Some Problems for Theistic Evolution

Robert C. Newman

Most readers of Perspectives on Science and Christian Faith *are acquainted with the terms "young-earth creation," "old-earth creation," and "theistic evolution."[1] These reflect the fact that, among Christians in general and within the American Scientific Affiliation in particular, there is considerable disagreement on how to relate the biblical and scientific data on origins. Some feel that theistic evolution is not the best solution. Here I wish to suggest why, by examining some problems for theistic evolution, both scientific and theological.*

Before looking at these problems, we will need to consider what theistic evolution is, and try to sort it into its various versions. After all, different forms of theistic evolution may face different problems.

What is Theistic Evolution?

Keith Stewart Thomson has a helpful discussion in *The American Scientist* entitled "The Meanings of Evolution."[2] Though he deals with evolution in general rather than theistic evolution, much of what he has to say is applicable. Thomson distinguishes three different senses for the term "evolution."

1. **Pattern:** ***Change over time.*** The first is a "general sense of change over time."[3] Stated so vaguely, this is nearly worthless for defining evolution. All but a few ancient Greek philosophers believe there has been change over time. Even when Thomson particularizes this to changes in "the qualitative and quantitative diversity of organisms over space and time,"[4] few views on origins would be excluded, except such varieties of young-earth creation as deny any change at all since creation. However, some young-earth creationists have suggested very large changes in animal diversity since the flood, e.g., deriving all cat-kinds (lions, tigers, housecats, etc.) from a single pair on the Ark.[5] This requires changes at rates even faster than the usual evolutionary models. Such young-earth creationists would thus be theistic evolutionists, though I doubt they accept the label.

In any case, Thomson couples these changes in biotic diversity with "a parallel set of data for changes in the earth itself"[6]—the geologic record—the combination producing a pattern of increasing diversity and complexity from the earliest fossils to the present. So stated, evolution parts company here with young-earth creationists, who see in the geologic column mostly the record of a one-year flood rather than a large fraction of earth's history.

But theistic evolution and old-earth creation do not divide on this matter. Thomson notes that "change over time is the most solidly based fact of evolution"[7] (based as it is on the mass of fossil evidence) but that this meaning "includes no statement or inference about process."[8] The divergence between theistic evolution and old-earth creation, it seems to me, is basically over the process God used to produce this diversity. If we could observe the geologic record at a very high time-resolution, it might be possible to see whether the more gradual transitions

The divergence between theistic evolution and "Blind Watchmaker" evolution is whether there is a God behind the process.

Robert C. Newman, *ASA fellow and chairman of its Commission on Creation, is professor of New Testament at the Biblical Theological Seminary of Hatfield, Pennsylvania and Director of the Interdisciplinary Biblical Research Institute. As a theologian, he has earned the degrees of Master of Divinity and Master of Sacred Theology. He has done further graduate work in religious thought, biblical geography, and biblical interpretation. In the field of science, he received his B.S. in physics from Duke University and his Ph.D. in theoretical astrophysics from Cornell University. He has done scientific research for the U.S. Weather Bureau and the Franklin Institute. A frequent speaker at churches and colleges, Bob is author or co-author of five books and a number of published articles. He has also made guest television appearances on "700 Club," "100 Huntley Street," and "Mysteries of the Bible." He can be reached by email at: rcnewman@erols.com.*

proposed by theistic evolution or the more rapid ones of old-earth creation are supported by the evidence. To the best of my knowledge, this is not yet possible, except as noted in our discussion of transitional fossils below.

The divergence between theistic evolution and "Blind Watchmaker" evolution is whether there is a God behind the process. This is the sort of distinction the intelligent design movement is seeking to detect.

2. **Process:** ***Descent through common ancestry.*** Thomson's second sense for the meaning of evolution is that "organisms are related by descent through common ancestry."[9] No one (including young-earth creationists) will deny that this is true for some organisms, but Thomson intends this to mean that *all* earthly organisms are so related. He notes that this is a hypothesis which logically follows from "the twin premises that [1] life arose only once on earth and that [2] all life proceeds from preexisting life."[10]

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But this second sense is a bit problematic. There are those who call themselves evolutionists, even in a nontheistic sense, who would not agree with common descent. For evolutionists who believe in an extraterrestrial origin of life, there is no compelling reason why all of it reaching earth need have come from the same source.[11] And even evolutionists who believe that all terrestrial life got its start on earth need not insist that life arose here only once.[12] Thus this meaning of evolution, descent through common ancestry, divides even nontheistic evolutionists, although the majority is currently in favor of common descent.

If nontheistic evolutionists can believe that modern life derived from a few simple life forms rather than one, then theistic evolutionists need not postulate a single source either—other than God, the ultimate source. Though nearly all old-earth creationists postulate at least two independent creations (original life and humankind), one could still be an old-earth creationist while having all life descended from one original form. Here, too, it looks like it is the mechanism that distinguishes theistic evolution from old-earth creation, though that, too, may have some kinks we need to investigate.

3. **Mechanism:** ***Natural Selection.*** The third sense Thomson proposes for evolution is Darwinism, or natural selection, "a model of random variation and differential survival."[13] It is here that theistic evolutionists and old-earth creationists take different paths. But the situation is more complicated than a simple bifurcation. For one thing, nearly all theistic models of origins (including special creation) admit some measure of natural selection. This is typically limited to microevolution by young-earth and old-earth creationists, so we might say that the real divide is over whether random variation and differential survival is the *sole* mechanism to explain the diversity of life on earth, with theistic evolutionists saying "yes" and special creationists saying "no." But random variation and differential survival have nothing to work upon until one has a self-replicating automaton, whether this be a cell or a molecular system. So what is the mechanism to get from simple organics to a self-replicating system? Probably various theistic evolutionists will opt for different answers.

