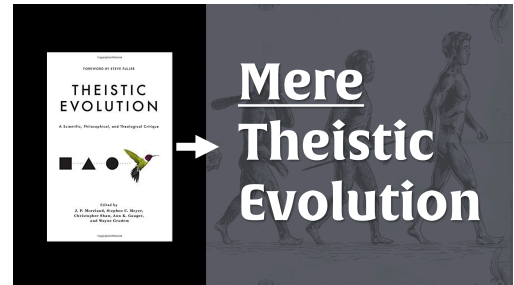




Mere Theistic Evolution

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A key takeaway from the recent volume *Theistic Evolution: A Scientific, Philosophical, and Theological Critique* is that no version of theistic evolution that adheres largely to consensus views in biology is a plausible option for orthodox Christians. In this paper we argue that this is false: contrary to the arguments in the volume, evolutionary theory, properly understood, is perfectly compatible with traditional Christian commitments. In addition, we argue that the lines between Intelligent Design and theistic evolution are not as sharp as most scholars have assumed, such that many who self-identify as Intelligent Design adherents would also qualify as theistic evolutionists.

1. Introduction

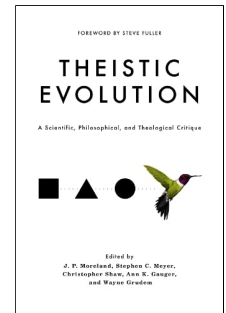
When dealing with collected works, it's important to attribute no more unity to the collection than it deserves.

Huckleberry Finn serves as a cautionary tale here. Huck's potted history of Henry VIII has the king killing a thousand and one of his wives, drowning the Duke of Wellington, and goading the American colonists into war:

Well, Henry he takes a notion he wants to get up some trouble with this country. How does he go at it—give notice?—give the country a show? No. All of a sudden he heaves all the tea in Boston Harbor overboard, and whacks out a declaration of independence, and dares them to come on. That was his style—he never give anybody a chance.

Just as Huck should have taken care not to blur a host of stories into the narrative of a single monarch, so also scholars should not assume that the many authors in an edited collection wish to advance a single position—or critique a single position, as the case may be.

We have tried to take this advice to heart in what follows, in which we discuss parts of the voluminous *Theistic Evolution: A Scientific, Philosophical, and Theological Critique*, edited by J. P. Moreland, Stephen Meyer, Christopher Shaw, Ann K. Gauger, and Wayne Grudem.¹ (For the sake of brevity and clarity, we will henceforth refer to this volume as SPTC.) For, as is typical of edited academic collections, the book is not a manifesto that articulates and advances a single position. Nor is it a work in which all the authors agree on a single, well-defined account of “theistic evolution” that they wish collectively to critique.



Even so, we believe that the volume as a whole conveys a strong and simple message, namely, that for Christians with traditional doctrinal commitments, no version of theistic evolution that adheres largely to consensus views in biology will be a plausible option. The communication of this message may have been unintentional; it may be the case that many of the book's contributors would count at least some versions of theistic evolution in this sense as genuine options for those with a traditional orientation. But intentional or no, the book as a whole is reasonably interpreted as a statement against such approaches, with little qualification or nuance. This is due not only to much of the content of SPTC, but also to the way that the book is framed in its title, in some of its introductions, and in the back-cover summary and reviews included in the hardcover edition. Moreover, this interpretation is further encouraged by the fact that there is no chapter (or even lengthy section) in the volume that aims primarily to defend some version of theistic evolution as a live option for readers.

2. Mere Theistic Evolution

If we are to defend the viability of some versions of theistic evolution in light of the criticisms in SPTC, a natural first step is to characterize what all versions of this position have in common. With this general characterization of theistic evolution in hand, we can then go on to distinguish some specific instances that qualify as live options for Christians with certain traditional doctrinal commitments.

With a nod to C. S. Lewis, we will refer to this general characterization as *mere theistic evolution*. As we see it, all versions of theistic evolution, however they may differ from each other, are to be

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1. J. P. Moreland, Stephen Meyer, Christopher Shaw, Ann K. Gauger, and Wayne Grudem, eds., *Theistic Evolution: A Scientific, Philosophical, and Theological Critique* (Wheaton, IL: Crossway, 2017).

distinguished collectively from competing approaches by three features.

First and foremost, they are all *theistic* positions: they assume the existence of a Creator who bears all and only those attributes that are fitting to ascribe to God (for example, omnipotence, omniscience, omnibenevolence).

