernism.

“*Conservative* was sometimes a synonym. So to call oneself a fundamentalist did not necessarily imply, as it virtually does today, that one was either a dispensationalist or a separatist. Neither did it necessarily imply, despite efforts to the contrary by its detractors, that one was obscurantist, anti-intellectual, or a political extremist” (ibid., 10, Marsden’s emphasis).

Marsden’s clear definition implies that any efforts at establishing a sharp distinction between evangelicalism and fundamentalism on the basis of *The Fundamentals* would not only be anachronistic but inexact. Carl Henry concurs, writing in retrospect, in a letter to Marsden, that “in the 1930s we were all fundamentalists. . . . The term ‘evangelical’ became a significant option when the NAE [National Association of Evangelicals] was organized (1942)” (Carl F. H. Henry to Marsden, Feb. 24, 1986, quoted by Marsden in *Reforming Fundamentalism*, 10). In the same letter, Henry writes: “In the context of the debate with modernism, fundamentalist was an appropriate alternative; in other contexts [of the debate within the fundamentalist movement], the term evangelical was preferable” (ibid.). In another part of the same letter Henry even comments that “nobody wanted the term ‘evangelical’ when NAE was formed in 1942; in social context and in ecumenical context it implied what was religiously passe” (ibid., n. 4). For a condensed historical overview and description of *The Fundamentals*, see Marsden, *Fundamentalism and American Culture*, chap. 14: “The Fundamentals,” 118–123.

<sup>100</sup>Ibid. (emphasis supplied).

<sup>101</sup>Modernism included belief in evolution as opposed to creation, as noted by Erickson, who writes, “In the modernist-fundamentalist controversy of the earliest twentieth century, the struggle was on a large scale—evolution versus creation.” Millard J. Erickson, *Christian Theology*, Unabridged, 1 vol. ed. (Grand Rapids: Baker, 1985), 367.

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### **The Basis for Atonement Theology Challenged**

The rejection of a cause-effect connection between sin and death adversely affects the evangelical theology of the atonement in at least the five following ways:

First, it was the tragedy of the fall of humanity into sin that set in motion God's plan for the redemption of the human race. Thus, redemption history begins with the sin of humankind, so that evangelical soteriology is dependent on a literal Fall of man.<sup>102</sup> It was at the Fall that the *proto-euangelion* was announced (Gen. 3:15). If man's voluntary, free decision is removed or severed from death, then sin as a cause of death disappears from the story of redemption.

Second, the disjunction of death and sin undermines the biblical teaching on death as a penalty for sin, thereby removing the basis for Christ's atonement understood in a substitutionary sense. For example, if death entered the world through any other means than by human sin, then, as noted, death could not be the penalty for sin, and the basis of the atoning value of Christ's death in the sinner's stead is neutralized precisely because His death does not then constitute the wages of the sin of humanity.<sup>103</sup> The importance of this implication cannot be overstressed. This means that Christ did not really have to die because God could have solved the death problem in a better way than the one He chose. "Christ dying for us," however, as noted by Bloesch, "is certainly the foundation and pivotal point of our salvation."<sup>104</sup> As Cameron argues, the acceptance of death as a reality before the sin of Adam pulls the rug "from under the feet of the evangelical understanding of the atonement."<sup>105</sup>

A third effect of the rejection of the biblical cause-effect connection between sin and death for atonement theology is that only if the phenomenon of death is more than natural is a more-than-natural plan of redemption necessary. If death were just a natural problem, it could have then been solved through natural solutions, and no supernatural intervention, such as God's irruption into human history through the incarnation, would have been necessary. Denying the sin-death connection makes the biblical plan of salvation a faulted plan instead of a perfect one. It jeopardizes God's wisdom in designing it. In short, the admission of no cause-effect connection between sin and death, as when death is regarded as just a natural phenomenon, renders the plan of salvation, as delineated in the Bible, unnecessary.

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<sup>102</sup>Pinnock, 151.

<sup>103</sup>This means that God could have dealt with the problem of death without having to deal with the problem of sin. But in fact He did not, which demonstrates the causal connection between sin and death.

<sup>104</sup>Bloesch, *The Christian Life and Salvation* (Grand Rapids: Eerdmans, 1967), 105.

<sup>105</sup>Nigel M. de S. Cameron, "Evil, Evolution and the Fall," in *Creation by Evolution? The Evangelical Debate Today*, ed. David C. Watts, 26–33 (Glasgow: Biblical Creation Society, 1983), 29.

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Fourth, according to a high view of Scripture, the above conclusion is not less true of the phenomenon of death in the nonhuman world, because the solution of even this aspect of the problem will also require supernatural intervention. Only if evolution is true, if animals, for instance, first came into life by only natural means, can we expect that the problem of their death should be reversed by means equally natural. But if the Genesis account is correct, and creation and the historical Fall are true, then the only possible way that the problem of death in the nonhuman world can be reversed is through a new creation, i.e., through God's supernatural intervention, which is precisely what God says He will do (Rev 21:5; cf. Isa 65:17–25). Moreover, it is because the lot of the natural creation is so inseparably connected with humanity's attitude toward God that Paul can write that the creation "was subjected to frustration, not by its own choice" (Rom 8:20), and that the whole of creation will be "liberated from its bondage to decay and brought into the glorious freedom of the children of God" (vs. 21). This passage indicates that God promises to accomplish the liberation of the lower animal kingdom through a new creation, not through a long process of evolution.

Fifth, affirming death before sin means that the first human sin ceases to be the basis for the human need of salvation, and this suggests the need of a rethinking of the Christian faith. Such faith has to be adapted to this new understanding of the "Fall" and "original sin." Theistic evolutionary evangelicals maintain that if this adaptation is not made possible, Christian soteriology would become obsolete.<sup>106</sup> Evangelical theology is thus confronted with the alternatives of either preserving historical Christianity or renouncing its doctrinal values in favor of interpretations that give science authority over Scripture. For example, writing from the standpoint of a theistic evolutionist, Schmitz-Moormann affirms that salvation "cannot mean returning to an original state, but must be conceived as *perfecting* through the process of evolutionary creation."<sup>107</sup> This process of creation by evolution, some evangelicals believe, is capable of telling us still more about God's purposes and about His way of offering humanity a way of salvation<sup>108</sup> than is the traditional Christian belief in creation as "a series of instantaneous events—creation by simple *fiat*."<sup>109</sup> On this point, evangelical author George Murphy agrees with Schmitz-Moormann.

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<sup>106</sup>Or, to quote Karl Schmitz-Moormann's words, the "Christian faith would be relegated to the status of the religious fossils known through mythology" (Karl Schmitz-Moormann, "Evolution and Redemption: What is the Meaning of Christians Proclaiming Salvation in an Evolving World?" *Progress in Theology: The Newsletter of the John Templeton Foundation's Center for Humility Theology* 1 [June 1993]: 7). In a theistic view illumined by evolutionary science, the most important truths, in keeping with the idea of continual progress, are to be found not in the beginnings, but in the present and in the future (ibid.).

<sup>107</sup>Ibid.; Schmitz-Moormann's emphasis.

<sup>108</sup>Ibid.

<sup>109</sup>Paul K. Jewett, *God, Creation and Revelation: A Neo-Evangelical Theology* (Grand Rapids: Eerdmans, 1991), 480.

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Murphy, as noted above, believes that theologically, evolution is preferable to the doctrine of creation.<sup>110</sup>

It is theologically important to notice that it was the emergency of the entrance of sin into the world which gave occasion to the most fundamental alteration of divine nature testified to in Scripture, namely, the Son of God's incarnation as Christ Jesus (1 Tim 3:16). In light of this fact, it is not surprising that some alterations, such as changes in the physiological make-up of some animals, became necessary in order to cope with the new conditions brought about by human sin. Only if the character of sin is not regarded as seriously as the Bible does can we wonder at the physical evils and the changes in the natural world brought about by the emergency of sin. At the same time, no physical evil can be compared with that moral or spiritual evil which is sin itself.<sup>111</sup> But if death preceded sin, how can the evil of sin be characterized?

#### **Concluding Remarks**

As noted, human beings have always pondered questions about origins. What has not always been taken into consideration is that the answers given are deeply influenced by the presuppositions of the inquirer. For example, scientists who are committed only to naturalistic assumptions and scientists holding a biblical worldview will reach entirely different conclusions. For those in the first group, "present day processes must be assumed to be sufficient to explain the origin of all things by naturalistic means."<sup>112</sup> For the second group, there is a distinction between God's acts of creation in the past and His continuing providential government of the created order.

This discontinuity implies that creation—which cannot be tested experimentally—and issues connected with the state of the original created order lie outside the sphere of scientific inquiry. This means that these issues become a matter of revelation.<sup>113</sup> This is not to say, however, that if scientists trust the claims of Scripture's creation texts, literally interpreted, in seeking to understand these issues, they cannot make intelligent inferences in their study of nature. But

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<sup>110</sup>Murphy, 19. However, in brief response to the claims made above, one may point out that if humanity is evolved from lower life forms, whether it happened entirely through natural processes as Darwin proposes, or through divine guidance of the process as suggested in theistic evolution, there was not a first man who stood as an individual entity separate from the animal kingdom. This means that without an Adam and Eve, the Fall as recorded in Genesis never occurred (cf. Bolton Davidheiser, "Theistic Evolution," in *And God Created*, ed. Kelly L. Segraves (San Diego: Creation-Science Research Center, 1973), 3:50–51.

<sup>111</sup>Haigh, 55.

<sup>112</sup>David J. Tyler, "Creation and Providence," in *Creation by Evolution?*, ed. David C. Watts (Glasgow: Biblical Creation Society, 1983), 37.

<sup>113</sup>*Ibid.*

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inferences in those areas are safe only as long as they do not go beyond God's given revelation.<sup>114</sup>

Cranfield notes that the admission that death came through sin entails very serious difficulties for many people, "since they are in the *habit of thinking* of death as natural and in no sense 'the wages of sin' (Rom 6:23)."<sup>115</sup> As we have seen, this "habit" has become almost a standard thinking pattern even within evangelical scholarship. This has clearly been the case since death "became natural" in pre-Darwinian times. And today, as noted by Munday, "*All evolutionary interpreters of course accept pre-fall animal death.*"<sup>116</sup> Usually for these scholars, a peaceful predator-prey relationship as described by Old Testament prophets is to be interpreted as "great poetry and true mythology." The reason is that, "if we believe at all in God as creator, and in the evolution of species as part of his design, it seems we must accept universal predation as integral to it."<sup>117</sup>

In harmony with these considerations we conclude that according to a high view of Scripture which interprets the creation texts as real history, one may well adopt the presupposition that a discontinuity exists between creation and providence, "which is the normal working of God in upholding and sustaining the universe,"<sup>118</sup> with reference, particularly, to post-Fall conditions. In other words, the present conditions of a world fallen into sin must not be made the measure of the so-called "natural conditions" of an unfallen creation.<sup>119</sup> Evangelical Christian scholars who reject this presupposition succumb to an unbiblical worldview.

Death is "the *eschatos echthros* with whose definitive destruction the work of salvation is fully accomplished (1 Cor 15:26; Rev 20:14)."<sup>120</sup> We agree with Murphy that at present we cannot fully know "how death and corruption can be

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<sup>114</sup>On this point, Ellen White writes: "I have been shown that without Bible history, geology can prove nothing. Relics found in the earth do give evidence of a state of things differing in many respects from the present. But the time of their existence, and how long a period these things have been in the earth, are only to be understood by Bible history. It may be innocent to conjecture beyond Bible history, if our suppositions do not contradict the facts found in the sacred Scriptures. But when men leave the word of God in regard to the history of creation, and seek to account for God's creative works upon natural principles, they are upon a boundless ocean of uncertainty." *Spiritual Gifts* 3:93.

<sup>115</sup>Cranfield, 340 (emphasis supplied).

<sup>116</sup>Munday, 52 n. 4 (emphasis added).

<sup>117</sup>Moule, *Man and Nature*, 12.

<sup>118</sup>Tyler, 35.

<sup>119</sup>Jim Gibson's thought, in personal communication to author.

<sup>120</sup>R. Bultmann, "Thanatos," *Theological Dictionary of the New Testament*, ed. Gerhard Kittel, trans. Geoffrey W. Bromiley (Grand Rapids: Eerdmans, 1976), 3:14. Carnell notes that the resurrection of Christ is the most celebrated event in the New Testament, and that this event enjoys this place of honor "because it verifies Christ's victory over sin and death." Edward J. Carnell, *The Case for Orthodox Theology* (Philadelphia: Westminster, 1959), 90.

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forever done away with in a new heaven and a new earth.”<sup>121</sup> But Christians can certainly depend on God, His Word, and His promises that the Messianic eschatological restoration will include both the king—man—and his kingdom—the world of nature (see Hos 2:18). The whole of the creation will be set free. For, as the consequences of sin are cosmic in scope, so is redemption. This means “that all created natures, and not only the human, will share in the new creation.”<sup>122</sup> The liberation of the creation from its bondage to decay, to be brought “into the glorious freedom of the children of God,” will be accomplished through the resurrection of humans and the recreation of the natural world.

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<sup>121</sup>Murphy, “Time, Thermodynamics, and Theology,” *Zygon* 26/3 (1991): 371.

<sup>122</sup>Idem, “A Theological Argument for Evolution,” 21; so Alsford, 129.

## Ellen G. White and Earth Science

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This article will investigate Ellen G. White's statements on science, particularly in relation to the issue of origins and the study of earth science. We will introduce the material with a brief description of the historical situation in regard to the science of geology in the 19<sup>th</sup> century, when she wrote the majority of her statements on the topic.

### I. Historical Background

At the beginning of the 19<sup>th</sup> century the science of geology was still in its infancy. By the end of the century it had not only matured but played a prominent part in the debate on the question of origins. A decisive turning point in this development was the publication of Charles Darwin's book *The Origin of Species* in 1859,<sup>1</sup> which put the theory of evolution on the front burner of the scientific establishment at that time. Within twenty years of the publication of this book, "nearly every naturalist of repute in North America had embraced some theory of organic evolution."<sup>2</sup>

Darwin's book, however, was not a bolt out of the blue, but the apogee or culmination of a process that had begun centuries before. Nicolaus Steno (1638–1686), in his *Dissertationis* (1669), laid the foundation for modern stratigraphy and paleontology by suggesting "that fossils are the remains of ancient living organisms and that many rocks are the result of sedimentation."<sup>3</sup> Giovanni Arduino (1714–1795), in Italy, established the first stratigraphic chronology by dividing the crust of the earth into four layers: Primary, Secondary, Tertiary, and

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<sup>1</sup> Charles Darwin (1809–1882) completed the manuscript in 1844 but waited until 1859 before publishing it (Harold G. Coffin, *Creation Accident or Design?* [Washington, D.C.: Review and Herald, 1969], 403).

<sup>2</sup> Ronald L. Numbers, *The Creationists* (New York: Knopf, 1992), 3.

<sup>3</sup> *Encyclopaedia Britannica*, 15<sup>th</sup> ed., Micropaedia, s.v. "Steno, Nicolaus."



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Quaternary. “He also pioneered the use of fossils and chemical methods to determine the age of rock formations.”<sup>4</sup>

James Hutton (1726–1797), the father of uniformitarianism, opened the way for the acceptance of long ages for geologic time, and Sir Charles Lyell (1797–1875), in his book *Principles of Geology*, published in 1830, “brought together data from all over the earth, with the express purpose of showing that all past changes have been of the same nature as those now going on.”<sup>5</sup> The glacial theory of Swiss scholar Louis Agassiz (1807–1873) left very little to be credited to the Flood, and Robert Chamber’s *Natural History of Creation*, published in 1844, “advocated the development of man from the lower animals.”<sup>6</sup>

Through the publication of these theories as well as the writings of many other scientists, the public mind was prepared to receive Darwin’s *Origin of Species*. The book was readily accepted by many because it removed a major objection to the theory of uniformity—“how to account for the origin of species during long ages of geological time. Darwin’s theory of natural selection appeared to have solved the problem.”<sup>7</sup>

The impact the book made on the Christian churches was soon apparent. While the majority of Bible-believing Christians continued to hold to special creation, many clergymen warmed to the idea of evolution. In 1860 Darwin’s theory of natural selection was discussed at the meeting of the British Association for the Advancement of Science at Oxford. Bishop Samuel Wilberforce (1805–1873) intended to crush Thomas Huxley (1825–1895), who defended the new theory. The debate, however, was a complete victory for the Darwinians. “Wilberforce ridiculed Darwin’s theory and asked Huxley on which side of his family he claimed to be descended from an ape.”<sup>8</sup> Whereupon Huxley, after demolishing the Bishop’s arguments, claimed “that he would rather be descended from an ape than from a man of high position who misused his talents to attack a theory he did not understand.”<sup>9</sup>

Thereafter, many theologians began to interpret the six days of creation as long periods of time. In 1880 the editor of the weekly *Independent*, which held the line against evolution for a long time, estimated that “perhaps half of the educated ministers in our leading Evangelical denominations” believe “that the story of the creation and fall of man, told in Genesis, is no more the record of actual occurrences than is the parable of the Prodigal Son.”<sup>10</sup>

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<sup>4</sup> *Ibid.*, s.v. “Arduino, Giovanni.”

<sup>5</sup> Harold W. Clark, *The Battle over Genesis* (Washington, D.C.: Review and Herald, 1977), 79.

<sup>6</sup> *Ibid.*, 87.

<sup>7</sup> *Ibid.*, 89.

<sup>8</sup> Peter J. Bowler, *Evolution: The History of an Idea* (Berkeley: U of California P, 1984), 184.

<sup>9</sup> *Ibid.*

<sup>10</sup> William Hayes Ward, “Whether It Is Right to Study the Bible,” *Independent* 32 (February 26, 1880): 4; quoted in Numbers, 3. See also Jon H. Roberts, *Darwinism and the Divine in America: Protestant Intellectuals and Organic Evolution, 1859–1900* (Madison: U of Wisconsin P, 1988).

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By the turn of the century, the theory of evolution was firmly entrenched in the scientific community, particularly in regard to geology. A textbook on geology published in 1911 shows a well-developed history of geology based on the theory of evolution.<sup>11</sup>

This was the background against which Ellen G. White and the pioneers of the Seventh-day Adventist Church wrote on the subject of geology, creation, and evolution. In spite of the difficulties they faced in leading a fledgling church, they kept themselves informed concerning the creation-evolution debate during the second half of the 19<sup>th</sup> century. On average, two articles on these topics appeared every year in the *Review and Herald* between 1860 and 1890.<sup>12</sup>

### II. Ellen White and Science

The words “science” and “sciences” appear about 1850 times in the writings of Ellen White. Frequently she uses the word “science” in its root meaning of “knowledge,” from the Latin *scientia*. Thus she can speak of “the science of salvation” (AA 474)<sup>13</sup>, “the science of heaven” (CG 293), “the science of conversion” (CC 292), “the science of Christianity” (CG 296), or the “science of cooking” (CG 372). Similarly, she describes Paul’s labor in Athens as meeting “logic with logic, science [knowledge] with science, philosophy with philosophy” (AA 244). At times she describes intellectual training in contrast to practical physical labor as “knowledge of the sciences” (CG 358). “Science” in her writings can also be found as a synonym for “skill” (CG 356) that can be seen even in the humblest work (CG 348).

“Science” in the modern sense of “natural science,” like physiology, Ellen White calls “the science of life” (ChS 152), “the science of human life” (CME 33), or the “science of health” (ChS 138). The study of nature she calls “natural science” (COL 125), or simply “science” (CE 196), and she referred to the work of medical missionaries as “scientific work” (CH 370).

Ellen White wrote extensively on the topic of health and made some statements in the fields of nutrition and physiology that have sometimes only been scientifically corroborated long after she published them. For example, in 1861 she warned overweight individuals who subsisted primarily on a meat diet that they were “liable to acute attacks of disease, and to sudden death” if they continued their dietary program (2T 61). Medical science during the 20<sup>th</sup> century

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<sup>11</sup> J. Brigham, *A Text Book of Geology* (New York: Appleton), 1911.

<sup>12</sup> Stoy E. Proctor, “Historical Context and Proposed Interpretation for Representative E. G. White Statements on Creation,” Term paper, Andrews University Theological Seminary (1970): 8. Some of these articles were: D. T. Bourdeau, “Geology and the Bible,” *Review and Herald* (Feb. 5, 1867): 98, 99; A. T. Jones, “‘Evolution’ and Evolution,” *Review and Herald* (March 11, 1884): 162, 163; *Ibid.* (March 18, 1884): 178, 179; *Ibid.* (March 25, 1884): 194, 195. Sometimes they reprinted articles from other papers; for example, in 1860 the front page of the *Review and Herald*, July 3, carried an article on geology from *The Bible True* (47–51).

<sup>13</sup> A key to the abbreviations used here may be found at the end of this article.

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recognized the risk of heart attacks and strokes from the use of certain kinds of meat and saturated fats.<sup>14</sup>

It was particularly in the area of health and medicine that Ellen White appreciated the findings of science, and she encouraged Seventh-day Adventists to enter these fields (DG 95).<sup>15</sup> She had a great burden for the training of nurses. “I could wish that there were one hundred nurses in training where there is one,” she wrote from Australia in 1892. She felt that “both men and women can be so much more useful as medical missionaries than as missionaries without the medical education” (CH 503).

Ellen White, on the basis of her visions, warned against the use of tea, coffee (MH 326), tobacco (MH 327), alcohol (Te 59), the use of meat (MH 313), and the consumption of large quantities of sugar (CH 154) and salt (MH 305) long before the dangers of these items became common knowledge. She was not a trained scientist—she wrote what the Spirit of God moved her to write. In regard to the moderate use of salt she wrote, in 1901, “The whys and wherefores of this I know not, but I give you the instruction as it is given me” (CD 344).

Some of her statements in the area of science and health have been challenged over the years as to their scientific accuracy: e.g., the “amalgamation of man and beast” (3SG 64)<sup>16</sup>; “self-abuse [masturbation]” (*An Appeal to Mothers*, 27); wigs leading to insanity (HR, October 1, 1871, 120–121); and phrenology and mesmerism as being “good in their place” (2SM 352). Since this article is focusing on the Ellen G. White statements in relation to the earth sciences, we will not investigate these particular statements. They have been dealt with in other places.<sup>17</sup>

### III. The Relationship between Scripture and Science

Under inspiration Ellen White wrote the following chapters and articles concerning the relationship between Scripture and the natural sciences:

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<sup>14</sup> *Journal of the American Medical Association* (June 3, 1961): 783.

<sup>15</sup> At the same time she counseled, “Great care should be taken not to encourage persons who might be useful in some less responsible position, to study medicine at a great outlay of time and means, when there is no reasonable hope that they will succeed” (CT 473).

<sup>16</sup> See Gordon Shigley, “Amalgamation of Man and Beast: What did Ellen White Mean?” *Spectrum* (June 1982): 10–19. The difficulty with her amalgamation statements is that on the one hand she wrote that “if there was one sin above another which called for the destruction of the race by the flood, it was the base crime of amalgamation of man and beast which defaced the image of God” (3 SG 64). This would fit the concept of cohabitation of man with beast. However, she also stated that “since the flood there has been amalgamation of man and beast, as may be seen in the almost endless varieties of species of animals, and in certain races of men” (*Ibid.*, 75). This seems to indicate that she had in mind the mixing of different races of humans and the mixing of different races of animals. Why this should be such a terrible sin is explained by Nichol with references to Genesis 6:2, 3 and statements in *Patriarch and Prophets*, pages 60–63 and 81, 82.

<sup>17</sup> See F. D. Nichol, *Ellen White and Her Critics* (Washington, D.C.: Review and Herald, 1951); Roger W. Coon, *The Writings of Ellen White: Sourcebook*, (Berrien Springs: Andrews University, 1992); Herbert H. Douglass, *Messenger of the Lord* (Nampa, ID: Pacific Press, 1998).

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1. 1864 “Disguised Infidelity” (3 SG 90–96)
2. 1884 “Science and Revelation” (ST March 13, 1884)
3. 1884 “Science and the Bible in Education” (ST March 20, 1884)
4. 1884 “Erroneous Doctrines Dangerous” (ST March 27, 1884)
5. 1903 “Science and the Bible” (Ed 128–134)

The platform from which Ellen White considered the natural sciences was the Bible. She had absolute confidence in Scripture and believed that everything, including scientific theories, had to be measured by the Word of God. “The Bible,” she said, “is not to be tested by men's ideas of science, but science is to be brought to the test of the unerring standard” (CT 425). Scripture was for her “the foundation of all true knowledge” (FE 393). She compared it to a fountain—“The more you look into it, the deeper it appears” (Ibid.). The Word of God, therefore, took precedence over any of the sciences. “Apart from Christ we are still incapable of interpreting rightly the language of nature” (8T 257).

Nevertheless, she recognized that science can teach the laws of nature, and in the area of health science had a contribution to make provided it was guided by the presupposition of Scripture that God is the creator of all laws of nature.

For Ellen White nature and the Bible had the same author; therefore, there had to be harmony between them. “Rightly understood, science and the written word agree, and each sheds light on the other” (CT 426). If there was a conflict, she saw the cause in “inferences erroneously drawn from facts observed in nature” (Ed 128). Case in point—geology. In the chapter “Science and the Bible,” in the book *Education* she wrote:

Geology has been thought to contradict the literal interpretation of the Mosaic record of the creation. Millions of years, it is claimed, were required for the evolution of the earth from chaos; and in order to accommodate the Bible to this supposed revelation of science, the days of creation are assumed to have been vast, indefinite periods, covering thousands or even millions of years. Such a conclusion is wholly uncalled for. The Bible record is in harmony with itself and with the teaching of nature. (128, 129)

She acknowledged that remains of animals much larger than any now known have been found, but she felt that the Flood recorded in Genesis 7–9 provided an explanation for these facts. “Before the Flood the development of vegetable and animal life was immeasurably superior to that which has since been known” (Ibid., 129). Then, at the Flood, tremendous changes took place, and “in the re-formation of the earth's crust were preserved many evidences of the life previously existing” (Ibid.).

#### **IV. True and False Science**

Ellen White frequently used the expression “true science,”<sup>18</sup> by which she understood science in harmony with Scripture. “All true science,” she wrote, “is but an interpretation of the handwriting of God in the material world” (CE 66). This kind of science “brings from her research only fresh evidences of the wisdom and power of God” (Ibid.).

We may question this understanding of science, but we must remember that her paradigm, into which everything else had to be fitted, was the infallibility of the Word of God. Scientific theories in her day, like those today, were frequently changing, Scripture, by contrast, was “the unerring counsel of God” (4 T 441). “God has permitted,” she wrote, “a flood of light to be poured upon the world in discoveries in science and art; but when professedly scientific men lecture and write upon these subjects from a merely human standpoint, they will assuredly come to wrong conclusions” (3 SM 307).

