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**ISSUES IN “INTERMEDIATE” MODELS OF
ORIGINS**

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ISSUES IN "INTERMEDIATE" MODELS OF ORIGINS

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Abstract. The nature of humans and their relationship to God and nature are fundamental issues in the Christian gospel. Scripture and science provide conflicting views on these issues, often producing major tensions within the Church, especially among the more educated members. Numerous attempts have been made to reconcile Scripture and science. These "intermediate models" generally involve accepting some type of divine creative activity over long ages of time. An examination of proposed intermediate models shows that each of them fails to resolve the tensions between Scripture and science. Science does not appear adequate to explain the history and nature of humans, their origins, or their relationship to nature.

INTRODUCTION

It is sometimes claimed that the six-day creation described in Genesis faces serious scientific problems and therefore it should be rejected in favor of some other model. The purpose of this paper is to evaluate the alternative models that have been proposed to determine how well they are supported scientifically and biblically. I will start by reviewing some arguments in favor of the six-day creation. Next I will define some terms, and then consider a series of origins models that have been proposed, along with some of the problems they face. I will show that no model of origins is free of scientific problems, and thus conclude that apparent conflict with science is not, in itself, a sufficient cause to reject a model of origins.

Four Reasons a Six-day Creation Is Important

The Bible includes many references to divine activity in the origins of the world, of living organisms, and of humans. Different points are emphasized in different passages, and one must consider all that Scripture has to say on the topic if one wishes to understand what the Bible teaches on the subject. One of the key Biblical concepts is the account of a six-day creation that transformed the earth from a dark, watery, chaotic state into a lighted, organized state complete with suitable habitats and living organisms. In this paper, I will argue that the six-day creation model, although admittedly difficult to correlate with scientific observations, is the best model of origins available. I will briefly present four reasons the six-day creation is important, and then elaborate on the fourth reason.

A six-day creation should be accepted because it is a teaching of Scripture. First, creation in six days is explicitly described in Genesis 1. Second, the six-day creation is given special emphasis in Exodus 20 as the basis for the seventh-day Sabbath. Third, Jesus affirmed the authority of Moses' writings in general in the parable of the rich man and Lazarus (Luke 16:31), and more specifically the Genesis creation accounts in His

response to the question of divorce (Matthew 19:4-5). Fourth, every New Testament writer alludes with approval to the Genesis account of pre-history, including the completion of the creation by the 7th day (Hebrews 4:4). Fifth, Ellen White strongly and unequivocally endorses the six-day view and rejects any other. The Genesis account of creation in six days is presented in the Bible as an important concept.

A second reason to accept a six-day creation is it is affirmed by the cross. Jesus died to save sinners, by accepting the death that results from sin (1 Peter 2:24; Isaiah 53; etc). This is the substitutionary atonement, widely recognized as the heart of the gospel. Death is the result of the sin of Adam, created separately and in God's image (Genesis 1,3; Romans 5, etc). Creation as described in Genesis is a logical implication of the cross as understood by Seventh-day Adventists and many others. No other creation story provides such meaning to the cross without encountering serious scientific and Biblical problems.

The eschatological role of the Sabbath is a third reason to accept the six-day creation. The role of the seventh-day Sabbath in the final conflict is a keystone doctrine for Seventh-day Adventists. Anything that would undermine the significance of the seventh-day Sabbath should be regarded with concern. The Bible presents only one reason the Sabbath should be kept on the seventh day, and that is because of God's example in the creation week described in Genesis. Other reasons are given for observing a Sabbath rest (Deuteronomy 5:15; Ezekiel 20:12), but no other reason is given for observing that rest on the seventh day of the week. Rejection of the six-day creation destroys the basis for the seventh-day Sabbath, and exposes one to eschatological problems. These ideas are affirmed by Ellen White in unequivocal language.

A fourth reason to accept a six-day creation is that no other available model is satisfactory. Science is the main alternative source of origins theories, but origins questions appear to be non-scientific in nature. Science lacks the tools to provide answers to the most fundamental questions about origins, such as how the universe began, and how life started. Other origins issues that appear to be beyond the reach of science include the origin of biological information, the origin of cellular reproduction, the origin of gender and sexual reproduction, the origin of morphological novelties, the origin of development, etc. Scientists and theologians have tried to develop other models, but none of them seems adequate. No other model has Scriptural support, and none of them is without significant scientific problems. The inadequacy of alternative models is the focus of this paper.

DEFINING "CREATION" AND "EVOLUTION"

The terms "creation" and "evolution" are both used in a variety of meanings that tend to confuse rather than clarify the issues. For this reason, I will attempt to define the terms for the purposes of this paper.

By *creation*, I mean the concept that God acted directly, through personal agency, to bring diverse lineages of living organisms into existence. "Creation" specifically implies the separate ancestry of humans, which is the crucial distinction from theories of "evolution."

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God may have created the first individuals of each lineage *ex nihilo* (Hebrews 1:3), or from non-living materials (Genesis 2:7), or in some combination. Creation in the sense used here does not include the proposal that God caused new forms of life to appear through secondary processes, such as by guiding the process of evolution. Nor does it include the appearance of new individuals through reproduction. Accordingly, God (directly) created only the founders of each independent lineage. (Of course God created the entire universe *ex nihilo*, but here we are concerned primarily with the origins of living things.)

By *evolution* I mean the concept of universal common ancestry¹ (monophyly), through descent with modification, regardless of the mechanism, whether naturalistic or divinely guided. Evolution is the theory that all organisms, including humans, descended from the same original ancestor. The crucial point here is the common ancestry of humans and non-humans, in distinction from theories of "creation."

I would distinguish between "evolution" and some other terms commonly associated with it. Variation and speciation do not entail universal common ancestry, so they are not the same as evolution. Evolution is sometimes defined merely as "change over time," but this is not an adequate definition. Every individual changes over time, yet individuals do not evolve -- it is populations that evolve. "Change over time" does not necessarily imply universal common ancestry. The term "macroevolution" has no single accepted definition, and I will avoid the term in order to avoid the confusion its use sometimes brings.

What is an "Intermediate" Model of Origins?

Biblical creation and naturalistic evolution are radically different models of origins, and are often the focus of attention when issues in creation are discussed. The differences between these two theories are profound, and the contrasts can readily be identified in such issues as whether the universe and human life were purposefully designed, the nature and extent of God's actions in the universe, and the extent to which answers to philosophical questions can be inferred from nature and from Scripture.

Biblical creation is based on a literal-phenomenal² interpretation (real events described in the language of appearance) of Genesis 1-3 and other creation texts. The Biblical model affirms that humans were separately created in a supernatural act of creation, some thousands of years ago, at the end of a six-day creation. They were endowed with the image of God and the possibility of eternal life. The original human pair freely chose to distrust God, bringing death and other evils into the world.

In contrast, naturalistic evolution is based on a naturalistic approach to science, without respect to Biblical teachings. Naturalistic ("scientific") evolution claims that humans developed from ape-like ancestors, through strictly natural processes, over several millions of years. Humans have no special status in nature, and there is no basis for believing in life after death. Death, disease and suffering are simply natural by-products of the processes operating in nature, and cannot be considered good or evil in any "moral" sense. The differences between the two models could hardly be more dramatic.

However, other models have been proposed that tend to blur some of the contrasts between the Biblical and naturalistic theories. A number of attempts have been made to develop intermediate models, in which elements of the Biblical story of creation are mixed with elements of the naturalistic story of origins. All of these models share the Biblical idea that nature is the result of divine purpose, and the "scientific" idea of long ages of time.

We do not have time to consider every variety of origins model, but most of them are variants of two major categories of models, often called "progressive creation" (or "multiple creations") and "theistic evolution." Neither of these categories is consistently defined, and each includes a range of models that differ in significant details. Thus it will be necessary to define the categories clearly and describe the major components of the models in order to identify their implications and assess their strengths and weaknesses.

CLASSIFYING MODELS OF ORIGINS

Several attempts have been made to classify intermediate models of origins.³ My classification borrows from these previous attempts, but emphasizes elements that seem to be particularly useful for evaluating the models. The major criterion is the putative ancestry of humans. This criterion divides the intermediate models into two categories: "long-age creation" models, and "theistic evolution" models.

By *long-age creation* I mean any theory that includes the stepwise appearance of living organisms over the long ages of the geological time scale, and the idea of separately created lineages, especially the special creation of humans. Since all the major forms of long-age creation involve a series of discrete creation acts, I regard the term *multiple creations* as a synonym for long-age creation. Various long-age creation models are distinguished on the basis of how they propose to interpret the "days" in Genesis 1.

I will use the term *theistic evolution* for those theories that accept the continuous development of living organisms over the long ages of the geological time scale, and universal common ancestry, including humans, in a divinely guided process. Various forms of theistic evolution are distinguished by the nature of the proposed divine activity in nature. Theories that do not include any divine activity are beyond the scope of this paper.