Second, all theistic-evolutionary accounts agree that the created universe as a whole, and the earth as a part of this creation, have existed for eons. (Reasonable estimates are approximately fourteen billion years for the age of the universe and four billion years for the earth.)

Finally, all versions of theistic evolution affirm that the complexity and diversity of life are best explained by appeal to evolutionary processes that have been operative over long periods of time, where the relevant processes include those that constitute what is often called “the modern evolutionary synthesis.” (One key process in this synthesis is natural selection, acting on random mutations. But it need not be the only important biological process.) Included in this affirmation—and implicit in what follows—is an endorsement of evolution as a *very good* explanation of these phenomena, and not simply the best among a rather poor set of candidates.

This third feature significantly narrows the scope of theistic evolution. For it means that it is not enough to affirm change over time, or even change over time plus common descent; theistic evolution in our sense comes with a confidence in the explanatory power of the evolutionary approaches employed in current biology. We prefer this narrow construal because we believe it better fits the way that people ordinarily ascribe the position to themselves or others. A broader understanding of theistic evolution—say, one that did not endorse natural selection as a primary driver of speciation—would be at odds with ordinary practice.

To review, here is what we propose as the minimum set of commitments that characterize any theistic-evolutionary position worth the name. The position must be theistic; it must subscribe to a very old earth in a very, very old universe; and it must affirm that the complexity and diversity of life are best accounted for by evolutionary processes of the sort included in, but not necessarily limited to, the modern synthesis (for example, natural selection)

With this characterization in mind, we can now ask: Are there specific versions of theistic evolution that constitute viable options for Christians with traditional doctrinal commitments? Given the context, we will narrow the question to a more tractable one: Are there accounts that assume the three key claims above but that are nevertheless immune to many of the key criticisms advanced in SPTC?

We believe that the answer to this question is incontrovertibly yes.

Before we begin our case, however, we think it important to clarify just what is required of us here. Most critical for present purposes is the fact that we don’t need to show that many of the world’s theistic evolutionists, let alone those theistic evolutionists who have spoken or written on the subject, would subscribe to the kinds of accounts that we sketch below. Such considerations would be relevant if our project were a historical or sociological one. But we are after something different. What matters for present purposes is not the

number or prestige of those theistic evolutionists that would sign on to the views we propose. Rather, what matters is whether or not there are versions of theistic evolution, as characterized above, that are consistent with various traditional doctrinal commitments. If, as we will argue, there are theistic evolutionary accounts of this sort, then theistic evolution is clearly a live option for Christians with these traditional commitments. The fact (if it is a fact) that relatively few Christians have accepted these kinds of accounts is an interesting historical and sociological detail, but by itself it is irrelevant to whether or not Christians could or should accept such accounts.

3. Divine Providence and Guided Theistic Evolution

In sections 3–6 we focus on four traditional doctrinal commitments that are alleged to be in tension with theistic-evolutionary claims, according to some of the authors of SPTC. These authors argue in their respective chapters that attempts to endorse both theistic evolution and one or more of these traditional commitments are plagued by serious philosophical problems. We begin with a discussion of the doctrine of divine providential guidance, and then turn to questions about miracles, evidence for theism, and nonphysical souls.

Broadly speaking, the term “divine providence” refers to God’s good and wise control over creation. It implies control over all kinds of events and processes, and thus over inanimate and animate aspects of creation, to include created persons. In everyday conversation, the use of this term is sometimes restricted to cases in which God brings about some outcome that would otherwise have been highly unlikely or even impossible—in a word, something that many of us would naturally refer to as a miracle. (For example, “There is simply no medical explanation for her recovery; it must have been divine providence.”) But it is important for present purposes that we avoid this restrictive characterization and hew instead to the Christian tradition’s broader understanding of providence.² That tradition presents us with a God whose providential control applies as much to the mundane as it does to the surprising, to the uniform no less than the exceptional. To borrow from Chesterton, orthodoxy counts the repetition we see in nature not as “mere recurrence” but as “theatrical encore.”³ In keeping with this, when we refer to divine providence in this and the following sections, unless otherwise noted, we will not be referring to God’s miraculous activity—what C. John Collins calls “extraordinary providence”—but rather to providential governance of the more ordinary sort, or “ordinary providence.”⁴ The latter sort of providence is crucial to water staying a liquid at room temperature and boiling over fire, while the former sort is what turns water into wine.