In contrast to “true science,” Ellen White often referred to “science, falsely so called,”<sup>19</sup> a phrase she borrowed from 1 Tim. 6:20. This kind of science, based on the conceptions and theories of men to the exclusion of the wisdom of God, was for her “stamped with idolatry” (CE 84). Why? Because “science, falsely so-called, has been exalted above God” (Ibid.), thereby placing that which has been created above its creator. This, she wrote “is wearing away the foundation of Christian principle” (RH, Dec. 29, 1896), and destroys “faith in the direct interposition of Providence, attributing all such manifestations to natural causes” (2 BC 1011). Christians therefore need to guard continually “against the sophistry in regard to geology and other branches of science falsely so called, which have not one semblance of truth” (RH, Mar 1, 1898).

#### **V. Fire in the Mountains**

Ellen White, it seems, loved mountains. But she recognized that they too are the products of the Flood. Speaking of the Alps in Europe she said, “In the rocks and mountains are registered the fact that God did destroy the wicked from off the earth by a flood” (OHC 252). This is a good illustration of how Ellen White integrated the facts of science with the Bible. She saw everything through the eyes of Scripture, and she firmly believed that the rocks and mountains supported the biblical record of the Flood.

As far as the existence of fossils of sea animals on top of the mountains was concerned, she did not believe that these mountains were once covered by water, as was held by some Christians in her time. She believed that

Clay, lime, and shells that God had strewn in the bottoms of the seas,  
were uplifted, thrown hither and thither, and convulsions of fire and

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<sup>18</sup> The Ellen G. White CD Rom gives 123 references for this expression. While many are undoubtedly copies, a sizeable number of original references remain.

<sup>19</sup> The Ellen G. White CD Rom lists 66 references for this expression.

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flood, earthquakes and volcanoes buried the rich treasures of gold, silver, and precious stone beyond the sight and reach of man. Vast treasures are contained in the mountains. There are lessons to be learned in God's book of nature. (2MR 307)

The Flood also provided for her the explanation for the existence of coal beds and oil deposits underground. At the time of the Flood “immense forests were buried,” she wrote. “These have since been changed to coal, forming the extensive coal beds that now exist, and also yielding large quantities of oil” (PP 108). These coal and oil fields, she believed, were responsible for some of the earthquakes and volcanoes,

The coal and oil frequently ignite and burn beneath the surface of the earth. Thus rocks are heated, limestone is burned, and iron ore melted. The action of the water upon the lime adds fury to the intense heat, and causes earthquakes, volcanoes, and fiery issues (ibid.).

In the late 19<sup>th</sup> century scientists discussed whether the core of the earth was a spheroid of molten matter, as vulcanologists believed, or a solid core with pockets of magma. The 1911 edition of the *Encyclopedia Britannica* states that

When physicists urged the necessity of assuming that the globe was practically solid, vulcanologists were constraint [sic] to modify their views. Following a suggestion of W. Hopkins of Cambridge, they supposed that the magma instead of existing in a central cavity, was located in comparatively small subterranean lakes. Some authorities again, like Rev. O. Fisher, regarded the magma as constituting a liquid zone, intermediate between a solid core and a solid shell.<sup>20</sup>

We do not know how much Ellen White was aware of these scientific discussions, but while admiring the mountains in Italy in 1885, she wrote, “These mountains to me are significant. Subterranean fires, although concealed in them, are burning” (2 MR 305). Then referring to God’s demonstration of his power at the end of time, she continued, “There is a sea of fire beneath our feet. There is a furnace of fire in these old rocky mountains. The mountain belching forth its fires tells us the mighty furnace is kindled, waiting for God's word to wrap the earth in flames” (ibid., 305–306). How much, if at all, she was influenced by the discussion among geologists at that time we shall probably never know this side of heaven.

Warren H. Johns made a study of her statements on subterranean fires and compared them with similar statements made before or at her time and with some of the findings of modern science. He discovered that during the 18<sup>th</sup> century Abraham Werner arrived at “the highly probable conjecture that most, if not

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<sup>20</sup> “Volcano,” *Encyclopedia Britannica*, eleventh edition (New York, 1911), 28:191.

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all, volcanoes arise from the combustion of underground seams of coal.”<sup>21</sup> According to Johns, the idea of subterranean coal fires, however, was dead by 1850.<sup>22</sup> Thus Ellen White’s statements in 1885 would have been an idea from a bygone era. But in 1940 the translation of Otto Stutzer’s *Geology of Coal* documented the fact that “subterranean coal beds are ignited through spontaneous combustion, resulting in the melting of nearby rocks that are classed as pseudo-volcanic deposits.”<sup>23</sup> Examples of burning coal beds have been found in Germany and Serbia as well as in America.<sup>24</sup> Thus modern science seems to confirm Ellen White’s statement that “coal and oil frequently ignite and burn beneath the surface of the earth” (PP 108). Johns concludes that it is highly unlikely that Ellen White read the scientific description of these fires in the scientific literature of the 18<sup>th</sup> and 19<sup>th</sup> century; therefore, her statements, he says, “must have been inspired.”<sup>25</sup> While God could certainly have told her this in a vision, he could also have led her to such a concept in some of the books she was reading.<sup>26</sup>

**VI. The Challenge of Evolution**

The evolutionary theory, by denying a creation in six days, as recorded in Genesis 1, challenged not only the 19th century Christian worldview, but also the truthfulness of Scripture. George Marsden aptly describes the situation at the end of the 19<sup>th</sup> century by stating:

Whether in South or North, the larger issue was the truth of the Bible. The authority for their whole belief system seemed to rest on this foundation. If the Bible were not true, then on what did Protestantism, the religion of scripture sola [sic], rest? And what if there were scientific and historical errors in Scripture? Would not such flaws call into question other biblical claims? With both Darwinist and highly sophisticated higher critics suggesting that there were serious errors in Scripture, many of the faithful of the turn-of-the-century generation had to be deeply disturbed.<sup>27</sup>

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<sup>21</sup> Archibald Geikie, *The Founders of Geology*, 2<sup>nd</sup> ed. (New York: Macmillan, 1905), 56; quoted in Warren H. Johns, “Ellen G. White and Subterranean Fires,” Part 1, *Ministry* (August 1977): 11.

<sup>22</sup> *Ibid.*

<sup>23</sup> Johns, “Ellen G. White and Subterranean Fires,” Part 2, *Ministry* (October 1977): 11.

<sup>24</sup> A fire along a 400 meter outcrop in the Blucher coal bed in Germany “lasted over 150 years, and the adjacent shale has been baked to a blue and red porcelain jasper and to a solid red slate” (Stutzer, 310; quoted in Johns, [October 1977], 20).

<sup>25</sup> *Ibid.*, 21, 22.

<sup>26</sup> On the issue of the Holy Spirit supervising the biblical writers in their research see George Rice, *Luke a Plagiarist?* (Mountain View, CA: Pacific Press, 1983), 19–29.

<sup>27</sup> George M. Marsden, *Understanding Fundamentalism and Evangelicalism* (Grand Rapids: Eerdmans, 1991), 37, quoted in Fernando Canale, *Understanding Revelation-Inspiration in a Post-modern World* (Berrien Springs, MI: Andrews University Lithotech, 2001), 209.

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Christian scholars responded to this challenge in different ways. Some rejected the claims of the theory of evolution and emphasized the inerrancy of Scripture; others preempted the conflict between science and theology by proposing a dichotomy between salvific and scientific issues in Scripture. Matters of salvation belong to theology, while questions concerning the origin of the world belong to science.<sup>28</sup> Thus, one could “simultaneously believe in evolution and in justification by faith in the cross without contradiction.”<sup>29</sup>

Ellen White was aware of these issues, and in 1894 she wrote, “Science, so-called, human reasoning and poetry, cannot be passed on as of equal authority with revelation” (RH, Nov. 20, 1894). She defended the authority of the Bible, and strongly objected to any tampering with Scripture. In the year 1900 she wrote:

Many professed ministers of the gospel do not accept the whole Bible as the inspired word. One wise man rejects one portion; another questions another part. They set up their judgment as superior to the word; and the Scripture which they do teach rests upon their own authority. Its divine authenticity is destroyed. (COL 39)

### **VII. Infidel Geologists**

In 1864, Ellen White addressed herself specifically to the topic of geology. “Infidel geologists claim,” she wrote, “that the world is very much older than the Bible record makes it. They reject the Bible record, because of those things which are to them evidences from the earth itself, that the world has existed tens of thousands of years” (3 SG 91, 92).

What in particular were the claims of these infidel geologists with which Ellen White disagreed? She listed the following:

1. That the six days of creation were six “vast, indefinite periods.”
2. That “the day of God’s rest was another indefinite period.”
3. That the world “was populated long before the record of creation, by a race of beings vastly superior in size to men now upon the earth” (ibid., 92, 93).

Ellen White dismissed all three propositions as out of harmony with God’s Word. “The Bible recognizes no long ages in which the earth was slowly evolved from chaos,” (PP 112) she declared. “Each successive day of creation . . . consisted of the evening and the morning, like all other days that have followed” (ibid.). This was not something she believed because she took Genesis 1 seriously; she “was shown,” she wrote, “that the first week, in which God performed the work of creation in six days and rested on the seventh day, was just like every other week” (3 SG 90). The first and second proposition, of course, made “senseless the fourth commandment of God’s holy law” (ibid., 92).

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<sup>28</sup> This, however, was only possible by redefining the revelation-inspiration process. See Canale, 224–225.

<sup>29</sup> Ibid., 225.



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They aimed directly at the foundation of the Sabbath commandment. Ellen White called it “the worst kind of infidelity” (ibid., 91), because with many who professed to believe the creation record yet accepted these claims, “it is infidelity in disguise. It charges God with commanding men to observe the week of seven literal days in commemoration of seven indefinite periods, which is unlike his dealings with mortals, and is an impeachment of his wisdom” (Ibid.).

Concerning the third proposition she wrote, “I have been shown that without Bible history, geology can prove nothing” (Ibid., 93). While she acknowledged that “the bones of human beings and of animals found in the earth, are much larger than those of men and animals now living,” she added, “The time of their existence, and how long a period these things have been in the earth, are only to be understood by Bible history” (Ibid.). And Bible history for her was to be measured in terms of “about 6000 years” (LHU 52).

**VIII. The Issue of Origin**

In 1904 Ellen White wrote: “The work of creation can never be explained by science . . . the theory that God did not create matter when He brought the world into existence is without foundation. In the formation of our world, God was not indebted to pre-existing matter” (8T 258).

The question is, was Ellen White referring to the earth’s foundation material (i.e., the planet itself) when she used the word ‘world,’ or was she speaking of the ordered, living biological world with its ancillary support system? When did God bring the planet itself into existence? Was it a few thousand years ago, or was it millions of years ago, and a few thousand years ago God only created the organic world and its support system in six days?

The timing of this statement is interesting. From the 1860s on, the pioneers of the Seventh-day Adventist Church had been discussing this issue. Uriah Smith, editor of the *Review and Herald*, in 1860 published several pages from a book or pamphlet entitled *The Bible True* which stated:

Nor is there anything in revelation which forbids us to believe that the substance of the earth was formed long before it received its present organization. The first verse of Genesis may relate to a period millions of ages prior to the event noticed in the rest of the chapter. Commentators who wrote hundreds, and some of them fifteen hundred years ago, seem to have understood the first verse as relating to a period far anterior to the creation of man. This interpretation, therefore, is not modern, nor made merely to obviate a difficulty. But if it were, it is so perfectly coincident with the just rules of interpretation, that there can be no just objection to it.<sup>30</sup>

J. N. Andrews, eighteen months later, however, seemed to object to Uriah Smith’s argument when he wrote in the *Review and Herald*, “Out of nothing

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<sup>30</sup> Uriah Smith, “Geology,” *Review and Herald* 16.7 (July 3, 1860): 49.

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God created all things ‘so that things which are seen were not made out of things which do appear.’ This act of creation is that event which marks the commencement of the first week of time.”<sup>31</sup>

In 1874, Andrews reiterated his position of 1861 and made it quite clear that in his view everything was created some six thousand years ago:

But if we could be placed back some 6000 years in the past, and from that point survey the vast abyss of space now studded with the stars of heaven, what should we behold? Blank nothing. The host of heaven did not then exist. Our earth itself had not risen into being. The vast infinity of space was literally, as Job expresses it, “the empty place,” and that which filled it was “nothing.” Job 26:7. Utter and profound darkness rested upon the great void. Even the materials which subsequently formed the worlds had no existence.<sup>32</sup>

Andrews’ view, however, did not prevail. In 1898 Milton C. Wilcox wrote an editorial in the *Signs of the Times* in which he stated:

When did God create, or bring into existence, the heaven and the earth?—“In the beginning.” When this “beginning” was, how long a period it covered, it is idle to conjecture; for it is not revealed. That it was a period which antedated the six days’ work is evident.<sup>33</sup>

Similarly George McCready Price, who became best known for his writings in the field of geology, wrote in 1902:

This [creation in Gen 1:1], be it clearly understood, and as other writers have so clearly pointed out, was *before* the six days of our world’s creation proper began. The six literal days of creation, or peopling of our world with life forms, begin with verse 3. *They begin with the whole body of our world already in existence.* How long it had been formed before this we are not told, and whether by a slow or rapid process we have no information.<sup>34</sup>

Ellen White’s statement two years later that “in the formation of our world, God was not indebted to pre-existing matter” (8T 258) may have clarified the issue at the time; she may have given further verbal explanations when asked. One hundred years later, however, when we can no longer ask her, her written words can be understood in two ways:

1. God created the globe on day one of the creation week.

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<sup>31</sup> J. N. Andrews, “History of the Sabbath,” *Review and Herald* 19/1 (Dec. 3, 1861): 1.

<sup>32</sup> Idem, “The Memorial of Creation,” *Review and Herald* 43/17 (April 7, 1874): 129.

<sup>33</sup> M. C. Wilcox, “The Gospel in Genesis One,” *The Signs of the Times*, 24/27 (July 7, 1898): 16.

<sup>34</sup> G. M. Price, *Outlines of Modern Science and Modern Christianity* (Pacific Press, 1902), 271.

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2. God was not indebted to pre-existing matter when he created the globe itself millions or billions of years ago.

Considering all her writings on the topic, it is unlikely, though not impossible, that she made a distinction between the Precambrian or pre-fossil material of the earth and the fossil bearing strata of the earth.

Many Adventist theologians and scientists today hold to the two-stage-creation theory. Millions of years ago God created the core globe of our earth, and 6–10,000 years ago he created all living organisms and their habitations in six days. W. H. Shea, for instance, writes, in reference to Genesis 1:1, “The text acknowledges the fact that the inert earth was in a watery state before the events of the creation week, but it is not especially concerned with identifying how long it may have been in that state.”<sup>35</sup>

However, a straightforward reading of Fundamental Belief number six, which is largely a quote from Exodus 20:11, gives the impression that the globe itself was created during the six days:

God is Creator of all things, and has revealed in Scripture the authentic account of His creative activity. In six days the Lord made “the heaven and the earth” and all living things upon the earth, and rested on the seventh day of that first week.<sup>36</sup>

If “all living things” refers to the organic creation, “heaven and earth” could refer to the inorganic creation.

### **IX. Six Thousand Years**

According to the E. G. White laser-disc concordance, there are forty-two 6000-year and forty-one 4000-year statements in her writings.<sup>37</sup> The former refers to the time since creation, the latter to the time from creation to the birth of Christ. It is from these statements that Spirit of Prophecy support has been garnered among Seventh-day Adventists for the commonly held belief that the earth is only about six thousand years old.

However, most of her references to these time periods are not for the sake of establishing the age of the earth, but incidental to some other thought she wanted to present. For example, “The continual transgression of man for six thousand years has brought sickness, pain, and death as its fruits” (3T 492). The point she was making was that since the fall man’s transgressions have had terrible consequences; the “six thousand years” can easily be replaced with “since the fall” without any loss of meaning to her statement. The same applies to her “four thousand year” statements.

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<sup>35</sup> William H. Shea, “Creation,” in *Handbook of Seventh-day Adventist Theology*, ed. Raoul Dederen (Hagerstown, MD: Review and Herald, 2000), 419.

<sup>36</sup> *Seventh-day Adventists Believe . . .* (Silver Spring, MD: Ministerial Association, 1988), 68.

<sup>37</sup> Warren H. Johns, “Ellen G. White and Biblical Chronology,” *Ministry* (April 1984): 20.

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The phrases “six thousand years” and “four thousand years” are variations of “since the beginning,” “since the fall,” or “during Old Testament times.” Since she was not making a precise statement of time, she used various phrases, such as “for six thousand years” (CD 117), “nearly six thousand years” (CT 467), “about six thousand years” (1 SP 87), and even “over six thousand years” (CTBH 154), and “more than six thousand years” (HS 133) to summarize the time period since the six-day creation in Genesis 1.

Only once did she actually refer to the age of the earth. This was in connection with her statements concerning infidel geologists, when she wrote, “the world is now only about six thousand years old” (3SG 92).<sup>38</sup> Why “six thousand years”? There is no indication that she was ever told in vision that the earth is only six thousand years old. Why then six and not eight or ten thousand years?

The explanation is most likely found in the fact that whenever she opened her King James Bible she saw on every page in the margins Ussher’s dates.<sup>39</sup> On the first page of the Bible next to the creation account she, like every Bible believing Christian at that time, read the date 4004 BC. Short of a revelation from heaven, why should she have used any other date?

We know from her son W. C. White that she did not consider herself to be an authority on the details of history and chronology. In his 1912 letter to W. W. Eastman, head of the publishing department of the Southwestern Union Conference, W. C. White explained: “Regarding Mother’s writings and their use as authority on points of history and chronology, Mother has never wished our brethren to treat them as authority regarding the details of history or historical dates.<sup>40</sup> While in the context of the letter, his words referred primarily to the historical dates in the *Great Controversy*, the general principle in the background of this saying applies equally to the chronologies in the Old Testament. Nevertheless, this does not mean that tens of thousands or millions of years can be inserted into her chronology. When she disclaimed being an authority, she was referring to details of history and chronology.

### **X. Biblical Chronology<sup>41</sup>**

Many people past and present have tried to calculate the age of the earth by means of the biblical genealogies. In contrast to the millions of years imagined by the Indian philosophers, and the 155,625 years of the Egyptian Apollonius

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<sup>38</sup> This statement was republished in *Spirit of Prophecy* (1870), 1:87, and *Signs of the Times*, March 20, 1879.

<sup>39</sup> While she never mentions archbishop Ussher by name, she was familiar with his chronology. Warren H. Johns, after investigating all 2500 chronological references made by Ellen White, writes, “She sided with Ussher not only upon the issue of the 6,000 years but also upon the dating of numerous biblical events” (Johns, 21).

<sup>40</sup> Arthur L. White, *Ellen G. White: The Later Elmshaven Years* (Washington, D.C.: Review and Herald, 1982), 331.

<sup>41</sup> I am indebted to Dr. W. H. Shea for material in this section of the paper.

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(2nd century BC), all calculations based on the Bible have a very short time span for the existence of the world.

Philo of Alexandria (1st Century AD) counted 5169 years from Adam to Christ; Clement of Alexandria (2nd century AD) 5624 years. Rabbi Hillel, a contemporary of Jesus, believed that the world was created 5761 years before his time.

In the 17th century, the Irish archbishop James Ussher (1581–1656) calculated that the world was created on October 2, 4004 BC.<sup>42</sup> Using this time period as his overall framework, he attempted to support it through an elaborate chronology that he believed was fully based on the Bible. “But in fact, he could make everything fit only by considerable manipulation.”<sup>43</sup> Nevertheless, his dates were used for centuries in the King James Version.

Ussher believed that the genealogies in the Bible were complete and could be used for working out the age of the earth. Unfortunately, this is not the case. When we study the genealogies in the Bible we discover that, contrary to Ussher’s claim, they do contain gaps.<sup>44</sup> Some gaps may even be present in the genealogies in Genesis 11.<sup>45</sup> These gaps are based on the Father-Son principle. In Hebrew every ancestor can be called *father* and every descendant can be called *son*, for example, “Jesus the son of David, the son of Abraham” (Matt 1:1).

The fact that there are gaps in these genealogies was of no great concern for the people of the Old Testament because the purpose of biblical genealogies was not to work out the date of the Flood or the creation of the world, but to help the people of Israel maintain their social fabric. The genealogies served to:

1. Identify landowners. Land was given by God and could not be sold (Lev 25:23);
2. Validate the continuity of the priestly office;
3. Validate the continuity of the kingly office;
4. Express continuity through times of political transition and disruption:
  - Ruth 4:18–22 joins the times of the judges and kings;
  - Ezra 7 bridges the gap of the exile;

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<sup>42</sup> Ussher obviously accepted the rabbinic saying found in the Babylonian Talmud that says, “The world is to exist six thousand years. In the first two thousand there was desolation [no Torah]; two thousand years the Torah flourished; and the next two thousand years is the Messianic era, but through our many iniquities all these years have been lost” (Sanhedrin 97a, b). Hence, Ussher believed that Jesus was born exactly 4000 years after the creation of the world. He knew that Dionysius Exiguus in the 6th century had made a mistake of at least four years as far as Christ’s birth was concerned, so he added four years to the OT and came to 4004 BC for the creation of the world.

<sup>43</sup> Robert Johnston, “6000 Plus 1000,” *Adventist Review* (October 29, 1998): 55. See also James Barr, “Why the World was created in 4004 B.C.: Archbishop Ussher and Biblical Chronology,” *Bulletin of the John Rylands University Library of Manchester* 67 (Spring 1985): 575–608.

<sup>44</sup> See appendices A and B.

<sup>45</sup> At least one gap can be shown by comparing Genesis 11:12 with Luke 3:36. According to Luke, who used the LXX, the son of Arphaxad was Cainan, who became the father of Salah.

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5. Express continuity through times of historical obscurity that lacked great religious significance:

- Gen 10 and 11 fill the vacuum between the flood and Abraham;
- Exodus 6 bridges the gap of the time spent in Egypt;
- Matt 1 bridges the intertestamental time period.

It is important to note that nowhere does the Old Testament add up the numbers mentioned in any genealogy to calculate creation, the flood, or any other event. When genealogies are used to cover times of obscurity, the emphasis is on the people at the beginning and the end of these lists (Noah – Abraham). This emphasis lends itself to gaps in the genealogies. Ussher’s chronology, therefore, is not a reliable guide when it comes to dating the Flood or the creation of the world.

### **XI. Teaching Science**

From the very beginning of our church Ellen White was concerned about our children and young people. Speaking of the early years she wrote, “The Lord directed our minds to the importance of the educational work. We saw the need of schools, that our children might receive instruction free from the errors of false philosophy, that their training might be in harmony with the principles of the word of God” (TM 27).

In her 1884 article on “Science and the Bible in Education” (ST March 20, 1884), Ellen White began with the statement, “The foundation of all right education is a knowledge of God.” Contrary to many parents who thought that a well-trained intellect was more important than a knowledge of God, she called on parents and teachers to put God first.

“The true object of education,” she said, is to fit us for service to God, but Satan seeks to defeat this object by introducing the wrong education.

The conclusions which learned men have reached as the result of their scientific investigations are carefully taught and fully explained; while the impression is distinctly given that if these learned men are correct, the Bible cannot be. These philosophers would make us believe that man, the crowning work of creation, came by slow degrees from the savage state, and that farther back, he was evolved from the race of brutes. They are so intent upon excluding God from the sovereignty of the universe, that they demean man, and defraud him of the dignity of his origin. Nature is exalted above the God of nature; she is idolized, while her Creator is buried up and concealed from sight by science falsely so-called. (ST, March 20, 1884)

Then she referred to some of the scientific ideas that the theory of evolution put forward—that matter possesses vital power and that the operations of nature are carried on according to fixed laws that even God himself cannot change. “This is false science,” she wrote; “nature is not self-acting; she is the servant of her Creator” (Ibid.). Nature is not an inherent power that guides the planets and

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keeps them in position, but the hand of God. Parents and teachers, therefore, “should aim to impress the young minds with the beauty of truth. They should realize that the safety of the young depends upon combining the religious culture with general education” (Ibid.).

She concluded with the foundational thought that dominates all her writings on science, that all true science is in harmony with the works of God. “Science opens new wonders to our view; she soars high and explores wonderful depths, but she brings nothing from her research that conflicts with divine revelation . . . the book of nature and the written word do not disagree, each sheds light on the other” (Ibid.).

At the 1896 General Conference she spoke on “Our Duty and Responsibility.” One of the responsibilities she mentioned were schools for the young people. In these schools students were to study not only the will of God, but they were to “reach to the very highest branches of science” (GCB Oct. 1, 1896) in order to better understand God and his work. She encouraged parents and students to aim high.

On January 18, 1894, she wrote to W. W. Prescott, “All who engage in the acquisition of knowledge should aim to reach the highest round of progress. Let them advance as fast and as far as they can; let their field of study be as broad as their powers can compass” (2MR 211). Yet at the same time she reminded him that they must make God their wisdom.

On another occasion she wrote that “too often the minds of students are occupied with men’s theories and speculations, falsely called science and philosophy” (COL 25). Therefore, she urged teachers to bring their students in close contact with nature. “Let them learn that creation and Christianity have one God. Let them be taught to see the harmony of the natural with the spiritual” (Ibid.).

In regard to the earth sciences in our schools, Ellen White strongly warned against the teaching of false theories in the classroom. “Before the theories of men of science are presented to immature students, they need to be carefully sifted from every trace of infidel suggestions” (CT 390), she counseled. “One tiny seed of infidelity sown by a teacher in the heart of a student may spring up and bring forth a harvest of unbelief” (Ibid.). Even schoolbooks did not escape her attention: “We need to guard continually against those books which contain sophistry in regard to geology and other branches of science” (Ibid.). She saw all this in the framework of the great controversy and identified Satan as the originator of these false theories. “Therefore, let our teachers beware lest they echo the falsehoods of the enemy of God and man” (Ibid.).

## **XII. Conclusion**

Ellen White’s understanding of the relationship between science and Scripture was fairly straightforward. Since God is the author of science, rightly understood, science and God’s Word had to agree. Both were to lead us to God by

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teaching us something of the physical and spiritual laws through which He works.

This harmony between Scripture and science was a key theme in her thinking. If there was an apparent difference, it was due to man’s faulty scientific theories, not because of what Scripture said. “True science,” she maintained, would never contradict Scripture.

Although she had no scientific training, Ellen White, on the basis of her visions, made some interesting comments on geology. The biblical Flood was for her the explanation for many features scientists attributed to evolution, and as for the origin of the world, she seemed to believe that God created planet earth and everything on it in six days, though a two-stage-creation, as advocated by some Seventh-day Adventists, cannot be ruled out.

The “four thousand” and “six thousand” years were primarily used respectively as metaphors for the Old Testament period and the history of mankind. As far as we know, she never had a vision concerning the 6000 years. Only once, most likely because of Ussher’s dates in her Bible, did she refer to the age of the earth as “six thousand years.”

As in all her writings, so also when writing on the topic of science, she pointed her readers to Jesus, the Savior of mankind, the creator of heaven and earth, and the re-creator of individuals who yield their hearts to the fountain of wisdom.