What are we to make of "random" variation? This will split the nontheistic evolutionists from the theists. But as Keith Miller and David Wilcox suggest in their ASA (American Scientific Affiliation) Statement on Creation (see p. 119), this will also split the theistic evolutionists into a number of groups, depending on how one defines "random." And how one defines random may also have some bearing on whether one would expect to see empirical evidence which would distinguish theistic from nontheistic evolution. Has God so hidden himself that humans could not detect his activity anywhere in the history of life on earth, not even by statistical means?

ASA Creation Statement

Consider next the statement on theistic evolution composed by Keith Miller and David Wilcox for the Creation Statement Subcommittee of the ASA Commission on Creation. Neither their statement, nor the larger whole of which it is a part, was intended to bind the ASA or officially reflect the exact diversity of views therein. The larger statement was designed to be a consensus of the views of the subcommittee, which was itself selected to reflect something of the diversity in the ASA. The individual statements on various

views of creation were composed by one or more proponents of the particular view involved. So this statement is that of Keith and David, but they attempt to reflect such diversity within theistic evolution of which they were aware. I have added the letters A, B, and C to three of the headings to facilitate reference to specific points.

Let me make a few comments on the Miller-Wilcox statement. Under theological statements that all theistic evolutionists agree on, both young- and old-earth creationists would also agree with A1 (God's freedom) and A4 (rejoicing in God's revelation in nature), and many—including me—with A2a (evolution not antithetical to God being Creator). We will respond to A2b (nothing in Scripture forbidding evolution) later on. A3 will be true only if theistic evolution is correct.

Among the theological statements on which theistic evolutionists disagree, B1 deals with mechanism. Of the four alternatives listed, it would appear that only B1b (fully-gifted creation) is likely to be testable scientifically. B2 deals with God's will in relation to creaturely freedom, and the various sub-items correspond roughly to the Arminian (B2a), Openness (B2b) and Calvinistic (B2c) models.

Among the scientific statements, C1 (ancient, changing earth and universe) is also accepted by old-earth creationists. C2 opts to limit the descent of living things (on earth, at least) to a single common ancestor, which, while rather characteristic, does not seem to be necessary to theistic evolution. Regarding C3, a model may have great explanatory power and be effective in generating hypotheses, yet not be the whole story. Atheistic evolutionists make a similar claim against theistic evolution. C4 leads us into the question of filling gaps, which we will examine later.

Having now spent some time thinking about varieties of theistic evolution, let's see if we can put together a general definition:

> **Theistic evolution** is a view of origins in which God used providential means such as mutation and natural selection as the prime or only means for producing the diversity of living things on earth.

ASA Statement on Creation: Theistic Evolution (Continuous Creation, Evolutionary Creation) View

Theological Statements:

A. In addition to the theological commitments affirmed by all parties, ASA members who accept an evolutionary* perspective, would affirm the following:
   1. God is free to act in creation in any way consistent with His character. The nature of the physical universe and of God's interaction is a consequence of God's free choice.
   2. Evolutionary processes* are not antithetical to God's creative action. Furthermore, nothing in scripture provides a theological basis for rejecting the descent of all living beings from a common ancestor, including humans.
   3. An evolutionary* view of the history of life provides a positive, productive context for understanding God's relationship to creation, and our role as His image bearers. It also provides a fruitful context for considering the meaning and implications of Christology and the cross.
   4. Christians should rejoice and praise God for each new revelation of the history and character of the creation, for each new discovery that fills previous gaps in our scientific understanding.

B. Areas of theological diversity among Christians holding an evolutionary* view:
   1. How does God direct the creation to His desired ends? Various models for God's action have been proposed, of which some follow. These are not mutually exclusive, so individuals may hold more than one.
      a. God is actively directing ALL natural processes ALL the time so that all physical events are specifically willed by Him.
      b. God gave, and continues to give, being to a creation gifted with all the capabilities to bring forth all the forms, processes, and events, willed by Him.
      c. Creation responds to God's will as our bodies respond to ours. However, God's being is not embodied in creation but is transcendent over it.
      d. God acts to determine the inherent indeterminacies of physical events, at the micro level of quantum phenomena and at the macro level of chaotic systems. The physical universe is not deterministic, but rather is an inherently open causal system.
   2. To what extent has God granted freedom to His creatures? Various suggestions have been proposed:
      a. God has chosen to limit His direct control over some aspects of creation to give His creatures genuine freedom.
      b. God allows for a certain level of genuine indeterminacy in creation such that specific outcomes are not predetermined. At the same time, He remains sovereign and the fulfillment of His will is assured.
      c. All physical events are predetermined and preknown by God.

C. Scientific Statements:
   1. An ancient and dynamically changing Earth and universe is supported by overwhelming evidence from geology, physics, astronomy, and cosmology.
   2. The common descent of all living things is well-supported by diverse lines of evidence in geology, paleontology, biology, and genetics.
   3. Biological evolution* has great explanatory power and has proven effective in generating new and testable hypotheses in a wide range of scientific disciplines including historical geology, paleontology, ecology, biogeography, developmental biology, biochemistry, and genetics.
   4. New discoveries and new models are progressively closing many previous gaps in our knowledge and understanding of evolutionary history and mechanisms.* While many unanswered questions remain, current research is raising many exciting possibilities for studying previously intractable problems.

*The various references to evolution herein are understood to include the full range of scientific models from the adaptive change of species populations to the diversification of life on Earth from its common origin, but to exclude the idea of autonomous nature assumed in the "Blind Watchmaker" hypothesis.

Article

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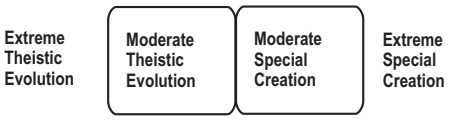
Some varieties of theistic evolution would include diversity on the matters of (1) whether original life was created miraculously or providentially, (2) whether there were one or more distinct forms of original life, and (3) whether there really was an original pair of humans, Adam and Eve.