(Because God’s providential control is supposed to extend to human thought and behavior, one might infer that it precludes humans from being free and morally responsible for what we think and do.

2. Catechism of the Catholic Church, http://www.vatican.va/archive/ENG0015/_INDEX.HTM, 305–314; Belgic Confession (<https://www.ccel.org/creeds/BelgicConfession.html#Article%2013>), article 13; Heidelberg Catechism (<https://www.ccel.org/creeds/heidelberg-cat.html#Heading1>), Q26–Q28; Westminster Confession (<https://www.ccel.org/ccel/anonymous/westminster3.i.html>), chap. 5.

3. G. K. Chesterton, *Orthodoxy* (San Francisco: Ignatius, 1995), 65–6.

4. SPTC, 662–3.

Similarly, one might think that divine providence leaves no room for created entities to serve as causes. But these conclusions would be too fast. For theologians through the ages have developed and defended multiple proposals as to how human freedom and responsibility could be compatible with divine providence, and likewise for the compatibility of providence and causation among creatures. Fortunately, for present purposes there is no need to argue for the superiority of some of these proposals over the others. Rather, we can simply assume compatibility and invite skeptical readers to investigate the issue further for themselves.⁵)

Given the importance of this doctrine within Christian tradition, it would be a significant shortcoming of theistic evolution if it were inconsistent with commitment to divine providence. Yet something like this charge is levied against theistic evolution by several of the authors of SPTC. In respective chapters, Stephen Meyer, J. P. Moreland, and John West all argue that theistic evolutionists, in the sense characterized above, cannot affirm that God providentially guides evolutionary processes so as to guarantee the short-term and long-term outcomes of these processes. If this charge is true, then theistic evolution would clearly be at odds with traditional thinking about divine providence. For on such a picture, God would be unable to govern the natural world in the way that tradition assumes—unable, perhaps, even to guarantee that human persons would be the endpoint of the evolutionary trajectory.

We think this charge is false, and clearly so. Theistic evolution *per se* has no difficulty accommodating even the most meticulous forms of the doctrine of divine providence, and thus no difficulty affirming that God guides evolutionary processes so as to ensure their short-term and long-term outcomes. As a first response to the challenge, we note simply that mere theistic evolution, as we outlined it in a previous section, is silent on the extent of God's control over evolutionary history. It does not commit either way, and therefore it does not *reject* this doctrine, explicitly or implicitly. And this means that we are free to accept both theistic evolution and divine providence—including divine providential guidance of evolutionary history—without any fear of contradiction.

Why might someone be tempted to think otherwise—to believe, mistakenly, that theistic evolution cannot accommodate divine control of this sort? We think there are two common reasons, and a brief discussion of each of them should help to further illuminate this issue.

First, some theistic evolutionists do in fact make claims that seem to fit ill with traditional thinking about divine providence. In his chapter, West provides colorful quotations from scientists John Polkinghorne, George Coyne, and Kenneth Miller that suggest that each of them rejects providential guidance of the relevant sort.⁶ But it would be fallacious to infer from these and similar examples that theistic evolutionists *must* reject divine providence. For such examples provide no evidence whatsoever that mere theistic evolution is inconsistent with that doctrine. (We note that West himself does not draw the problematic inference.)

5. See, e.g., Paul Helm, *Eternal God* (New York: Oxford University Press, 1988); William Hasker, *God, Time, and Knowledge* (Ithaca, NY: Cornell University Press, 1989); Thomas P. Flint, *Divine Providence: The Molinist Account* (Ithaca, NY: Cornell University Press, 1998).

6. SPTC, 770–1.

But there is another, more intricate line of reasoning that frequently leads people to conclude that theistic evolution is inconsistent with providential guidance of the relevant sort. These considerations turn on a claim about the importance of *unguidedness* (or *undirectedness*, or *randomness*), in standard approaches within evolutionary biology. The argument, in a nutshell, is as follows. The sources of variation (mutations and so forth) that are crucial to the theory of evolution that is accepted and advocated in current biology are supposed to be *unguided* (or *undirected*, or *random*) mutations. This, in turn, means that any view that proposes that these variations are *guided* (or *directed*, or *nonrandom*) will be in serious disagreement with a major pillar of the modern evolutionary synthesis. Therefore, if theistic evolutionists wish to align themselves largely with the consensus approaches in biology on this major theoretical point—and given our characterization of mere theistic evolution, they *must*—then they have to reject the claim that God (or anything else) guides these variations. Because of the importance of variation in evolution, this would amount to a rejection of God's providential guidance over evolutionary history.