LONG-AGE CREATION MODELS (including "progressive creation")

Long-age creation models include any model that incorporates the two ideas of: 1) the geological time scale and 2) the separate creation of humans, and numerous other independent lineages. These models are usually associated with the idea that if there was a six-day creation or Biblical flood, they were local events, rather than global. Ramm⁴ introduced the term "progressive creation" and argued for many separate creations, each followed by "horizontal" but not "vertical" radiations. However, this term is used for a wide variety of models, at least one of which includes an animal ancestry for humans.⁵ Because "progressive creation" is so vague, I prefer to use "long-age creation" or "multiple creations."

Classifying long-age creation models

Probably the most significant distinguishing feature of long-age creation models is the interpretation of the word "day" in Genesis 1. Certain long-age creation models hold that the creation "days" are literal, sequential days of creation, while other long-age creation models hold that the "days" are non-literal and/or non-sequential. (Theistic evolution models necessarily hold that the "days" are non-literal.) I use this difference to help classify the long-age creation models discussed below.

Multiple-creation models with sequential, literal creation days

Gap theory. One of the first models of multiple creations over long ages was the "gap theory."⁶ This theory maintains that there was an ancient creation that was corrupted by Satan and finally destroyed. The destruction might have been due directly to Satan's activity when he supposedly was in control of the world⁷ or the results of a war between Satan and God.⁸ The fossil record reflects the history of this creation and conflict. Genesis 1 refers to a recent, new creation in six literal, contiguous days.⁹ Proponents of this view often claim that the phrase "the earth was without form and void" (Genesis 1:2) should read "the earth became without form and void," which represents a change from its original condition (compare with Isaiah 45:18).¹⁰ The gap theory founders on both exegetical and scientific grounds. Exegetically, the gap theory is based on the supposition that Genesis 1:2 means that the world "became" without form and void. However, the Hebrew word (*hayetha*) does not have that meaning. The text states that the earth was without form and void, not that it became without form and void.¹¹

Scientifically, the gap theory predicts a "creation boundary" in the fossil record, with the rubble of the old destroyed creation below the boundary and the record of the new creation above the boundary. But there is no such "creation boundary" in the fossil record, and most scholars abandoned the gap theory long ago.

Some scholars have attempted to get around this problem by claiming that the animals and plants of the first creation closely resembled God's work in re-creation.¹² Thus, the "creation boundary" would be undetectable. In this view, some fossils that appear to be humans were actually human-like animals, while others were true humans with moral accountability.¹³ Fossils from the two creations are supposedly morphologically indistinguishable. It seems logically problematic to claim that there is no observable difference between God's good new creation and the old creation that was so corrupted by Satan that it had to be destroyed. This idea lacks any Biblical, scientific or philosophical support, and it is perfectly understandable why the idea of an "invisible gap" has not been widely accepted.

Intermittent Creation days (Multiple gaps). A few scholars have attempted to preserve the idea of literal days in a long time frame by proposing that the days were intermittent rather than contiguous.¹⁴ Thus, there were actually six literal creation days, in the sequence recorded in Genesis, but they were separated in time by millions of years.

The major problem with this idea is that the sequence of events in Genesis conflicts with the fossil sequence (see under Day-age Model). This effectively falsifies the proposal. To get around this problem, a leading major proponent of this view states that "each successive day opens a new creative period."¹⁵ The "literal" days are actually only beginning points of successive "overlapping ages" of creation. The successive creation events begin on specific days, but are completed some time later. This strategy effectively transforms the "intermittent" creation days into the "overlapping day-age model" (see below under Non-literal, non-sequential days).

Multiple-creation models with sequential but non-literal days

Non-literal days. Various suggestions have been made that cut the relationship between literal days and the creation process. One is the "day-age" interpretation discussed in the next section. A similar suggestion is the "relativistic day" interpretation of Schroeder,¹⁶ that proposes that "day" means a regular day to humans, but a period of time much different to God.

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A third suggestion is that the Genesis "days" are "days of proclamation" or "fiat," in which God uttered the creative words in a series of six literal days. Each fiat might have initiated the creation process, but the events were only completed some time during the millions of years of the "age."¹⁷ The latter proposal has the obvious problem of how one can have a first literal "day" before the solar system (or even the universe?) was created.¹⁸ Another problem with this interpretation is that Genesis records "and it was so" before the conclusion of each day. This seems to indicate that each day's creative activity was completed before the beginning of the next day.

Each of these interpretations, in the form discussed here, attempts to retain the sequence of Genesis events. Hence, they are included with "day-age" models.

Day-Age theory. I include here any model that maintains the Genesis sequence of creation, and in which the events of a creation "day" are not completed in a literal day, but may extend over long, sequential ages of indefinite length.¹⁹ The following models should be included: the "overlapping day-age" theory²⁰; the "intermittent-day" theory of Newman²¹; and the "relativistic-day" theory of Schroeder.²² The day-age interpretation can also be included in a model of theistic evolution. Since all sequence-based, long-age models of origins conflict with the order of the fossil sequence, the problems described here would also apply to any theistic evolution model that attempts to preserve the Genesis creation sequence.

The "day-age" interpretation has very serious exegetical issues.²³ The exegetical problems include the Biblical description of each day as literal, with an evening and a morning. The phrase "and it was so" precedes the statement "and the morning and the evening were the [nth] day," and seems to indicate that the action of each day was completed before the day ended. Also, the fourth commandment specifies a literal Sabbath day as commemorating the (by inference) literal creation days. It is widely acknowledged that the natural reading of the text is that the days were literal.²⁴

Scientific issues were probably more influential than the exegetical problems in causing the demise of the day-age theory.²⁵ The sequence of creation events does not match the sequence seen in the fossil record. In Genesis 1, the creation sequence of living groups is:

- 1) land plants and fruit-bearing trees (Day 3);
- 2) water creatures and flying creatures (Day 5);
- 3) land vertebrates including mammals and humans (Day 6).

In the fossil record, the sequence of first appearances is

- 1) water creatures (Cambrian; Day 5);
- 2) some land plants and land insects (Silurian; Day 3; Day 6?);
- 3) flying insects and land vertebrates (Carboniferous; Day 5?; Day 6);
- 4) mammals (Triassic-Cretaceous; Day 6);
- 5) birds (Jurassic/Cretaceous; Day 5);
- 6) fruit-bearing trees (Cretaceous; Day 3);
- 7) humans. (Plio/Pleistocene; Day 6)

The primary similarity is that humans appear last in both lists, and that water creatures appear before flying or land creatures. Otherwise, the lists are quite different.

These problems have led to the wide-scale abandonment of the day-age interpretation by most scholars. Hugh Ross, of *Reasons to Believe*, is probably the most vocal contemporary proponent of the day-age interpretation of multiple creations. Ross argues that the sequences are actually in

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harmony.²⁶ Ross appeals to flying insects rather than birds to place flying creatures before land creatures. However, if flying insects are to be included, land insects should also be included, and they appear before flying insects in the fossil record.²⁷ The relative order of land plants and water creatures differs in the two sequences, as does the relative order of flying creatures and land creatures. These conflicts are sufficient to falsify all long-age models that incorporate the sequence of Genesis 1.

The conflict between the sequence of Genesis and the sequence of the fossil record has been known for more than a century. Thomas Huxley commented on attempts to reconcile Genesis with geology, in a debate with William Gladstone. Gladstone apparently promoted the view that the days of creation were successive long ages, evolution was the method used by God to create, and the fossil sequence supported the sequence in Genesis. In a memorable passage, Huxley responded to this proposal:²⁸

"This statement appears to me to be the interpretation of Genesis which Mr. Gladstone supports, reduced to its simplest expression. "Period of time" is substituted for "day"; "originated" is substituted for "created"; and "any order required" for that adopted by Mr. Gladstone. It is necessary to make this proviso, for if "day" may mean a few million years, and "creation" may mean evolution, then it is obvious that the order (1) water-population, (2) air-population, (3) land-population, may also mean (1) water-population, (2) land-population, (3) air-population; and it would be unkind to bind down the reconcilers to this detail when one has parted with so many others to oblige them."

Multiple creation models with non-literal, non-sequential days.

In contrast with day-age models, some models reject both the literalness of the days of creation and the sequence of creation events. This permits the model to match whatever the fossil record indicates. The "model" can be adjusted at will to fit any new fossil discoveries. The practical effect is that these models have no actual content of their own; they are merely a statement that whatever happened, God did it.