By contrast, we can then suggest a parallel definition of special creation as follows:

> **Special creation** is a view of origins in which God used miraculous intervention as the prime or only means for producing the diversity of living things on earth.

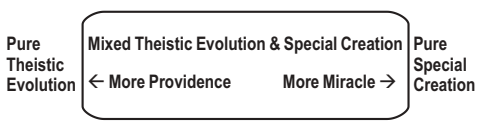
Whether or not one likes these definitions, they permit us to view theistic origin models as a kind of spectrum as illustrated below, with the extreme views using only the one means and the moderate views using the relevant means as the prime means. Most views held by various Christians will fall somewhere between the two extremes.



Another approach would be to define theistic evolution and special creation so that they are not mutually exclusive. For instance:

> **Theistic evolution** is a view of origins in which God used providential means such as mutation and natural selection as a means for producing the diversity of living things on earth.
>
> **Special creation** is a view of origins in which God used miraculous intervention as a means for producing the diversity of living things on earth.

In this case, the extreme positions would be "pure theistic evolution" and "pure special creation" and the intermediate positions would involve a mixture of the two means as illustrated below.



Scientific Problems for Theistic Evolution

Let us begin with scientific problems that face theistic evolution. Being a theist myself, I do not find any insuperable problem with the idea that God might be behind the various phenomena studied under evolution. Here I will not attempt to deal with problems which atheists would bring against the view. These are often (but not always) the same as those an atheist would urge against theism in general, and they are largely philosophical and theological in nature. Instead, I want to look at items we could call scientific that are problematic for one or another of the various forms of theistic evolution over against forms of special creation. Or, using our alternative definitions, problems for more providential forms of theistic evolution over against more miraculous ones.

Transitional Fossils

The first problem is that of the relative scarcity of fossils that can reasonably be considered intermediate or transitional between the major categories of the biological classification system.

In any model in which there has been the sort of change over time that we call descent through common ancestry, one would expect numerous transitions between the earlier forms of living things and the currently existing ones. Darwin's original model proposed that the changes which occur are very small, necessitating many intermediate steps between organisms which are even moderately different. Employing the idea of natural selection, Darwin suggested that the intermediates would eventually be eliminated through competition with their descendants (and surviving ancestor-forms), so that by later times, large gaps would have developed among the various kinds of living organisms. However, the fossil ensemble itself, being a record of this history of life, should be nearly continuous through time.

Darwin knew that the fossil sequence was not continuous. His solution to this problem was to suggest that the fossil record is very fragmentary. There is obviously some sense in which this is true. At least for land-based life, only a tiny fraction of the organisms which once lived get preserved

by fossilization. On the other hand, marine life, particularly those sorts having hard body parts not soluble in water, would presumably leave a pretty complete record. In any case, the actual fossils that do survive do not appear to be an imperfect record of the sort of gradual process Darwin envisioned.

Gould and Eldridge proposed a version of evolution they call punctuated equilibrium. … This model, however, could work well as a form of theistic evolution. It does fit the fossil record. A mind guiding the process could easily produce results one would never expect in a mindless universe.

This actual fossil record was apparently one of the reasons driving a shift from the original model of Darwin—in which all populations are slowly evolving—to the view found in neo-Darwinism, that really significant changes take place only in small, isolated population groups. Here the isolation can help avoid a new mutation being swamped by the old version. The small size of the population makes it more likely that a statistical fluke may help an innovation gain ascendancy in the population. The real problem comes when one considers a change that will take many mutations to accomplish. The chance of getting a second (third, fourth, …) good mutation in this small population is nil compared to getting it in the original large population, so one must wait until the small population has grown and spread to become really big before there is any real chance of taking the next step. For the higher categories in the biological classification scheme, the separations between categories are hundreds or thousands of mutations, so we should have hundreds or thousands of large intermediate populations which are nearly as capable of leaving fossils as their ancestors and descendants. This we do not see, and it is a scientific problem for all forms of gradualistic evolution—whether theistic or not.

Partly as a result of this problem, Gould and Eldridge proposed a version of evolution they call punctuated equilibrium. In this model, the transition from one form to another is quite rapid—"punctuated"—to account for the sudden appearance of new forms in the fossil record. Among these new forms, the ones which survive to produce evidence in the fossil record are those in equilibrium (internally and externally) so that they do not tend to change, producing the observed phenomenon called "stasis."

The problem facing the punctuated equilibrium view is similar to that facing evolution by large mutations—the chance of getting something functional is astronomically minuscule. This model, however, could work well as a form of theistic evolution. It does fit the fossil record. A mind guiding the process could easily produce results one would never expect in a mindless universe. I commend this alternative to those who are theistic evolutionists, though I am not inclined to call it theistic evolution myself. In any case, this is something that easily should be distinguishable empirically (statistically) from atheistic evolution, and the arguments of Gould and Eldridge (and earlier, Goldschmidt) suggest that it is.

For versions of theistic evolution that have God using random processes, the problem remains. The only way of crossing from one viable form to another (that are, say, ten mutations apart) is by means of a random walk. A random walk is a process by which an object moves through space randomly, taking steps of either fixed or variable length in random directions. The illustration popularized by George Gamow is that of a drunk trying to find his way home.[14] Starting from a convenient lamppost, he takes a step in a random direction. His next step is in another random direction. The question is, how far from the lamppost would the drunk be expected to be after N steps? If the average (or root mean square) length of the drunk's step is L, then his expected distance from the lamppost will be D = LxSQRT(N). This same result holds for movement in any number of dimensions, for distances are still measured using an extension of Pythagoras' theorem.