**Exhibit A**

**Typical Examples of Genealogies with Purposeful Gaps in Them**

**I. Ezra’s Genealogy—Ezra 7:1–5**

15 <sup>th</sup> century B. C.	Aaron Eleazar Phineas  Abishua Bukki Uzzi Zerahiah Meraiaoth Azariah	Priests at the foundation of the tabernacle
Later 11 <sup>th</sup> century	Amariah	Priest at the foundation of the temple
Early 10 <sup>th</sup> century	Ahitub Zadok  Shallum	(Skips the rest of the monarchy)
Late 7 <sup>th</sup> century	Hilkiah	Priest at the end of the temple
Early 6 <sup>th</sup> century	Azariah Seriah	(Skips the Exile)



Mid-5 <sup>th</sup> century	Ezra	
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**II. An Extra-Biblical Example of a Similar Priestly Genealogy**

The Give at Hamivtar Tomb Inscription from Jerusalem that was found in 1972. The script of the text is Palaeo-Hebrew, but its language is Aramaic, and it is currently dated to the 2<sup>nd</sup> century B.C.:

“I, Abba, son of the priest Eleazar, son of Aaron the high priest, I, Abba, the oppressed and the persecuted, who was born in Jerusalem, went into exile in Babylonia and brought back to Jerusalem Mat-tathiah the son of Judah, and I buried him in the cave, which I ac-quired by writ.” (From *Jerusalem Revealed*, ed. Y. Yadin [Jerusalem: The Israel Exploration Society, 1975], 73)

**Exhibit B**

An Example of a Genealogy which is Numerically at Variance with its own Contents and with known Genealogical Sources from the Old Testament.

**Matthew 1**

<p>“So all the generations from Abraham to David were 14 generations”</p> <ol style="list-style-type: none"> <li>1. Abraham - ca. 2000</li> <li>2. Isaac</li> <li>3. Jacob</li> <li>4. Judah</li> <li>5. Perez</li> <li>6. Hezron</li> <li>7. Ram</li> <li>8. Amminadab</li> <li>9. Nahshon</li> <li>10. Salmon</li> <li>11. Boaz</li> <li>12. Obed</li> <li>13. Jesse</li> <li>14. David - ca. 1000</li> </ol> <hr/> <p>13 sons born in 1000 yrs.= average birth age 70 yrs. Biologically unlikely. See the birth-ages in Gen. 11. (Terah, Abraham, Isaac, and Jacob were exceptions rather than the rule).</p>	<p>“And from David to the deportation to Babylon 14 generations”</p> <ol style="list-style-type: none"> <li>1. Solomon - ca. 1000</li> <li>2. Rehoboam</li> <li>3. Abijah</li> <li>4. Asa</li> <li>5. Jehoshaphat</li> <li>6. Joram</li> <li>(7.) Ahaziah</li> <li>(8.) Joash</li> <li>(9.) Amaziah</li> <li>(10.) 7. Uzziah</li> <li>(11.) 8. Jotham</li> <li>(12.) 9. Ahaz</li> <li>(13.) 10. Hezekiah</li> <li>(14.) 11. Manasseh</li> <li>(15.) 12. Amon</li> <li>(16.) 13. Josiah</li> <li>(17.) - Jehoiakim</li> <li>(18.) 14. Jehoiachin ca. 600</li> </ol> <hr/> <p>Total - 18 generations (400 years) Matthew - 14 generations</p>	<p>“And from the deporta-tion to Babylon to the Christ 14 generations”</p> <ol style="list-style-type: none"> <li>1. Shealtiel - ca. 600</li> <li>2. Zerubbabel</li> <li>3. Abiud</li> <li>4. Eliakim</li> <li>5. Azor</li> <li>6. Zadok</li> <li>7. Achim</li> <li>8. Eliud</li> <li>9. Eleazar</li> <li>10. Matthan</li> <li>11. Jacob</li> <li>12. Joseph</li> <li>13. Jesus - B. C./A. D.</li> </ol> <hr/> <p>Total - 13 generations (600 years) Matthew - 14 generations</p>
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### **Abbreviations of E. G. White Publications Cited in this Article**

AA *Acts of the Apostles*,  
1BC, 2BC, . . . 7aBC *Seventh-day Adventist Bible Commentary*  
CC *Conflict and Courage*  
CCh *Counsels for the Church*, 1957  
CD *Counsels on Diet and Foods*  
CE *Christian Education*  
CG *Child Guidance*  
CH *Counsels on Health*  
ChL *Christian Leadership*  
ChS *Christian Service*  
CL *Country Living*, 1946  
CM *Colporteur Ministry*, 1953  
CME *A Call to Medical Evangelism and Health Education*  
COL *Christ's Object Lessons*  
CT *Counsels to Parents, Teachers, and Students*,  
CTBH *Christian Temperance and Bible Hygiene*  
DG *Daughters of God*  
Ed *Education*  
FE *Fundamentals of Christian Education*  
GCB *General Conference Bulletin*  
HS *Historical Sketches of the Foreign Missions of the Seventh-day Adventists*  
LHU *Lift Him Up*  
MH *Ministry of Healing*  
1MR, 2MR, etc. *Manuscript Releases*. 21 vols.  
OHC *Our High Calling*  
PP *Patriarchs and Prophets*  
RH *Review and Herald*  
1SG, 2SG, etc. *Spiritual Gifts*, 4 vols.  
1SM, 2SM, 3SM *Selected Messages*  
1SP, 2SP, etc. *Spirit of Prophecy*. 4 vols.  
ST *Signs of the Times*  
1T, 2T, etc. *Testimonies for the Church*. 9 vols.,  
Te *Temperance*  
TM *Testimonies to Ministers and Gospel Workers*

## **Basic Issues between Science and Scripture: Theological Implications of Alternative Models and the Necessary Basis for the Sabbath in Genesis 1–2**

Norman R. Gulley  
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This paper divides into four sections: (1) Some problems facing evolutionists and biblical creationists. (2) Alternate models for creation held by Bible believing scholars, including views held by some Seventh-day Adventist scholars. (3) The biblical record of creation with a literal week as a necessary basis for Sabbath-keeping. (4) The biblical meaning of the Sabbath as unfolded in biblical history, with its solid basis in the creation account.

### **I. Some Problems Facing Evolutionists and Biblical Creationists**

Why is there disagreement between science and Scripture concerning the process of human creation? The gap between evolutionary and biblical study has a number of levels. One fundamental problem is a misunderstanding of science by biblical scholars and a misunderstanding of biblical study by scientific scholars. Admission of this basic fact is necessary before any advance can be made in real communication between them. Rather than communicating with each other, sometimes adherents talk past each other, and no gains are made by either side. In fact, a deepening of the divide takes place.

What follows is an irenic attempt to suggest some of the things that both sides need to do in order to communicate with each other more successfully.

1. **Hermeneutics.** This has to do with interpretation. Much of the debate between science and religion is philosophical, where neither side is true to either science or Scripture, but transcends their appropriate basis in science and Scripture. Natural science must be demonstrable now, in the lab, to be true science. Any extrapolation of theories over vast time periods is beyond the scope of science. Many biblical scholars also go beyond their basis in Scripture. While attempting to reconcile biblical data with evolutionary data, many biblical scholars accept the “geological time-frame” for the creation. In this accommodation,

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*theistic evolutionists* believe God started the long process, and *progressive evolutionists* add that God continues to contribute to the process from time to time. The theory of the survival of the fittest and the death of animals for millions of years and the eventual evolution of humans is opposed to the biblical view of God as love. Why would God inflict so much pain and death on animals in order to create humans? Biblical scholars who attempt to accommodate Scripture to evolutionary thinking in order to protect the trustworthiness of Scripture unwittingly end up questioning its trustworthiness in teaching the love of God.

2. **Sola Scriptura.** *Sola Scriptura* is the biblical doctrine that Scripture interprets Scripture. A large number of scholars overlook the importance of this doctrine. These scholars go to the creation record (Gen 1–2) but come up with different interpretations. They range from those who say God created *ex nihilo* (out of nothing) to those who say He created through the evolutionary process, launching it and guiding it each step of the way. As we will see below, these Bible-believing Christians come up with various models of creation, yet each one claims to be true to Scripture. This obviously involves whether or not one is using a hermeneutic where Genesis 1–2 is carefully interpreted in its immediate and canonical contexts. What the rest of Scripture says about creation is important to a proper understanding of Genesis 1–2.

Creation study limited to Genesis 1–2 confines the objectivity of the research and unwittingly ignores the Bible's own criteria for biblical study. The rest of Scripture provides the biblical worldview for Genesis 1–2. The *sola scriptura* principle illustrates that rightly understood, biblical-theology is a science. It allows revelation given in Scripture to inform, rather than looking within human thinking to non-biblical ideas.

T. F. Torrance, my major professor at the University of Edinburgh, has made a significant contribution in demonstrating that theology is a science. Although basically in the Barthian tradition, subsuming all revelation under the revelation of Jesus Christ as the Word of God, he has some keen insights into the right that theology has to function as an authentic science. Some of his books on this topic include *Theological Science* (1969), *Christian Theology and Scientific Culture* (1980), *Belief in Science and in Christian Life* (1980), *Reality and Scientific Theology* (1985), and *Transformation and Convergence in the Frame of Knowledge: Explorations in the Interrelations of Scientific and Theological Enterprise* (1984).<sup>1</sup>

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<sup>1</sup> T. F. Torrance, *Theological Science* (London: Oxford UP, 1969); *Christian Theology and Scientific Culture* (Eugene OR: Wipf & Stock, 1998, 1980); *Belief in Science and in Christian Life* (Edinburgh: Handsel, 1980); *Transformation and Convergence in the Frame of Knowledge: Explorations in the Interrelations of Scientific and Theological Enterprise*, (Grand Rapids: Eerdmans, 1984). Other texts include, *Reality and Evangelical Theology: The Realism of Christian Revelation* (Downers Grove, IL: InterVarsity, 1999) and *Divine Meaning, Studies in Patristic Hermeneutics* (Edinburgh: T & T Clark, 1995).

**3. The Challenge of Subjectivity in Both Science and Biblical-Theology.**

Immanuel Kant (1724–1804) posited the idea that reality is in the mind of the observer, a position common in the dualistic thinking of the Greeks, who separated the *noetic* (mind) from the *ontic* (real) world, or the *intelligible* from the *sensible* realms. For the Greeks, reality in nature was but a projection of the reality in the mind.

Kant continued this dualism by stating that God could never be known as He is in Himself, for all knowledge involves some projection of the mind upon the reality.<sup>2</sup> Torrance rightly calls this objectifying rather than being objective.<sup>3</sup> For Kant the world and God do not exist independent of the human mind. Process theology apparently builds on this principle, for God, who is in process of development, is dependent upon the universe as His body.<sup>4</sup> For Kant, one does not draw the laws of nature out of nature, but reads them into nature. So “scientific theories have no bearing upon being or reality independent of ourselves.”<sup>5</sup>

This view is called in question in the modern (and now postmodern) world, culminating in the great contribution made by Albert Einstein. Scientific method has progressed through three major periods: (1) The early classical period from Pythagorean (6<sup>th</sup>–4<sup>th</sup> centuries BC) and Ptolemaic (4<sup>th</sup> century BC–16<sup>th</sup> century AD) times up to Newton (1642–1727), with its emphasis on deduction; (2) the Newtonian era, with emphasis on causality; and (3) the modern and postmodern period, with its emphasis on field theory, which rejected the dualistic basis of the other two periods.<sup>6</sup> Biblical-theological<sup>7</sup> science means that one rejects the existential theological method in which concepts are projected from religious self-understanding. It recognizes that there is a given in Scripture as there is in nature, and that one must come to study the given for its own sake and allow its own inner-rationality to reveal itself. It begins with Genesis 1–2 as literal history and refrains from reading into it a subjective interpretation of long periods of evolutionary theory.

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<sup>2</sup> Immanuel Kant, *Critique of Pure Reason* (Cambridge, UK: University Press, 1998), 169, 605–623. Kant said, “all our knowledge begins with experience.” *Critique of Pure Reason*, trans. Norman K. Smith (London: Macmillan, 1929), 41. Kant called such knowledge empirical philosophy, whereas “doctrines from *a priori* principles alone we may call *pure* philosophy.” Immanuel Kant, *Critique of Practical Reason and Other Works on the Theory of Ethics*, trans. Thomas K. Abbott (London: Longmans, Green, 1948), 2. T. F. Torrance, *Christian Theology and Scientific Culture* (Belfast: Christian Journals, 1980), 20. Richard Grigg, *Theology and a Way of Thinking* (Atlanta: Scholars, 1990), 26.

<sup>3</sup> Torrance, *Christian Theology and Scientific Culture*, 20.

<sup>4</sup> For an evaluation of Process thought, see Norman R. Gulley, *Christ is Coming!* (Hagerstown, MD: Review and Herald, 1998), 47–61.

<sup>5</sup> Torrance, *Christian Theology and Scientific Culture*, 20.

<sup>6</sup> Torrance, *Reality and Scientific Theology*, 80.

<sup>7</sup> By this I mean theology based on Scripture, rather than on philosophy (systematic theology) or theology in Scripture (biblical theology in the technical sense).

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4. **Defining Science:** There are many sciences. “Science” is a word that is appropriately used for natural science and biblical-theological science. As long as natural or biblical-theological study is done in a way that is true to itself, it is a science. All sciences have their own rationality and logical consistency. It is not right to force one upon another. In order for biblical-theology to be a science, it must be true to its own reality, thinking faithfully in accordance with the revelation of its own subject. It has a right to its own independent presentation of the data to answer the questions that seem to overlap with philosophy and natural science. The same can be said for true science, whatever the discipline.

(a) **Worldviews.** So-called scientific facts have changed with changing worldviews, as Thomas Kuhn observed.<sup>8</sup> Changes in scientific worldviews include the Copernican cosmology (sun as center of the universe) replacing the Ptolemaic cosmology (world as center of the universe) and the Einsteinian cosmology (all the universe is in a relational movement, without a center) replacing the Copernican.

Newton and Einstein studied the same universe, yet Newton thought it was mechanistic, while Einstein thought it was characterized by relativity. The reason for their different conclusions was the worldview, or framework, within which they observed. The science of these two scholars was impacted by the different worldviews they espoused.

In a similar way, natural science and biblical-theological science is thought out within two mutually exclusive worldviews. That is, either God had nothing to do with evolution or He created through the evolutionary process. This is the basic difference between them. Even though there are numerous theories on both sides, the discussion of these theories is without final resolution due to the worldview in which they are found. The evolutionary theories are confined to the natural worldview (methodological naturalism). The biblical theories are thought out within the supernaturalistic worldview. John Montgomery is right when he writes, “What nature is to the scientific theorizer, the Bible is to the theologian.”<sup>9</sup> Biblical-theological studies are becoming more precise and true to their own worldview. D.A. Carson reminds us, “Science no longer holds the epistemological advantage it once had.”<sup>10</sup>

Biblical-theological science must not be intimidated by other sciences. It must be remembered, as Max Wilders mentions, that “Concerning reality as a whole . . . we are almost completely ignorant.”<sup>11</sup> There is no natural science that can cover the totality of reality. Einstein’s theories of relativity and the scientific

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<sup>8</sup> Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: U of Chicago, 1962).

<sup>9</sup> John W. Montgomery, *The Suicide of Christian Theology* (Minneapolis: Bethany, 1970), 283.

<sup>10</sup> D. A. Carson, *The Gagging of God: Christianity Confronts Pluralism* (Grand Rapids: Zondervan, 1996), 86.

<sup>11</sup> N. Max Wilders, *The Theologian and His Universe: Theology and Cosmology From the Middle Ages* (New York: Seabury, 1982), 166.

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probes into outer space give concrete evidence that there are vast universes out there, far beyond the imagination of those who launched the Enlightenment. There is no human worldview that does justice to the vastness of reality. Nor can it tell where the race came from, why it is here, and where it is going, the three basic questions probed by philosophy.

Biblical-theological science has a biblical worldview that is as expansive as the God who created the “heavens and the earth” (Gen 1:1, 2:1). This does not mean humans are left to their own unaided reason to discover or comprehend this vastness. However, biblical-theological science presents this larger worldview because it is given by God in His revelation in Scripture.

(b) **Presuppositions.** Exponents of either worldview (naturalism or supernaturalism), whatever their various theories within their worldview, come with that worldview as their fundamental presupposition. It is this presupposition that interprets the data.

Science is considered an objective search for truth, and scientific method holds a powerful influence over many disciplines. Often, by contrast, biblical-theological study is considered obscurantist, lacking objectivity, merely an expression of subjective feelings based upon assumptions that cannot be proven. Biblical-theology should not be pressed into a corner by such a charge. It is best to look at this claim over against the context of science itself. David Hume, in his books *An Enquiry Concerning Human Understanding* and *Treatise of Human Nature*, questions basic assumptions of science that he believes cannot be demonstrated. For example, uniformitarianism, that the future will be the same as the past, and that every event has a cause.<sup>12</sup> This is important to our topic because uniformitarianism is foundational to the theories of evolution and geology. Scripture even predicted uniformitarianism in the end-time (2 Pet 3:3–6).

Science has basic presuppositions that are foundational to its systems. These basic beliefs must be accepted as a given in order for any system building to be done. Furthermore, with changing paradigms in science, who is to say that the present one will last? With Max Wilders, we agree in principle, “It is not inconceivable that contemporary science will in ages to come be looked down upon just as we look down upon the science of the Greeks or of the Middle Ages.”<sup>13</sup>

It should be remembered, as Carl F. H. Henry points out, that “The decisive role of presuppositions is increasingly apparent to 20th-century scientific scholarship. The great advances in recent modern scientific theory have arisen through creative postulation rather than inductive observation.”<sup>14</sup>

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<sup>12</sup> David Hume, *An Enquiry Concerning Human Understanding*, ed., Eric Steinberg, (Indianapolis: Hackett, 1993), 15–25 (IV), 39–53 (VII); and *Treatise of Human Nature*, eds., L. A. Selby-Bigge and H. Nidditch (Oxford: Clarendon, 1985), 69–179 (1.111).

<sup>13</sup> Wilders, 168.

<sup>14</sup> Carl F. H. Henry, *Toward a Recovery of Christian Belief*, (Wheaton, IL: Crossway, 1990), 74.

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“Only by careful attention to the role of presuppositions will the disaster of suspending Christian truth upon empirical consideration be avoided.” For as Henry rightly points out, “Empirical method deals with phenomenal, not with noumenal reality; it cannot adjudicate the existence and nature of the supernatural. Worse yet, it yields only tentative and revisable conclusions; it cannot provide an irreversible verdict on anything. To rest the case for Christianity on an empirical appeal is not only methodologically unpromising but also theologically hazardous.”<sup>15</sup>

(c) **Limitations of Science.** Not only does biblical-theological science have a breadth that transcends the visible domain of other sciences, but science has limitations even within its own empirical realm. Science is limited to the *how* questions. Thus, an article may be analyzed into how many atoms comprise it, how the basic particles interact, but there is no room for the *why* question. “Suppose for example, the object were a violin. Does a mere description of the layout of the atoms constituting the violin provide one with all that one might want to know about what a violin is and why such objects are made?”<sup>16</sup> The answer is obviously no. There is much more to a violin than a description of its physical components. In the same way, there is much more to the universe than what one can observe. Biblical study is a science because it offers the broadest worldview to cover the major questions that remain unanswered in philosophy and the natural sciences.

In *The Case for Christianity*, C. S. Lewis speaks about the limitations of science, and therefore the need of the broader Christian perspective about God. “Science works by experiments. It watches how things behave. Every scientific statement in the long run, however complicated it looks, really means ‘I pointed the telescope to such and such a part of the sky at 2:20 a.m. on 15th January and saw so-and-so,’ or ‘I put some of this stuff in a pot and heated it to such-and-such a temperature and it did so-and-so.’ Don’t think I’m saying anything against science: I’m only saying what its job is. And the more scientific a man is, the more (I believe) he’d agree with me that this is the job of science—and a very useful and necessary job it is, too. But why anything comes to be there at all, and whether there’s anything behind the things science observes—something of a different kind—this is not a scientific question.”<sup>17</sup> But it is very much within the purview of theological science, because theological science has to do with God, the Creator of everything.

Carl F. H. Henry notes that,

Empirical science must routinely take for granted what it cannot prove, including such principles as the comprehensive unity, harmony, and intelligibility of the universe, the prevalence of some kind

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<sup>15</sup> Henry, 50.

<sup>16</sup> Russell Stannard, *Grounds for Reasonable Belief* (Edinburgh: Scottish Academic, 1989), 11.

<sup>17</sup> C. S. Lewis, *The Case for Christianity* (New York: Macmillan, 1989), 19.



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of causal continuity in nature, and the necessity of honesty in experimentation and in scientific research. Without antecedently assuming such postulates, empirical science cannot even get under way.<sup>18</sup>

Science is not without other limitations. For example, it is well known by scientists that “facts” are theory-laden. As W. S. Vorster notes, “there is no such thing as pure observation or observation without theory. Each observation is based on some kind of theory or theoretical assumption.”<sup>19</sup> Evolutionary theories are often accepted as fact, without adequately questioning how those facts were derived and whether the process was objectively valid.

Millard Erickson rightly focuses on the uniqueness of theological science.

Theology surpasses other speculative sciences by its greater certitude, being based upon the light of divine knowledge, which cannot be misled, while other sciences derive from the natural light of human reason, which can err. Its subject matter, being those things which transcend human reason, is superior to that of other speculative sciences, which deal with things within human grasp. It is also superior to the practical sciences, since it is ordained to eternal bliss, which is the ultimate end to which science can be directed.<sup>20</sup>

While affirming the above-stated advantages of biblical-theological science over other sciences, it is also necessary to state that facts are theory-laden for biblical-theological science, too. Theologians too come to their data with presuppositions. This is why it is necessary that Christian scholars allow themselves to be placed under the divine guidance of the Holy Spirit illuminating Scripture, for “spiritual things are spiritually discerned” (1 Cor 2:14). A Spirit-led understanding of Scripture judges human presuppositions and corrects them by God’s revelation.

(d) **Different Scientific Methods.** Different sciences are like different games. Stephen Toulmin asks what is the purpose of sport? If a person answers that it is to score more goals and beat one’s opponent, this fits soccer, baseball, and tennis. But it does not fit solitaire, or many other games. Toulmin’s book, *Foresight and Understanding: An Enquiry Into the Aims of Science*, reminds us that there is no single “scientific method.”<sup>21</sup> We can only speak of scientific methods.

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<sup>18</sup> Henry, 43.

<sup>19</sup> *Paradigms and Progress in Theology*, eds., J. Mouton, A. G. van Aarde, and W. S. Vorster (South Africa: Human Sciences Research Council, 1988), 36.

<sup>20</sup> Millard J. Erickson, *Christian Faith* (Grand Rapids: Baker, 1986), 34.

<sup>21</sup> Stephen Toulmin, *Foresight and Understanding: An Inquiry Into the Aims of Science* (New York: Harper & Row, 1963), 17.

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Hans-Georg Gadamer, in his book *Truth and Method*, notes that different games are played differently, according to their own rules<sup>22</sup> (the same is pointed out by the philosopher Wittgenstein in his later contributions).<sup>23</sup> The rules of the game fit the game, and not some other game. Each is played according to its own rules. Rugby rules don't apply to tennis, nor golf rules to basketball. So it is with biblical-theology as a science. It has its own rules (e.g., the biblical cosmic controversy worldview and *sola scriptura*) that form the scientific orderly reasoning that is characteristic of biblical-theological science. Just as a game must be played according to its own rules, so biblical-theology must be articulated according to its own rules. It is not necessary for biblical-theology to be beholden to the rules of philosophy or science because it is a different game. Christian scholars who accommodate biblical truth to the rules of evolutionary theory overlook this. Nor is it relevant for evolutionary scientists to reject creation by God, as this belongs to a game that has different rules.

Biblical-theological method involves more than scientific method.<sup>24</sup> This seems to be overlooked by David Tracy when he claims, "Most Christians now recognize that much of the traditional Christian manner of understanding the cognitive claims made in the Christian Scriptures should be rejected by the findings of history and of the natural and human sciences."<sup>25</sup> Practical science studies the observable in nature. Theology studies the unseen God through the medium of Scripture. As Nigel Cameron reminds us, "The methods of the two are distinct, in that one involves the reception of God's self-revelation and the other active observation of the natural order."<sup>26</sup> Kelly Clark rightly distinguishes between belief in God and belief in a scientific hypothesis. "It is more fitting to construe belief in God as analogous to belief in other minds or persons."<sup>27</sup>

Scientific method is confined to the demonstrable and cannot reach back beyond to the origin (metaphysics) of the observable.<sup>28</sup> Biblical-theological method is broader than the scientific method because it begins with God as the Creator of all that is. Theological method begins with the self-revelation of God

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<sup>22</sup> Hans-Georg Gadamer, *Truth and Method*, trans. Joel Weinsheimer and Donald G. Marshall (New York: Crossroad, 1990, 2<sup>nd</sup> rev. ed., Germ. 1960), 96.

<sup>23</sup> Ludwig Wittgenstein, *Philosophical Investigations*, trans. G. E. M. Anscombe (New York: Macmillan, 1958, 3<sup>rd</sup> ed.), 19, 23, 241, 8–9, 11–12, 88.

<sup>24</sup> However, "some of the most noteworthy experiments in modern experimental physics have been engendered by imaginative metaphysical theories." Carl F. H. Henry; *God, Revelation, and Authority* (Waco, TX.: Word, 1976), 1:171.

<sup>25</sup> David Tracy, *Blessed Rage for Order: The New Pluralism in Theology*, (New York: Seabury, 1978), 5.

<sup>26</sup> Nigel M. de S. Cameron, "Talking Points—Science Versus Religion," *Themelios*, 8/1, (1982): 23–27.

<sup>27</sup> Kelly J. Clark, *Return to Reason: A Critique of Enlightenment Evidentialism and a Defense of Reason and Belief in God* (Grand Rapids: Eerdmans, 1990), 122.

<sup>28</sup> The metaphysical dimensions of evolutionary theory (origins) are just that—theory, and not a part of scientific method.

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in the totality of Scripture. Any confining of biblical-theology to a closed universe (Bultmann), or to a theory of correlation (Tillich), or to a feeling of absolute dependence (Schleiermacher) is a reductionist move toward the more limited worldview of science.

(f) **The Importance of Belief in Science and Biblical-theology.** Evolutionary scholars need to evaluate their claim that their determinations are based upon proof, whereas biblical-theology is based upon beliefs. Facts are not the sole province of science and beliefs the sole province of biblical-theological study. “How did this world get here?” is the question before both evolutionary naturalism and biblical creationism. Both answer this question from their beliefs in evolutionary theories or in biblical inspiration.

It is essential to biblical-theological science that the theologian believe in God as portrayed in Scripture. To relegate God to the “ground of all Being” (Tillich), to a “Wholly Other” (early Barth), or to immanence (Schleiermacher) is to fail to do justice to the God of Scripture. As biblical-theology is the science of God in His relationship to His universe, it fails to do its work if it speaks about any other god. The God of Scripture is the only God who is the subject of biblical-theological science.