Appeal to something like this argument appears in chapters by Meyer, Moreland, and West.⁷ Meyer's usage will be illustrative:

...[I]f the theistic evolutionist means to affirm the standard neo-Darwinian view of the natural selection/mutation mechanism as an undirected process while simultaneously affirming that God is still causally responsible for the origin of new forms of life, then the theistic evolutionist implies that God somehow guided or directed an unguided and undirected process. Logically, no intelligent being—not even God—can direct an undirected process. As soon as he directs it, the “undirected” process would no longer be undirected.

On the other hand, a proponent of theistic evolution may conceive of the natural selection/mutation mechanism as a directed process (with God perhaps directing specific mutations). This view represents a decidedly non-Darwinian conception of the evolutionary mechanism. (SPTC, 43)

To recap the argument: The standard biological approach counts variation as unguided, which means that any position that claims that they are guided by God will be at odds with standard biology. Therefore, if theistic evolution is best understood as a position that aligns itself tightly to standard biological approaches, then it cannot affirm that God has guided evolutionary history. The reasoning appears to be unassailable.

But appearances are deceiving, as there is a subtle but significant problem with the argument above. To see the problem, it's important to recognize that the argument only works if “guide” has roughly the same meaning in the theological claim as it does in the biological claim. In other words, the line of reasoning is sound only if Meyer (and West and Moreland) are right to think of divine providential guidance as roughly the same kind of guidance that is denied of mutations in mainstream biology. If instead, “guide” means something significantly different across these contexts, then the argument fails. By analogy, I may claim without contradiction that there are currently no matches at the All England Club and that there are currently many matches at the All England Club, so long as the

7. Meyer, SPTC, 43–4; Moreland, SPTC, 650; West, SPTC, 764.

references are to different kinds of matches. And this could very well be the case, as the club may feature no tennis matches at present and yet house hundreds of matchbooks filled with their little incendiary devices.

This analogy is an apt one in the present context. For it turns out that the sense in which the biologist uses the term “guided” is significantly different than the sense in which a theistic evolutionist would use the term to refer to God’s providence, and a proper understanding of this difference reveals that there is no danger of contradiction of the sort alleged in SPTC. As a number of philosophers of science and religion have noted recently, the biological sense in which evolutionary processes are said to be unguided (or undirected, or random) is a highly technical one, a stipulative sense that is perfectly consistent with those same processes being guided (or directed, or nonrandom) in the more ordinary sense that is assumed in attributions of divine providence.

Alvin Plantinga, Phil Dowe, and Elliott Sober have all provided clarifications of this subtle but significant point.⁸ Here we will explain the difference by employing a version of Sober’s approach.

To begin, it’s important to recognize that many of the central claims of evolutionary theory are probabilistic claims. That is, they are claims about the likelihood of various changes occurring over time (the likelihood of various mutations occurring, the likelihood that an organism with such-and-such traits will produce more viable offspring, and so forth). And crucially, the probabilistic claims that are central to evolutionary theory are *relative* rather than absolute. This is true of many kinds of probabilistic claims, not just those that are used in evolutionary biology. Such claims are relative in the same way as claims about *distance* are relative. Just as there is no absolute answer to a question like “How far is it to Wittenberg?”—the right response in Berlin will differ significantly from the right response in Frankfurt—so also there are no absolute answers to most questions about probabilities.

This point is key to understanding the biologist’s technical use of the terms “guided” and “unguided,” and so we think it’s worth clarifying by way of a simple example. Consider the probabilities associated with coin tosses. If you are asked how likely it is that a normal coin will land heads when it is tossed, and you have been given no more information about the coin or the toss, the right response will be to put the probability at 50 percent, or 0.5. But importantly, the probability of heads is only 0.5 *given that you don’t know anything more than that a normal coin is tossed*. If you had been given more information relevant to the outcome, then the right response might have varied accordingly. For example, were you also told that the toss was generated by a device that resulted in heads outcomes in 800 out of the last 1,000 tosses, then your response ought to be that the probability is closer to 0.8 than to 0.5. And in some extreme cases, if you had complete and precise knowledge of all the physical facts in the circumstances—the physical properties of the coin, the laws describing the operation of the tossing mechanisms, and so forth—

then because normal coin tosses are often practically deterministic processes, you could predict with certainty whether the coin would land heads or not. In such a case we can say that the probability that the coin will land heads, *given all relevant physical facts*, is 1.0 (or 0 if the laws and conditions determine that the coin will land tails).