One variant of this category is the suggestion that the Genesis "days" are days of revelation, in which Moses received a series of six symbolic visions about the creation²⁹, but the actual sequence of creation is not revealed. Another member of this category is the proposal that the "days" of creation are overlapping ages. Each age began when God uttered a command, but the actual creation events may have been completed during any of the "ages."³⁰ Again, the sequence of creation is unspecified. A major example of this category is the proposal that the "days" refer to God's heavenly activity rather than any earthly event. Another popular model of this type denies that the "days" of Genesis 1 have any correspondence to reality.

Literary framework hypothesis. The literary framework hypothesis³¹ belongs in this category. The literary framework interpretation treats the "days" of Genesis 1 as neither literal nor sequential, but merely as a literary device for telling the theological truth that the world is a creation. No model of creation history is offered, although the special creation of a personal Adam and his subsequent Fall are considered to be true historical events.

A key concept of the framework hypothesis is the "two-register cosmology." According to this formulation, the earth forms a visible "lower register" and the heavens form an invisible "upper register." The two "registers" are related "analogically." This framework is applied to Genesis 1 to explain the "days" as periods of time that belong to the invisible "upper register," and not to the literal world in which the creation events took place. The authors insist that the creation "days"

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refer to something real and significant in the "upper register," although it is not clear just what that means, since they deny the sequence represented in God's "daily" activities.

The literary framework interpretation is not really a creation model, but an exegetical hypothesis. It makes no predictions about the fossil sequence and is infinitely flexible in its application. Therefore, the framework hypothesis is a non-scientific theory, and must be evaluated exegetically and theologically.

Exegetically, the framework interpretation has very serious problems.³² The narrative style of the text, the words used to describe the events, and the rest of Scripture, including the fourth commandment, all combine to indicate the author's intention to describe literal, consecutive days. All New Testament writers appear to accept the Genesis story as literal.³³

The literary framework interpretation has the ability to explain away any exegetical inconvenience by referring it to the invisible "upper register," where it need not concern us. Any text that challenges our own opinions can be safely removed from the "real world" in which we live and relegated to the invisible "upper register," where its meaning becomes very vague.

The framework interpretation suffers from the implication of a distinct separation of God's activities in the "upper register" from the world of the "lower register." This conflicts with the Biblical understanding that God is continuously acting throughout the entire universe, and is not confined to an "upper register."³⁴ It also faces serious theological problems with its implications for the character of a God who intentionally created a world of violence, death and suffering.³⁵

"Serial Creation" Model

This is the model Bernard Ramm proposed and called "progressive creation."³⁶ I use the term "serial creation" because the original term has been applied to such a diversity of models that its meaning is not clear. The model proposes two types of creative activity. Morphological gaps in the fossil sequence are explained as the result of discrete creations while more-or-less continuous morphological sequences are explained by guided descent with modification. The sequence of creation is whatever the fossil record indicates. The creation account in Genesis allegedly does not contain any prepositional revelation.

The "serial creation" model encounters a number of problems. There is no evidence to support it, either biblically or scientifically. It attempts to explain the fossil sequence by appealing to a Creator whenever a gap is found in the fossil record, while appealing to "natural" processes the rest of the time. Scientifically, the model makes no predictions, and has the same status as a proposal that God supernaturally arranged the fossil sequence during the Flood. Philosophically, the model is unsatisfying because it is entirely *ad hoc* and conjectural. One may choose to believe it, but there is no particular reason to do so. Theologically, the model record implies a long history of repeated destructive catastrophes. Biblically, the model is based on inconsistent exegesis, accepting some parts of the Biblical story of creation as real, while denying other parts of the story. For these reasons, the theory of "serial creation" has never gained widespread acceptance.

Problems Specific to Long-age Creation Models

All long-age creation models suffer from numerous problems. Many of these problems are shared with theistic evolution and will be discussed later. A few problems unique to long-age creation are noted below.

First, all forms of long-age creation that make actual predications are in conflict with science. Those models that preserve the sequence of events outlined in Genesis are in conflict with the sequence of the fossil record. Thus, the intermittent day theory and day-age theory are both scientifically untenable. The gap theory predicts a "creation boundary" which the fossil record does not have.

Second, the remaining versions of long-age creation are essentially conjectural. This refers to the framework hypothesis and the serial creation hypothesis. These lack direct support, either scientific or Biblical. The scientific evidence does not suggest a series of discrete creations of living organisms over long ages of time.³⁷ The Biblical evidence points away from such a suggestion, toward a single week for the creation of terrestrial life. While divine activity seems necessary in explanations of nature, the absence of Biblical support makes these models appear entirely *ad hoc* and difficult to defend. As pure conjectures, there seems no particular reason to accept either of these models.

Third, there is a troubling inconsistency in interpreting Genesis 1 in a long-age context.

"[O]ld earth special creationism, by its choice to accept the scientifically derived timetable for cosmic history, is in the exceedingly awkward position of attempting to interpret some of the Genesis narrative's pictorial elements (interpreted as episodes of special creation) as historical particulars but treating the narrative's seven-day timetable as being figurative."³⁸

Thomas Huxley, not known for his "political correctness," stated the problem rather sarcastically.³⁹

"If we are to listen to many expositors of no mean authority, we must believe that what seems so clearly defined in Genesis -- as if very great pains had been taken that there should be no possibility of mistake -- is not the meaning of the text at all. The account is divided into periods that we may make just as long or as short as convenience requires. ... A person who is not a Hebrew scholar can only stand aside and admire the marvelous flexibility of a language which admits of such diverse interpretations."

Numerous theological problems are shared with theistic evolution, and will be discussed later in this paper. They include the problem of the origin of humans, the effects of the Fall, the problem of multiple mass destructions, and the problem of death before sin.

Conclusions Respecting Long-age Creation Models

Several models of long-age creation have been proposed. They share two characteristics: acceptance of the long geological time scale, and the separate creation of humans and other lineages. When the models are considered in detail, it is apparent that none of them is free of scientific problems. The gap model predicts a gap in the fossil record, which is non-existent. The intermittent creation day model and the day-age model conflict with the fossil sequence. Overlapping day-age models seem logically problematic due to the attempt to blend the sequence of Genesis days with a denial of the sequence of events recorded for those same days. The literary framework interpretation and the serial creation model are entirely *ad hoc*, and merely explain every observation in the fossil column with the words "God did it" (or, perhaps, "the devil did it.").

Long-age creation models were proposed with the intention of resolving the scientific problems faced by the Biblical literal-phenomenal model. However, all long-age creation models have

serious scientific problems. In addition, long-age creation models introduce serious theological problems.

It seems pointless to reject the obvious meaning of Genesis on scientific grounds in order to accept another model with serious scientific problems. Seventh-day Adventists cannot improve their position by adopting any presently available model of long-age creation.

THEISTIC EVOLUTION MODELS

Theistic evolution models include any models that are based on 1) universal common ancestry of all organisms, including humans, and 2) the common descent of all organisms as the result of a divinely guided process over long ages of geological time. Several other terms are sometimes used for models of this type: "evolutionary creation"⁴⁰; "fully-gifted creation"⁴¹; "providential evolution"⁴²; and continuous creation.⁴³

Classifying theistic evolution models

Theistic evolution models differ among themselves primarily in how they propose divine guidance is accomplished.⁴⁴ Many theistic evolutionists seem to accept the Greek dualistic idea of separation of spiritual and material.⁴⁵ Since God is spiritual and the world is material, there is no direct interaction between the two. This creates a dilemma for those who think God does not interact with the material world, and yet see a need for some kind of divine guidance in nature.

The number of minor variants of theistic evolution is too large to consider each one separately, but they can be grouped into categories. I will use three categories. One category includes views holding that God created nature to be autonomous, so that continuing divine influence on nature is unnecessary. The second category is that God is continuously interacting with nature in the regularities we recognize as natural law, yet He is somehow influencing the outcome for His own purposes. The third category is that God is continuously directing nature, in a manner similar to a mechanic who is constantly "tinkering" with an automobile engine.

Theistic evolution through autonomous "natural law"

One form of theistic evolution holds that nature is autonomous. This seems to be the view of Van Till,⁴⁶ who uses the term "the fully gifted creation". According to Van Till, God did not "withhold" anything from the creation that would be needed for it to maintain "functional integrity." There are, allegedly, no "gaps" in the "natural economy."

In this view, God does not personally control any natural event. Instead, God intentionally designed the laws of nature so that evolution is the natural result. God established the laws of nature at the time of the Big Bang, and no further divine action is needed.⁴⁷ God intended that consciousness would evolve, but He did not need to "coerce material into assuming forms that it was insufficiently equipped to actualize with its God-given capabilities."⁴⁸

The emphasis here is on the sufficiency of natural law. God is not a participant in the evolutionary process, but merely an observer. This view would be ordinary deism except that Van Till does allow God to occasionally intervene in the lives of believers.⁴⁹ However, interacting in the flow of nature is apparently forbidden. So the model is quasi-deistic, although Van Till dislikes that term.