Let us assume for simplicity that all the mutations are the same length L. To cross a distance equivalent to the length of 10 mutations, D = 10L. Then SQRT(N) = 10 and N = 100, so it will take 100 mutation steps on average to move this distance. One can immediately see that it takes much longer to cross a gap by random walk than by a guided walk.

Applying random walk to evolutionary changes, the space in which the movement takes place is not the drunk's two-dimensional sidewalk nor our physical three-dimensional space, but some multi-dimensional phase space of functional characteristics. In a one-dimensional space, movement is along a straight line, so that after 100 random steps, one is on average about 10 steps from the start, but this may be either in the right direction or the wrong direction for the needed transition. Thus there is only one chance in two that 100 steps will cross the gap. For a two-dimensional phase space, the problem is much worse—in fact, insuperable, if we imagine the target is a point. Expanding the target to a circle (say, one mutation is radius), there is less than one chance in thirty that 100 steps will take us to the right destination. For a three-dimensional phase space, the chance drops to less than one chance in four hundred, and thereafter the chances

decrease approximately by a power of ten for each added dimension. Random walk is not a very efficient way to get from one place to another! More to the point, it must leave an enormous number of transitional fossils behind. These we do not see in the fossil record.

This phenomenon of irreducible complexity is explained more easily, it seems to me, by a sudden intervention to assemble such structures, or by the sort of guided providence that would … show up empirically under thorough investigation.

Irreducible Complexity

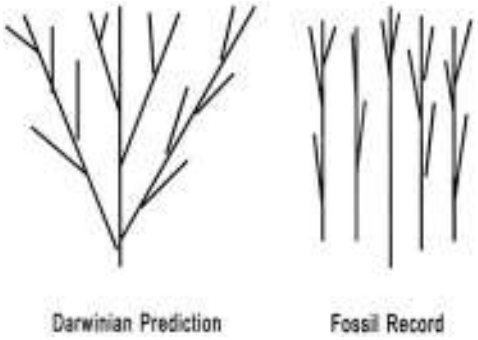
Michael Behe, in his book *Darwin's Black Box*, has popularized the phrase "irreducible complexity."[15] By this he means that living things contain numerous organs, structures, processes, and reactions which have component parts that appear to be useless unless all are present together. If one part is missing, the function is gone.

Behe's illustration is the traditional mousetrap, which consists of a wooden platform to hold the parts, the hammer to get the mouse, the spring to drive the hammer, the arm to hold back the hammer, the trigger to release the arm and hammer, and various staples to attach the parts to the platform. If any of these parts is missing, the device will not catch mice. Some sort of bait (cheese, bacon, peanut butter) is also desirable if one wishes to catch mice without waiting for them to blunder into the trigger by chance, but this is not absolutely necessary and so is not a part of the mouse trap's *irreducible* complexity.

Behe suggests that a similar phenomenon is found in living organisms. He gives as examples the rotary motor that drives the flagellum in the *E. coli* bacterium, the chemical processes that initiate vision and blood clotting, and the intracell transport system. Behe's point is that such systems apparently have no survival value until the whole has been assembled, and thus a series of coordinated mutations are needed to produce any such structures, the sort of thing that random processes are notoriously unlikely to provide. It is, of course, possible to claim that each needed intermediate step *must* have some survival value, we just do not know what it is. That is possible. It is also a form of the "God of the gaps" argument. It is equally possible that all junk DNA has some function which we have not found yet, or that all vestigial organs have some current function so that they are not really vestigial. We shall return to this question later when we discuss the "God of the gaps." In any case, this phenomenon of irreducible complexity is explained more easily, it seems to me, by a sudden intervention to assemble such structures, or by the sort of guided providence that would (again) show up empirically under thorough investigation. Thus, irreducible complexity points to a more likely explanation by some sort of old-earth creationism or a theistic evolution that leaves tracks.

Shape of the Fossil Record

A third type of scientific problem for theistic evolution is what we might call the "shape" of the fossil record. Darwinian evolution (and the neo-Darwinian and punctuated equilibrium versions also) builds diversity progressively. One begins with small diversity, and large diversity arises late in the process. Thus an original life form consists of a single type, which over time gradually diversifies until its various varieties become distinct species, some of these species diverge enough to become separate genera, some of the genera diversify to families, and so on, up to the level of phyla. The result should be that the various phyla are the last categories to be formed in the history of life. Without getting into nitpicking over the exact definition of the various levels in the biological classification system, in the Darwinian scheme, life should form a sort of single tree.



As a matter of fact, the fossil record pictures life as something like a large series of bushes, with the major body plans for the animals all being formed in the brief period known as the Cambrian Explosion. This, again, looks much more like some sort of intervention (or at least rapid, guided evolution) than it does like a slow, random process of small mutations.

Natural Law and Mediation

What is natural law? Nobody knows, at least no one down here on earth. For atheists (secular humanists, naturalists, materialists), it must be some sort of structure that allows the universe to have organization, but the existence of which is finally inexplicable. For theists, two suggestions have been made: (1) It is the way God normally acts, and has no real separate existence of its own; and (2) It is some sort of created structure, to which God has given certain capabilities.

Do Christians know which of these theistic alternatives is correct? I do not think so. How would we decide? I know of no way from within the universe that we could do any experiment to make a choice between the two. The answer is thus going to be obtained from some sort of philosophical or theological argument, from some biblical hints, or from eschatological verification. My own inclination is that (2) is correct. Actually, it does not matter for our concern. The Bible and theology (and philosophy) still distinguish between God's providential activity and his miraculous activity, whether God's providential actions are mediated through a created natural law structure or not. The Bible uses the distinctive Greek terms *dunamis, thauma, semeion,* and *teras* in the New Testament, and similar terms in Old Testament Hebrew to designate miraculous events. They are thus seen as "powerful, amazing, significant" or "wondrous" over against normal events which, while under God's control, do not carry their significance on their sleeve, so to speak.