This may seem surprising at first blush. How, after all, is it possible for one and the same outcome—a tossed coin landing heads—to have a probability of 0.5 and a probability of 1? Isn’t that contradictory?

It is not. And the reason is that these two probability assessments are made on the basis of different background information. The first assessment is made only on the basis of the information that *a coin is tossed*, while the second is based on information that *a coin with these specific properties is tossed under these specific conditions in a world with these specific laws*. Both assessments are right, and there is no danger of contradiction.

One might object that it is simply not true that both probability assessments are right; rather, the assessment made on the basis of maximal information must be the right one—or anyway it must be the more accurate of the two. But this is not true either. This is easy to see when we reflect on how we use coin tosses as a way of generating random outcomes, as when we determine who will receive the first kickoff in a football game. As above, in many conditions the probability that the pregame coin will land heads is either 1.0 or 0 *given all the relevant facts*. But since we don’t know all these facts, *we will get a very predictively accurate theory* if we assign a probability of 0.5 to heads on any given toss. And indeed, when we toss coins, they do come up heads about half the time. Given the knowledge we actually have about coin tosses, a theory that treats the outcomes of tosses as random—as being equally likely to result in heads or tails—gives us accurate predictions, despite the fact that in many conditions we would correctly assign a probability of 1.0 or 0 to each toss if our knowledge of the facts in each case were perfect.

Something similar is true in evolutionary theory, and in a way that is directly relevant to judgments about whether or not evolutionary processes are guided. To see why, let’s begin by considering the following question, which was at one time under serious discussion by biologists: Do mutations occur because they will benefit the organism? Or do they occur independently of any potential benefit? While there was once some doubt about this, the matter is now largely settled: when it comes to mutations within our genes, there is no general connection between these genetic changes, on the one hand, and whether or not these changes will be beneficial, on the other.

To illustrate this point, let’s imagine a simple case of a red cell placed in a green environment. In that environment, let’s further imagine that the cell can undergo one of two kinds of point mutations: one kind will turn its color to green, while the other kind will turn its color to blue. Finally, let’s imagine that if the cell undergoes a mutation that changes its color to green, it will be more likely to survive (perhaps because it blends into its environment), but if it undergoes a mutation that changes its color to blue, it will be less likely to survive. Given all this, and without knowledge of any other relevant facts, we might ask whether in any given case it is more likely that a beneficial (green) mutation occur rather than a nonbeneficial (blue) mutation. As we noted just above, the answer to questions of this sort has largely been settled. In this scenario, and all other scenarios of this sort, the

8. See Alvin Plantinga, *Where the Conflict Really Lies: Science, Religion, and Naturalism* (New York: Oxford University Press, 2011), chap. 1; Phil Dowe, “Darwin, God and Chance,” in *Oxford Studies in Philosophy of Religion*, vol. 3, ed. Jonathan L. Kvanvig (New York: Oxford University Press, 2011); and Elliott Sober, “Evolutionary Theory, Causal Completeness, and Theism: The Case of ‘Guided’ Mutation,” in *Essays in Honor of Michael Ruse*, ed. R. Paul Thompson and Denis M. Walsh (New York: Cambridge University Press, 2011).

evidence is that beneficial and nonbeneficial mutations are equally likely; the occurrence of a beneficial mutation—the green kind in our example—is not more probable (or less probable) than the occurrence of a harmful mutation.

Importantly, this means that we can treat it as a *random* matter whether in any given case a mutation will be beneficial, in the same way that we can treat it as a random matter whether in any given case the outcome of a coin toss will be heads. In each case, treating the phenomenon as random gives you a predictively accurate theory over the long run. And it is in this sense that evolutionary biologists affirm that mutations (and other aspects of evolution) are random, where “random” is used interchangeably in biology with terms like “undirected” and “unguided.” Therefore, when biologists claim that science has shown us that mutations are unguided, the claim amounts to this: given the facts that biologists take into account when making evolutionary predictions, those predictions are accurate if mutations are treated as random in the sense above—that is, if they are treated as if the occurrence of a beneficial mutation is no more or less likely than a nonbeneficial mutation. (*Mutatis mutandis* for other aspects of evolution.)