The autonomous model of theistic evolution has some very serious difficulties. In the Bible, nature is not autonomous, but totally and continuously dependent on God for continued existence. There is no Biblical support for the idea of a God who does not interact with His creation, and much Biblical evidence against this idea.⁵⁰

Scientifically, this model has serious problems. There are just too many apparent gaps in the "natural economy." Some of the most glaring examples include: the cause of the Big Bang; the origin of life;⁵¹ the origin of gender and sexual reproduction;⁵² the origins of multicellularity, cellular differentiation, and embryonic development; the origins of the metazoan phyla and classes in the "Cambrian Explosion,"⁵³ and other major groups; the rapid radiation (assuming the long age view) of "crown groups" of mammals and birds around the Cretaceous-Tertiary boundary;⁵⁴ and the origin of consciousness, language and morality in humans. No known natural law can explain the origin of any of these phenomena. The fact that they may operate in harmony with natural law says nothing about their respective origins.

Second, there seems to be too much evidence of intelligent design in nature. From the irreducible complexity of many molecular machines to the fitness of the environment for the needs of living organisms, neither chance nor natural law seems an adequate explanation. Another example is the structure of the human brain, which appears to be designed for far more mental capacity than required for survival under the "law" of natural selection.

Theistic evolution driven by God's continuous but undetectable interaction with nature

Several versions of theistic evolution postulate that God continuously interacts with nature. Nature is not autonomous, but is totally dependent on God's continuous sustaining activity. God's activity is observed in the "laws of nature." But God is not merely sustaining nature; He is somehow influencing its directionality.⁵⁵ As God sustains nature, He somehow acts providentially to bring about His will, in ways that are generally undetectable to us. This raises the dilemma of how God can influence nature to accomplish His will in specific instances without violating the regularity of the natural laws He chose as His method of sustaining the universe.

Some have proposed⁵⁶ that God acts through chaotic systems, which are unpredictable to us, although it is possible that God can predict the outcome. However, chaotic systems, while unpredictable to us, are driven by deterministic mathematical equations.⁵⁷ Another possibility is that quantum uncertainty may provide an opening for God to act in undetectable ways.⁵⁸ However, quantum events, although uncertain individually, act statistically in predictable, lawlike ways,⁵⁹ which tends toward determinism rather than an opening for divine action.

This model, or one much like it, is widely held among scientists, and is the primary object of criticism by the intelligent design group. If natural law is sufficient to explain evolution without God's intervention, why insist that there is actually an invisible, undetectable God somehow acting to influence events?⁶⁰

Some versions of theistic evolution are open to the possibility of occasional direct divine "intervention," as in miracles.⁶¹ Miracles are uncommon, special acts of God. Miracles for the benefit of believers are often accepted by theistic evolutionists⁶² but usually not in nature.⁶³ Some, however, would permit miracles in the course of nature. God might "intervene" in nature, for example to help evolutionary processes over difficult obstacles⁶⁴ such as the gaps mentioned previously.

Theistic evolution by divine "tinkering"

A few scholars seem to favor the idea that God is continuously and freely active in nature, directly guiding processes to accomplish His will. In this view, evolution is directly guided, perhaps as a divine experiment, and not necessarily directed by natural law or providence. This would imply that the fossil record shows the history of divine experimentation or "tinkering" with life.

Scientifically, this proposal seems difficult to justify. There is nothing in the fossil record to suggest divine tinkering. The fossil sequence does not seem to reflect divine superintendence. Mutations appear (with a few possible exceptions) to be unrelated to organismal needs, especially the many genetic diseases. Theologically, the proposal is preposterous because it implicates God as the direct cause of every evil, including genetic diseases. Even if the first case or two of muscular dystrophy could be explained as due to an experiment gone awry, any god clever enough to know how to manipulate the DNA would have quickly learned how to avoid causing the same genetic disease repeatedly. It is not surprising that this model has few proponents.

Problems specific to Theistic Evolution Models

All forms of theistic evolution have numerous problems. First, a direct reading of the fossil record, even with the assumption of the long age geological time scale, does not suggest a single evolutionary tree with all organisms descending from a common ancestor. The "evolutionary tree" as reflected in the fossil record, is full of morphological gaps.⁶⁵ These are especially glaring at the level of phyla and classes. The morphological pattern in the fossil record is summarized in the phrase "disparity precedes diversity."⁶⁶ Descent with modification would produce the opposite pattern.

Second, the fossil record exhibits too much evil for the evolutionary process to appear guided by a beneficent creator. There are too many extinctions, and too much evidence of suffering and disease. The problem is not solved by the various suggestions that have been offered⁶⁷: e.g., that we may be wrong in judging such things as evil⁶⁸; or that God's participation in suffering somehow makes it easier to take⁶⁹; or that God was limited to working with nature as it is⁷⁰; or that God was unable to (or chose not to) directly create humans in His image, and was forced to impose suffering on amoral creatures in order to create us.⁷¹

Third, the deleterious effects of most observed mutations seem difficult to reconcile with the notion that God is guiding them, either directly or indirectly. The origin of cancer and birth defects from mutations are related problems.⁷²

Fourth, the origin of morally accountable humans is a difficult problem for all forms of theistic evolution. How can a continuous, gradual process account for a discontinuity in the origin of spiritual humans? In other words, how would one justify the position that a particular individual was morally accountable but his parents were not? A variety of conjectures have been brought forward, but none of them seems satisfactory. One proposal is that the humans gradually became morally conscious, and gradually fell.⁷³ Another suggestion is that Adam was not the first genuine human, but a person in whom God chose to create His "image."⁷⁴ Another idea is that hominids became human when they gained a religious sense.⁷⁵ All these views imply that some human-like fossils are not truly "human." By the same reasoning, one may ask whether all living races of humans are truly "human."⁷⁶ Both Biblical and scientific data indicate that all humans are truly members of the same species in every respect.

Fifth, the possibility of human freedom seems difficult to harmonize with the view that the human mind arose purely through processes in which all chemical reactions were and are driven by natural law. Natural law does not seem capable of producing a brain with freedom of choice. Quantum uncertainty has been suggested as a solution to this problem, but quantum processes do not really provide a suitable mechanism for freedom of choice.⁷⁷ Individual events are unpredictable, which is not a good basis for free choice. Collective events are statistically deterministic, again not a good basis for free choice. Most humans believe they actually have freedom of choice, and they hold other humans accountable for their behavior. This would not be logical if natural law and/or God were directing every atom and every chemical reaction, rather than some reactions being subject to human will.

Sixth, theistic evolution tends toward panentheism, although not all advocates accept panentheism.⁷⁸ The proposal that God is somehow acting "within" the creation, continuously influencing its directionality, tends to blur the distinction between Creator and creation in the minds of some theistic evolutionists.

Seventh, the "Fall" of Adam is difficult to explain in the context of theistic evolution. In evolution, humans are on an upward trajectory⁷⁹ rather than the downward trajectory described in the Bible. This implication of theistic evolution introduces theological problems by undermining the Biblical teaching of Calvary and the atonement.⁸⁰ This point is discussed further below.

Theistic evolution raises many other, serious Biblical and theological problems. These are too numerous to discuss here, but some of them have been discussed elsewhere.⁸¹ A few will be mentioned here.

GENERAL PROBLEMS WITH ALL INTERMEDIATE MODELS

Certain problems are inherent in all intermediate models of origins, whether long-age creation or theistic evolution. The origin of humans in the image of God, and the relationship of natural evil to the Fall of Adam are perhaps the most interesting of these.

The problem of Adam and the origin of humans

All intermediate models of origins have a serious practical problem with the origin of humans. When one accepts the long geological time scale, one by implication accepts that there was a series of increasingly human-like fossils, stretching back more than a million years. Where do Adam and Eve fit into this scenario?

Theistic evolutionists often deny there was any individual Adam, but that Adam was a generic representation of the evolutionary advance from primate to human.⁸² Another view is that Adam was a divinely selected individual in whom God implanted a soul.⁸³ Some theistic evolutionists accept the reality of Adam as a Neolithic farmer with emergent self-consciousness rather than a soul.⁸⁴ This Adam was not the ancestor of all humans, but the "federal representative" of the race. The image of God was first placed in Adam, and later perhaps given to the remainder of the species.

Long-age creationists have responded in a variety of ways. Some have proposed that Adam was created less than ten thousand years ago⁸⁵ or as much as 60,000 years ago⁸⁶ in a world already containing other human-like lineages. Another proposal is that Adam was the first anatomically modern human⁸⁷ created perhaps one hundred fifty thousand years ago. In either case, there were already human-like, but non-spiritual, organisms in existence before the creation of Adam. These

purported groups are the "pre-Adamites." Yet another proposal is that language is a defining capability of humans, and paleoanthropological evidence indicates the existence of language at least 400,000 years ago, and perhaps as far back as two million years.⁸⁸

What, then, is the origin of the "pre-Adamites?" Were they simply animals created by God with human bodies and animal natures? Were they human-like animals produced by Satan's experiments? Did they leave any living descendants? Multiple creation theories would propose answers to these questions different from theistic evolution theories, but both would share the problem of locating Adam in history.