Much of our debate between old-earth creation and theistic evolution (and even among the various versions of theistic evolution) revolves around the question of distinguishing providential from miraculous events; and more particularly, of inferring the one or the other for events at which no human observer was present. Though perhaps not all miracles could be characterized by discontinuity, this seems to me to be one rather distinctive marker that separates most providential events from most miraculous ones. Though God turns water into wine every summer, to do so in a few moments in a stone jar without the aid of a grapevine is pretty discontinuous in some sense.

Now science studies the structures and events in nature in an attempt to discover natural laws which govern these phenomena. Natural events will presumably operate continuously on some scale, so that a scientist tends to fill all gaps with interpolations which are as smooth as possible. But actual observations are discontinuous, a series of discrete dips into the stream of nature. How do we tell when we have correctly or incorrectly filled a gap in the data, whether by postulating the correct continuity or the actual miracle which has occurred, or by mistakenly postulating a continuity (or a wrong continuity) or a miracle when none has occurred?

Every human being is constantly filling gaps in his or her experience, either with natural explanations or with miracles—with a God of the gaps or with a natural law of the gaps. Only those who postulate that miracles do not occur can be sure that a natural law explanation is the right one. And only those who deny natural phenomena can be certain that a miracle is the right explanation, though I seriously doubt anyone holds this view.

I believe we are correct in seeing miracles as much rarer phenomena than providential events. It does not follow that the right methodology (a la Hume) is to go with providence in every case. Nor, I think, should we flip a coin, or spin a pointer whose dial is weighted to what we think is the relative likelihood of providence and miracle. Instead we look for clues that point to the one or the other, or (more likely) treat providence as the default explanation in the absence of markers for the miraculous. What are these markers for the miraculous? I think the biblical terms for miracle give us some insight. Events which are sufficiently powerful, amazing, significant or wondrous are presumably miraculous. The stinger is "sufficiently." How powerful, amazing, significant, or wondrous need an event be to qualify? The work of Bill Dembski and Mike Behe is helpful here.[16] If the event is powerful, amazing, significant or wondrous enough that a miraculous intervention looks like a better explanation than does a natural phenomenon, then that is the way we should go. Our methodology should be *inference to the best explanation* rather than simply using a fixed rule to plug gaps.

Theological Problems for Theistic Evolution

We turn now to theological problems facing theistic evolution, under which we include exegetical and hermeneutical problems.

Exegesis of Genesis 1: The Origin of Living Things

It seems to me that Genesis 1 (understood from an old-earth perspective) presents no problems for some sort of theistic evolution of living things. The land produces vegetation, the waters teem with living creatures, the birds fly in the sky, the land produces living creatures—all in response to God's command—without any indication of how quickly they respond or whether any mediation was employed. Obviously, if Genesis 1 is understood from a young-earth perspective, it presents a formidable problem for theistic evolution.

The King James translation "after their kind" has regularly been taken to indicate fixity of species (or at least of created kind). But the word "after" in this context is probably an archaic English usage, meaning "according to," as indicated by the use of the phrase elsewhere in the Bible. In any case, the corresponding Hebrew phrase *l^{e}min* has no temporal connotation. Thus God made the various kinds of plants and animals, but the Bible says nothing about whether they *reproduce* after their kind.

The idea proposed by some theistic evolutionists—that God made man by putting a human soul into an ape—has often been argued from the traditional King James translation of nephesh hayah *as living soul.*

Exegesis of Genesis 2: The Origin of Humans

The situation is different in Genesis 2. On the face of it, the chapter narrates the creation of Adam by a miraculous rather than a providential process. Adam is "formed" from "the dust of the ground," God "breathed into his nostrils the breath of life," and as a result "the man became a living being."

The idea proposed by some theistic evolutionists—that God made man by putting a human soul into an ape—has often been argued from the traditional King James translation of *nephesh hayah* as living soul. So God put a living soul into this creature he had made and he thus became human. But this interpretation is not favored by the use of this phrase in the previous chapter, where it is applied to the other animals and is translated variously as "living creature," "living thing," or "breath of life." It seems that *nephesh* represents a breathing being, and *hayah* is the usual adjective for "living," so that Adam becomes a living, breathing being. The implication is that Adam was not alive before this happened, even though his body had already been formed.

The creation of Eve in Genesis 2 is clearly narrated as subsequent to that of Adam, after he had named the animals and come to realize that he had no mate like they did. God puts Adam to sleep, takes one of his ribs (or a part of his side), and makes the woman from that, a sort of clone with some significant differences. Again, the natural reading indicates an interventionist rather than providential event.

Exegesis of Genesis 3: The Fall of Humans

The fall of humankind into sin in Genesis 3 likewise seems problematic for at least some versions of theistic evolution. The event is narrated as though it were a specific historical event, involving two human individuals who make specific successive choices to disobey God—the woman following the (implied) advice of the serpent, and the man accepting the fruit offered by his wife. The event is followed by real consequences for the snake, the woman and the man, which are apparently to be passed on to their descendants.

The Theology of Genesis 2 and 3

I see no problems in Genesis 2 and 3 for those versions of theistic evolution in which Adam and Eve are separate special creations not descended from any pre-existing life. I would probably call these views old-earth creation myself, but defer to the label which their proponents wish to use. For other versions in which Adam is descended from apes but is still a real special creation, the only problem is the remark in Gen 2:7 about Adam becoming a living being. This has been handled by Glenn Morton in a satisfactory (though quirky) way by suggesting that Adam was a non-viable mutation of an ape that consequently died but God brought to life again.[17] All of these views come under the category I call "Adam-type" theistic evolution. I see no large exegetical or theological problems here.