There is a dualism between mind and matter evidenced in Greek and Kantian thought. T. F. Torrance speaks of “the damaging split between subject and object, mind and matter, or thought and experience.”<sup>29</sup> Michael Polanyi, considered “one of the greatest scientist-philosophers of our age,”<sup>30</sup> worked to restore “personal knowledge” to scientific activity. “According to Polanyi, any scientific research pursued in a detached, impersonal, materialist way isolates itself from man’s higher faculties and thereby restricts its range and power of discernment and understanding.”<sup>31</sup>

In other words, faith can be a source of knowledge as well as observation. This differs from the Greek and Kantian projection of thought upon reality. Rather, it is a bringing of faith to reality with an openness to understanding it in an appropriate and worthy manner. Biblical-theological science necessitates that exponents come with a basic presupposition of faith in Scripture, just as a scientist comes with a basic presupposition of belief in nature.

Biblical-theology is a science in the truest sense of the term. Einstein, in his articles about the relationship between the two disciplines,

discounted the one-sided contrast between knowledge and belief and the claim that belief should be replaced increasingly by knowledge, for that would undermine the enterprise of science itself as well as the conduct of our daily life. The aim of natural science is limited, to determine how facts are related to, and conditioned by, each other, and

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<sup>29</sup> Torrance, *Belief in Science and in Christian Life: The Relevance of Michael Polanyi’s Thought for Christian Faith and Life* (Edinburgh: Handsel, 1980), xv.

<sup>30</sup> Torrance, *Belief in Science and in Christian Life*, xiii.

<sup>31</sup> Torrance, *Belief in Science and in Christian Life*, xv.

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in that way to attempt what he called ‘the posterior reconstruction of existence by the process of conceptualization.’ Science is quite unable through demonstration of this kind to provide the basic belief in the objective rationality of the universe or the aspiration toward truth and understanding that it clearly requires. Without profound faith of this kind, which comes from religion and revelation, science would be inconceivable.<sup>32</sup>

In simple language, the basic belief in the objective rationality of the universe does not come from the universe itself, for the universe, compared to Scripture, is a non-verbal revelation. It does not say anything.

Some great scientists, through the centuries, were indebted to the biblical worldview.<sup>33</sup> Scripture says the universe was created by the pre-incarnate Christ (Heb 1:1–3). This gives it inherent intelligibility, for as a contingent universe it reflects to some degree the rationality of its Maker. To this extent these scientists’ belief in Scripture, or in God as the Creator of the universe, was fundamental to their science.

**5. The Challenge of Science to Evolution.** Science has challenged evolutionary assumptions. In his book *Darwin’s Black Box*, Michael J. Behe, Professor of Biochemistry, observes that since the 1950s biochemistry has been examining the workings of life at the molecular level, something Darwin didn’t know.

It was once expected that the basis of life would be exceedingly simple. That expectation has been smashed. Vision, motion, and other biological functions have proven to be no less sophisticated than television cameras and automobiles. Science has made enormous progress in understanding how the chemistry of life works, but the elegance and complexity of biological systems at the molecular level have paralyzed science’s attempt to explain their origins.<sup>34</sup>

How do you get from a single nut to a complex computer? It takes a lot of information to create a sophisticated computer. Likewise, how can mutations or natural selection create new genetic information? Phillip E. Johnson, in his book *The Wedge of Truth: Splitting the Foundations of Naturalism*, notes that random mutations in genes are inactive and hence not subject to natural selection, so how can they possibly be causing massive increases in genetic information to

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<sup>32</sup> Torrance, *Christian Theology and Scientific Culture*, 7; parenthesis supplied.

<sup>33</sup> The following are Christian founders of key scientific disciplines: Isaac Newton (Dynamics), John Kepler (Astronomy), Robert Boyle (Chemistry), Lord Kelvin (Thermo-dynamics), Louis Pasteur (Bacteriology), Matthew Maury (Oceanography), Michael Faraday (Electro-magnetics), Clerk Maxwell (Electro-dynamics), John Ray (Biology), and Carolus Linnaeus (Taxonomy). Henry M Morris, *The Biblical Basis for Modern Science* (Grand Rapids: Baker, 1990, 8<sup>th</sup> printing), 30.

<sup>34</sup> Michael J. Behe, *Darwin’s Black Box: The Biochemical Challenge to Evolution* (New York: Simon & Schuster, 1996), x.

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make evolutionary development work?<sup>35</sup> He refers to the book *Not By Chance! Shattering the Modern Theory of Evolution*, by Lee Spetner, who says the adaptive mutations that Darwinists cite as information-creating actually can lead to a loss of information. For example, this occurs when a mutation makes a bacterium resistant to antibiotics, doing so by disabling its capacity to metabolize a certain chemical. Johnson likens this to hitting the case of a sputtering radio to cause a loose wire to reconnect. “But no one would expect to build a better radio, much less a television set, by accumulating such changes.”<sup>36</sup> Nor would this help a nut become a computer.

6. **The Soul Argument.** The place of the soul in evolution or creation is misunderstood by both sides. Evolution denies any dualism of body and soul, claiming both as material. Most Christians accept dualism of body and soul, claiming souls as non-material. Henry M. Morris is an example of a creationist who uses dualism of soul and body to question materialistic evolution.<sup>37</sup> These conclusions are not based on science or Scripture, but are unproved assumptions.

7. **Beyond Concordism.** Some scholars try to harmonize the various creation views. They are known as Concordists. They believe Scripture and nature are really speaking about the same events, but from different perspectives. They tend to look to nature for objective evidence and to Scripture for a primitive, less sophisticated, non-scientific account. This assumes what it seeks to prove, that evolution is a fact and that humans are still evolving, and so contemporary scientists are more advanced than the writer (or writers, JEDP) of Genesis.

## II. Alternate Models of Biblical Creation

1. **Impact of Evolution on Churches.** We do not consider liberal theology, which capitulated to evolutionary theories long ago. The fact is, conservative churches are also vulnerable. Evolution has made remarkable inroads into Evangelical theology by calling into question the historicity of the Genesis account of creation. How far have evolutionary theories invaded Christianity? Some consider that George McCready Price made an important contribution. J. P. Moreland and John Mark Reynolds report, on the other hand, that

By the middle of the twentieth century, opposition to Darwinism was limited to the more fundamentalist religious communities. Groups like the Seventh-day Adventists carried on an active assault against

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<sup>35</sup> Phillip E. Johnson, *The Wedge of Truth: Splitting the Foundations of Naturalism* (Downers Grove, InterVarsity, 2000), 41–46.

<sup>36</sup> Johnson, 47.

<sup>37</sup> Henry M. Morris, *The Biblical Basis for Modern Science* (Grand Rapids: Baker, 1984), 405–413.

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evolutionary thinking, sometimes with more noise and vigor than scientific care or rigor.<sup>38</sup>

Paul K. Jewett notes that “few who confess the Christian doctrine of creation would suppose that the world was fashioned in a week of time some six thousand to ten thousand years ago. Drafts of time of a vastly different magnitude are indicated by the findings of the natural sciences.”<sup>39</sup> Howard J. Van Till comments, “I would even be so bold as to add that the misunderstanding of the historic doctrine of creation may be as widespread within the Christian community as it is outside of it . . .”<sup>40</sup> Theology accommodates science by interpreting the Genesis record in the light of the current scientific worldview.<sup>41</sup> Some evangelical theologians believe that death existed before the human race prior to the Fall,<sup>42</sup> raising questions about whether death is sin’s wages and hence undermining the atonement. According to evolutionary theory, death is something natural and not a result of human sin. Karl Barth claims that death is a part of being finite, because God has no beginning or end, while by contrast humans have a beginning and an end. Therefore, death is a part of being human.<sup>43</sup>

The Second Vatican Council (1963–1965) addressed the relation between Scripture and science. It speaks of “the rightful independence of science,”<sup>44</sup> and of “the legitimate autonomy of human culture and especially of the sciences.”<sup>45</sup> This is in keeping with the Catholic division between Scripture and tradition. In the Document on Revelation, “sacred tradition” is placed before “sacred revelation.”<sup>46</sup> In the same way it is expected that science take precedence over Scripture in the area of evolution. The current *Catechism of the Catholic Church* (1994) says, “The question about the origins of the world and of man has been the object of many scientific studies which have splendidly enriched knowledge

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<sup>38</sup> J. Moreland and John Mark Reynolds, eds., *Three Views on Creation and Evolution* (Grand Rapids: Zondervan, 1999), 32–33.

<sup>39</sup> Paul K. Jewett, *God, Creation, and Revelation* (Grand Rapids; Eerdmans, 1991), 479–480.

<sup>40</sup> *Three Views on Creation and Evolution*, 161.

<sup>41</sup> Scholars who, in varying degrees, place evolutionary theory as the context in which to interpret the Genesis account include: Augustus Strong, *Systematic Theology* (Philadelphia: Judson, 1907), 465–466; Bernard Ramm, *The Christian View of Science and Scripture* (Grand Rapids: Eerdmans, 1954), 76–79; Langdon Gilkey, *Maker of Heaven and Earth* (Garden City, NY: Doubleday, 1965); Millard J. Erickson, *Christian Theology* (Grand Rapids: Baker, 1986), 381–382; Jewett, 378–484.

<sup>42</sup> Marco T. Terreros, “Death Before the Sin of Adam: A Fundamental Concept in Theistic Evolution and Its Implications for Evangelical Theology” (Ph.D. dissertation, Andrews University Theological Seminary, 1994). See *Andrews University Seminary Studies* 32/1–2 (Spring-Summer 1994): 114.

<sup>43</sup> Karl Barth, *Church Dogmatics* (Edinburgh: T & T Clark, 1960), 3/2:511–640.

<sup>44</sup> *The Documents of Vatican II*, ed. Walter M. Abbott, S. J. trans. ed., Rev. Msgr. Joseph Gallagher (London: Geoffrey Chapman, 1967), *The Church Today*, Par. 36, 234.

<sup>45</sup> *The Documents of Vatican II*, *The Church Today*, par. 59, 265.

<sup>46</sup> *The Documents of Vatican II*, 117.

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of the age and dimensions of the cosmos, the development of life-forms and the appearance of man.” The document gives thanks to God “for the understanding and wisdom he gives to scholars and researchers.”<sup>47</sup>

All of the above is sad in light of Scripture’s own witness to the historicity of Genesis 1–11. Richard Davidson says, “In fact, *every* NT writer explicitly or implicitly affirms the historicity of Genesis 1–11 (see Matt 19:4, 5; 24:37–39; Mark 10:6; Luke 3:38; 17:26, 27; Rom 5:12; 1 Cor 6:16; 2 Cor 11:3; Eph 5:31; 1 Tim 2:13, 14; Heb 11:7; 1 Pet 3:20; 2 Pet 2:5; James 3:9; 1 John 3:12; Jude 11, 14; Rev 14:7).”<sup>48</sup>

2. **Alternative Models.** We will consider (1) three major models that Christians espouse as presented in the book *Three Views on Creation and Evolution*. They follow methodological naturalism or theistic evolutionism. The first attributes what we see around us to natural selection and chance, while the second attributes it to divine causation in the launching of the process. It is alleged that evolution demonstrates that creation is the result of a natural process rather than the work of God. The three views below attempt to respond to this challenge. Then we will consider (2) an alternative view found within the Seventh-day Adventist church and some comments on creation by other Seventh-day Adventist scholars.

(a) **Young Earth Creationists** come to Genesis with a **Completely Literal View**. This is an instantaneous fiat creation out of nothing in six days about ten thousand years ago. Efforts to support this view are (1) one view of the *gap theory* between Genesis 1:1 and 1:2, suggesting the world was first created a long time before creation week; (2) the *apparent-age theory*, making the world look older than ten thousand years; and (3) the *flood-geology theory* to explain the strata levels as a death of the old world rather than an evolution of the first world.<sup>49</sup>

Most Seventh-day Adventists fit into this category (except #1) in believing that God directly created each of the basic types of organisms in six days, that the curse of Genesis 3:14–19 has “profoundly affected every aspect of the natural economy,” and that there was a global flood.<sup>50</sup> They reject the theory that God used evolution as His method to create humans.

(b) **Old Earth Creationists or Progressive Creationists** come to Genesis with an **Essentially Literal View**. Genesis 1–3 are essentially historical, but they are also non-literal descriptions. Proponents look for *harmonization* of the literal biblical text with scientific descriptions. For example, each day in creation is a *chronological* long period of natural evolution between times of fiat creation. Or the arrangements of creation days are *not chronological*. Human

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<sup>47</sup> *Catechism of the Catholic Church* (Liguori, MO: Liguori Publications, 1994), 74.

<sup>48</sup> Richard M. Davidson, “Biblical Interpretation,” in *Handbook of Seventh-day Adventist Theology* (Hagerstown, MD: Review and Herald, 2000), *SDA Bible Commentary*, 12:70.

<sup>49</sup> *Three Views on Creation and Evolution*, 251.

<sup>50</sup> *Three Views on Creation and Evolution*, 42–44.

beings were not the result of natural evolution, but came by a creative act of God.<sup>51</sup>

Progressive creationists believe God created the heavens and earth aeons ago (Gen 1:1). Then the earth became formless and empty, possibly due to Satan's rebellion (Gen 1:2), and the recent restoration of the earth occupies the rest of the Genesis account. Some believe the flood was universal, others that it was local.<sup>52</sup> For Robert C. Newman, God's creative works do not take place during the days of creation, but in the long periods inaugurated by those days. So the week is dismissed, along with the Sabbath.<sup>53</sup>

(c) **Old Earth Creationists, Theistic Evolutionists, or Advocates of a Fully Gifted Creation** come to Genesis with an **Essentially Nonliteral View**. *Harmonization* between Scripture and science is rejected to the degree that Genesis was not written to inform humans of modern science. How God created is not given in Genesis but is largely given in science. Advocates are open to the fact that all creation, including humans, may have come into being through natural processes.<sup>54</sup> To the extent that theistic evolutionists believe God used the evolutionary process to create, they accept harmonization between science and Scripture.

**Influence of Theistic Evolution.** Theistic evolution attempts to accept evolutionary theory while holding onto the fact that God as Creator launched the process and perhaps even superintended it. Some contemporary theologians "deny any original act of creation, and equate creation with that universal, continuing activity which traditional theology called 'preservation' or 'providence.'"<sup>55</sup> Calling it "continuing creation," process theologians influenced by Alfred Whitehead especially espouse it,<sup>56</sup> and it appears in the theology of John Macquarrie.<sup>57</sup> Theistic evolutionists look at the Genesis account of creation as myth, saga, or poetry, in which the only factual information is that God had some part in the creative act. It is considered by many that the description of creation by Moses was influenced by the other creation stories in Eastern Mesopotamia, such as the *Enumah Elish* account. So the authority of the biblical record of creation is called into question and is laid aside to make room for evolutionary theory to explain the alleged mechanism of creation by random genetic mutation and natural selection.

The root problem of theistic evolution is that it overlooks the worldview of evolution. Darwin did not believe in miracles or in God's intervention, either at

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<sup>51</sup> *Three Views on Creation and Evolution*, 251.

<sup>52</sup> *Three Views on Creation and Evolution*, 112.

<sup>53</sup> *Three Views on Creation and Evolution*, 149–150.

<sup>54</sup> *Three Views on Creation and Evolution*, 252.

<sup>55</sup> Thomas N. Finger, *Christian Theology: An Eschatological Approach* (Scottsdale, PA: Herald, 1989), 2:413.

<sup>56</sup> Alfred Whitehead, *Process and Reality* (New York: Free, 1929), 25–26.

<sup>57</sup> John Macquarrie, *Principles of Christian Theology* (New York: Scribner, 1966).



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the beginning or anywhere else along the evolutionary process (in spite of some mention of God in his first edition of *The Origin of Species* in order to help it be accepted). Darwin's worldview was a closed universe where God is removed from the natural laws of cause and effect. His theory is belief in natural selection, where nature left to itself, without God, has achieved the evolutionary development. Clearly anyone accepting biblical creationism believes in the supernatural act of God in creating. Theistic evolution is logically a misnomer. It is like saying God began the process and yet had no part in the process. Behind the term *theistic evolution* lies two opposing worldviews, and hence opposite paradigms—supernaturalism and naturalism. Either nature created (naturalism) or God created (supernaturalism). A marrying of the two worldviews doesn't explain anything, for one cancels the other.

As a footnote to this section, some biblical-theological scholars add human ideas to the creation record. Jesuit paleontologist Pierre Teilhard de Chardin<sup>58</sup> and Augustine of Hippo<sup>59</sup> are two Catholic examples. Neither does justice to the biblical account of creation, where creation was completed (Gen 2:2).

**Howard J. Van Till's Thinking.** We come now to the contribution of Howard J. Van Till, who sees no problem between creation and science. In fact, to him, such an "either/or" is "wholly inappropriate."<sup>60</sup> God simply uses evolution as His method to create. Many Christians accept this view, though it is merely a misguided attempt to save the biblical account from being considered naïve by science. This is a capitulation to science by biblical-theological science, forgetting that they function by different game rules which are fundamentally different because mutually exclusive, for creation by nature alone (science) is not the same as God creating by nature (the view of many Christians). The book *The Modern Creation Trilogy: Scripture and Creation* repeatedly reveals the folly of Christian scholars accommodating to evolutionary scientists, even though the latter do not respect this attempt.<sup>61</sup> What they unwittingly ignore is the atheistic basis of evolutionary naturalism compared to divine supernaturalism.

Van Till thinks of his view as a "fully gifted creation perspective." He says, "I believe that God has so generously gifted the creation with the capabilities for

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<sup>58</sup> His evolutionary thinking goes beyond the natural process to produce humans to the evolving of the human spirit (*The Future of Man*, trans. Norman Denny [London: William Collins, 1969], 13). Both humans and the cosmos are evolving. Humans move towards "superhumanization" 117, to the emergence of the "Ultra-Human" 273–274. We find exponents of evolution of humans to godhood in eastern religions, Theosophy, and the New Age Movement. For further data on these see Norman R. Gulley, *Christ is Coming!* 159–210.

<sup>59</sup> Augustine seems to posit the idea that God implanted seeds in the natural order for an ongoing creation; *On the Holy Spirit* (3:8), *The Nicene and Post-Nicene Fathers*, First Series (Edinburgh, Scotland: T & T Clark, 1988), 3:60–61.

<sup>60</sup> *Three Views on Creation and Evolution*, 163.

<sup>61</sup> Henry M. Morris, John D. Morris, *The Modern Creation Trilogy: Scripture and Creation* (Green Forest, AR: Master Books, 1996).

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self-organization and transformation that an unbroken line of evolutionary development from nonliving matter to the full array of existing life-forms is not only possible but has in fact taken place.”<sup>62</sup> He says the Christian community “must recover the historic Christian doctrine of creation as a theological commitment that is essential to the Christian faith [that much is good], but distinct from any particular picture of the creation’s formational history.”<sup>63</sup> He calls on the Christian community to incorporate “this concept of creation’s formational history into our contemporary articulation of the historic Christian faith.”<sup>64</sup>

Van Till asserts, “I am a firm believer in the biblically informed historic doctrine of creation. However, I am equally firm in my belief that the Scriptures in no way require me to favor or adopt the special creationist picture of the creation’s formational history”<sup>65</sup> (note the word “picture”). In other words, the findings of science must inform the meaning of the biblical record. He dismisses the biblical timetable (six days) for the conclusions of the “scientific community.” He rejects the fact that Christians “have access to privileged information” from the Scriptures.<sup>66</sup> Although he wouldn’t phrase it this way, this means human thinking must correct God’s Word—it places human philosophy above divine revelation.

Van Till opposes “an inordinate elevation of the status of a historic text, which could lead to the idolization of that text.”<sup>67</sup> Yet he elevates his idea of gifted creation to the same level. The trouble is he opts for a human idea of gifted creation instead of looking to gifted revelation in the biblical record. His positing of a “gifted creation,” left to itself to develop all the life-forms we have today, is no different from the distant God of Deism. This stands in direct contrast to the biblical creation record and the rest of Scripture.

Far from elevating Scripture, Van Till considers it as only “one of the many sources provided by God for our growth,” and wrongly thinks this is the same as the *sola Scriptura* of the Reformation.<sup>68</sup> So he abandons the belief that Scripture must interpret Scripture and replaces that with his own “gifted creation” interpretation of Genesis 1–2. He says, “In fact, I think Christian theology is now long overdue for a spurt of growth stimulated by our growing knowledge of the creation and its formational history . . . I would encourage the most intellectually gifted of Christian youth to consider the challenge of bringing our theological reflection up-to-date in its engagement of contemporary science.”<sup>69</sup> I believe the

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<sup>62</sup> *Three Views on Creation and Evolution*, 171.

<sup>63</sup> *Three Views on Creation and Evolution*, 181.

<sup>64</sup> *Three Views on Creation and Evolution*, 182.

<sup>65</sup> *Three Views on Creation and Evolution*, 192.

<sup>66</sup> *Three Views on Creation and Evolution*, 194.

<sup>67</sup> *Three Views on Creation and Evolution*, 207. He rejects so-called “humanly devised claims” about Scripture, but has his own humanly devised claims.

<sup>68</sup> *Three Views on Creation and Evolution*, 207–212.

<sup>69</sup> *Three Views on Creation and Evolution*, 213.

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words of Christian geologist Davis A. Young apply to Van Till. He said, “Theistic evolutionists . . . have views of Scripture that are not themselves derived from Scripture.”<sup>70</sup> Young should include himself, for his view of geological ages instead of six literal days does not come from Scripture.<sup>71</sup>

Van Till says that by accepting the six days creation timetable, “the judgment of both the old earth special creationists and practically the entire scientific community must be thrown out.”<sup>72</sup> He ignores the fact that evolutionary theories like His own “gifted creation” theory belong to philosophy and not to science. Further, Van Till distances Bible-believing students from those who are trained scientists, as he is trained in physics. His thesis is that the untrained should look to the experts. J. Moreland rightly says, “Van Till fails to take his own advice. The vast majority of his article conveys his views about matters in philosophy, theology, and biblical exegesis. Since Van Till is trained in science and not in these other fields, his own advice would, I think, require him to refrain from speaking authoritatively on these topics and, instead, defer to the majority of experts trained in these other fields.”<sup>73</sup>

**Keith Ward’s Thinking.** Keith Ward, Regius professor of Divinity at Oxford University, claims that the vastness of the universe was not understood when Genesis 1–2 was written. It took modern science to bring to view its amazing size. It involves a fifteen-billion year history of expanding at the speed of light. The scientific view posits the possibility of the end of planet-earth and humans through a cosmic catastrophe, but that would not be the end of the universe, which will exist for billions of years, perhaps evolving forms of life more advanced than humans. Ward speaks about the scientific finale as an “inevitable destruction of the universe,” which is like a Mozart Symphony. Although Mozart is dead, his symphony is appreciated by humans. Likewise, though humans will all be dead, the value of their existence will be appreciated by God.<sup>74</sup> On the other hand, he can speak of the biblical finale of evolution as humans united with Christ (Eph 1:10), which he calls “a partly self-shaped conscious union with the creator.”<sup>75</sup>

He comes to Genesis considering it not a scientific cosmology, but “a spiritual interpretation of the universe’s origin, nature and destiny.”<sup>76</sup> Even though he sees Genesis 1–2 as two contrary creation stories (different order of

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<sup>70</sup> Davis A. Young, *Creation and the Flood: An Alternative to Flood Geology and Theistic Evolution* (Grand Rapids: Baker, 1977), 25. Young gives examples of other scholars who impose ideas onto Scripture instead of allowing it to be its own interpreter. This is a basic error in the debate between science and Scripture; see 25–41.

<sup>71</sup> Young, 113.

<sup>72</sup> *Three Views of Creation and Evolution*, 211.

<sup>73</sup> *Three Views of Creation and Evolution*, 233.

<sup>74</sup> Keith Ward, *God, Faith and The New Millennium* (Oxford: Oneworld Publications, 1998), 19–26.

<sup>75</sup> Ward, 30.

<sup>76</sup> Ward, 43.

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events), it is surprising that he sees the first creation story ending with the seventh-day Sabbath,<sup>77</sup> which we will return to below. His book is a straining to find consonance between the scientific and biblical views. His problem is attempting to marry two mutually exclusive worldviews, for either nature created or God did. Saying that God did it through nature portrays God as incompetent, not all-powerful or loving. He says, “If God wants to create life-forms very like human beings, God will have to create a universe with all the properties this universe has. To put it bluntly, God could not create *us* in a better universe, or a universe with fewer possibilities of suffering in it.”<sup>78</sup>

**Evaluation of Theistic and Progressive Evolution.** Henry M. Morris and John D. Morris make the following criticisms against evolution.

Because God is omnipotent He can create instantly.

Why go through the long process when fellowship with humans (image of God) was the purpose of human creation?

If God is omniscient, why all the misfits, extinction, and poor planning? Why random mutation?

If God is a God of love, why the harsh world with violent death and extermination of the weak and unfit? God sees even a sparrow fall to the ground (Matt 10:29).

Why waste billions of years in aimless evolution when God commands, “Let everything be done decently and in order” (1 Cor 14:40)?

Why the survival of the fittest, which reflects a humanistic view of earning salvation, when God gives grace?<sup>79</sup>

Clearly, in attempting to allegedly make biblical creation more acceptable to science, many Christian scholars end up with a god who is less than the God of Scripture.

**An Adventist Alternate View: The Thinking of Frederick E. J. Harder**

In a chapter titled “Theological Dimensions of the Doctrine of Creation,” Harder presents creation in the light of the incarnation, arguing that the eternal purpose of creation was realized in the incarnation. He claims, “The incarnation was not an event necessitated by sin but a miracle essential to human beings’

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<sup>77</sup> Ward, 48.

<sup>78</sup> Ward, 95. How can creation necessarily require a process of suffering and death to evolve human life? Is this what he means when he says, “When God creates, God expresses the divine nature in a way that would otherwise have remained only potential” (98). Looking to the cross as evidence of God’s love (as Ward does, 99–100) leads one to ask why the God who died to do away with human death had to create humans through the death of animals? This god doesn’t seem to be “the same yesterday and today and forever” (Heb 13:8), but changing/evolving from causing death for humans before He chose death for humans, the first beyond His control, the other not. Yet Ward sees this god as “compatible with evolution” (112), but overlooks his incompatibility with the God of Scripture.

<sup>79</sup> Henry M. Morris, John D. Morris, *The Modern Creation Trilogy: Scripture and Creation*, 40.

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realization of a destiny intrinsic to their creation in God's image<sup>80</sup> He reminds me of Irenaeus in the 2<sup>nd</sup> century<sup>81</sup> and Karl Barth in the 20<sup>th</sup> century.<sup>82</sup> Both looked to the incarnation as the completion of God's eternal will for creating humans. The creation of Adam and Eve was merely the first step for Christ to become human and elevate the human race in His own humanity. So, fundamentally, Christ became human because of this two-staged creation plan and not because of their need for atonement. In other words, even if humans had not sinned, it was Christ's plan to become human.