According to anthropologists, American aborigines reached the New World before 10,000 years ago, and Australian aborigines reached Australia by 40,000 years ago. Europe is thought to have been continuously populated for some 35,000 years. The out-of-Africa hypothesis of human origins proposes that humans and their ancestors have lived in Africa for several million years. Placing the creation of Adam less than 10,000 years ago, within the long-age chronology, raises the question of how his sin could affect the rest of mankind, since most groups of humans could not be genetically related to him.⁸⁹ It also seems to imply that the atoning sacrifice of the "second Adam" does not benefit most races of humans, since they are not descendants of the first Adam. On the other hand, extending the time for Adam's creation back several millions of years to include all "hominids" means that the image of God is present in the australopithecines, or at least in the erectines.⁹⁰ This idea is as difficult to accept on scientific grounds as on Scriptural grounds.

The problem of the effects of Adam's "Fall" on nature

The Fall of Adam into sin is identified in the Bible as a major turning point in human experience, with serious effects on nature as well as on the human condition. Integrating the Fall into a long-age chronology poses significant challenges.

Those interpretations of the Fall that propose a significant change in nature when Adam sinned run into scientific trouble with the fossil record, since evidence of disease, predation, and mass extinction are found throughout the fossil record.

On the other hand, those interpretations that attribute no physical changes in nature at the Fall run into theological trouble with the relationship of moral and natural evil.⁹¹ Attributing natural evil to God's intentions does not fit with the Biblical revelation of God's character, and seems contrary to the Biblical promises of redemption and restoration. This problem is discussed further in the next section.

Theistic evolutionists often reject the story of Adam's Fall, interpreting it as symbolic of the undeniable fact that we are estranged from God and in a less than ideal world.⁹² Some claim there was no fall, but "we appear to be rising beasts rather than fallen angels."⁹³ Such views conflict with the most fundamental teachings of Scripture.

Berry⁹⁴ offers a contrasting position, that there was a real Fall, which was a failure in ecological responsibility by Adam and Eve. The result of the Fall was the negative ecological effects resulting from the abuse of nature by humans. However, if ecological problems are a moral evil, who was responsible for them before Adam sinned?

The problem of death and suffering before sin

The problem of death and suffering is related to the problem of the effects of the Fall, but can be discussed separately. All long-age models entail the idea of death and suffering before, and thus independent of, the sin of Adam. The fossil record thus becomes a record of God's activity, not a record of the results of Adam's sin. Repeated episodes of mass extinctions in the fossil record do not seem to reflect the behavior of a caring Creator.

It is commonly claimed that the "death" that resulted from Adam's sin was only a "spiritual" death;⁹⁵ physical death was already in force. This conclusion has been severely criticized. Death resulting from Adam's Fall must have been physical, since it involved returning to dust, and was facilitated by preventing access to the "tree of life."⁹⁶ Furthermore, restoration involves resurrection of the body. Indeed, physical death is a "sign" that spiritual death has occurred.⁹⁷

The claim that God lacked the ability to create living organisms without paying the price of death and suffering⁹⁸ is neither intellectually satisfying nor consistent with Scripture. Some scholars have even suggested that God was inexperienced as a Creator, and had to learn by practice.⁹⁹

Fourth, a multiple creation model is also a multiple destruction model. The fossil record is a record of death and extinction, including numerous mass extinctions in which large numbers of species disappear from the record simultaneously. The extinction of a single species requires the death of every individual of that species. It is not difficult to understand how this can happen if the species is confined to a small region. It is much more difficult to explain the extinction of an entire order or class of organisms, especially if the group has a global distribution. Such extinctions require catastrophic events of global magnitude. What kind of god would repeatedly create and destroy on a global scale?¹⁰⁰

The existence of disease and suffering is another aspect of natural evil that has not received as much attention as the problem of death before sin. Yet there is good evidence that animals suffer now, and that they suffered from disease, injury, and perhaps even emotional trauma, in the past.¹⁰¹ Suffering is not necessary for evolution, and it is difficult to see how it can be justified theologically. A common response is simply to give up trying to justify suffering, and speculate that somehow it is part of "God's good creation."¹⁰² This leaves the problem unresolved, and is a major theological challenge to all long-age models of origins.

Some have attempted to clear God of responsibility for evil by removing Him from direct control over nature. Kenneth Miller is an example of this thinking, when he criticizes the theological implications of God directing nature:¹⁰³

"Intelligent design [Miller's term for multiple creations] does a terrible disservice to God by casting Him as a magician who periodically creates and creates and then creates again throughout the geologic ages. Those who believe that the sole purpose of the Creator was the production of the human species must answer a simple question -- not because I have asked it, but because it is demanded by natural history itself. Why did this magician, in order to produce the contemporary world, find it necessary to create and destroy creatures, habitats, and ecosystems millions of times over?"

Ironically, Miller's criticism strikes his own preferred view, theistic evolution, just as strongly. God is equally responsible whether He directly causes every evil event, or whether He simply established the laws that cause them to happen and then withdrew.¹⁰⁴ We do not exonerate a terrorist whose bomb explodes after he leaves the scene, but hold him just as accountable as the one who throws a grenade directly into a crowd.

A superficially more attractive, but entirely conjectural, answer to the problem of death before sin is the claim that pre-Adamic death and suffering are the result of Satan's rebellion.¹⁰⁵ This idea has a certain appeal, but it seems strange that God and Satan would battle for 300 million years over trilobites, tabulate corals, and such things. This idea also runs into serious difficulties with the problem of the lack of distinction in the fossil record between the supposed works of Satan and those of God. It is quite unsatisfactory to state that, within what appears to be a single species, some individuals were actually the product of Satan's work while others were actually the product of God's work.¹⁰⁶ This becomes an especially onerous idea when applied to the human species. Most, but not necessarily all, theistic evolutionists seem to reject the existence of Satan. Thus, this explanation is primarily limited to advocates of long-age creation, who generally do believe in the existence of a personal devil.

Theological problems

Numerous theological problems are associated with long-age models of origins. The exact nature of the problems varies somewhat with the specific variety of model. The seventh-day Sabbath, the nature of the atonement, the character of God, the nature of inspiration, the nature of humanity, the basis for marriage, the nature of the future life, and other doctrines are logically related to the story of origins to greater or lesser degrees. Many others have addressed the theological problems in long-age models of origins.

Ellen White was aware of the hypothesis of long chronology, embodied in the day-age theory, and firmly rejected it:¹⁰⁷

"But the infidel supposition, that the events of the first week required seven vast, indefinite periods for their accomplishment, strikes directly at the foundation of the Sabbath of the fourth commandment. It makes indefinite and obscure that which God has made very plain. It is the worst kind of infidelity; for with many who profess to believe the record of creation, 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."

This point seems to apply to any of the theories in which the Genesis days are not interpreted as literal, contiguous days of creation.

SUMMARY AND CONCLUSION

We started this investigation with the question of how alternative models fare scientifically. The answer is – not very well. All of the models described here suffer from serious scientific problems, or are entirely ad hoc and conjectural. It may be that there really is no way to find harmony between the Biblical view of origins and current scientific thinking. This point was made recently by Giberson and Yerxa:

"The various *via media* positions are attempting to reconcile viewpoints that are, in their simplest form, contradictory.

...
 "These two perspectives [science and religion] can have, at best, some kind of uneasy truce. They can never be reconciled."¹⁰⁸

The Biblical six-day creation faces serious scientific problems. This is often given as a reason to abandon Biblical creation in favor of some intermediate model. However, a review of the intermediate models shows that they also have serious scientific problems. Thus, the existence of

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scientific problems seems a poor reason to prefer one of these theories in place of another. One may adopt an attitude of agnosticism, but this hardly seems appropriate for a Christian.

Only one family of models enjoys Biblical support -- those based on the literal-phenomenal interpretation of Genesis. This is the model on which the Biblical story of redemption is based, and the model on which Seventh-day Adventist theology is based. Although many questions about the Biblical model remain unanswered, the fact that the model has scientific problems does not distinguish it from the alternative models discussed here, nor does it justify abandoning the model. Indeed, abandoning the Biblical view of creation would undermine the Church's mission and message, and transform it into just another social group with religious roots.

ENDNOTES

¹ Giberson, K.W. and D.A. Yerxa. 2002. *Species of Origins*. Lanham MD: Rowman and Littlefield. page 49.

² Ramm, B. 1954 (1966 reprint). *The Christian View of Science and Scripture*. Grand Rapids: Eerdmans. page 67.