On the other hand, I do see serious problems with "no Adam" theistic evolution. In these versions, there never is a single pair who are the first humans. Instead a whole population of anthropoid apes gradually develops into humans over the course of many thousands of years. In such a case, the narratives of Genesis 2 and 3 cannot be historical, in contradiction to the natural reading of the many references to Adam, Eve, and the Fall that occur elsewhere in Scripture. Rather, the accounts in Genesis are mythical or parabolic in some sense—a simplified way of conveying some information to the original readers which we must now recast in light of modern scientific findings. This approach seems to involve greatly reshaping the nature of the fall of humankind into sin and rebellion, with consequent influence on the nature of redemption and the atoning work of Christ. These are theological problems with a vengeance.

The Hermeneutics of Genesis 2 and 3

Next let us consider hermeneutical questions. What is the genre of Genesis 2 and 3? For the various forms of special creation (whether young or old earth), these chapters are fairly straightforward historical narratives, which thus form a continuum with the remaining chapters of Genesis. They doubtless contain figurative language. Presumably there is anthropomorphism here and there, probably "formed" (2:7), "breathed" (2:7), "planted" (2:8), perhaps even "said" and "saw" (through-

out chapter 1) and "rested" (2:2). There is, after all, really quite a lot about God we do not know.

For the various forms of "Adam-type" theistic evolution, these chapters are likewise historical narratives, but "formed from the dust" (2:7) is taken as a condensed and concrete expression for a long process of evolution.

The term "myth" has a wide range of meaning, but common to all of these is the idea that the event narrated never actually happened. Bible believers are rightly unhappy with this characterization of biblical narratives, though examples in Scripture have been suggested that might fall into this category. I will expand more below when we discuss parable or allegory. One perennial problem is that ancient pagan religions made extensive use of myth, and both Christians and Jews wished to distance themselves from the idolatry and immoralities of these religions. A major recent problem is that liberal versions of Christianity which employ the category of myth as a genre found in the Bible regularly wind up (de)mythologizing significant teachings of Scripture, as do Rudolf Bultmann, for example, and the more recent Jesus Seminar.

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There is probably little sense in trying to distinguish parable from allegory in Scripture. The distinction is a standard one in modern literature, but the Hebrew term *mashal* and its Greek translation *parabole* included both. So, is there any narrative in Scripture that looks something like what no-Adam theistic evolutionists envision for Genesis 2 and 3? Yes, there is something similar in Ezekiel 16. Let us have a look at it.

The passage is a parable or allegory for the relation between Jerusalem and God. Jerusalem's history is parabolically narrated as the story of a girl from her birth through much of her adulthood. God is pictured as a man who adopts and marries her. Some of the significant features of the narrative are:

- The child's parents are mentioned (16:3, 44–45).
- She is abandoned at birth (16:4–5).
- God rescues her, allowing her to survive to maturity (16:6–8).
- She is adopted by God, married to him and cleaned up (16:8–9).
- God gives her many gifts of the sort appropriate for a wealthy woman (16:10–13).
- Her fame, due to her beauty and wealth, spreads far and wide (16:14).
- She begins to trust in her beauty and wealth, turning from her husband to become a prostitute, lavishing his gifts on others and killing her own children (16:15–34).
- Therefore, God is going to bring disaster on her, using her former lovers to bring judgment, shame and poverty, but this will not be fatal nor final (16:35–43).
- Jerusalem is like her mother, who despised her husband and children, and like her sisters, though she herself is the worst of the lot (16:44–59).
- But one day, God will remember his covenant with her, and restore her, and make her sisters to be her daughters (16:60–63).

What warrant do we have to think the genre of Genesis 2–3 is that of Ezekiel 16? On the positive side, we see an example of a narrative that both resembles and is also quite different from the reality it is intended to picture. That is what no-Adam theistic evolutionists claim for Genesis 2–3 over against what really happened in the origin and rebellion of humankind. In both Ezekiel and Genesis, an individual is used to represent a collective identity, Jerusalem or humankind. We do not know enough of the history of Jerusalem to know how to relate many of these features, but we know that (1) Jerusalem existed for centuries between its birth and its adoption by God to be the capital city of Israel; (2) After it became Israelite, it grew to be very wealthy in the time of David and Solomon, and its inhabitants began to play up to the pagan nations around them and to adopt their idolatrous practices; (3) By the time of Ezekiel, Jerusalem was in real trouble from the Babylonians; and (4) Afterwards, Jerusalem was conquered, devastated, and abandoned, only to be rebuilt in a much more humble style long afterwards. Some of the items seem to be predictions to be fulfilled at the end of the age. Both Ezekiel and Genesis use striking figures in the story to represent something different in the reality. In Ezekiel, the rescue of an abandoned child and her subsequent marriage is used to picture God's protection of pre-Israelite Jerusalem and his subsequent taking of the city to be his capital. In Genesis, the molding of clay and breathing into it is a vivid picture for God's guiding evolution to develop apes into humans. Much more of this sort of comparison could be developed, but I will let proponents of this view do it themselves.

Negatively, there are indicators in Ezekiel 16 that it is a parabolic narrative, indicators of the sort we do not find in Genesis. For instance, Ezek. 16:2–3 says: "Son of man, confront *Jerusalem* with her detestable practices, and say, "This is what the sovereign LORD says to *Jerusalem*: *Your*

Van Till … emphasizes that everything needed to produce all of the diversity in creation (including the unique human abilities) is somehow built into the created structure of particles and laws at the beginning, operating under the purely providential guidance of God.

ancestry and birth were in the land of the Canaanites; *your* father was an Amorite and *your* mother a Hittite." So the girl is labeled unmistakably as a city. Her father and mother are ethnic groups. Her sisters are other cities. Clearly we are in an allegory or parable.