So Harder can say,

The more I study the doctrine of creation, the more impressed I am that the incarnation was eternally intended as the final step in the perfection of humanity—the inscrutable act of God by which those who were created in the likeness of God would become one with God. Sin postponed it and required the atonement to make humankind fit for it. The incarnation, however, is an event belonging to creation—not merely a prelude to the atonement.<sup>83</sup>

Thus, the initial creation of Genesis 1 is but a prelude to the incarnational creation of John 1. No wonder the Sabbath is linked to Christ as the “Lord of the Sabbath” rather than to a literal creation week. Harder says, “We belittle the majesty of this weekly memorial, diminish its diffusive purpose in Christian doctrine, and impair its comprehensive base of authority when we insist that its significance is dependent upon a dubious chronology or on a particular number of days the Creator devoted to creating. And we do not add one whit of support for a six-day creation week”<sup>84</sup>

It follows for Harder that “the sanctity of the Sabbath derives from the Creator-Redeemer of our world” and not from Genesis 1, which he relegates to literary analysis to determine whether it is “verbatim-literal.” For Genesis 1 is to “be interpreted by our concepts of the processes of inspiration and revelation.”<sup>85</sup> Whether Harder realizes it or not, at least in the matter of creation, he apparently places greater weight on the revelation of Christ as “Lord of the Sabbath” than upon the revelation of the Sabbath in creation week. In so doing, at least for the Genesis creation account, he joins a large group of scholars who empty Scripture of revelation by placing it solely in Christ.<sup>86</sup>

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<sup>80</sup> Frederick E. J. Harder, “Theological Dimensions of the Doctrine of Creation,” in *Creation Reconsidered*, ed. James L. Hayward (Roseville, CA: Association of Adventist Forums, 2000), 283.

<sup>81</sup> Irenaeus, *Against Heresies, The Anti-Nicene Fathers* (Grand Rapids: Eerdmans, 1989), 1:546–547 (5.18.3).

<sup>82</sup> Barth, 3/1:55.

<sup>83</sup> Harder, 284.

<sup>84</sup> Harder, 285.

<sup>85</sup> Harder, 285.

<sup>86</sup> So many theologies reject Scripture as the Word of God, speaking of it merely as a witness to God, opting to place revelation solely in Jesus Christ. These include Karl Barth, Emil Brunner,

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In his *Spectrum* article “Beyond Arithmetic: The Truth of Creation,” Harder says why he keeps the Sabbath: it was blessed by God, it is a memorial of creation, it witnesses to God’s sanctifying activity, it foreshadows Sabbaths to come in eternity, it is in God’s law, because Christ is the “Lord of the Sabbath,” and because he looks forward to entering God’s rest described in Hebrews 4. These are all good. But nowhere in this article does he give God’s reason for keeping the day—He rested on the seventh day after His six days of creating, attested to in the creation record (Gen 1:31–2:2) and the fourth commandment (Exod 20:8–11).<sup>87</sup>

Harder says he believes in a seven-day creation. “However,” he says, “if it were ever undeniably demonstrated to be untenable, I can’t conceive of any possible change that it would make in my theology or religious practices. Even if I admit that the world was not created in six days, I would still keep the seventh-day Sabbath”<sup>88</sup> His assurance that God created in six days depends more on so-called scientific research than divine revelation. He places human research above divine revelation. Though unwittingly, he really places humans above God. God’s own foundation for the Sabbath is a literal creation week, and it is just as important to believe God’s word in this respect as it was to believe He also said “eat the fruit and you will die.” With cunning craft Satan caused Eve to doubt God’s word, and she became separated from God, the first step in the fall of humankind. To doubt His word about the six-day creation is just as devastating, although Harder seems not to realize what he is saying in this respect. In essence, there is no difference between doubting God’s word about creation week and doubting His word about forbidden fruit.

If one appeals to the fact that Harder believes the other things God stated about the Sabbath, one can point to Eve believing Christ created her, gave her Eden, and everything she had. Partial belief is not enough. Total trust in God’s word is what was called for in Eden and is called for today.

**What Harder Overlooked.** God knew that evolution would become a problem in the end-time. This is why Scripture speaks of “last-day scoffers” denying the second advent, saying “everything goes on as it has since the beginning of the creation” (2 Pet 3:3), which is uniformitarianism, the basis of evolutionary theories. Scripture says they deliberately ignore creation by God’s word and a global flood (vs. 5–6). It’s in this context that the first angel’s message, which began in 1844, calls humans to “Worship him who made the heavens, the earth, the sea and the springs of water” (Rev 14:7b). Here is an end-time call to

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Thomas Torrance, Hans Frei, Paul Tillich, Georg Stroup, George Lindbeck, G. C. Berkouwer, Stanley Grenz, Avery Dulles, James Barr, David Tracy, David Kelsey, and Donald Bloesch. See Norman R. Gulley, *Systematic Theology*, vol. 1, *Prolegomena* (Berrien Springs, MI: Andrews UP, 2003), chapter 6.

<sup>87</sup> F. E. J. Harder, “Beyond Arithmetic: The Truth of Creation,” *Spectrum*, 15/2 (August 1984): 54–59.

<sup>88</sup> Harder, “Beyond Arithmetic,” 56.

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remember God as Creator, and not the uniformitarianism of natural selection. This has no reference to the incarnation of Christ in the New Testament, but to the creation of humans in Genesis 1–2.

The first angel’s message also calls people to reverence God, “and give him glory, because the hour of his judgment has come” (Rev 14:7a). So the first angel announces the pre-advent judgment in heaven and makes a judgment against the pre-advent evolutionary theory on earth. Both judgments are a vital part of the end-time message. The judgment in heaven is against the system and those who replace the redemption of Christ by a human counterfeit of works. The judgment on earth is against those who replace the creation of Christ by a human counterfeit of evolution, whatever its form.

**Roy Branson on the Sabbath.** Branson rejects Price’s view that the Sabbath is a rejection of a scientific theory of origins. He selectively finds the meaning of the Sabbath in freedom—liberation at the Red Sea (Deut 5:15)—and salvation—liberation through Christ’s death (John 19:12–20:1). He ignores the meaning of the Sabbath in Christ’s finished work of creation in six days (Gen 2:2–3; Exod 20:8–11; Rev 14:7). He removes the foundational meaning of the Sabbath, assuming that the Sabbath can be kept without reference to Christ’s creation in six days.<sup>89</sup>

In so doing he removes what Scripture first says about the Sabbath and goes to subsequent references, choosing the latter meaning and setting aside the initial meaning. He evidently fails to understand that the meaning of the Sabbath is foundational in the creation story, and that the celebration of Christ’s finished work of creation is added to in the celebration of His finished deliverance at the Red Sea and His finished salvation death at Calvary for anyone who will accept it and be saved. If one wants to know the full meaning of the Sabbath, one cannot choose a few examples and ignore the basic one, which is foundational to the rest.

**Jack Provonsha on the Sabbath.** Provonsha lists foundational convictions that a believer, to be a believer, must espouse: the personality of God, that He is the Creator, His goodness, the reality of evil, the personality of evil, what constitutes “good” and “evil,” the Fall of creation, and its restoration. He then adds “(Please note that I have omitted time and creative method as essential “givens.” They are more crucial to one type of scriptural hermeneutic, I think, than they are to the matter under consideration.)”<sup>90</sup>

The matter under consideration is the great controversy. So he is saying that God creating in six days is not a given. God creating over vast spans of time through evolutionary means is just as viable an option. Yet Provonsha goes on to suggest that what is seen in the natural record, attributed to evolution, may be

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<sup>89</sup> Roy Branson, “George McCready Price Was Made for the Sabbath, Not the Sabbath for George McCready Price,” in *Creation Reconsidered*, 313-321.

<sup>90</sup> Jack W. Provonsha, “The Creation/Evolution Debate in the Light of the Great Controversy Between Christ and Satan,” in *Creation Reconsidered*, 310.

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the result of Satan's working in nature, for "the idea of a totally random evolutionary process is utterly incredible on the face of it." It appears that the great controversy involves a Satan-guided evolutionary creative experimentation in genetic engineering.<sup>91</sup>

This is a creative idea. But if this is a corollary of his list of "givens," how about the biblical given of a six-day creation with a Sabbath? Isn't that more important than speculation?

Apparently Provonsha, like Harder and Branson, do not go to creation to find the foundational text on the Sabbath. Yet God did in the fourth commandment (Exod 20:8–11), and that was written with the finger of God, and you can't have a greater "given" in Scripture than that.

### **III. The Biblical Record of Creation**

**1. Debate over Length of Days in Creation.** Are creation days literal twenty-four-hour days or long ages of geological time? We first look at the debate, and then at the biblical account. Many scholars observe that "the evening and the morning" designation for the six days (Gen 1:5, 8, 13, 19, 23, 31) is not present for the seventh-day (Gen 2:2). They conclude the seventh day is still in process. Vern S. Poythress assumes,

the seventh day, the day of God's rest (Gen. 2:2–3), goes on forever. Though God continues to act in providence and in salvation, his acts of *creating* are finished forever. But if the seventh day is God's eternal rest, the other six days are also *God's* days, not simply ours; we cannot naively deduce that they must be twenty-four hours long.<sup>92</sup>

Robert C. Newman believes each new creation day begins "a new creative period." His six periods are: day 1, formation of atmosphere and ocean; day 2, formation of dry land and vegetation; day 3, oxygenation and cleaning of the atmosphere; day 4, the formation of air and sea animals; day 5, the formation of land animals and humans; day 6, the formation of redeemed humanity; and day 7 will be the eternal Sabbath.<sup>93</sup> Clearly the last three days are wrongly ascribed. Furthermore, he notes that Moses wrote Psalm 90, which speaks of a day being like a thousand years (v. 4), and he refers to John's "last hour" (1 John 2:18) as nearly 2,000 years ago.<sup>94</sup> He claims his method is to harmonize science and Scripture,<sup>95</sup> but Scripture is not only altered (final three days), but he says the philosophy of science informs his approach to the Bible and theology,<sup>96</sup> so he

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<sup>91</sup> Provonsha, 310.

<sup>92</sup> *Three Views on Creation and Evolution*, 92.

<sup>93</sup> *Three Views on Creation and Evolution*, 104.

<sup>94</sup> *Three Views on Creation and Evolution*, 110.

<sup>95</sup> *Three Views on Creation and Evolution*, 127.

<sup>96</sup> *Three Views on Creation and Evolution*, 124.



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places philosophical speculation above inspired revelation. This is not a scientific approach for a Christian who accepts Scripture as God's Word.

Our focus is on evangelicals, where Seventh-day Adventist biblical-theological study finds an affinity, more than with liberalism on the left and fundamentalism on the right. Evangelicals are those who believe in Scripture as authoritative and trustworthy. Their forerunners, the reformers of the 16<sup>th</sup> and 17<sup>th</sup> centuries, opposed the papal tradition and magisterium being placed above Scripture. They believed Scripture interprets itself, the so-called *sola scriptura* hermeneutic. Martin Luther taught creation in six days, ending in the Sabbath. He concludes, "Therefore from the beginning of the world the Sabbath was intended for the worship of God."<sup>97</sup> John Calvin says "the creation of the world was distributed over six days,"<sup>98</sup> and "God claims for himself the meditations and employments of men on the seventh day."<sup>99</sup> Francis Turretin sees evidence for a six-day creation from the fourth commandment.<sup>100</sup>

That has all changed. Today, leading evangelical scholars either reject or seem unwilling to accept creation days as literal twenty-four-hour periods. Millard Erickson says, "At present, the view which I find most satisfactory is a variation of the age-day theory."<sup>101</sup> So the days are not literal to him, but long periods of time. Carl Henry says, "The Bible does not require belief in six literal twenty-four-hour creation days on the basis of Genesis 1–2."<sup>102</sup> Wayne Grudem considers "the possibility must be left open that God has chosen not to give us enough information to come to a clear decision on this question."<sup>103</sup> Gordon Lewis and Bruce Demarest claim that "Only after God appointed the sun to mark days and nights could there have been literal days," and conclude, "Differences on the length of the creation 'days' should not become tests for dividing personal, church, or other Christian fellowships."<sup>104</sup> So the length of these days is not an issue. Grudem notes that the differences over whether creation days are literal or long periods "has led to a heated debate" among evangelicals, "which is far from being settled decisively one way or another."<sup>105</sup> Each one of these scholars believes in the inerrancy of Scripture. So why do they find it difficult to

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<sup>97</sup> Martin Luther, *Luther's Works*, ed. Jaroslav Pelican (St Louis: Concordia, 1958), 1:80; see 3–82.

<sup>98</sup> John Calvin, *Calvin's Commentaries: Genesis*, trans. John King (Grand Rapids: Baker, 1989), 1:92.

<sup>99</sup> Calvin, 105.

<sup>100</sup> Francis Turretin, *Institutes of Elenctic Theology*, trans. George Musgrave Giger, ed., James T. Dennison Jr. (Phillipsburg, PA: Presbyterian and Reformed, 1992) 1:444–452.

<sup>101</sup> Millard J. Erickson, *Christian Theology* (Grand Rapids: Baker, 1986), 382.

<sup>102</sup> Henry, *God, Revelation and Authority*, 6:226.

<sup>103</sup> Wayne Grudem, *Systematic Theology* (Grand Rapids: Zondervan, 1994), 297.

<sup>104</sup> Gordon R. Lewis and Bruce A. Demarest, *Integrative Theology* (Grand Rapids: Zondervan, 1990), 2:46.

<sup>105</sup> Grudem, 293.

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accept a literal six-day creation? Why do so many reject creation days as literal twenty-four-hour days. Does the word day (*yôm*) help decide which is right?

These scholars rightly claim that the word *yôm* in Scripture has several different meanings, which include twenty-four hours, or a longer period of time. Here are some examples:

Genesis 2:4 “This is the account of the heaven and the earth when they were created.” The word “when” in Hebrew is *yôm*. (In the day they were created, day = six days).

Job 20:28 “A flood will carry off his house, rushing waters on the day of God’s wrath.” (day = period of God’s wrath).

Prov 25:13 “Like the coolness of snow at harvest time” (time = *yôm* = period of time).

They claim there was so much to do on the sixth day of creation that it must have been more than a day (naming of all the animals).

They claim the seventh day is still continuing, hence is a long period of time (cf. John 5:17; Heb 4:4, 9–10), as it had no evening and morning designations (Gen 2:3), as the other six had (Gen 1:5, 8, 13, 19, 23, 31)

Here is the reasoning, as expressed by Grudem. Because *yôm* in Genesis 2:4 is longer than twenty-four hours, we should not make “dogmatic statements” about the length of the creation days. Further, “if convincing scientific data about the age of the earth, drawn from many different disciplines and giving similar answers, convinces us that the earth is billions of years old, then this possible interpretation of *day* as a long period of time may be the best interpretation to adopt.”<sup>106</sup> In this context Grudem gives a reinterpretation of the fourth commandment. Thus, just as God

followed a six-plus one pattern in creation (six periods of work followed by a period of rest), so they were to follow a six-plus-one pattern in their lives (six days of work followed by a day of rest; also six years of work followed by a sabbath year of rest, as in Ex. 23:10–11). In fact, in the very next sentence of the Ten Commandments, ‘day’ means ‘a period of time’: ‘Honor your father and your mother, that your days may be long in the land which the Lord your God gives you’ (Ex. 20:12). Certainly, here the promise is not for ‘long’ literal days (such as twenty-five- or twenty-six-hour days!), but rather that the period of one’s life may be lengthened upon the earth.<sup>107</sup>

It seems to me that the different ways *yôm* is used is precisely that—different ways. This means that the context determines meaning. The same happens in English and is not peculiar to the word *yôm*. Thus we can speak of the Reformers introducing a new day in biblical interpretation, meaning period. We can say that each day the Reformers proclaimed the gospel, meaning

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<sup>106</sup> Grudem, 294–295.

<sup>107</sup> Grudem, 296.

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each literal day. We can say that the elderly Luther finished out his days in gratitude to God for the discovery of the gospel, meaning his last years. Context determines meaning. So in creation week six days are designated by an evening and a morning (Gen 1:5, 8, 13, 19, 23, 31), and the seventh-day (Gen 2:2–3) is the Sabbath in the fourth commandment (Exod 20:8–11). The context calls for literal creation days followed by a literal seventh day of rest. It seems that these literal days, called for by the biblical context, are replaced by an external context in evolutionary theory.

2. **The Creation Story.** Biblical critics believe that a number of writers wrote the Book of Genesis, and hence the multiple source theory. Others interpret the creation record as a myth (Bultmann) or a saga (Barth) rather than as a historical document.<sup>108</sup> Opposed to both views, conservative students of the Bible find that the Genesis creation story is a carefully crafted account of how life came into being on planet earth and must be the work of one writer. It's important that Scripture opens with the words, "In the beginning God created the heavens and the earth" (Gen 1:1). Here's the truth Satan wants to eradicate. If he can cause doubt in human minds that God created their first ancestors, then he's well on the way to breaking their dependent relationship upon God. He knows firsthand how powerful is this dependence. For a long time He depended on God, who gave Him everything he was and had.

#### Genesis 1–2: A Carefully Crafted Creation Account

As Gordon J. Wenham points out in the *Word Biblical Commentary*, "the material of chaps. 1–11 is markedly different from that in chap. 12 onward. The opening chapters have a universal perspective dealing with all mankind . . . Chaps. 12–50, on the other hand, deal almost exclusively with Israelite concerns."<sup>109</sup> That's important because it places the creation record at the beginning of the human race and the Sabbath as a universal holy day and not just a day for Israel, as so many claim because the Sabbath commandment was given to Israel on Mt. Sinai (Exod 20:1–17). In other words, as Christ affirmed, "The Sabbath was made for man" (Mark 2:27).

1. **Two Names for God.** There are two Hebrews words used for God in the creation record. The word *Elohim* is found thirty-one times in Gen 1 and eight times in Gen 2. *Yahweh* is found three times in Gen 2, and *Yahweh Elohim* is found five times. *Elohim* is the universal God, omnipresent, the transcendent

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<sup>108</sup> Barth can speak of creation as historical, but it is always qualified by his definition of "saga" (a story beyond the historiographical account) with his basic presupposition that creation is merely the external basis of the covenant, and the covenant the internal basis of creation. One example is the dominion given to Adam (Gen 1:28), which he sees as fully realized in the man Jesus. Thus the historical reality of dominion given to Adam and Eve is called in question. Barth converts creation history into covenant prophecy. See *Church Dogmatics*, 3/1:206.

<sup>109</sup> Gordon J. Wenham, *Word Biblical Commentary: Genesis 1–15* (Waco, TX: Word, 1987), 1:xxii.

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God, by contrast with *Yahweh*, the God of the covenant, the imminent One, the God up-close. Genesis 1 presents the transcendent God who speaks everything into existence on each creation day: “And *Elohim* said” (vs. 3, 6, 9, 11, 14, 20, 24, 26). The narrative structure highlights the third and the sixth days of creation with a double announcement of the divine word, “And God said” (vs. 9, 11, 24, 26).

Genesis 2 presents the God up-close who stoops down and forms Adam and Eve. In Genesis 1 the word create is *bārā*, while in Genesis 2 the word “form” is *yašar*, the first done by speaking from the transcendent heights, the second done by a hands-on approach. There’s a distinction between creating everything for humans and creating humans themselves. God comes close to create humans, unlike the rest of creation. This distinction is one that evolution of humans from animals doesn’t provide.

**2. A Correspondence Between the Two Creation Accounts.** There’s a correspondence between Genesis 1 and 2, and the number seven dominates. The Hebrew words in both are multiples of seven. Thus 1:1 has seven words, 1:2 has fourteen words (2 x 7), 2:1–3 have thirty-five words (5 x 7). Could this set the stage for the seven days? There’s a correspondence between days one through three with days four through six, where the first three give the areas formed by *Elohim* and days four through six give the days when *Elohim* filled those areas with His creative works.<sup>110</sup> Wenhem charts them as follows:

Day 1 Light	Day 4 Luminaries
Day 2 Sky	Day 5 Birds and Fish
Day 3 Land (Plants food)	Day 6 Animals and Man (Plants for food)
Day 7 Sabbath <sup>111</sup>	

So in days one through three *Elohim forms* the places to be *filled* in days four through six. And the remarkable fact in this carefully crafted structure is that this is not the climax. The climax is not the creation of humans on day

<sup>110</sup> *Ibid.*, 1:6–7

<sup>111</sup> *Ibid.*, 1:7. Derek Kidmer, in the *Tyndale Old Testament Commentaries: Genesis*, ed. D. J. Wiseman, (Downers Grove IL, InterVarsity, 1967), 46, arranges the six days as follows:

<i>Form</i>	<i>Fullness</i>
Day 1 Light and Dark	Day 4 Lights of Day and Night
Day 2 Sea and Sky	Day 5 Creatures of Water and Air
Day 3 Fertile Earth	Day 6 Creatures of Land

Wayne Grudem’s arrangement, in his *Systematic Theology* (Grand Rapids: Zondervan, 1994), 301, arranges the six days as follows:

<i>Days of Forming</i>	<i>Days of Filling</i>
Day 1 Light and darkness separated	Day 4 Sun, moon, and stars, lights in the heavens
Day 2 Sky and waters separated	Day 5 Fish and birds
Day 3 Dry land and seas separated; Plants and tress	Day 6 Animals and man

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six,<sup>112</sup> but the gift of the Sabbath on day seven, for the narrative ends with the Sabbath in 2:1 (chapter divisions came long after the time of writing).

**3. The Sabbath as Climax of Creation.** Clearly the Sabbath is not only a day of rest given to all humans by *Elohim*, but the climactic focus of the creation story in Genesis 1. Everything in the forming and filling leads to the Sabbath, God’s chosen memorial of creation. Just as Yahweh created Adam and Eve, so with the mention of the Sabbath the word for God is *Yahweh*, the God up-close. On the six days *Elohim* spoke things into existence in space; on the seventh day *Yahweh* comes to be with humans in time—up close. A work in time by a God up-close speaks volumes about the distinction of the Sabbath compared to the works of creation in space on the other days. Christ spoke everything into existence for humans. He gave them gifts in space. But on the Sabbath He gave them Himself in time, to be their Creator up-close, like His life on planet earth “to tabernacle” among them (John 1:14) and His coming in the earth made new when “God himself will be with them and be their God” (Rev 21:3). This is Immanuel, “God with us” (Matt 1:23). Sabbath keeping is spending time with Christ up close!

In Genesis 2:1–2 the seventh day is mentioned three times (vs. 1, 2 [twice]). Wenhem rightly notes that the “threefold mention of the seventh day, each time in a sentence of seven Hebrew words, draws attention to the special character of the Sabbath. In this way form and content emphasize the distinctiveness of the seventh day.”<sup>113</sup>

Because the worship of sun and moon was prevalent from early times, God guided Moses to use the words “greater light” and “lesser light” in place of the sun and moon respectively (Gen 1:16). Only the Creator-God is worthy of worship, not His creation. Not only does Satan want worship instead of God, but he inspires all worship that is not worship of God.

The word Sabbath is derived from the Hebrew word *šabat*, meaning to “cease” or “desist” from a previous activity—in this case, to desist from creating. God finished His work of creation during the six days. He didn’t cease because He was tired, but He ceased in order to celebrate with Adam and Eve what He had completed. So Sabbath is time to celebrate the finished work of Christ’s creation.

On day six, Christ judged creation as “very good” (Gen 1:31), and hence it was completed (Gen 2:3). For “in six days the Lord made the heaven and the earth, and on the seventh day he abstained from work and rested” (Exod 31:17). Therefore, His “works were finished from the foundation of the world” (Heb 4:3 NKJV). Clearly the work of creation was finished on the sixth day of creation

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<sup>112</sup> Humans are “the crowning work of Creation” in SDA Fundamental Belief #6 (which compares humans with other created things). Young considers humans “the climax of creation” in space in this sense (89).

<sup>113</sup> Wenhem, 1:7.

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week, and hence the view of a continuing creation through theistic evolution is contrary to this biblical record.

As Kenneth Strand rightly points out, the first reference to the Sabbath (Gen 2:2–3) is in a chiasmic structure that emphasizes the importance of the day.

- A. God finished his work (verse 2)
- B. And he rested on the seventh day from all his work which he had done (verse 2)
- C. So God blessed the seventh day and hallowed it (verse 3)
- B. Because on it God rested from all his work which he had done (verse 3)
- A. In creation (verse 3 cont.)<sup>114</sup>

In an A-B-C-B-A chiasmic structure, the middle statement is often the most important of the chiasm. So the emphasis is on the seventh day as the Sabbath, and the seventh day as the day He blessed. God’s blessing (Hebrew, *bārāk*) was only given to the seventh day. It was set apart from the other six, and in this way it was made holy. This setting apart is seen in Exod 16:23, the Sabbath commandment in Exod 20:8–11, and also in Exod 31:14–16, where it is to be kept forever, and in Exodus 35:2, where death is commanded for Sabbath breakers. These indicate the continuing importance of the creation seventh-day Sabbath as holy throughout human history. Karl Barth says the Sabbath “is in reality the coronation of His work,” for “not man but the divine rest on the seventh-day is the crown of creation.”<sup>115</sup>

**IV. The Biblical Meaning of the Sabbath as Unfolded in Biblical History**

The meaning of the Sabbath is unfolded throughout Scripture, but each addition is rooted in the creation record. In creation the Sabbath was blessed, or set aside as holy by Christ, and celebrated the finished work of Christ as Creator. “God blessed the seventh day and made it holy, because on it he rested from all the work of creating that he had done” (Gen 2:3). It was the first full day of Adam and Eve’s existence, and it was spent in resting in Christ. One can imagine that on that day they reflected on creation as a gift to them. They had done nothing to earn or deserve creation. The Sabbath commandment is rooted in this creation gift. “Remember the Sabbath day by keeping it holy . . . For in six days the Lord made the heavens and the earth, the sea, and all that is in them, but rested on the seventh day. Therefore the Lord blessed the Sabbath day and made it holy” (Exod 20:8,11).

The next time the Ten Commandments are given, the fourth one adds another dimension, not in contradiction to, but in an unfolding of the Sabbath’s meaning. “Remember that you were slaves in Egypt and that the Lord your God

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<sup>114</sup> “The Sabbath,” *Handbook of Seventh-day Adventist Theology: The SDA Bible Commentary*, 12:493–495.

<sup>115</sup> Barth, 3/1:223 (German ed., 1945).

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brought you out of there with a mighty hand and an outstretched arm. Therefore the Lord your God has commanded you to observe the Sabbath day” (Deut 5:15). This is the only commandment given an added meaning, but the principle remains unchanged. In creation Christ gave Adam and Eve a gift. In the exodus across the Red Sea he gave the Israelites a gift. Both were gifts of life, one in its inception, the other in its continuance. Those who use this text to say God gave the Sabbath to Israel, and not to the world, overlook the word “remember” and the biblical fact that “the Sabbath was made for man” (Mark 2:27), for humankind, and not just for one nation.

There is a comparison of creation Friday and creation Sabbath with crucifixion Friday and crucifixion Sabbath. Christ is central in both. On creation Friday He gave life to Adam and Eve. On crucifixion Friday He gave life to everyone who accepts it. On creation Friday Christ gave the gift of life to two humans and their posterity. On crucifixion Friday Christ gave the gift of eternal life to whoever accepts it. How significant that the Sabbath following the two gifts was time for celebration of the completed work of Christ.