³ Many attempts have been made. Here are a few: Thompson, B. 1995. *Creation Compromises*. Montgomery AL: Apologetics Press. (long-age creation models); Report of the Creation Study Committee, Presbyterian Church of America. downloaded from the web: <http://www.reasons.org/resources/apologetics>; Wilcox, D.L. 1986. A taxonomy of creation. *Journal of the American Scientific Affiliation* 38:244-250; Gibson, L.J. 2000. Biblical Creation: Is There a Better Model? *Ministry* (May, 2000), pages 5-8.

⁴ Ramm, B. 1954 (1966 reprint). *The Christian View of Science and Scripture*. Grand Rapids: Eerdmans. pages 112-115, 271-272.

⁵ E.g., Mills, G.C. 2002. A design theory of progressive creation. www.asa3.org/ASA/topics/Evolution/IntelligentDesignTheory2002.html; Mills, G.C. 2002. In defense of intelligent design. *Perspectives on Science and Christian Faith* 54:260-263.

⁶ Custance, A.C. 1970. *Without Form and Void: A Study of the Meaning of Genesis 1:2*. Ottawa: Doorway Publ. 211 pages. Also available on the web:

http://www.ringsurf.com/netring?ring=Gap_Theory;action=list; Fields, W.W. 1976. *Unformed and Unfilled*. Phillipsburg NJ: Presbyterian and Reformed Publishing, p 40; Discussed in Taylor, I.T. 1984. In *The Minds of Men : Darwin and the New World Order*. Toronto: TFE Publishing, pages 362-364; See also chapter 9 in Thompson, B. 1995. *Creation Compromises*. Montgomery AL: Apologetics Press.

⁷ E.g., Rimmer, H. 1937. (1962 printing). *Modern science and the Genesis record*. Grand Rapids: Eerdmans, pages 27-28; Some Seventh-day Adventists have written favorably about this possibility (see additional references in endnote 105).

⁸ Rimmer, H. 1937. (1962 printing). *Modern Science and the Genesis Record*. Grand Rapids: Eerdmans, page 28; A web site advocating this view is www.kjvbible.org/satan.html. A similar view was suggested in Lewis, C.S. 1996. *The Problem of Pain*. New York: Touchstone. p 120, First Touchstone Edition.

⁹ This model should not be confused with the "passive gap" model, in which a lifeless planet existed for some undetermined period of time before it was organized and populated during the Genesis creation week. Davidson, R.M. 2003. The Biblical account of origins. *Journal of the Adventist Theological Society* 14():4-43.

¹⁰ Pember, G.H. n.d. (1876?) *Earth's Earliest Ages*. New York: Revell; Thompson, B. 1995. *Creation Compromises*. Montgomery AL: Apologetics Press, page 161.

¹¹ Younker, R.W. 1999. *God's creation: Exploring the Genesis story*. Nampa ID: Pacific Press; Thompson, B. 1995. *Creation Compromises*. Montgomery AL: Apologetics Press, page 161.

¹² This idea is promoted on the website: www.kjvbible.org/satan.html, and is implicit in any theory that explains pre-Adamic natural evil as the result of Satan's activities. The argument is not necessarily dependent upon Satan's involvement; it could be that God's successive creations were indistinguishable morphologically.

¹³ For a similar view in the context of a variant of the day-age model see Fischer, D. 1990. *The Days of Creation: Hours or Eons? Perspectives on Science and Christian Faith* 42:15-22.

¹⁴ E.g., Newman, R.C. 1999. *Progressive Creationism (Old-earth Creationism)*. Pp. 105-141 in (J.P. Moreland and J.M. Reynolds, eds) *Three Views on Creation and Evolution*. Grand Rapids: Zondervan; England, D. 1972. *A Christian view of origins*. Grand Rapids: Baker, pages 110-111 (Cited in Thompson, B. 1995. *Creation Compromises*. Montgomery AL: Apologetics Press, p 213).

¹⁵ Newman, R.C. 1999. *Progressive Creationism (Old-earth Creationism)*. Pp. 105-141 in (J.P. Moreland and J.M. Reynolds, eds), page 107; *Three Views on Creation and Evolution*. Grand Rapids, MI: Zondervan.

¹⁶ Schroeder, G.L. 1997. *The Science of God*. New York: Free Press.

¹⁷ H. Miller. 1867. *The Testimony of the Rocks; or, Geology in its Bearings on the Two Theologies, Natural and Revealed* (Edinburgh: Thomas Constable & Co.), pages 157-191; Hayward, A. 1985. *Creation and Evolution: The Facts and the Fallacies*. London: Triangle, pages 167-178. This is the effect of "overlapping day-age" models, including Newman's "intermittent day" proposal (see endnote 14).

¹⁸ This is also an objection to recent creation models that include the creation of the entire universe in the six days of Genesis.

¹⁹ Ross, H. and G.L. Archer. 2001. *The Day-Age View*. Pp 123-163 in (D.G. Hagopian, ed.) *The Genesis Debate*. Mission Viejo, CA: Crux Press.

²⁰ Embraced by Pun, P.P.T. 1982. *Evolution: Nature and Scripture in Conflict?* Grand Rapids: Zondervan, page 265; and apparently by Fischer 1990 (see endnote 13).

²¹ Newman, R.C. 1999. *Progressive Creationism (Old-earth Creationism)*. Pp. 105-141 in (J.P. Moreland and J.M. Reynolds, eds) *Three Views on Creation and Evolution*. Grand Rapids: Zondervan

²² . Schroeder, G.L. 1997. *The Science of God*. New York: Free Press.

²³ Hasel, G.F. 1994. *The "Days" of Creation in Genesis 1: Literal "Days" or Figurative "periods/Epochs" of Time?* *Origins* 21:5-38; Thompson, B. 1995. *Creation Compromises*. Montgomery AL: Apologetics Press. pages 132-147; Pipa, J.A. 1999. *From Chaos to Cosmos: A Critique of the Non-Literal Interpretations of Genesis 1:1-2:3*. Pp 153-198 in (J.A. Pipa and D.W. Hall, eds) *Did God Create in Six Days?* Taylors, SC: Southern Presbyterian Press; Duncan, J.L. and D.W. Hall. 2001. *The 24-Hour Response*. Pp 165-177 in Pp 123-163 in (D.G. Hagopian, ed.) *The Genesis Debate*. Mission Viejo, CA: Crux Press.

²⁴ E.g., Harris, R.L. 1999. *The Length of the Creative Days in Genesis 1*. Pp 101-111 in (J.A. Pipa and D.W. Hall, eds) *Did God Create in Six Days?* Taylors, SC: Southern Presbyterian Press; Pun, P.P.T. 1987. *A Theology of Progressive Creationism*. *Perspectives on Science and Christian Faith* 39:9-19.

²⁵ Hayward, A. 1985. *Creation and Evolution: The Facts and the Fallacies*. London: Triangle, page 166.

²⁶ This remarkable claim is made in Ross, H. and G.L. Archer. 2001. *The Day-Age View*. Pp 123-163 in (D.G. Hagopian, ed.) *The Genesis Debate*. Mission Viejo, CA: Crux Press. See also the web site at: <http://www.reasons.org/resources/apologetics/testablecreationssummary.shtml?main>.

²⁷ Benton, M.J. 1993. *Fossil Record 2*. London: Chapman and Hall.

²⁸ Huxley, T.H. 1885. *The Interpreters of Genesis and the Interpreters of Nature*. *Collected Essays IV* pages 155, 156. Available on the web at: <http://aleph0.clarku.edu/huxley/CE4/GeNat.html>

²⁹ Wiseman, P.J. 1977. *Clues to Creation in Genesis*. London: Marshall, Morgan and Scott; cited in Hayward 1985: ch10, endnote 13, (see endnote 14).

³⁰ Ross, H. and G.L. Archer. 2001. *The Day-Age View*. Pp 123-163 in (D.G. Hagopian, ed.) *The Genesis Debate*. Mission Viejo, CA: Crux Press.

³¹ Irons, L. and M.G. Kline. 2001. *The Framework View*. Pp 217-256 in (D.G. Hagopian, ed. *The Genesis Debate*. Mission Viejo, CA: Crux Press; Kline, M.G. 1996. *Space and Time in the Genesis Cosmogony*. *Perspectives on Science and Christian Faith* 48:2-15. The basic idea of the framework hypothesis is also compatible with theistic evolutionary models.