In Genesis, we could take the names of Adam and Eve as allegorical, but there are no explicit indicators that we should do so. We do have the man called *Adam*, which could be a generic name, though it is not the common noun for man, *Ish*, but rather (apparently) a play on the fact that he was made from the ground, *adamah*. The woman is called "woman," *Ishah*, from her creation in 2:22 until she is named *Eve* (*havah*) in 3:20, apparently a play on the word "living" *hay*. These could be allegorical names, but because we are looking at the origin of the race and the first male and female in it, we should not expect them to have the sort of distinctive names needed when there are many humans on earth. So the account might be an allegory or it might not, but there are no explicit markers of allegory.

The Ezekiel narrative shifts back and forth between literal features of Jerusalem and figurative features of the story. The original readers are assumed to be able to handle this because they know a good deal about the history of the city. In Genesis, by contrast, we do not know the "real story" until it is discovered by modern anthropologists, so the readers would be pretty much in the dark until know.

Could Ezekiel 16 be a model for the genre of Genesis 2–3? I think it could, but the warrant for reading it as such would have to come almost totally from general revelation in nature. I do not think the scientific case for a gapless evolution is strong enough to warrant our making the paradigm shift.

Fully Gifted Creation

In recent years, Howard Van Till has proposed a version of pure theistic evolution (according to my chart, see p. 120) which he labels "fully gifted creation."[18] Van Till has chosen this name for his view because he emphasizes that everything needed to produce all of the diversity in creation (including the unique human abilities) is somehow built into the created structure of particles and laws at the beginning, operating under the purely providential guidance of God. This diversity is not imposed by supernatural, miraculous intervention at various points along the way.

It seems to me this view should be testable. Do we have good reason to believe that nature contains the information necessary to construct the complex structures we see in living things, especially in humans? Where is it? In the DNA? But would it not also be in the DNA of primitive organisms as well? Could it be hidden in some invisible law structure? It does not look to me as though chaos theory, for example, is going to generate the type of structure needed. Will mutation and natural selection generate the information? My experience with computer modeling (and Behe's experience with irreducible complexity) does not incline me to think so.[19] I would say that, at present, we do not have evidence that nature contains the type of information necessary for these structures, nor that they were inserted providentially (i.e., gradually) by God. Thus Van Till's view is currently a natural law of the gaps model, but of a theistic rather than atheistic sort.

If Van Till is an orthodox Christian, he does not deny the historicity of the miracles narrated in the biblical account. In this sense, Van Till does not have a deistic world view, though some have accused him of it. Yet he does restrict miracles to salvation history, removing them from the events of creation.[20] This is certainly a possible option, though (given that the Bible does have miracles) it seems somewhat arbitrary. One reason for choosing this option is that creation is then fully gifted, rather than incomplete, which certainly sounds like it gives God more credit for what he has done than would postulating an incomplete creation in which God needs to intervene again and again.

This reminds me of a statement by Fred Hoyle in his book *Galaxies, Nuclei and Quasars* written in the 1960s. In explaining why he preferred his steady-state cosmology over the various varieties of the big-bang model, Hoyle noted that the cosmological models he preferred were those in which all the necessary features were built in from the beginning and arose naturally from the laws, rather than having to have special adjustments as his old post-war automobile did to keep it running.[21]

No doubt if we picture God as a watchmaker and the universe as his watch, we would think his creation much more elegant if it kept time without his having to open the back every few days to make adjustments! But suppose God's creation is a violin he made on which to perform a concerto, and that God's interventions are crucial parts of his playing the music, like a series of pizzicatos in the midst of regular bowing. We do not fault Stradivarius for not being a watchmaker.

Let us suppose with Van Till that God's miracles are restricted to salvation history. When did salvation history begin? With the fall of Adam and Eve? But Satan is clearly fallen before then, and so presumably are the wicked angels. In fact, the creation account contains not a peep about the creation of angels, a fact so glaring that the author of the ancient Jewish pseudepigraphal book Jubilees felt constrained to put it in (on the first day).[22] My own guess (partly based on the remark in Heb. 9:11 about the heavenly tabernacle not being a part of this creation) is that Satan was already fallen before God created our universe, and that our creation is a part of God's salvation work.

Whether or not creation is a part of salvation history, Job 38:7 suggests that the angels were present at the creation of the earth. Perhaps the miracles in creation were intended for their benefit. Or they may have even been intended for us moderns, who would begin to see scientific evidence for miraculous intervention in creation in the twentieth century, at a time when the historical reliability of the other biblical narratives containing miracles had come under attack.

By the way, it does not seem to me that any of the current Christian views of creation have done much with the question of whether and how the angels may have been involved in God's creative work. This is nothing that secular science is going to want to investigate, but Christians surely should give the matter some thought.

Mind-Body Problem

Somewhat related to the matter of creation models is the mind-body problem. Space forbids any extensive discussion of this matter, but a few questions are in order. How does the mind relate to the body? Is the mind merely some sort of signal moving around in the hardware of the brain? Or is the mind/soul/spirit some sort of ghost in the machine? Is the brain, as Sir John Eccles suggested, a machine that only a spirit can operate?[23] Is the theory that reduces the mind to a signal the real science and the other theory only theology? If the mind is merely some epiphenomenon that arises only when the brain is complex enough, what happens to it when the brain dies? It seems to me that there are serious problems here regarding the biblical teaching of personal immortality, postmortem survival, and the intermediate state (existence of the person between death and resurrection). The choice between a monistic and a dualistic view of human nature seems to me to have serious theological consequences which Christian monists have not solved.[24]

It seems that the mind-body interaction is, to some extent, a model for the interaction of God with nature. Just as our unseen mind controls the events of our visible body, so the unseen God controls visible nature.