Thus the Sabbath is connected to a gift to two humans, to a nation, and to all humans who will accept it. The Sabbath is a sign to God’s people of any age. It is a set-apart day to set-apart people. “I gave them my Sabbaths as a sign between us, so that they would know that I the Lord made them holy [or set-apart]” (Ezek 20:12). The Sabbath is connected with giving life in creation, giving rescue at the Exodus, and giving eternal life at Calvary. But these gifts are to give us sanctification, holiness, setting us apart for heaven. All Gods’ gifts celebrated by the Sabbath throughout Scripture reveal Christ’s gift of Himself to prepare humans to be with Him forever. In the new creation “the dwelling of God is with men, and he will live with them. They will be his people, and God himself will be with them and be their God” (Rev 21:3). This is the essence of the Sabbath, God up-close with His people in time, first manifested in the creation Sabbath. Hence, there is no distinction between the gift of the Sabbath in creation and the gift of the Sabbath to Israel.

Nor is there any difference between the gift of the Sabbath throughout human history and the gift of the Sabbath in creation. This is why the first angel’s message invites humans to “Worship him who made the heavens, the earth, the sea and the springs of water” (Rev 14:7b). This is not only a call to remember the Creator when the masses look to evolution, but it is a call to remember the Sabbath of His creation, for it is a repetition of a part of the fourth commandment: “For in six days the Lord made the heavens and the earth, the sea, and all that is in them . . .” (Exod 20:11), as pointed out by Jon Paulien<sup>116</sup> and John T. Baldwin.<sup>117</sup> Note that this linguistic reference to the Sabbath is in the context of

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<sup>116</sup> Jon Paulien, “Revisiting the Sabbath in the Book of Revelation,” unpublished paper presented at the Jerusalem Bible Conference, June 9–14, 1998.

<sup>117</sup> John T. Baldwin, “Revelation 14:7: An Angel’s Worldview,” in John T. Baldwin, ed, *Creation, Catastrophe, and Calvary* (Hagerstown, MD: Review and Herald, 2000), 19–39.

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the historical reference to the “everlasting gospel” (Rev 14:6). The gospel goes all the way back to Genesis 3:15, just as the Sabbath goes all the way back to creation in six days (Gen 1:1–2:3). Neither merely go back to Israel.

Furthermore, this call to worship the Creator is a call to worship Christ the Creator. Scripture is replete with references to Christ as Creator. The Gospel of John (1:1–3) is a divine commentary on Genesis 1. “In the beginning was the Word, and the Word was with God, and the Word was God. He was with God in the beginning. Through him all things were made; without him nothing was made that has been made.” And verse 14 says, “The Word became flesh and lived for a while among us. We have seen his glory, the glory of the one and only Son, who came from the Father, full of grace and Truth.” Genesis 1 and John 1 take us back to the beginning of creation on planet earth, and we see that the *Elohim* of Genesis 1 is the Christ of John 1.

Other New Testament texts corroborate this connection. Christ “is the image of the invisible God, the firstborn over all creation. For by him all things were created: things in heaven and on earth, visible and invisible, whether thrones or powers or rulers or authorities; all things were created by him and for him. He is before all things, and in him all things hold together” (Col 1:15–17). Christ not only created everything in heaven and on earth, but in His continued providence He keeps the world and appoints powers and authorities. God in the last days “has spoken to us by his Son, whom he appointed heir of all things, and through whom he made the universe. The Son is the radiance of God’s glory and the exact representation of his being, sustaining all things by his powerful word. After he had provided purification for sins, he sat down at the right hand of the Majesty in heaven” (Heb 1:2–3).

#### **The Importance of Revelation 14:7**

John Baldwin’s chapter “Revelation 14:7: An Angel’s Worldview” is an important source for a deeper reflection on the significance of the first angel’s message in light of our topic.<sup>118</sup> His major contribution is to demonstrate that Rev 14:7 alludes to the fourth commandment of Exod 20:11 and not to the fourth commandment of Deut 5:12–14. The words “For in six days the Lord *made* the *heavens* and the *earth*, the *seas*, and all that is in them” (Exod 20:11) is the root passage for “Worship him who (*in six days*) *made* the *heavens* and the *earth* and *sea* and springs of waters” (Rev 14:7). The allusion is clear with the four italicized words (one verb and three nouns) found in each. Deuteronomy does not include any of these five. Hence this direct allusion to the fourth commandment of Exod 20:11 implies “the six days” not found in Revelation 14:7. This implication is shown to be correct because it was the pre-incarnate Christ accompanying Israel (1 Cor 10:4) who gave the fourth commandment on Mount Sinai. The Revelation of Jesus Christ (Rev 1:1) would not contradict this.

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<sup>118</sup> Baldwin, 19–39.



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Baldwin rightly points out that although the Deuteronomy account mentions the Sabbath as the seventh day

it does not explicitly designate the time unit of which the Sabbath is the seventh day. It leaves the reader with the question whether the Sabbath is the seventh day of the lunar month, the seventh day of the year, or the seventh day of some other time unit. One needs to refer to Genesis 1 and 2 and to Exodus 20:11 in order to discover biblically that the Sabbath is the seventh day of the weekly time unit established at creation. In light of this consideration it is understandable why in Revelation 14:7 God intentionally focuses attention upon the wording of the fourth commandment of Exodus 20 rather than upon the Sabbath commandment of Deuteronomy 5.<sup>119</sup>

Although Deuteronomy 5:15 only mentions the Sabbath without reference to days, it must also be noted that three verses before (v. 12), there is a call to observe the Sabbath as God commanded, noting that it is the seventh day after six days of work. This seems to refer back to the fourth commandment of Exodus 20:11. It is clear that Revelation 14:7 calls for end-time people to worship the Creator God who also created the Sabbath, with the Greek words going back to Exodus 20:11. It is also instructive that the Greek translation in the Septuagint of Exodus 20:11 is identical to the Greek of Acts 14:15, where Paul and Barnabas tear their clothes when those in Iconium declare them to be gods. Paul and Barnabas point them to the living God who created “heaven and earth and sea and everything in them,” another clear allusion to the fourth commandment, with creation in six days followed by a Sabbath. So Acts 14:15 and Revelation 14:7 are two NT references with the same allusion to creation week with its six days of creation followed by the seventh-day Sabbath.

This is what Harder does not comprehend. The Sabbath is rooted in the historical six-day week of creation. Any question about the literal, historical, six-day week with a seventh-day Sabbath in the creation record jettisons the foundational biblical record for the Sabbath. This is why the evolutionary views that reject the historicity of Genesis 1–11 are so important for our church to understand. When Harder says he could keep the Sabbath even if Genesis 1–2 is shown not to be historical, he misses the fact that Deuteronomy does not specify a weekly seventh day.

**The Challenge of Evolution to Seventh-day Adventists**

It's significant that Darwin had his *Origin of Species* (1859) written (230 pages) by 1844, the date when God called out the Seventh-day Adventist church to take the first angel's message to the world, a call “to every nation, tribe, language and people” to “worship him who made the heavens, the earth, the sea and the springs of water” (Rev 14:6–7). God was ready to use a movement to

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<sup>119</sup> Baldwin, note 4, 35.

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call the world to remember the Creator Christ and to worship Him, and the phrase “who made the heavens, the earth, the sea and the springs of water” is a repetition of part of the Sabbath commandment (Exod 20:11).

It’s vital that we sense our destiny in these last days. At a time when people have removed God from His world and His Word, we are commissioned to proclaim the truth as it is in Jesus, to point to Him as our Creator-Redeemer. That truth includes the historical, literal, twenty-four-hour, consecutive creation days followed by a seventh-day Sabbath given to all humans just as surely as they were given life and marriage in creation week. Any view of creation days as ages unwittingly calls in question a literal twenty-four-hour weekly Sabbath. Christ created all things (John 1:1-3, 14; Col 1:15–17; Heb 1:1–2), including the Sabbath. This is why “the Son of Man is Lord even of the Sabbath” (Mark 2:28). He invites us all, “If you want to enter life, obey the commandments” (Matt 19:17). His invitation to come to Him to receive rest (Matt 11:28) includes the Sabbath rest. The seventh-day Sabbath gift is a gift from Christ. It is the only day of creation week that He blessed and made holy (Gen 2:3). Nowhere in Scripture does He annul this blessing and setting apart, or give it to another day. First day meetings are no more evidence of a change of the Sabbath than is the Thursday meeting for the Lord’s Supper (Matt 26:17–28:1). Descriptive passages cannot deny prescriptive passages. “The Sabbath was made for man” (Mark 2:27) long before there was a Jew. The seventh-day Sabbath is Christian because it is the day Christ set apart. God’s law, including the seventh-day Sabbath, was written by the finger of God (Exod 31:18; Deut 9:10). In the end-time Satan is against those who keep these commandments of God (Rev 12:17). No wonder the end-time call to worship the Creator includes an allusion to the seventh-day Sabbath (Rev 14:7) and refers to the saints as those “who obey God’s commandments and remain faithful to Jesus” (Rev 14:12). This is the Jesus who promised, “If you love me, you will obey what I command” (John 14:15). The seventh-day Sabbath command requires belief in a six day creation climaxed by Christ’s Sabbath gift to humanity.

Scripture presents Christ as the God up-close, “Immanuel,” God with us (Matt 1:23). The greatest evidence of creation was not in Eden, but Bethlehem. When Jesus was born of Mary through the Holy Spirit we have a creative act of God in history, born in Bethlehem in Judea during the time of King Herod (Matt 2:1). If God can create the second Adam, the God-man Jesus, then creation of the first Adam was much easier. Evolution has nothing comparable. Its process, allegedly over millions of years, takes place before human history. It merely leads up to the beginning of human history, and hence it doesn’t take place during human history, and so cannot be historically checked, as can the birth of Jesus. Evolution can only demonstrate micro-evolution (very small changes) and extrapolate from this to imaginary larger changes (macro-evolution). Science can only help in the micro documentation; the macro is philosophy, not science. By contrast, the incarnation of Jesus is a macro kind of creation compared to the

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creation of Adam and Eve. Macro-evolution is a theory that should be classified as philosophy, not science, a theory, not a fact. Macro creation is a historical fact, not theory. There is a difference.

Evolution is really a theodicy,<sup>120</sup> an attempt to explain natural evil by natural means rather than the cosmic controversy biblical worldview. Moral and natural evil is Satan's destructive work, the opposite to Christ's creative work. He pushes this counterfeit view of creation in order to distance Christ from His creative work, to distance humans from their Creator, and to do away with the fall. For if humans are the product of an evolutionary development, then they are the pinnacle of the process, and if they can be moral in their own power, apart from God, then the process is allegedly upward without any need of salvation. Then there's no need of Christ as Redeemer, no need of Calvary to save them, no need of Christ's re-creative work within human lives, and no need of a future resurrection, for so many believe that humans are immortal (e.g., Kant). By contrast God creates in history, as seen in the evidence of changed lives, for "if anyone is in Christ, he is a new creation; the old has gone, the new has come!" (2 Cor 5:17). Christ's creative work in humanity climaxes at His second coming. "For since death came through a man, the resurrection of the dead comes also through a man. For as in Adam all die, so in Christ all will be made alive" (1 Cor 15:21).

Judah forgot its Creator-God. Christ said to them,

"Behold, I will create new heaven and a new earth. The former things will not be remembered, nor will they come to mind . . . The wolf and the lamb will feed together, and the lion will eat straw like the ox . . . they will neither harm nor destroy in all my holy mountain," says the Lord. This is what the Lord says: 'Heaven is my throne and the earth is my footstool. Where is the house you will build for me? Where will my resting place be? Has not my hand made all these things, and so they came into being?' declares the Lord. 'This is the one I esteem: he who is humble and contrite in spirit and trembles at my word' (Isa 65:17, 25; 66:1-2).

I agree with Nigel M. de S. Cameron, in his *Themelios* article, where he said,

It is true that the closer and more adequately we study the Scripture, and the more we allow it to determine the form of our theology, the more nearly our thinking will conform to the truth about God himself. But, in order to study God, we look not at him (whom we cannot see, and may not), but at his image in Scripture. The paradox is that the more we revere and study the Book, the more we know its Author. This is other than the way in which we know the natural order.<sup>121</sup>

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<sup>120</sup> See Cornelius G. Hunter, *Darwin's God: Evolution and the Problem of Evil* (Grand Rapids: Brazos, 2001).

<sup>121</sup> Cameron, 26.

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Here is no mere bibliolatry or naïve fundamentalism. This is a reverence for God's cognitive revelation that comes out of a reverence for Him as God.

The Word presents Christ as the Creator who will re-create the heavens and the earth, and the lion and lamb will dwell together, and there will be no more predators, and natural evil will be gone forever. It's this same Creator who showed His love to human rebels, carried their sins to the cross, and died to rescue them, to re-create humans into His image, to resurrect and glorify them, and to recreate a new earth one day for them. This is the Christ of the Word. How tragic that human reason led Darwin and others to miss this glorious revelation! How sad that they distanced God from the world, the very One who has the answer to the moral and natural evil of the world by being the God up-close, the "Lord of the Sabbath."

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## **Living with Confidence Despite Some Open Questions: Upholding the Biblical Truth of Creation Amidst Theological Pluralism**

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### **Introduction**

The question of biblical creation is a very sensitive issue that has far reaching consequences. The clash between faith and science cannot easily be tucked away as having little impact on the rest of what we believe. One of the main issues in this debate is proper hermeneutics, rather than antagonism between Scripture and science.

But what do we do with conflicting positions on the issue of origins that arise from the findings of science and the study of Scripture? What should we do with unsolved problems? How much room is there for pluralism in the issue of origins and creation? Should concerns for unity shape our theology?

These are all legitimate questions that deserve to be addressed. At the same time, we all know they do not lend themselves to easy solutions and will not be solved by superficial answers. In this article I will attempt to respond to those challenging questions by submitting for consideration some foundational ideas that deserve to be addressed.

First we will briefly look at the role creation plays in Scripture and its significance to biblical faith. We will then consider the relationship between faith and natural science before pointing out some aspects that can help us, I trust, to live confidently despite some open questions and to uphold the biblical truth of creation amidst theological pluralism. We will conclude with some challenges that we have to face as theologians, scientists, and leaders of this church as we deal with this crucial question. Let's begin, however, by briefly looking at the question of whether creation is an essential part of biblical teaching.

**The Prominent Role of Creation in Scripture**

Is creation an essential topic in Scripture, or is creation an unimportant side issue that can easily be neglected?<sup>1</sup> Does creation belong to “*doubtful disputations*” (Rom 14:1 KJV), or is it a “*dispute over opinions*” (Rom 14:1 NAB)? Is the topic of creation “*a foolish controversy*” (Titus 3:9 NAS) that is useless and should be shunned because it is not essential to salvation, or does the doctrine of creation belong to those “*elementary truths of God’s Word*” (Heb 5:12 NIV) that are absolutely indispensable to biblical faith? I humbly submit that creation belongs to the latter category.

Creation is foundational for biblical thinking in many ways. In the symphonic melody of biblical ideas creation constitutes a recurring theme picked up by many biblical writers in the Old and in the New Testament. From Genesis (Gen 1:1ff) to the book of Revelation (Revelation 21:1ff), from the very beginning to the very end of Scripture, creation is a dominant and indispensable theme of God’s Word. The subject of God’s special creation permeates Scripture at many places. Beyond Genesis 1–2 we find specific references<sup>2</sup> in the wisdom literature of Job (cf. Job 38–41), in the Psalms (cf. Ps 8; 19; 104 and others), in the prophets (cf. Amos 4:13; 5:8–9; 9:5–6; Isa 40:26–28, 65; 66; Jer 10:11–13; 27:5; 32:17; 51:15–16 and others) and throughout the New Testament (cf. Acts 4:24; 14:15; 17:24; 2 Cor 4:6; Eph 3:9; Col 1:16; Heb 4:4; Rev 10:6, etc.). Several highly theological arguments that pertain to foundational matters of salvation depend on a literal creation (cf. Paul’s elaborate theological argument in Rom 5:12–21 and 1 Cor 15:45–49, where Adam is presupposed as historical individual and the fall of Adam as the reason for the entrance of sin, from which Christ has come to save us). Jesus Christ himself is presented in Scripture as creator (Col 1:16–19; John 1:1–3; Heb 1:2), and he affirms a literal creation as

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<sup>1</sup> One wonders whether there is really such a thing as an “unimportant side issue” in Scripture that can easily be neglected. If we have the means to understand a biblical subject and the opportunity to obey it but deliberately neglect to follow this plain duty, we deceive ourselves and shall find in the end that this can be an error of no small consequence. It is reported that the great Protestant reformer Martin Luther once aptly said: “If I profess with the loudest voice and clearest exposition every position of the truth of God except precisely that little point which the world and the devil are at that moment attacking, I am not confessing Christ, however boldly I may be professing Christ. Where the battle rages, there the loyalty of the soldier is proved; and to be steady on all the battle fields besides, is mere flight and disgrace if he flinches at that point” (quoted in Francis A. Schaeffer, *Der Schöpfungsbericht: Was die Bibel über Kosmos und Geschichte wirklich aussagt* (Wuppertal: R. Brockhaus Verlag, 1976; original title: *No Final Conflict* [Downers Grove, IL: InterVarsity, 1975], 12).

<sup>2</sup> It would be a worthwhile task to study the numerous allusions to God’s creation throughout Scripture, something that space and time does not allow us to pursue at this point. A convenient and concise overview of biblical references to creation is provided by William H. Shea, “Creation,” in Raoul Dederen, ed., *Handbook of Seventh-day Adventist Theology* (Hagerstown, MD: Review and Herald, 2000), 419–440. The biblical passages we list as examples do not exhaustively cover every reference to creation in Scripture. They simply illustrate the fact that creation is indeed a prominent theme throughout Scripture.

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the beginning of this world (cf. Matt 19:4–5, referring to Gen 1:27 and 2:24). One can interpret this widespread occurrence of the theme of creation as evidence for the theological unity of Scripture. Interestingly, there are also special links between the end-time message of the Bible and creation that play an important part in the last book of the Bible (cf. Rev 1:10; 4:8, 11; 10:6; 14:7). Finally, the book of Revelation points to the grand new creation, the ultimate re-creation of the new earth (Rev 21–22). I wonder: if creation is upheld by the twenty-four elders and the four living creatures **in heaven**, who are positioned around the throne of God (cf. Rev 4:11), why shouldn't we as individual believers and as the Seventh-day Adventist Church corporately uphold the doctrine of creation **on earth** until Jesus returns?

Even this cursory presentation of creation in the biblical account makes it abundantly clear that creation is no side issue. We are dealing here with one of the most prominent themes in all the Bible. The significance and the wide ranging implications of the concept of biblical creation become even more obvious when we briefly look at the interrelation of creation with other significant biblical subjects. To this we will turn now.

#### **Creation and Biblical Faith**

Creation is more than a recurring theme in Scripture. The reality of creation is profusely interconnected with many other biblical topics. Therefore we will now turn to the question of the significance of creation to biblical faith.

**The Significance of Creation to Biblical Thought.** The great significance of creation to biblical thought becomes evident through its multifaceted interrelation with other biblical doctrines and biblical faith.<sup>3</sup> While we do not have the time to describe this in detail, I would like point out at least the following twelve theologically relevant connections:

- Creation and the Nature of Man
- Creation and Sin
- Creation and the Origin and Nature of Death
- Creation and Theodicy
- Creation and Salvation
- Creation and the Person and Work of Christ
- Creation and Love
- Creation and the Nature of God
- Creation and the Meaning of History
- Creation and Biblical Ethics
- Creation and the Sabbath
- Creation and Eschatology

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<sup>3</sup> It has been pointed out in a noteworthy recent dissertation on this topic that too little attention is being given to the dogmatic consequences of creation and alternative models of (evolutionary) origins of this world and of life on earth (cf. Reinhard Junker, *Leben durch Sterben? Schöpfung, Heilsgeschichte und Evolution*. Studium Integrale (Neuhausen/Stuttgart: Hänssler Verlag, 1994), 90–91.

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**Preliminary Conclusion.** Even this cursory listing of biblical connections that exist with creation makes it abundantly clear that biblical creation is no side issue. It is a core element of biblical faith and indispensable to our understanding of the nature of God and His dealings with this world. The concept of creation has far reaching implications for biblical eschatology, for the meaning of history, for a proper understanding of human nature, for a correct understanding of sin and death as well as salvation from sin and all evil that has intruded into our world. Hence creation is intimately connected to the central theme of salvation from sin through Jesus Christ. Biblical creation is at the foundation of a biblical ethics that takes seriously all of God's commandments, including the fourth commandment, and motivates our responsibility and stewardship for God's creation. A proper understanding of the biblical day of rest is closely connected to biblical creation. In fact there is no other convincing explanation for the origin of a seven-day week, except as a result of God's creation.

The big picture is abundantly clear! Biblical creation is certainly no marginal doctrine in Scripture. Creation is an essential and indispensable component of biblical faith. It is obvious that biblical creation and evolutionary thought are diametrically opposed to each other. In fact they are incompatible. To attempt to unite evolution and theistic belief, as for instance in theistic evolution, ignores the fundamentally different outlook and presuppositions of both, which becomes apparent when we look at the implications for biblical doctrine and the nature of God. They start with fundamentally different presuppositions.

While the general picture is clear, we are still faced with a number of questions that await a solution and/or a satisfactory answer. How do we deal with challenges from the natural sciences to a biblical creation, and what is the relationship between faith and science?

### **What is the Relationship Between Faith and Science?**

In order to tackle some of those questions, we need to gain an understanding of what the relationship between faith and science should be. Let's briefly look at various proposals on how faith and science ought to be connected.

**Conflict Between Faith and Science.** One widely popular modern proposal sees faith and science continually at war with each other. This has resulted in a most serious conflict between faith and science.<sup>4</sup> According to this perspective, any attempt to harmonize faith and science harms both religion and science. Many today are convinced that modern science has eliminated the justification for belief, by faith, in a meaningful and purposeful creation of the cosmos. Faith

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<sup>4</sup> A description of this warfare can be found in Andrew D. White, *A History of the Warfare of Science with Theology in Christendom* (New York: George Braziller, 1955); from an Adventist perspective, cf. Moleurus Couperus, "Tensions Between Religion and Science," *Spectrum* 10/4 (1980): 74-88.



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in a meaningful origin is believed to be able to survive only as a mere feeling.<sup>5</sup> Richard Dawkins, member of the Royal Society and professor at Oxford, even states that faith is one of the great evils in the world, comparable to a dangerous virus, but much harder to kill.<sup>6</sup> How can such a conflict be resolved? There have been several unsatisfactory proposals.

*Change and Adapt our Interpretation of Scripture.* One approach to solving such a dispute is to change the interpretation of clear statements of Scripture in order to adjust Scripture to our current level of scientific knowledge. Especially those parts of Scripture that speak about the creation of this world through God's supernatural power are often classified as historically and culturally conditioned and thus no longer relevant and normative to our modern understanding of the origin of the world. The biblical writers are believed to have been limited in their understanding of science and are relegated to a level with their contemporaries who were only children of their time and culture. According to some, "the gift of inspiration did not make them, in effect, astronomers or geophysicists or biologists."<sup>7</sup> It has been pointed out that within the Seventh-day Adventist Church "progressives placed the conclusions of natural science above the cosmological statements of the Bible."<sup>8</sup> Thus, the real issue in the conflict between conservative and liberal positions in the Seventh-day Adventist Church has been a problem of biblical hermeneutics. "If the two sides had ever reached theological agreement, the so called scientific differences would have vanished."<sup>9</sup> It is interesting that the concepts of theistic evolution normally are not

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<sup>5</sup> Cf. P. W. Atkins, "Will Science Ever Fail?" *New Scientist* (8 August 1992): 32–35, as quoted in John Lennox, *Hat die Wissenschaft Gott begraben? Eine kritische Analyse moderner Denkvoraussetzungen* (Wuppertal: R. Brockhaus, 2002), 5.

<sup>6</sup> Richard Dawkins, "Is Science a Religion?" *The Humanist*, (January/February 1997): 26–39, as quoted in Lennox, 5. At this point history can help us to remember that the conviction that the universe is structured has theistic roots. Modern science has at its basis a monotheistic perspective. Cf. Melvin Calvin, *Chemical Evolution* (Oxford: Clarendon Press, 1969), 258, as quoted in Lennox, 9. In fact, the popular opinion that the relationship between religion and science has been characterized by warfare and hostility is historically wrong and a gross distortion of the facts (cf. Colin Russel, "The Conflict Metaphor and its Social Origins" *Science and Christian Belief* 1 [1989]: 3–26, as quoted in Lennox, 14).

<sup>7</sup> Raymond F. Cottrell, "Inspiration and Authority of the Bible in Relation to Phenomena of the Natural World," in James L. Hayward, ed., *Creation Reconsidered: Scientific, Biblical, and Theological Perspectives* (Roseville, CA: Association of Adventist Forums, 2000), 199; cf. also Frederick E. J. Harder, "Prophets: Infallible or Authoritative?" in idem., 226, who raises the question: "Can a prophet be authoritative without being inerrant?" For Harder a prophet seems to be "human and fallible" (230) and "no human being—not even a prophet—is exempt from liability to human error or character defects" (226). Thus, according to Harder, "if we should find scientific or historical error, this would in no way detract from the purpose for which scripture was inspired" (230).

<sup>8</sup> Martin Frederick Hanna, "Contemporary Tensions Within Adventism Concerning the Relations of Science to the Doctrine of Creation," unpublished research paper, Andrews University, Seventh-day Adventist Theological Seminary, 1992, available in the Adventist Heritage Center.

<sup>9</sup> Edward Lugenbeal, "The Conservative Restoration At Geoscience," *Spectrum* 15/2 (1984): 24–25.

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derived from biblical passages but from considerations of the view of God and God's involvement in the natural processes of this world. Furthermore, the idea of theistic evolution is also dependent on historical-critical arguments.<sup>10</sup>

Such an approach in effect leaves an ugly broad ditch between God's Word and the rest of God's created reality that cannot be harmonized. This approach is unsatisfactory for many reasons, but especially because it does not do justice to the historical nature of God's revelation and the many intersections between faith and history. History is the realm in which God acts. Scripture repeatedly testifies to this fact. The truth of the biblical teaching about God is connected to a chain of historical events. Thus it is a characteristic of biblical revelation that theological statements are connected with historical events that at least partially can be verified. While it is true that the Bible is no textbook on biology or geology, there is an important connection between God's Word and the history of this world that cannot and should not be ignored.

Many have been aware of the danger in changing the interpretation of Scripture to match science, noting that it leads to an unavoidable reinterpretation of the biblical message and the content of faith. In order to safeguard faith from the critical attacks of naturalistic science, some have resorted to another solution that is no less problematic than the first.

*Separation of Faith From Science.* Another approach to the issue of faith and science that typically has been favored in neo-orthodox or neo-liberal circles, where historical-critical methods are at work, has been the separation of faith from science. The role of science is believed to be describing the mechanism and process of the origin of this world, whereas the role of theology is to attribute the purpose and existence of the universe to God.<sup>11</sup> Science, in other words, is taken to provide the explanation of the "how" of the origin of this world, whereas Scripture is allowed to provide a theological rational "why" this world came into being. Science is mute on the question "why"; Scripture is inept on the question "how." Science and Scripture are believed to serve useful but different purposes. Such an approach, however, is unsatisfactory for several reasons.

First of all, such an approach seems to uncritically take for granted the neutrality of science and assumes the equal weight of faith and reason. But are faith and reason really complementary faculties that are intended by God to be used in balance as we endeavor to understand the biblical record? How can faith and reason correct each other, as is suggested by some?<sup>12</sup> Does such a view do justice to sin's effect on human reason?