- ³² For a brief history of the idea, see pages 215-218 in Thompson, B. 1995. *Creation Compromises*. Montgomery AL: Apologetics Press. For a critique, see Joseph Pipa, "From chaos to cosmos: A critique of the Framework Hypothesis," Pp 153-198 in (J.A. Pipa and D.W. Hall, eds) *Did God Create in Six Days?* Taylors, SC: Southern Presbyterian Press.
- ³³ Davidson, R.M. 1994. In the Beginning: How to Interpret Genesis 1. *Dialogue* 6:(3):9-12, endnote 14.
- ³⁴ Ross, H. and G.L. Archer. 2001. The Day-Age View. Pp 123-163 in (D.G. Hagopian, ed.) *The Genesis Debate*. Mission Viejo, CA: Crux Press, page 274.
- ³⁵ A criticism repeated, ironically, by a theistic evolutionist: Miller, K.R. 1999. *Finding Darwin's God: A Scientist's Search for Common Ground Between God and Evolution*. New York: Perennial; First Perennial Edition 2002, page 128.
- ³⁶ Ramm, B. 1954 (1966 reprint). *The Christian View of Science and Scripture*. Grand Rapids: Eerdmans. pages 112-115, 271-272.
- ³⁷ First fossil appearances could be interpreted as separate creations (cf. Hoffman, A. 1989. *Arguments on Evolution*. New York: Oxford University Press, pages 7-8.) However, first fossil appearances do not produce any generalized pattern that could be recognized as discrete creation events.
- ³⁸ Van Till, H.J. 1999. The Fully Gifted Creation. Pp 161-218 in (J.P. Moreland and J.M. Reynolds, eds) *Three Views on Creation and Evolution*. Grand Rapids: Zondervan, page 211.
- ³⁹ Huxley, T.H. 1877. *The Three Hypotheses Respecting the History of Nature*. *Collected Essays IV*. Downloaded from the web at <http://aleph0.clarku.edu/huxley/CE4/LecEvol.html>
- ⁴⁰ McGrath, G.B. 1997. Soteriology: Adam and the Fall. *Perspectives on Science and Christian Faith* 49:252-263. McGrath comes close to using the term "progressive creation" for his version of theistic evolution.
- ⁴¹ Van Till, H.J. 1999. The Fully Gifted Creation. Pp 161-218 in (J.P. Moreland and J.M. Reynolds, eds) *Three Views on Creation and Evolution*. Grand Rapids: Zondervan.
- ⁴² Elder, G.P. 1996. *Chronic Vigour: Darwin, Anglicans, Catholics and the Development of a Doctrine of Providential Evolution*. Lanham MD: University Press of America.
- ⁴³ Discussed in Peters, T. 1988. On Creating the Cosmos. Pp 273-296 in (R.J. Russell, W.R. Stoeger, and G.W. Coyne, eds) *Physics, Philosophy and Theology*. (Vatican Observatory- Vatican City State). Notre Dame, IN: Notre Dame Press.
- ⁴⁴ "The central question for theistic evolution is: How is God involved in the evolutionary process?" Gilbersen, K.W. and D.A. Yerxa. 2002. *Species of Origins*. Lanham MD: Rowman and Littlefield, page 172.
- ⁴⁵ Canale, F.L. 2005. Adventist theology and deep time history: Are they compatible? *Ministry* (May):7-11.
- ⁴⁶ Van Till, H.J. 1999. The Fully Gifted Creation. Pp 161-218 in (J.P. Moreland and J.M. Reynolds, eds) *Three Views on Creation and Evolution*. Grand Rapids: Zondervan.
- ⁴⁷ Peacocke, A. 1999. *Biology and a Theology of Evolution*. *Zygon* 34:695-712.
- ⁴⁸ Van Till 1999, p 187 (see endnote 39). Note the highly prejudicial language.
- ⁴⁹ Van Till, 1999, p 187 (see endnote 39)
- ⁵⁰ The entire Bible is a record of divine interaction with the world. Well-known examples of divine interaction in nature include Genesis 1-11; Psalms 19, 104, 148, etc. Direct divine activity is necessary if God is to affect events in the real world, a point made cogently by: Tracy, T.F. 1997. *Particular Providence and the God of the Gaps*. Pp 289-324 in Russell, R.J., N. Murphy, and A.R. Peacocke (eds). 1997. *Chaos and Complexity: Scientific Perspectives on Divine Action*. 2nd edition. Vatican City State: Vatican Observatory Publications.
- ⁵¹ Bradley, W.L. 1999. Response to Howard J. Van Till. Pp 219-225 in (J.P. Moreland and J.M. Reynolds, eds) *Three Views on Creation and Evolution*. Grand Rapids: Zondervan.
- ⁵² Several of these problems are discussed in: Maynard Smith, J. and E. Szathmary. 1995. *The Major Transitions in Evolution*. Oxford and New York: W.H. Freeman
- ⁵³ E.g., Conway Morris, S. 2000. The Cambrian "Explosion": Slow-fuse or Megatonnage? *Proceedings, National Academy of Sciences* 97:4426-4429.
- ⁵⁴ Numerous "radiations" have been identified in the fossil record, e.g., Feduccia, A. 2003. 'Big Bang' for Tertiary Birds? *Trends in Ecology and Evolution* 18:172-176. For a discussion of the problem, see Gibson, L.J. Rates of evolution. Unpublished manuscript. Geoscience Research Institute.

- ⁵⁵ See, e.g., Stoeger, W.R. 1997. Describing God's Action in the World in Light of Scientific Knowledge of Reality. Pp 239-261 in Russell, R.J., N. Murphy, and A.R. Peacocke (eds). 1997. *Chaos and Complexity: Scientific Perspectives on Divine Action*. 2nd edition. Vatican City State: Vatican Observatory Publications, and various other papers in the same volume.
- ⁵⁶ E.g., Polkinghorne, J. 1989. *Science and Providence: God's Interaction with the World*. London: SPCK.
- ⁵⁷ Tracy, T.F. 1997. Particular Providence and the God of the Gaps. Pp 289-324 in Russell, R.J., N. Murphy, and A.R. Peacocke (eds). 1997. *Chaos and Complexity: Scientific Perspectives on Divine Action*. 2nd edition. Vatican City State: Vatican Observatory Publications. Peacocke, A. 1997. God's Interaction with the World: The Implications of Deterministic "Chaos" and of Interconnected and Interdependent Complexity. Pp 263-287 in Russell, R.J., N. Murphy, and A.R. Peacocke (eds). 1997. *Chaos and Complexity: Scientific Perspectives on Divine Action*. 2nd edition. Vatican City State: Vatican Observatory Publications.
- ⁵⁸ Pollard, W.G. 1958. *Chance and Providence*. New York: Charles Scribner's Sons; Peacocke, A. 1997. God's Interaction with the World: The Implications of Deterministic "Chaos" and of Interconnected and Interdependent Complexity. Pp 263-287 in Russell, R.J., N. Murphy, and A.R. Peacocke (eds). 1997. *Chaos and Complexity: Scientific Perspectives on Divine Action*. 2nd edition. Vatican City State: Vatican Observatory Publications; Russell, R.J. 2003. Special Providence and Genetic Mutation: A New Defense of Theistic Evolution. Pp. 335-369 in (K.B. Miller, ed.) *Perspectives on an Evolving Creation*. Grand Rapids, MI: Eerdmans.
- ⁵⁹ Polkinghorne, J. 1989. *Science and Providence: God's Interaction with the World*. London: SPCK, pages 26-28; Polkinghorne, J. 1988. The Quantum World. Pp 333-342 in (R.J. Russell, W.R. Stoeger, and G.W. Coyne, eds) *Physics, Philosophy and Theology*. (Vatican Observatory- Vatican City State). Notre Dame, IN: Notre Dame Press. The entire premise that indeterminacy in nature is needed for God's action is challenged by: Byl, J. 2003. Indeterminacy, Divine Action, and Human Freedom. *Science and Christian Belief* 15:101-116.
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- ⁶² Miller, K.R. 1999. *Finding Darwin's God: A Scientist's Search for Common Ground Between God and Evolution*. New York: Perennial; First Perennial Edition 2002, page 239; Polkinghorne, J. 1989. *Science and Providence: God's Interaction with the World*. London: SPCK, pages 45-58.
- ⁶³ Miller, K.R. 1999. *Finding Darwin's God: A Scientist's Search for Common Ground Between God and Evolution*. New York: Perennial; First Perennial Edition 2002, page 218; Peacocke, A. 1999. *Biology and a Theology of Evolution*. *Zygon* 34:695-712.
- ⁶⁴ Mentioned briefly in Jeeves, M.A. and R.J. Berry. 1998. *Science, Life, and Christian Belief*. Grand Rapids: Baker, p 79; and advocated more explicitly in Mills, G.C. 1995. A Theory of Theistic Evolution as an Alternative to the Naturalistic Theory. *Perspectives on Science and Christian Faith* 47:112-122.
- ⁶⁵ Hoffman, A. 1989. *Arguments on Evolution*. New York: Oxford University Press, page 8.
- ⁶⁶ Gould, S.J. 1989. *Wonderful life*. New York: W.W. Norton, page 49.
- ⁶⁷ Summarized in: Wennberg, R. 1991. Animal Suffering and the Problem of Evil. *Christian Scholar's Review* 21:120-140; See also: Munday, J.C. 2003. Animal Pain: Beyond the Threshold? Pp. 435-468 in (K.B. Miller, ed.) *Perspectives on an Evolving Creation*. Grand Rapids, MI: Eerdmans
- ⁶⁸ Berry, R.J. 1999. This Cursed Earth: Is "the Fall" Credible? *Science and Christian Belief* 11:29-49, page 42. Berry claims that "evil" in the pre-Adamic world is just an error in our interpretation, not the actual state of nature.
- ⁶⁹ Polkinghorne, J. 1989. *Science and Providence: God's Interaction with the World*. London: SPCK, pages 59-68.
- ⁷⁰ Miller, K.R. 1999. *Finding Darwin's God: A Scientist's Search for Common Ground Between God and Evolution*. New York: Perennial; First Perennial Edition 2002, page 218.
- ⁷¹ Peacocke, A. 1999. *Biology and a Theology of Evolution*. *Zygon* 34:695-712