And just as was true of the coin tosses, there may be other relevant factors that are not taken into account within evolutionary theory that change these probability assessments significantly. To illustrate, we can return to our example of the red cell in the green environment. If, in contrast to our original case, we were provided instead with much more information about this situation—say, complete and precise knowledge of all relevant physical facts—then, assuming that the relevant processes are practically deterministic, we could predict with certainty whether or not a beneficial green mutation would occur. *Given this background knowledge*, our probability assignment for a beneficial mutation would either be 1.0 or 0. Generalizing, we can say that in many cases, the probability that a beneficial green mutation will occur is either 1.0 or 0 *given all the relevant facts*. Even so—and again, similar to the coin example—since biologists don’t know (and don’t typically need to know) all these other facts, they will get a *very predictively accurate theory* if they assign a probability of 0.5 to the occurrence of a beneficial green mutation in any given case. And so a theory that treats mutations as random—where in this context that means: being equally likely to be beneficial or nonbeneficial—gives scientists accurate predictions, despite the fact that they would correctly assign a value of 1.0 or 0 to the probability of a beneficial mutation in many cases if they took into account all relevant physical facts.

But now it is a straightforward matter to show that one and the same mutation can be both random and completely determined by God—or to put the point in the terms that motivated our discussion, we can show fairly easily that an unguided mutation can be completely guided by God. Let’s first illustrate how this might work by returning to our example of coin tosses. Imagine a referee who has a gambling addiction and bets on every football game that he officiates. In order to boost his winnings, this referee has learned how to toss coins to get just the outcome that will benefit the team on which he has bet. For example, if his preferred team calls “heads,” he makes the pregame coin land heads, and if the team he has bet against calls “heads,” he tosses the coin so that it will land tails. Now, let’s assume further that when captains pick heads or tails before the pregame coin toss, they do so randomly—they pick heads half the time and tails half the time. Under these circumstances, our referee’s coin

tosses will, over time, yield roughly the same pattern as ordinary coin tosses, landing heads half the time and tails the other half. And this means that an approach that treats the outcomes of these tosses as random—that is, as equally likely to land heads or tails—will be a very predictively accurate theory. For the distribution of the heads and tails outcomes in these games will match the distribution that is expected if the probability of a heads outcome in any given case, *based solely on the information that a normal coin is tossed*, is 0.5. In this sense, then, the outcomes of these tosses are correctly described as random. Even so, it is also true that the referee can guarantee the outcome that he desires on any specific toss, and he exercises this ability to determine exactly how the coin will land. In light of this, we can say that based on additional information—in particular, information about the referee’s intentions for the toss—the probability of a heads outcome in any given case will either be 1.0 or 0. There is therefore a second sense in which the outcomes of the coin tosses are not random at all, because they are precision-guided by the referee.

It’s even easier to see that random coin tosses can be divinely guided. Suppose that God determined, via His ordinary providence, the outcomes of the pregame coin tosses for the last ten Super Bowls. It is certainly true that the probability that the Super Bowl XLIV toss would land heads was 1.0, *given all relevant facts*—now including not only the physical facts but facts about God’s actions as well. But because (let’s assume) we lacked knowledge of God’s intentions for this toss and the tosses to follow, as well as knowledge of all relevant physical facts in each case, the right probability to assign to a heads outcome in each of the ten tosses was 0.5. In other words, even though God was determining the outcome in each case, the right approach for us was to treat it as a *random* matter whether any given toss would land heads, as this approach made for a predictively accurate theory over the long run.

And, to come to the key point, the same is true of the random, or *unguided*, mutations in evolutionary processes. Let’s suppose that God determined exactly which kind of mutation—beneficial green or nonbeneficial blue—would occur in ten cells, one after the other, in the following order: green, green, green, green, blue, blue, blue, blue, green, blue. Could He have done so, through the exercise of His ordinary providence, in a way that nevertheless kept those mutations unguided in the biological sense? Given our explanation of what “unguided” means in biology, the answer is clearly yes, and for reasons that are similar to those given for the coin tosses. It is certainly true that the probability that the first mutation would be beneficial was 1.0, *given all relevant facts*—now including not only the physical facts but facts about divine activity. But assuming that we lacked knowledge of God’s intentions for this mutation and those to follow, as well as knowledge of all relevant physical facts in each case, the right probability to assign to a beneficial mutation in each of the ten cases would have been 0.5. In other words, even though in half the cases God determined that a beneficial mutation would occur, the right approach for us would be to treat all ten of the mutations as unguided—as though beneficial mutations were no more or less likely than nonbeneficial mutations—as this approach would have given us accurate predictions over the long run.