Furthermore, the separation of faith and science means that faith is no longer relevant to all areas of life. Faith is relegated to an existential level that

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<sup>10</sup> Junker, *Leben durch sterben?*, 82.

<sup>11</sup> Cf. Milo V. Anderson, "The Relation Between Science and Inspiration," in *Creation Reconsidered*, 238.

<sup>12</sup> Cf. Cottrell, "Inspiration and Authority of the Bible," 218.

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has nothing to do with history. When both faith and science are assigned their autonomous realm, each is pursued independently from each other in its own right. This, however, is theological segregation, which amounts to nothing less than theological or scientific apartheid. Such a compartmentalizing does not succeed in integrating faith and science into a harmonious one. The challenge before us is to not simply repeat the shortcomings of those other approaches, but to look for alternatives that are biblically faithful, that acknowledge the Word of God as the integrating factor for faith and science, and that look to Scripture as the ultimate and authoritative norm for faith and doctrine. This leads us to an authentic Adventist alternative: the integration of faith and science.

**An Adventist Alternative: the Integration of Faith and Science.** Adventists have long been known for their interest in integrating faith and learning.<sup>13</sup> Integration is not separation or segregation! Integration is possible only on the basis of some higher authority that can be appealed to and that provides the basis and parameter for a harmonious integration. For Seventh-day Adventist this integrating authority is the Bible, the written Word of God.

*Priority of Faith Over Reason and Science.* The role reason plays in theology is crucial. This role has been understood in several different ways throughout history.<sup>14</sup> While some have proposed that faith and reason are on an equal par with each other, Scripture is clear that there is no neutral, independent human reason that is capable of arriving at truth on its own. Rather, the natural man indulges in the desires of the flesh *and of the mind* (Ephesians 2:3). The sinfulness of man has affected all aspects of his existence, including human reason. Hence, sinful human reason stands in need of conversion just as the rest of man needs to be renewed. Human beings become truly “reasonable” in the biblical sense when “*we take every thought captive to the obedience of Christ*” (2 Cor. 10:5 NASB).

In contrast to autonomous human reason, the biblical concept of reason could be termed “faithful, or obedient reason.” It is informed by God’s Word and acts obediently according to God’s written revelation. Faithful reason is centered neither on nature, nor on science, nor on the voice of tradition, but on God and His trustworthy Word. The problem is not simply that unconverted reason produces *results* that disturb faith. Rather, unconverted human reason carries with it *presuppositions* that from the very outset destroy all possibilities

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<sup>13</sup> Gary Land has pointed out that “it appears that for at least the first 50 years they operated an educational system, Adventists had relatively little interest in the sciences for their own sake” (“God’s Second Book: Adventist Education and the Sciences,” *The Journal of Adventist Education* 64/5 [2002]: 4. According to Land, however, the challenge that is upon us now is whether “science on Adventist campuses is becoming important in its own right, rather than principally serving other purposes.” Thus, “Adventist scientists face the challenge of redefining what it means to be an Adventist in science and the role science is to take in Adventist education” (ibid., 8).

<sup>14</sup> Time and space does not permit us to deal with this important issue at greater length at this point. However, the reader is referred to a deeper study from an Adventist perspective in Frank M. Hasel, “Theology and the Role of Reason,” *JATS*, 4/2 (1993): 172–198, esp. 172–184.

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of an harmonious integration of reason into faith. By nature, unconverted human reason does not joyfully submit to what is revealed to man by God.<sup>15</sup>

Furthermore, the issue is not that we have to choose between blindly trusting God on the one hand and thinking carefully about our beliefs on the other, as some seem to suggest. Faithful reason is no sacrifice of the intellect, *but the integration of reason into faith*. And here the wording and the word-sequence is of crucial importance, because the integration of reason into faith implies that faith has priority! It is not an integration of faith into reason. In that case, reason would have the final say. Nor is it an attempt to balance faith and reason.<sup>16</sup>

As a church we should be aware that in trying to balance two things, no unity is gained. If equality is the ultimate goal in the issue of the relationship between faith and reason, no true unity is possible. Whenever we focus on having equal shares, this very focus tends to bring the two into an antagonistic relationship. Equals are not necessarily together; they stand on opposite sides of the equation, constantly watching that the other side does not get ahead. They are not united but in contest with each other.

In trying to balance faith and reason—as some have proposed—who finally decides how to balance one with the other? Who finally “keeps the balance?” History has shown that every time reason tried to support faith, it was reason that finally decided on the content of faith and changed and adapted God’s revelation to the current ideology of the day. In the words of church historian Walter Köhler, “reason in theology has always had the tendency to change or shift its position from servant (Diener) to Lord (Herr)”<sup>17</sup> from co-worker to master, from helper to ruler.

Human reason is a divine gift, and as such it has its worth and cannot be ignored. The competence of human reason, however, is limited by the negative effects of sin. Natural reason is able to engage itself in science and the investigation of natural phenomena. However, it is thoroughly incompetent when it tries to discern divine realities. Human reason transgresses its limits when it attempts on its own to determine the spiritual meaning of Scripture. Here we need the enlightening help of the Holy Spirit, who helps the believer to know what God has really done (cf. Eph 1:17–18). To correctly understand God’s work in this world—including His supernatural creation of nature—is possible

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<sup>15</sup> Cf. Frank M. Hasel, “Theology and the Role of Reason,” 184–186.

<sup>16</sup> So for instance Raymond F. Cottrell, “Inspiration and Authority of the Bible in Relation to Phenomena of the Natural World,” 212, 213; also idem., *Reason and Faith* (Washington, D.C.: Review and Herald, 1966), 18, 21, 37. Similarly Richard Rice, *The Reign of God: An Introduction to Christian Theology from a Seventh-day Adventist Perspective* (Berrien Springs, MI: Andrews UP, 1985), 5; cf. also Fritz Guy, *Thinking Theologically: Adventist Christianity and the Interpretation of Faith* (Berrien Springs, MI: Andrews UP, 1999), 95–96, 105–107.

<sup>17</sup> Walther Köhler, *Dogmengeschichte als Geschichte des christlichen Selbstbewusstseins: Das Zeitalter der Reformation* (Zurich: Max Niehans Verlag, 1951), 135.

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only if God reveals to man what he has done. To integrate faith and reason is possible only on the basis of Scripture.

This leads us to our next point, the priority of Scripture over nature.

*Priority of Scripture over Nature.* Nature has been called God's second book.<sup>18</sup> Because nature is sustained by God's power and testifies to the wisdom and love of God,<sup>19</sup> some have suggested that "the Bible and the natural world, each in its own way, is an inspired revelation that has something important to say about God."<sup>20</sup> However, to elevate nature—and with nature the natural sciences—to the same level as Scripture, to accept both—nature and Scripture—as valuable revelations from God,<sup>21</sup> overlooks an important difference and distinction. While nature has a divine origin, neither Scripture nor Ellen White attribute the quality of **inspiration** to nature. The Bible is God's inspired book. Nature is not. Nature is God's creation and came into existence through God's special design. As such it reveals something about God, its creator. But nature is not inspired.

Ellen White frequently uses the phrase "the book of nature" to speak of God's creation as revealing something about God's love and power, yet she clearly differentiates and distinguishes "the book of nature" from the "pages of inspiration."<sup>22</sup> Even in Eden before the entrance of sin, man needed the revealing Word of God to interpret nature correctly. How much more is God's revelation needed today, after the entrance of sin has marred and spoiled the perfect and harmonious nature of God's creation. In the words of Ellen White:

To man's unaided reason, nature's teaching can not but be contradictory and disappointing. Only in the light of revelation can it be read aright. 'Through faith we understand' (Hebrews 11:3) . . . Only by the aid of that Spirit who in the beginning 'was brooding upon the face of the waters;' of that Word by whom 'all things were made;' of that 'true Light, which lighteth every man that cometh into the world,' can the testimony of science be rightly interpreted. Only by their guidance can its deepest truths be discerned. Only under the direction of the Omniscient One shall we, in the study of His works, be enabled to think His thoughts after Him.<sup>23</sup>

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<sup>18</sup> The phrase "nature is God's second book" is not found in Ellen G. White's writings. D. A. Delafield, among others, has used this phrase. According to Delafield, "Mrs. White loved the beauty of the natural world. To her, nature was God's second book" (D. A. Delafield, *Ellen G. White in Europe, 1885-1887* (Washington D.C.: Review and Herald, 1975), 127. Ellen G. White, however, frequently used the phrase "the book of nature."

<sup>19</sup> Cf. Ellen G. White, *Education* (Mountain View, CA: Pacific Press, 1942), 102-103.

<sup>20</sup> Raymond F. Cottrell, "Inspiration and Authority of the Bible in Relation to Phenomena of the Natural World," in *Creation Reconsidered*, 195.

<sup>21</sup> Cf. Karen Bottomley, "Pilgrimage in the Rockies: the AAF Geology Tour," *Spectrum* 16/4 (1985): 21-26.

<sup>22</sup> So for instance in Ellen G. White, *The Acts of the Apostles* (Boise, ID: Pacific Press, 1911), 571.

<sup>23</sup> Ellen G. White, *Education*, 34.

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According to Ellen White, “the book of nature is a great lesson book,” but it should be used “**in connection with the Scriptures**,”<sup>24</sup> for “the Bible is second to no other book; it is without a rival.”<sup>25</sup> God’s written Word is certain and reliable (Titus 3:8; 1 Tim 1:15). The Bible is trustworthy, deserving full acceptance (1 Tim 4:9; cf. 2 Tim 2:11; Heb 2:3). In Col 2:8 the apostle Paul writes: “See that no one takes you captive through philosophy and empty deception, according to the tradition of men, according to the elementary principles of the world” (NASB).

This means that Scripture and nature are **not** on equal par with each other, as far as the quality and the character of their revelation of God and his work is concerned. God’s special revelation (Scripture) has precedence over natural revelation (creation/nature). Nature reveals something about God at best only indirectly. For nature as it exists today, as well as our human reasoning ability, is distorted by sin. Thus, on our own, we cannot interpret nature correctly. Speaking about Adam and Eve, who had yielded to Satan and fallen into sin, Ellen White writes:

In losing the garments of holiness, they lost the light that had illuminated nature. **No longer could they read it aright.** They could not discern the character of God in His works. **So today man cannot of himself read aright the teaching of nature.** Unless guided by divine wisdom, he exalts nature and the laws of nature above nature’s God. **This is why mere human ideas in regard to science so often contradict the teaching of God’s word.**<sup>26</sup>

Scripture is superior to nature, for it is God’s inspired witness. Creation came into existence through God’s creative Word. However, it is God’s written Word that reveals to us an authentic account of the origin of this world. Hence, Scripture should be the normative source for our understanding of the origin of this world. Ellen White was clear that

apart from Bible history, geology can prove nothing. Those who reason so confidently upon its discoveries have no adequate conception of the size of men, animals, and trees before the Flood, or of the great changes which then took place. Relicts found in the earth do give evidence of conditions differing in many respects from the present, but the time when these conditions existed can be learned only from the Inspired Record. In the history of the Flood, inspiration has explained that which geology alone could never fathom.<sup>27</sup>

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<sup>24</sup> Ellen G. White, *Christ’s Object Lessons* (Washington D.C.: Review and Herald, 1900), 24, emphasis added.

<sup>25</sup> Ellen G. White, *Our High Calling* (Washington, D.C.: Review and Herald, 1961), 352.

<sup>26</sup> Ellen G. White, *The Ministry of Healing* (Mountain View, CA: Pacific Press, 1905), 461–462, emphasis added.

<sup>27</sup> Ellen G. White, *Patriarchs and Prophets* (Mountain View, CA: Pacific Press, 1958), 112.

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She continues:

when professedly scientific men treat upon these subjects from a merely human point of view, they will assuredly come to wrong conclusions. . . . The greatest minds, if not guided by the word of God in their research, become bewildered in their attempts to trace the relations of science and revelation.<sup>28</sup>

According to Ellen White's divinely given insight,

there should be settled belief in the divine authority of God's Holy Word. The Bible is not to be tested by men's ideas of science. Human knowledge is an unreliable guide. Skeptics who read the Bible for the sake of caviling, may, through an imperfect comprehension of either science or revelation, claim to find contradictions between them; but rightly understood, they are in perfect harmony. Moses wrote under the guidance of the Spirit of God, and a correct theory of geology will never claim discoveries that cannot be reconciled with his statements. All truth, whether in nature or in revelation, is consistent with itself in all its manifestations.<sup>29</sup>

This idea is echoed also in the *Seventh-day Adventist Encyclopedia*, which states that "there is no reason for conflicts between science and religion. Truth, whether scientific or spiritual, whether measurable or beyond the scope of direct human observation and testing, is consistent with itself in all its manifestations."<sup>30</sup> In other words, Adventists believe that "the natural world, rightly understood, is in complete harmony with the revelation of the divine character, mind, and will set forth in Scripture."<sup>31</sup>

*The Integration of Faith and Science.* Because both Scripture and God's created world have the same author, there will be the possibility of an intrinsic harmony between Scripture and the natural world. Such harmony is to be expected, at least in principle. In the light of **Scripture** nature—and the origin of nature and life—will be understood correctly. Rightly understood, there will be perfect harmony instead of warfare. The revealed Word of God and the natural world will be in agreement, "for all truth, whether in nature or in revelation, is consistent with itself in all its manifestations."<sup>32</sup> The faithful believer

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<sup>28</sup> Ellen G. White, *Patriarchs and Prophets*, 113.

<sup>29</sup> Ellen G. White, *Patriarchs and Prophets*, 114.

<sup>30</sup> "Science and Religion," in Bobbie Jane van Dolson and Leo R. van Dolson, eds., *Seventh-day Adventist Encyclopedia*, second rev. ed. (Hagerstown, MD: Review and Herald, 1996), 2:559.

<sup>31</sup> "Science and Religion," *idem.*, 559. Thus, "the unfortunate conflict that has arisen in recent times between the study of science and religion is not the result of inherent irreconcilability between revealed truth and scientific truth" (*ibid.*, 560). Instead, "Seventh-day Adventists have taught that there is a positive relationship between science and religion" (*idem.*, 561).

<sup>32</sup> Ellen G. White, *Patriarchs and Prophets*, 114.

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does not test the Bible by men's ideas of science; he brings these ideas to the test of the unerring standard. He knows that in true science there can be nothing contrary to the teaching of the word; since both have the same Author, a correct understanding of both will prove them to be in harmony. Whatever in so-called scientific teaching contradicts the testimony of God's word is mere human guess-work.<sup>33</sup>

According to this insight from Ellen White, true integration of faith and science is possible on the basis of the higher authority of Scripture. Anything that contradicts the unerring standard of Scripture is to her only "so-called" science and in fact mere human guess work.

The *divine origin* of nature can be correctly understood only on the basis of Scripture. Scripture provides the spectacles<sup>34</sup> that help to gain a reliable insight into the supernatural *origin* of the natural world and the beginning of life on this earth. Scripture should be the basis to interpret the *origin* of nature—but *naturalistic presuppositions* of science should not be allowed to reinterpret the clear statements of Scripture that speak of God's recent creation in "six literal consecutive, contiguous, creative, natural 24-hour days."<sup>35</sup> Since all truth comes from God, ideally there will be no conflict between good science and good theology. When properly understood, science and faith are not contradictory in nature, but present a more complete picture of reality than can be achieved by viewing either science or theology exclusively. Both creation and Scripture are to be studied to apprehend the wonders of God's wisdom in creation, but in our search for truth the Bible must remain the final arbiter. Here special revelation (Scripture) must always take precedence over general revelation (nature).

On the basis of the priority and superiority of Scripture, some remarkable possibilities open up to the believing scientist and theologian. Rather than adapting biblical ideas to the latest outlook in science, Scripture can have a unique input on science by asking questions that could function as a source of inspiration in developing new strategies of scientific research. Wolfhart Pannenberg's remarkable words deserve to be taken seriously: "The theologian must not be too quick to adapt theological ideas and language to the latest outlook in the sciences, especially where such adaptation requires substantial readjustment of traditional doctrine. The theological vision of the world can also function as a challenge to science and as a source of inspiration in developing new strategies of research."<sup>36</sup> While such a perspective opens up new windows of opportunities

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<sup>33</sup> Ellen G. White, *The Ministry of Healing*, 462.

<sup>34</sup> Calvin used the well-known simile "Spectacles" to describe the role of Scripture as related to the revelation of the Creator in creation (cf. *Institutes*, 1.6.1; 1.10.1). According to Calvin, Scripture can communicate to us what the revelation in the creation cannot (ibid., 1.6.4).

<sup>35</sup> Cf. Richard M. Davidson, "The Biblical Account of Origins," presentation at the International Faith and Science Conference in Ogden, Utah, August 25, 2002, in this issue of *JATS*.

<sup>36</sup> Wolfhart Pannenberg, "Theology and Philosophy in interaction with Science: A Response to the Message of Pope John Paul II on the Occasion of the Newton Tricentennial in 1987," in Robert J.



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for fresh investigation of origins on the basis of Scripture, still some crucial questions remain.

### The Challenge of Certainty

To what extent can we as Christians speak with certainty about biblical origins in light of the fact that all of our knowledge is tentative and/or incomplete? How do we as Christians relate contradictory statements of science to Scripture? Is it possible to be certain about the biblical doctrine of creation, especially in light of a conflict of views and the sometimes seemingly overwhelming evidence that speaks against the possibility of biblical creation?

**The Problem of Certainty.** Certainty (from Latin *certus*, sure) is the opposite of skepticism and doubt<sup>37</sup> and is commonly associated with the feeling of assurance (certitude) that something is true and undeniable.<sup>38</sup> It has been pointed out that the term certainty includes those aspects that are described in the Greek language with **πίστις**, (*pistis*—faith [cf. Rom. 3:3], trust, belief; the Christian faith; conviction, assurance, proof) on the one hand and **ἀσφαλεία** (*aspaleia*—security, safety, accurate information, full truth [Lk 1.4]) and **βέβαιος**, (*bebaios*—reliable; firm, well-founded; confirmed, verified; effective [cf. 2 Pet. 1:19—the prophetic message that is altogether reliable, NAS]) on the other.<sup>39</sup>

Such a certainty is not gained through the practice of methodological and systematic doubt. “In general, the feelings associated with doubt are anxiety or hesitation, which are identified as feelings of doubt when they arise in contexts

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Russell, William R. Stoeger, S.J., and George V. Coyne, eds. *John Paul II on Science and Religion: Reflections on the New View From Rome* (Notre Dame, IN: U of Notre Dame P, 1990), 78. Unfortunately, Pannenberg himself does not follow his own advice and seems to advocate the readjustment of theological vision and the reassessment of doctrinal affirmations of the past in the light of modern scientific developments as presented by the theory of evolution of life (*ibid.*, 78–79).

<sup>37</sup> It has been pointed out that “doubt is the negation of belief, the condition of not having reached a positive conclusion for or against any proposition. . . . in the doubting attitude there is at least the absence of a categorical or of a settled judgment with reference to the idea in question” (“Doubt,” by Norman Wilde, *Encyclopedia of Religion and Ethics*, ed. James Hastings [Edinburgh: T. & T. Clark, 1912], 4/862). Doubt as a permanent state of mind would be little better than intellectual death, for the human mind lives as it believes. “The danger of doubting is not only that it may become a fixed habit, but that interest may centre in the process itself . . . and become a mania (doubting-madness; *folie du doute; Grübelsucht*)” (“Doubt,” by Edwin D. Starbuck, in *idem.*, 864).

<sup>38</sup> Cf. “certainty, psychological or intuitive,” in Peter A. Angeles, *Dictionary of Philosophy* (New York: Barnes and Noble, 1981), 36. On the spectrum of meaning associated with the term “certainty” cf. the following articles: “certainty,” by Peter Klein, *Routledge Encyclopedia of Philosophy*, ed. Edward Craig (London: Routledge, 1998), 2:264–267; “Certainty,” by C. D. Rollins, *The Encyclopedia of Philosophy*, ed. Paul Edwards (New York: Macmillan, 1972), 2:67–71; and “Gewissheit,” by Alfred Schöpf, *Handbuch Philosophischer Grundbegriffe*, eds. Hermann Krings, Hans Michael Baumgartner and Christoph Wild (Munich: Kösel, 1973), 2:585–596.

<sup>39</sup> “Gewissheit,” by W. Halbfass, in *Historisches Wörterbuch der Philosophie*, ed. Joachim Ritter (Basel: Schwabe, 1974), 3:592–593.

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involving questions of belief.”<sup>40</sup> Skeptical doubt does not lead to certainty. Neither is certainty reached through scientific investigation. It is a well-known fact that “Science does not lead to certainty. Its conclusions are always incomplete, tentative, and subject to revision.”<sup>41</sup> To affirm the truth of God’s supernatural creation as it is testified in Holy Scripture is “no haven of ignorance” for wishful thinking or pious experience. Yet we should be aware of the danger of deifying (natural) science and elevating it above the written Word of God thereby expecting more from science than it is able to offer.

Certainty is not something that we can achieve. It is a gift of God, just as faith is a divine gift. Speaking about the book of nature that is to be studied in connection with the Scriptures, Ellen White has grasped this important insight when she writes:

As the works of God are studied, **the Holy Spirit flashes conviction into the mind. It is not the conviction that logical reasoning produces;** but unless the mind has become too dark to know God, the eye too dim to see Him, the ear too dull to hear His voice, **a deeper meaning is grasped, and the sublime, spiritual truths of the written word** are impressed on the heart.<sup>42</sup>

Conviction comes **through the Holy Spirit**, when the **truths of the written Word of God** are impressed upon the heart. The divine gift of believing is that faculty that “*makes us certain of realities we do not see*” (Heb. 11:1) for faith is to the unseen world what the senses are to the visible world.

Perhaps the act of divine pardon may illustrate our Christian experience at this point.<sup>43</sup> When Christ announces: “You are forgiven!” how does one know one is forgiven? Is there any certainty that God has indeed forgiven me and taken away all my sins and my guilt? Can I be certain that Christ has forgiven me, even if my (subjective) experience and the external evidence (my sinful deeds) seem to contradict my being forgiven through faith in Jesus Christ? And yet, Scripture tells us that we can be certain that Christ has forgiven us. We can have the assurance of salvation. “*These things I have written to you who believe in the name of the Son of God, in order that you may know that you have eternal life.*” (1 John 5:13 NAS). We are even called to proclaim this good news with confidence and with conviction (2 Cor 5:20). We can indeed know that God has forgiven us and that we have eternal life because Jesus Christ has acted in history. We know about this past act of God because Scripture bears witness to

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<sup>40</sup> Harry G. Frankfurt, “Doubt,” in Paul Edwards, ed. *The Encyclopedia of Philosophy* (New York: Macmillan, 1972), 2:413 (412–414).

<sup>41</sup> Ian Barbour, *Religion in an Age of Science*. The Gifford Lectures 1989–1991 (San Francisco: Harper & Row, 1990), 1:35.

<sup>42</sup> Ellen G. White, *Christ’s Object Lessons* (Washington, D.C.: Review and Herald, 1900), 24; emphasis added.

<sup>43</sup> Cf. Thomas C. Oden, *The Living God. Systematic Theology: Volume One* (Peabody, MA: Prince, 2001), 1:382.

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what Jesus has done for us and because God's written Word provides the meaning and explanation of that historical act that would be missing if God had not revealed it to us.

In a similar manner, I submit, certainty is possible in the area of biblical creation as well. Here God has also acted in history and has provided an explanation through His revelation as recorded in Scripture that helps us to sufficiently understand and believe what has taken place to proclaim it with conviction and certainty—despite some open questions.

#### **Living With Confidence Despite Some Open Questions—The Paradigm of Love**

Love might teach us some important lessons on how we can live with confidence despite some unresolved questions. Let me explain. The apostle Paul has stated: "*But now abide faith, hope, love, these three; but the greatest of these is love*" (1 Cor 13:13 NAS). Love is the foundation for faith. Love brings forth faith. Love creates hope. This is why love is the greatest of the three qualities that remain: "faith, hope, love." It is the empathy of love, rather than critical distance and doubting skepticism, that helps us to understand and know. Only love enables us to believe things "*which have not entered the heart of men, all that God has prepared for those who love Him*" (1 Cor. 2:9 NAS).

The epistemological foundation of understanding and knowing is love. Because we have received love (from our parents, from God), we are able to learn and to understand things. Only when we love God will we be able to keep His commandments (John 14:15). Only when we love His written Word will we be able to understand and obey it correctly. Only love is able to bring forth certainty and assurance.

God's love is never abstract and on the theoretical level only. God's love is always specific and tangible. Unlike the Platonic love of Greek philosophy, God's love is revealed in definite historical acts, be that His creation or His incarnation. Creation was an act of love. The Incarnation was an act of love as well. And so is the re-creation of sinners.

I submit that love can be a help to us in dealing with the issue of creation and evolution as well as in discerning the qualitative difference between those two incompatible systems. God has provided sufficient evidence that He is love. God's love does not solve every question we might have concerning His love, yet He has proven beyond the shadow of a doubt that He is love, for He has so loved this world that He has given His only son so that we might be saved. Scripture speaks about His love. God demonstrated and proved His love when he became human and died on the Cross so that we can have the assurance of forgiveness and of eternal life.

It is worthwhile to briefly compare God's love with the mechanism of evolution at this point:

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1. God's love has a purpose and aims at a specific goal. Evolutionary chance, by contrast, is blind and random.

2. God's love saves by overcoming death. Evolution destroys, for it needs death to evolve.

3. Divine love trusts and hopes, despite some open questions. Only love knows and attains certainty. Evolution, by contrast, is always provisional, never arrives, does not know how things initially came about, where they will end, and what the outcome will be. With evolution there is no certainty.

To mix God's purposeful love, as demonstrated in creation and re-creation, with the aimless, blind, and destructive chance of Evolution is to deliberately send mixed signals that distort the character of God and his dealings with the world.

Just as with love, God has given ample evidence that clearly testifies that he has created this world supernaturally. While God has not solved every question that might come up with such a belief, God has provided sufficient evidence for us to know that creation does make sense and is meaningful. Furthermore, God's self-giving (altruistic) love is fundamentally incompatible with evolutionary thought. The manner of God's work in creation is: personal love—selfless service—life.

The manner of evolutionary process is: impersonal chance—egoism (survival of the fittest)—death. The contrast could not be greater and more drastic. The difference is obvious. There is no plausible explanation for the phenomenon of self-giving love in evolution.<sup>44</sup>

Furthermore, love teaches us how to deal with each other when we grow in our understanding of God's Word and His creation. It also shows us how to deal with those who no longer uphold biblical truth. Love in the biblical sense does not mean to approve and to accept everything as true and good. There is "the danger of hyper-tolerance."<sup>45</sup> Biblical love is exclusive in character. It has a specific content that is bound to the clear Word of God.<sup>46</sup> Love does not support pluralism, where conflicting truth claims are promoted side by side as equally valid expressions of truth. Love has an exclusive ring to it that makes it special and unique. But love always reaches out to all—no matter who they are and what they believe, in order to win them, to serve them, and to save them. This leads us to our next question: is theological pluralism a legitimate option for the Seventh-day Adventist Church?