- ⁷² Famously noted by Weinberg, S. 1992. *Dreams of a Final Theory*. New York: Pantheon Books, page 250.
- ⁷³ Day, A.J. 1998. Adam, Anthropology and the Genesis Record – Taking Genesis Seriously in the Light of Contemporary Science. *Science and Christian Belief* 19:115-143.
- ⁷⁴ Held, A. and P. Rust. 1999. Genesis Reconsidered. *Perspectives on Science and Christian Faith* 51:231-243.
- ⁷⁵ Clouser, R.A. 1991. Genesis on the Origin of the Human Race. *Perspectives on Science and Christian Faith* 43:2-13.
- ⁷⁶ Jeeves, M.A. and R.J. Berry. 1998. *Science, Life, and Christian Belief*. Grand Rapids: Baker, pages 111-112, affirm that not all humans are genetically related to Adam, although they do not claim this makes them non-human.
- ⁷⁷ Polkinghorne, J. 1988. The Quantum World. Pp 333-342 in (R.J. Russell, W.R. Stoeger, and G.W. Coyne, eds) *Physics, Philosophy and Theology*. (Vatican Observatory- Vatican City State). Notre Dame, IN: Notre Dame Press, page 340.
- ⁷⁸ E.g., Peacocke, A. 1999. Biology and a Theology of Evolution. *Zygon* 34:695-712, appears to endorse pantheism, while Polkinghorne does not: Polkinghorne, J. 1989. *Science and Providence: God's Interaction with the World*. London: SPCK, pages 15-16.
- ⁷⁹ Peacocke, A. 1999. Biology and a Theology of Evolution. *Zygon* 34:695-712, page 701.
- ⁸⁰ Williams, P.A. 2001. *Doing Without Adam and Eve*. Minneapolis: Fortress Press, page 182; See also Wells, H.G. 1961. *Outline of History*, Vol 2, New York: Doubleday, pages 776-777: "...If all the animals and man had been evolved in this ascendant manner, than there had been no first parents, no Eden, and no Fall. And if there had been no fall, then the entire historical fabric of Christianity, the story of the first sin and the reason for an atonement, upon which the current teaching based Christian emotion and morality, collapsed like a house of cards."
- ⁸¹ E.g., Van Dyke, F. 1986. Theological Problems of Theistic Evolution. *Perspectives on Science and Christian Faith* 38:11-18; Gibson, L.J. 1992. Theistic Evolution: Is it for Adventists? *Ministry* (January 1992), pages 22-25; Rodriguez, A.M. 2004. *Theistic Evolution and the Adventist Faith: An Analysis*. Unpublished paper presented at the East-Central Africa Division Faith and Science Conference, Nairobi, Kenya, 5-6 May 2004; Newman, R.C. 2003. Some problems for theistic evolution. *Perspectives on Science and Christian Faith* 55:117-128.
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- ⁸³ Adam defined by receiving a soul is the most common explanation for the origin of humans in theistic evolution theories. E.g., Schroeder, G. 1997. *The Science of God*. New York: Free Press, pages 137-145; Pope John Paul II presented a now-famous statement on evolution, in which the immediate creation of the soul is emphasized: Pope John Paul II. 1996. *Message to the Pontifical Academy of Sciences*. On the Internet at: <http://www.cin.org/users/james/files/message.htm> or <http://www.cin.org/jp2evolu.html>
- ⁸⁴ Jeeves, M.A. and R.J. Berry. 1998. *Science, Life, and Christian Belief*. Grand Rapids: Baker, Chapters 7, 8.
- ⁸⁵ Fischer, D. 1993. In Search of the Historical Adam: Part 1. *Perspectives on Science and Christian Faith* 45:241-251; Fischer, D. 1994. In Search of the Historical Adam: Part 2. *Perspectives on Science and Christian Faith* 46:47-57.
- ⁸⁶ Ross, H. 1994. *Creation and Time*. Colorado Springs: NavPress; Ross, H. and G.L. Archer. 2001. The Day-Age View. Pp 123-163 in (D.G. Hagopian, ed. *The Genesis Debate*. Mission Viejo, CA: Crux Press, page 141; a date of about 40,000 years ago seems favored by: Hurd, J.P. 2003. Hominids in the Garden? Pp 208-233 in (K.B. Miller, ed.) *Perspectives on an Evolving Creation*. Grand Rapids, MI: Eerdmans
- ⁸⁷ Wilcox, D.L. 1996. Adam, Where Are You? *Changing Paradigms in Paleoanthropology*. *Perspectives on Science and Christian Faith* 48:88-96; Wilcox, D.L. 2004. Establishing Adam: Recent Evidences for a Late-Date Adam (AMH@100,000 BP). *Perspectives on Science and Christian Faith* 56:49-54.
- ⁸⁸ Morton, G.R. 1999. Dating Adam. *Perspectives on Science and Christian Faith* 51:87-97
- ⁸⁹ Russman, R. 2000. Correspondence. *Science and Christian Belief* 12:165-166.
- ⁹⁰ Morton, G.R. 1999. Dating Adam. *Perspectives on Science and Christian Faith* 51:87-97

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- ⁹² E.g., Barbour, I.G. 1997. *Religion and Science*. San Francisco: Harper, page 301; Polkinghorne, J. 1998. *Belief in God in an Age of Science*. New Haven: Yale University Press, p 88-89.
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- ⁹⁴ Berry, R.J. 1999. This Cursed Earth: Is 'the Fall' Credible? *Science and Christian Belief* 11:29-49
- ⁹⁵ E.g., Berry, R.J. 1999. This Cursed Earth: Is 'the Fall' Credible? *Science and Christian Belief* 11:29-49; Ross, H. 1994. *Creation and Time*. Colorado Springs: NavPress, pages 61-64; Menninga, C. 1999. *Disease and Dying in the Fossil Record: Implication for Christian Theology*. *Perspectives on Science and Christian Faith* 51:226-230.
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- ⁹⁸ Wennberg, R. 1991. *Animal Suffering and the Problem of Evil*. *Christian Scholar's Review* 21:120-140. Peacocke, A. 1986. *God and the New Biology*. San Francisco: Harper and Row, page 55. See also endnotes 57-61 in this paper.
- ⁹⁹ Morse, J.O. 1997. *The Great Experimenter? Perspectives on Science and Christian Faith* 49:108-110.
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- ¹⁰⁴ Southgate, C. 2002. *God and Evolutionary Evil: Theodicy in the Light of Darwinism*. *Zygon* 37:803-824.
- ¹⁰⁵ Held, A. and P. Rust. 1999. *Genesis Reconsidered*. *Perspectives on Science and Christian Faith* 51:231-243. See also references in endnote 5. Discussed in Wennberg, R. 1991. *Animal Suffering and the Problem of Evil*. *Christian Scholar's Review* 21:120-140; and in Thompson, B. 1995. *Creation Compromises*. Montgomery AL: Apologetics Press. A few Seventh-day Adventists have speculated on the possibility of Satan's involvement in pre-Adamic death: Pearl, H.F. *An Anti-Evolution Model for the ICFS*, 2002. Unpublished manuscript for the First International Conference on Faith and Science, Ogden, Utah, 23-29 August, 2002, in conference notebook volume 2, Tuesday section; Provonsha, J.W. 2000 (1985). *The Creation/Evolution Debate in the Light of the Great Controversy Between Christ and Satan*. Pp 303-311 in (J.L. Hayward, ed) *Creation Reconsidered*. Roseville, CA: Association of Adventist Forums.
- ¹⁰⁶ The suggestion that Satan might be able to direct the evolution of hominids "lacking only the 'image of God'" was made by Provonsha, J.W. 2000. page 310. The idea is implied in the position taken on the website www.kjvbible.org/satan.html.
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