The mind-body interaction is also a paradigm for intelligent design. As I see it, the intelligent design approach affirms that intelligence is not reducible to either natural law or random (chaotic, chance) phenomena. Unlike chance, intelligence is not meaningless, but is characterized by purpose and goal. Unlike law, an intelligence can initiate actions, and these actions are often ones which cannot be predicted.

Similarly, it seems that the mind-body interaction is, to some extent, a model for the interaction of God with nature. Just as our unseen mind controls the events of our visible body, so the unseen God controls visible nature.

There are, of course, features in the mind-body interaction which do not correspond to those in God-nature, but that is merely to say that we humans are made in the image of God but are not gods ourselves.

As the unseen mind is (in some limited sense) transcendent over the body, so God is (without limit) transcendent over nature. There are, of course, features in the mind-body interaction which do not correspond to those in God-nature, but that is merely to say that we humans are made in the image of God but are not gods ourselves.

Summary: Some Problems for Theistic Evolution

As our discussion has suggested, there are a number of varieties of theistic evolution. These varieties have various problems.

Under scientific problems, we suggest the following. Transitional fossils are a problem for all versions of theistic evolution except those with rapid, guided transitions between the major biological categories. Irreducible complexity is problematic also, except (again) for versions which provide for rapid, guided transitions into these new structures characterized by such complexity. Theistic evolutionists tend to fill gaps with natural law (divine providence) rather than miracle (divine intervention). This is acceptable as a default position. Some criteria need to be developed as to when this default position should be abandoned in particular cases.

Among theological problems, we suggest the following. The account of human origins in Genesis 2, taken as a historical account rather than as a myth or allegory, is a severe problem for all no-Adam versions of theistic evolution, and a lesser problem for most versions of theistic evolution which have a nonhuman ancestor for Adam. The account of the origin of human sin and death in Genesis 3, taken as a historical account rather than as a myth or allegory, is a severe problem for all no-Adam versions of theistic evolution. The warrant for reading Genesis 2 and 3 as a myth or allegory comes from outside Scripture, allegedly from the gapless nature of evolution. This is an example of "God of the gaps" thinking in which natural law is the gap plugger. We should not mistake research agendas for empirical results. "One who puts on his armor should not boast like one who takes it off" (1 Kings 20:11). The desire to have a non-interventionist origin of humanity leads naturally to a monistic view of human nature, raising severe problems for post-mortem survival, a doctrine clearly taught in Scripture. ✦

Notes

[1]Robert C. Newman, "Creationism," in *Encyclopedia of Fundamentalism,* ed. Brenda E. Brasher (New York: Routledge, 2001). ASA Statement on Creation: www.asa3.org/ASA/topics/Evolution/commission_on_creation.html#Commission%20on %20Creation.

[2]Keith Stewart Thomson, "The Meanings of Evolution," *American Scientist* 70 (Sept–Oct 1982): 529–31.

[3]Ibid., 529.

[4]Ibid.

[5]E.g., Dudley J. Whitney, Harold W. Clark, Frank Lewis Marsh, H. Douglas Dean, mentioned in Ronald L. Numbers, *The Creationists* (New York: Knopf, 1992), 109, 124, 131–2, 234.

[6]Thomson, "Meanings of Evolution," 529.

[7]Ibid.

[8]Ibid.

[9]Ibid.

[10]Ibid. My numbers added in brackets.

[11]E.g., Fred Hoyle and Chandra Wickramasinghe, *Evolution from Space* (New York: Simon and Schuster, 1981), chaps. 3-4; Francis Crick, *Life Itself: Its Origin and Nature* (New York: Simon and Schuster, 1981), chap. 13.

[12]E.g., G. A. Kerkut, *Implications of Evolution* (London: Pergamon, 1960), chap. 2.

[13]Thomson, "Meanings of Evolution," 530.

[14]George Gamow, *One Two Three … Infinity* (New York: Viking, 1962), 199–202.

[15]Michael Behe, *Darwin's Black Box* (New York: Free Press, 1996).

[16]William A. Dembski, *Intelligent Design* (Downers Grove, IL: InterVarsity, 1999), chaps. 5–6; Behe, *Darwin's Black Box*, chaps. 9–10.

[17]Glenn R. Morton, *Foundation, Fall and Flood: A Harmonization of Genesis and Science* (published by author, 16075 Longvista Dr., Dallas, TX 75248, 1995), 247.

[18]Howard Van Till, "The Fully Gifted Creation," in *Three Views on Creation and Evolution*, ed. J. P. Moreland and John Mark Reynolds (Grand Rapids: Zondervan, 1999), 161–218, esp. pp. 184–90.

[19]Robert C. Newman, "Self-Reproducing Automata and the Origin of Life," *Perspectives on Science and Christian Faith* 40 (March 1988): 24–31; "Artificial Life and Cellular Automata" in *Mere Creation: Science, Faith & Intelligent Design*, ed. William A. Dembski (Downers Grove, IL: InterVarsity, 1998), 427–45.

[20]Van Till, "Fully Gifted Creation," p. 187, defines miracle as "an extraordinary act of God performed in the presence of human observers for some specific revelatory or redemptive purpose."

[21]Fred Hoyle, *Galaxies, Nuclei and Quasars* (New York: Harper and Row, 1965), 96.

[22]See Jubilees 2:2 on the creation of angels on the first day.

[23]See John C. Eccles, *How the Self Controls Its Brain* (Berlin, etc.: Springer-Verlag, 1994); Karl R. Popper and John C. Eccles, *The Self and Its Brain* (London: Routledge & Kegan Paul, 1983).

[24]See John W. Cooper, *Body, Soul, and Life Everlasting: Biblical Anthropology and the Monism-Dualism Debate* (Grand Rapids, MI: Eerdmans, 1989) for an excellent discussion of these matters.

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