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<sup>44</sup> Cf. Francis A. Schaeffer, *Gott ist keine Illusion*, [original title: *The God Who is There*] (Wuppertal: R. Brockhaus, 1984), 108–110, 123–126.

<sup>45</sup> Cf. Thomas C. Oden, *Life in the Spirit. Systematic Theology* (Peabody, MA: Prince, 2001), 3:474, 475.

<sup>46</sup> While it is possible to keep God's commandments without love (which is legalism), there can be no true love without the keeping of God's commandments.

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### Is Theological Pluralism an Option?

According to the *Seventh-day Adventist Encyclopedia*, Seventh-day Adventists “have always affirmed belief in creation *ex nihilo*” and “have generally taken it for granted that it was on the first day of Creation week that He brought into existence the matter that composed the earth and that He proceeded immediately with the work of the six days.”<sup>47</sup> Consequently, Seventh-day Adventist “theologians and scientists reject both mechanistic and theistic evolution, on both scriptural and scientific grounds.”<sup>48</sup> It has been claimed that on the issue of creation and evolution, ecclesiastical and intellectual realities within the Seventh-day Adventist church have changed, so that today pluralism is more evident within the church than even thirty years ago. Today we encounter “a wide range of viewpoints from flood geology to human evolution” within the church.<sup>49</sup> According to Delmer A. Johnson, “some people within the Adventist church think that life has existed on earth for more than six, ten, or even twelve thousand years. Some think it may have been here for as long as most geologists and paleontologists claim.”<sup>50</sup> In light of such pluralistic positions we can speak of a “fragmentation of Adventism.”<sup>51</sup>

Some of those who propose such pluralistic views think that a clash of doctrines is not a disaster but an opportunity.<sup>52</sup> According to this perspective, in the evolution of real knowledge a contradiction marks the first step in progress toward a victory. “This is one great reason for the utmost toleration of variety of opinions.”<sup>53</sup> Thus, pluralism is espoused by some as an inevitable part of the process of secularization,<sup>54</sup> and as such is seen as a positive factor that attracts a broad spectrum of beliefs and is able to settle theological issues by enabling the church to transcend all differences. Pluralism is believed to be the principle by which the church would be enabled to reappraise and apply the gospel to the needs of a contemporary world. It is also being claimed that our pioneers were much more tolerant and flexible in the early phase of the Advent movement, where “as a people we are brought together from divisions of the Advent body [the Millerites], and from the various denominations, holding different views on some subjects . . .”<sup>55</sup> Should not a similar openness to different views—as we

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<sup>47</sup> S.v. “Creation,” 2:417.

<sup>48</sup> “Evolution,” in *ibid.*, 527.

<sup>49</sup> James L. Hayward, “Preface,” in *idem.*, ed. *Creation Reconsidered*, 14.

<sup>50</sup> Delmer A. Johnson, “By the Campfire: Red Giants, White Dwarfs, Black Holes—and God,” *Spectrum*, 20/1 (1990): 34.

<sup>51</sup> William Johnsson, *The Fragmenting of Adventism: Ten Issues Threatening the Church Today* (Boise, ID: Pacific Press, 1995).

<sup>52</sup> So Alfred North Whitehead, “Religion and Science,” from his book *Science and the Modern World* (New York: Macmillan, 1937), as quoted in *Creation Reconsidered*, 339.

<sup>53</sup> Whitehead, in *ibid.*, 340.

<sup>54</sup> Cf. Peter L. Berger, *The Sacred Canopy* (Garden City: Doubleday, 1967), 127–153.

<sup>55</sup> James White, *Review and Herald*, August 11, 1853.

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face them now in the issue of creation and evolution—be characteristic of us today?

**The Difference between Diversity and Pluralism.** Unfortunately, the words “pluralism” and “diversity” are often confused. What is the difference between pluralism and diversity?

*Pluralism.* The term “pluralism” (from the Latin *pluralis*, from *plus*, *pluris*—“more,” “more than one”) expresses the idea that there are conflicting truth-claims that stand in competition with each other because there is no common basis, foundation, or starting point. There are different sources of knowledge, such as experience, reason, philosophy, naturalistic science, and Scripture. Imagine each of these sources as a tree, each bearing its own characteristic fruit. These trees stand apart from each other, each claiming to have greater importance than the others.

If there is pluralism, there will be no unity. Instead of unity we have conflicting truth claims and viewpoints within the church that lead to fragmentation, ambiguity, and doubt. If we approach the issue of creation and evolution pluralistically, the church cannot arrive at a unified understanding of truth. This might explain why within the church today unity on scriptural grounds is so difficult to achieve. Instead of standing united on the trustworthy foundation of God’s written Word, conflicting viewpoints are being kept together at best by means of cultural or sociological reasons, or by appealing to our common heritage or tradition. Such humanly constructed solidarity, however, cannot bring forth a unity achievable only through the Word of God.

*Diversity.* The word “diversity,” on the other hand, implies that there is a common basis (Scripture) on which different opinions can be approached and resolved. If there is one foundation, the Bible, then from this one commonly accepted basis will come growth in knowledge, spiritual growth, and growth in the understanding of God’s nature. If we imagine Scripture as the tree of our knowledge on which these grow, we will easily understand that some fruits will not occur on a tree that has this foundation. The various fruits may be at different stages of growth. Not all will have the same color. As the apostle Paul wrote: there is “*one Lord, one faith, one baptism*” (Eph 4:5 NIV). On the basis of this **one** faith there will be unity—not pluralism. But different opinions can be tackled and resolved because the Bible is the norm for our faith.

This is exactly what James White expressed in his statement that was quoted a short while ago. James White’s statement continues with these very words:

... yet, thank Heaven, the Sabbath is a mighty platform on which we all shall stand united. And while standing here, with the aid of no other creed than **the word of God**, and bound together by **bonds of love**—love **for the truth**, love **for each other**, and love **for the perishing world**—‘which is stronger than death’, **all party feelings are lost**. We are united in these great subjects: Christ’s immediate per-

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sonal second Advent, and the observance of all commandments of God, and the faith of his Son Jesus Christ, as necessary to a readiness for his Advent.<sup>56</sup>

Notice that for James White the Bible is the platform on which we all stand united. And the love for the truth—yes, there is such a thing as truth!—and the love for each other and for a perishing world will be stronger than any party feelings. This is also supported by Ellen G. White, who wrote:

When God's Word is studied, comprehended, and obeyed, a bright light will be reflected to the world; new truths, received and acted upon, will bind us in strong bonds to Jesus. **The Bible, and the Bible alone, is to be our creed, the sole bond of union; all who bow to this Holy Word will be in harmony.** Our own views and ideas must not control our efforts. Man is fallible, but God's Word is infallible. Instead of wrangling with one another, let men exalt the Lord. Let us meet all opposition as did our Master, saying, "It is written." Let us lift up the banner on which is inscribed, The Bible our rule of faith and discipline.<sup>57</sup>

I submit to you that we can do no better than that.

**The Risk of Theological Pluralism.** The issue of origins has the potential to be very divisive for the Adventist Church because much is at stake. From the experience of other Christian Churches who have adopted a pluralistic position, we are now in a position to know that traditional biblical beliefs were banished under the guise of being updated. The result in these other churches has been a loss of scriptural authority, a loss of direction and purpose, a loss of discipline, a loss of a distinct message, a loss of identity, and a loss of doctrinal continuity.<sup>58</sup> "In adopting pluralism in their belief system, the above-described churches [The United Methodist Church, The United Church of Christ, The United Presbyterian Church in the United States] not only reduced the strength of their belief-system or *message*, but also lost motivation and effectiveness in accomplishing the *mission* of the Christian church."<sup>59</sup> Katherine Ching concludes her remarkable study on the practice of theological pluralism by stating:

Churches that have allowed theological pluralism to dominate 'peripheral' doctrinal beliefs have discovered that it gradually sways *all* doctrinal interpretation, finally leading to theological indifference and intolerance of firm doctrinal standards . . . commitment to theological pluralism becomes an empty, substitute faith, a virtue in itself, while authoritative principles and standards are trampled in its path. Theological pluralism does not appear to be a solution. Not only does it

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<sup>56</sup> James White, *Review and Herald*, 4/52 (August, 11, 1853); emphasis added.

<sup>57</sup> Ellen G. White, *Review and Herald*, December 15, 1885 (ISM, 416); emphasis added.

<sup>58</sup> Cf. Katherine Ching, "The Practice of Theological Pluralism," *Adventist Perspectives*, 5/1 (1991): 6–11.

<sup>59</sup> Ching, 10.

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perpetuate and intensify a church's problems, it threatens its very life and existence.<sup>60</sup>

If this is true of "peripheral" doctrinal beliefs, how much more is this the case with such a central and foundational doctrine as creation? More recently, Ariel Roth has pointed out that many Christian churches that have slowly and insidiously adopted various ideas about life's progressive development have abandoned their high priority on biblical truth and often have had a loss in membership. "It is particularly difficult to convince people that Christianity is for real when churches consider the Bible to be in error, especially with respect to the important question of origins."<sup>61</sup> Taking these experiences seriously, it is not advisable to foster theological pluralism in the Seventh-day Adventist church, particularly not on the issue of creation-evolution.

**The Source and Foundation of Our Unity.** Our NO to theological pluralism springs from our YES to Jesus Christ as our only savior and from His YES to the historicity of the biblical creation account. Jesus upheld the trustworthiness of Scripture, even when it refers to people and events.<sup>62</sup> By upholding the biblical account of creation, we declare that we believe and need a message that is distinct from the widespread and popular account of the origin of life as espoused by evolutionary hypotheses.

**How Can we Deal With Conflicts Between Science and Scripture?**

How do we deal with unresolved questions that are raised by the natural sciences? What attitude and disposition is necessary to uphold the biblical account of creation when it is challenged by science? Without claiming to be exhaustive, I submit the following characteristics of such an attitude<sup>63</sup>:

**Allow for a Creative Tension Between Scripture and Science.** Facts that seem to be contradictory to biblical statements should not be ignored or denied. Neither should they be colored or glossed over. It is not necessary to support biblical truth by coloring facts. This is not acceptable, and we have no moral mandate to do so. Neither do we have the right to color our interpretation of Scripture in order to adapt it to the scientific level of the day. To allow for a "creative tension" indicates that we are called to search for a solution that is faithful to Scripture and impartial in its scientific investigation.

**Resist the Temptation of Superficial Answers.** To search for solutions that are at once faithful to Scripture and impartial in their scientific investigation

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<sup>60</sup> Ching, 11.

<sup>61</sup> Ariel Roth, "Adventism and the Challenges to Creation," *Adventists Affirm*, 16/1 (2002): 20.

<sup>62</sup> Cf. John Wenham, *Christ and the Bible* (Grand Rapids: Baker, 1994).

<sup>63</sup> Cf. Reinhard Junker, "Die Glaubwürdigkeit der Bibel und die Schöpfungsordnung," in Stephan Holthaus and Karl-Heinz Vanheiden, eds., *Die Unfehlbarkeit und Irrtumslosigkeit der Bibel* (Nürnberg: Verlag für Theologie und Religionswissenschaft, 2002), 137ff. Cf. Also Frank M. Hasel, "Presuppositions in the Interpretation of Scripture," forthcoming chapter in a book on Biblical Hermeneutics, published by the Biblical Research Institute.



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means that we have to resist the temptation to provide shallow answers and superficial solutions that do not do justice to very complex and multifaceted issues. Shallow answers and superficial solutions do not satisfy and will in the end do a disservice to the church and to biblical faith. In order to search for such answers, we need to possess some other important attitudes.

**Honesty.** Let us deal with every difficulty we encounter with perfect honesty. Honesty implies that we first of all acknowledge a difficulty and do not try to obscure or dodge it.<sup>64</sup> Perfect honesty and frankness always wins out in the long run. An honest person has an open mindset and is willing to learn. It is a mindset that is receptive and open toward the message and content of what is being studied. Honesty aims at the motives with which the interpreter and scientist approaches the biblical text and the field of science and also includes the openness to use the proper methods of investigation. Everyone has to face the question: Are my motives in harmony with the Word of God? Are my methods appropriate for the subject matter of science and also of Scripture? God is “pleased with integrity” (1 Chr 19:17 NIV). If we are really convinced that the Bible is the Word of God, is reliable in what it affirms, and can be trusted, we are far better off to wait for an honest solution to a perplexing difficulty than to submit a solution that is evasive or unsatisfactory. Honesty turns away from all lies. And honesty includes a faithfulness to God that results in an independence from presuppositions of naturalistic science that run counter to God’s Word, no matter how widespread and popular such science might be. While we will not share atheistic premises of naturalistic science, honesty calls us to be fair and respectful to those who work on those premises.

**Patience.** Complex problems require untiring patience and an indomitable determination to deal with every difficulty we meet. We have to be determined that no matter how much time and study and hard thinking it may require, we will patiently work on finding a solution. As Bible-believing Christians, we have to recognize that especially in the scientific investigation of creation, there are only limited resources and manpower available to deal with enormous questions and challenges. The number of scientists who believe in biblical creation is small (but growing), and therefore the results are limited. To study some of those (complex) problems, it would be helpful to investigate them in our own laboratories, to conduct our own field-studies in order to collect primary data, to do our own research, etc. This is a costly endeavor and needs to be done systematically. It would be an important signal, however, if the Seventh-day Adventist Church would support such efforts in various ways and thus contribute to the task of finding reliable answers that are scientifically sound, thorough, and yet faithful to the biblical view of creation, not compromising the clear statements of Scripture and of Ellen G. White on creation. With such a proactive approach,

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<sup>64</sup> This is true for both sides of the debate. There has been obscurantism among proponents of biblical creation as well as obscurantism and evasion of difficulties on the side of evolutionists.

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the Adventist Church has the potential to make a real contribution to our own church members and to the Christian world at large that would help to gain credibility and respect for a message that we are called to proclaim before Jesus will come again. And if some difficulties persistently defy even our hardest efforts to solve them, we should not get discouraged. It is interesting to note that one characteristic of the faithful believers at the end of history is to live patiently. “*Here is the perseverance of the saints who keep the commandments of God and their faith in Jesus*” (Rev 14:12 NAS). The call to perseverance is made in Rev 14 in the context of clear references to creation and the flood (v. 7).<sup>65</sup> Part of our perseverance is to be able to live with open questions, yet be faithful to God’s Word. For God’s Word has proved to be reliable and trustworthy.

**Humility.** Humility is one the rarest characteristics among those engaged in the study of science, theology,<sup>66</sup> or both, yet it is very important. In the attitude of humility is expressed the willingness and modesty to submit one’s beliefs to a higher authority. Humility expresses the unassuming insight that God and His Word are greater than our human reason and even greater than our current understanding of science.<sup>67</sup> Every difficulty we encounter in the relationship between the Bible and science should be considered with that humility that becomes all persons of such limited knowledge as we are. Recognizing the limitations of our own mind and our human knowledge, we should not suppose that there is no solution just because we have not yet found any.

**Recognize the Limited Nature of Scientific Knowledge.** In dealing with difficulties that are posed by science to Scripture, we have to acknowledge that in our explanation of the distant past we do not have all the information available that we would like to have in order to solve a difficult question. At the same time we have to recognize that our scientific knowledge of things is very limited. It has been pointed out that no science can explain everything.<sup>68</sup> This is

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<sup>65</sup> Cf. John T. Baldwin, “Revelation 14:7: An Angel’s Worldview,” in John T. Baldwin, ed., *Creation, Catastrophe and Calvary* (Hagerstown, MD: Review and Herald, 2000), 19–39, esp. 19–28.

<sup>66</sup> Augustine reports that the well-known teacher of rhetoric in antiquity, Demosthenes, once was asked: what is the chief rule in eloquence? He replied: “Delivery”; when asked: what is the second rule? he answered: “Delivery”; and what is the third rule? “Delivery” was the response. Augustine then added: “so if you ask me concerning the precepts of the Christian religion, first, second, third, and always I would answer, ‘Humility’” (quoted in Calvin, *Institutes of the Christian Religion*, II, 2, 11, 268–269. The anecdote is told of Demosthenes by Quintilian, *Institution oratoria* XI. Iii. 6 [LCL Quintilian IV. 244f]. For its use in Augustine, see his *Letters* cxiii. 3. 22 [MPL 33. 442; tr. FC 18. 282]).

<sup>67</sup> This subordination of human reason to the higher authority of God’s Word is expressed in these words: “God desires man to exercise his reasoning powers . . . yet we are to be aware of deifying reason which is subject to the infirmity of humanity. . . . when we come to the Bible, reason must acknowledge an authority superior to itself, and heart and intellect must bow to the great I AM” (Ellen G. White, *Steps to Christ* (Mountain View, CA: Pacific Press, 1892), 109ff.

<sup>68</sup> Cf. John Lennox, 18–26.

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especially the case when we have to deal with primordial issues. We may learn from archeology that the absence of evidence is no evidence for the absence of what has not yet been found. Our limited knowledge of those things becomes evident already in a question God asks Job: “Where were you when I laid the foundation of the earth! Tell Me, if you have understanding” (Job 38:4 NAS). It is with the awareness of those human limitations and boundaries that we investigate God’s creation scientifically, always being conscious that our knowledge is restricted.

Even though scientific explanations at times might seem omnipotent, we do have to recognize the fact that scientific theories are influenced by philosophical presuppositions<sup>69</sup> and that scientific knowledge can be revised and changed.<sup>70</sup> Science is no infallible absolute.<sup>71</sup> Science builds on empirical knowledge, and this means that new data can question scientific theories. Where this is no longer allowed, science has mutated into an ideology.

**Be Open to the Fact that God Intervenes.** In dealing with problems at the interface between faith and science as biblical theologians and believing scientists, we have to be open to the fact that God intervenes supernaturally and that such a supernatural intervention cannot be explained with normal natural processes as we know them in the sciences. To speak with Shakespeare’s Hamlet: “There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy.”<sup>72</sup> To be open to God’s supernatural intervention also encompasses a spiritual approach to difficulties where every difficulty is dealt with prayerfully. Prayer is no substitute for diligent and hard work. But on the other hand, we should never underestimate what God can do to our understanding of Scripture and nature through prayer.

**Learning from Love.** Love has convincing evidence that leads to conviction. But love does not have a 100% mathematical or scientific proof for it. After all, there is more to love than scientific evidence. Love is a supernatural gift. Therefore, love is able to endure. And love is able to live with open questions. While we now may see dimly, nevertheless we do see. And we “*may be able to comprehend with all the saints what is the breadth and length and height and depth, and to know the love of Christ which surpasses knowledge*” (Eph

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<sup>69</sup> Cf. Hansjürgen Staudinger, “Wider den naturwissenschaftlichen Monismus,” in Willi Oelmüller, ed., *Philosophie und Wissenschaft* (Munich: Ferdinand Schöningh, 1988), 40–46. Cf. Hans Michael Baumgartner, “Humanities and Sciences. Ein Beitrag der Philosophie zum Thema Philosophie und Wissenschaft,” in idem., 33–39.

<sup>70</sup> Cf. Thomas S. Kuhn, *The Structure of Scientific Revolutions*, second rev. ed. (Chicago: U of Chicago P, 1970). For a critical analysis and evaluation of Thomas Kuhn’s concept of paradigm and paradigm change, see Frank M. Hasel, “Scientific Revolutions: An Analysis and Evaluation of Thomas Kuhn’s Concept of Paradigm and Paradigm Change for Theology,” in *JATS*, 2/2 (1991): 160–177; and idem., “Thomas Kuhn’s Revolution: A New Way of Looking At Science,” *College and University Dialogue* 4/2 (1992): 11–13.

<sup>71</sup> Cf. Reinhard Junker, 138–139.

<sup>72</sup> William Shakespeare, “Hamlet,” I, 5.

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3:18–19 NAS, emphasis added). Thus, while we do understand what God has revealed to us, it is our hope that we “*will come to understand fully*” (2 Cor 1:14 NIV). In other words, love is the epistemological basis for knowing and trusting. Love is the basis of our faith, and it is the foundation of our hope (“*it hopes all things*” 1 Cor 13:7 NAS). “*Love never fails*” (1 Cor 13:8 NAS). “*And this I pray, that your love may abound still more and more in real knowledge and all discernment*” (Phil 1:9 NAS; emphasis added).

While there are some questions that are still unresolved from a creationist perspective, this does not invalidate the position of biblical creation. Let us not forget that not everything is up in the air and unresolved. There are foundational issues that are very clear and beyond the shadow of a doubt. Furthermore, we should be aware of the fact that there are a good many tough questions unresolved for the hypothesis of evolution as well, and it seems as if some of those difficult questions for evolution do not diminish but grow more vexed as time goes on.

#### **Is Pluralism an Option?**

It was the great French mathematician and theologian Blaise Pascal (1623–1662) who once remarked that “we must know where to doubt, where to feel certain, where to submit. He who does not do so understands not the force of reason.” Pascal continued, “there are some who offend against these rules . . . by doubting everything, from want of knowing where to submit.”<sup>73</sup> While we do not have all the answers to some of our questions, and while it is necessary to remain humble and open to learn new things, it is also true that God has already revealed many foundational aspects of his creation that are very clear. I submit that we have to uphold those clear statements of Scripture and from there try to shed more light on some issues where we do not yet have all the solutions.<sup>74</sup> In light of those clear concepts of Scripture, any theological pluralism that allows diametrically opposed worldviews and explanations as equally valid within the church will prove to be disastrous. Biblical creation and evolution are not compatible. In questions of ultimate significance and importance, as is the case with the biblical doctrine of creation, which touches upon our origin, the meaning of

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<sup>73</sup> Blaise Pascal, *Pensees*, Section IV, “On the Means of Belief,” #267–269 (1660), trans. W. F. Trotter. The complete statement reads as follows: “267. The last proceeding of reason is to recognize that there is an infinity of things, which are beyond it. It is but feeble if it does not see so far as to know this. But if natural things are beyond it, what will be said of supernatural? 268. Submission—we must know where to doubt, where to feel certain, where to submit. He who does not do so understands not the force of reason. There are some who offend against these three rules, either by affirming everything as demonstrative, from want of knowing what demonstration is; or by doubting everything, from want of knowing where to submit; or by submitting in everything, from want of knowing where they must judge. 269. Submission is the use of reason in which consists true Christianity.”

<sup>74</sup> To move from clear statements to less clear statements and not vice versa is a sound hermeneutical principle.

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life, the end of all life, that impinges upon dominant biblical themes like eschatology, salvation, the dignity and nature of mankind, the trustworthiness of Scripture, the nature of God, God's acting in history, the meaning of history, and much more, it is devastating to allow for conflicting pluralism and not to uphold the clear and unequivocal teaching of God's Word on biblical creation.

Unlike water, where hot and cold can be mixed and the result still will be water—albeit “lukewarm” water—that somehow might be drinkable,<sup>75</sup> pluralism in theology produces an unbearable confusion and chaos that compromises God's clear truth as it is revealed in Scripture. In the church, theological pluralism has very detrimental effects on doctrine, mission, and growth.<sup>76</sup> To encourage pluralism in this area will result only in misunderstanding, perplexity, ambiguity, and doubt. Theological pluralism does not help the church gain a greater sense of certainty. Instead, it will multiply uncertainty and foster confusion.

While we do not want to indoctrinate anybody in the sense of manipulating others to adopt our understanding of scriptural doctrines, we do have the responsibility to provide clear guidance and unambiguous orientation for those who attend our educational institutions and churches. As Adventist teachers, pastors, journalists, thought leaders, and those who are responsible to the church in leadership positions (administrators), we have a sacred commission and responsibility before God to pass on correct biblical doctrine that has a specific biblical content. What we teach, preach, and publish will shape the thoughts and lives of countless students and church members as well as seekers of the faith. Let us not banish clear biblical beliefs under the guise of updating them in order to make them more relevant to contemporary thinking and society. It was well known theologian George Lindbeck, from Yale University, who pointed out some time ago that it is a mistake to believe that the gospel has ever been spread by trying to make it more relevant to the people through adapting it to new terms and concepts. According to Lindbeck, in the early days of the Christian Church it was the Gnostic heretics who rewrote the biblical material according to a new understanding.<sup>77</sup> And we know that emperor Constantine did not fare any better when he began to make the biblical message attractive to those who were distant to the faith. Lindbeck correctly points out that the beginning of the conversion process from heathenism to Christian faith was the fascination of the non-believer with a Christian lifestyle that was practiced honestly and lived convincingly. This led

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<sup>75</sup> We are aware that any comparison is deficient. A “lukewarm” state of being is not favored by God, who calls for a decided stand for his cause: “*I know your deeds, that you are neither cold nor hot; I would that you were cold or hot. So because you are lukewarm, and neither hot nor cold, I will spit you out of My mouth*” (Rev 3:15–16 NAS).

<sup>76</sup> Cf. Katherine Ching, “The Practice of Theological Pluralism,” *Adventist Perspectives*, 5/1 (1991): 6–11; and more recently, Ariel A. Roth, “Adventism and the Challenges to Creation” *Adventists Affirm*, 16/1 (2002): 19–21.

<sup>77</sup> George A. Lindbeck, “Theologische Methode und Wissenschaftstheorie,” in *Theologische Revue* 74/4 (1978): 278.

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the unbelievers into a long process of instruction (catechism) in which they began to understand the Christian language, which was foreign to them before, and where they learned to think biblically. Only after they had given proof that they had understood Christian concepts and thinking were they allowed to join the church in baptism.<sup>78</sup>

In affirming the biblical doctrine of creation amidst theological pluralism and in a pluralistic world, we have the sacred responsibility to use the language we employ unambiguously. It seems as if in the past so-called “progressive” theologians did not attack traditional views of creation openly within our church. Instead they “used traditional terminology and concepts but infused them with new meaning.”<sup>79</sup> It has been pointed out that “it may have taken a while for conservatives to sense that although the words and the symbols were familiar, the theological perspective was new.”<sup>80</sup> Today, as we deal with these important issues, there is a great need for theological honesty and for linguistic precision so that our words do not empty the biblical doctrine of creation of its biblical meaning and convey something unbiblical instead.

While it is good to listen to those who are trained and educated in scholarship and science, we should not fall prey to the wrong thinking that only scientifically trained people and those who teach religion are able to discover correctly God’s truth about creation. As theologians and scientists who work for the church and are employed by church owned institutions, we are responsible to the whole church, and we are representatives of all church members, not just our own academic peer group. We believe in the priesthood of all believers—not the high-priesthood of the scientist and theologian who holds a Ph.D. and is knowledgeable about historical and scientific analysis. Any such assumption is arrogant and even insulting to others because it does not adequately reflect the possibility and reality of the Holy Spirit leading the whole church into God’s truth.

It is my hope that the ideas presented in this article will stimulate and motivate all of us to search for better answers, answers that will prove to be convincing and at the same time are in full harmony with God’s written Word. Only then will we honor God and bring glory to He who created this world through His powerful Word.

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<sup>78</sup> Lindbeck, 278.

<sup>79</sup> Lugenbeal, “The Conservative Restoration at Geoscience,” *Spectrum*, 15/2 (1984): 23.

<sup>80</sup> Lugenbeal, *ibid.*