What is true of this one simple case can be generalized to all mutations, and indeed to all aspects of evolution. If we take into account the kinds of facts and principles that are standardly used in evolutionary biology, we can accurately predict that evolution is

unguided, in the sense that mutations do not occur because they carry some benefit for the organism. But this is perfectly compatible with the outcomes of evolutionary processes being guided in another, entirely legitimate sense, by divinely caused factors that evolutionary biologists are not taking into account.

More simply, the standard biological claim that evolutionary processes are *unguided* is compatible with the claim that God *guides* them, because “guide” has different meanings across the first and second instances. The combination of these two claims, properly clarified, means only this: (a) according to the best accounts within evolutionary biology, beneficial mutations are no more or less likely to occur than nonbeneficial mutations, and (b) God providentially governs evolutionary processes, to include bringing about certain mutations, to achieve His purposes. Put thus, it is clear that the theistic evolutionist can endorse consensus views in the sciences concerning the relevant biological facts, while also endorsing the claim that God guides evolution through His ordinary providence.

4. Miraculous Theistic Evolution

We have discussed divine providence at length because we believe that appeal to this doctrine, along with clarity concerning the different meanings of “guide” in theology and biology, will be key to any theistic-evolutionary position that aims to hew closely to traditional Christian commitments. But readers may remember that the kind of providence we have been discussing thus far is what we called, following C. John Collins, “ordinary providence.” We now turn our attention to the “special” or “extraordinary” sort of providence that we see in cases of miracles, and the compatibility of such providence with theistic evolution.

Let’s start with a review of the two kinds of providence. On our account of this distinction, God acts providentially in the “extraordinary” sense only when he brings about His desired outcome by (among other things) ensuring that a process within creation unfolds in a radically different way than is typical for processes of that kind. Many biblical miracles are plausibly of this sort, such as Jesus’s calming of the storm and healing of the sick; in each case God acted so that the physical processes that culminated in the outcome would unfold in radically atypical ways. In contrast, God acts providentially in the “ordinary” sense only when he brings about his desired outcome by (among other things) ensuring that a process within creation unfolds in a way that is typical for processes of that kind. Ordinary providence is the rule rather than the exception. And there are plausible biblical references to support this claim, such as Job 38.⁹ (Presumably we are not to infer that God’s provision for lions and ravens is always via extraordinary providence.)

Our focus in the last section was on ordinary providence. More specifically, we clarified that commitment to the claim that God guides evolution via His ordinary providence is consistent with the empirical evidence and consensus conclusions in the biological sciences. We want now to clarify that theistic evolution is likewise consistent with the thesis that God sometimes exercises extraordinary providence—that God *performs miracles*, including (but

not limited to) the miracles affirmed throughout the Bible. This is an important clarification in light of a challenge in SPTC.

To begin, note that mere theistic evolution, as we have characterized it previously, is largely silent on the question of miracles. It does not commit either way on questions about whether, for example, God parted the Red Sea to liberate the Israelites, sent fire to refute the prophets of Baal, preserved Shadrach, Meshach, and Abednego in the furnace, raised Jesus from the dead, or healed the afflicted at Publius’s estate. It is likewise silent on whether God has performed (or does perform, or will perform) other miracles not recorded in the Bible.

Of course, there are some claims about miracles that would be inconsistent with theistic evolution even in our minimal sense. This follows straightforwardly from the second and third principles that we used to characterize the position. For instance, the claim that God miraculously created the universe and all that is in it relatively recently—say, less than 100,000 years ago—is one that is obviously inconsistent with the thesis that the universe has existed for eons. Similarly, mere theistic evolution is inconsistent with miracle claims that entail that the complexity and diversity of life are not best explained by appeal to evolutionary processes, as this would render the third principle in our characterization false. One clear example of the latter would be the claim that God miraculously created all species in their current forms in some way other than via evolutionary processes. But a number of less sweeping versions of this claim would likewise be inconsistent with mere theistic evolution. Consider, for example, someone who affirms the existence and operation of evolutionary processes over long periods of time, but claims that these processes are able to explain only very little of the complexity and diversity of life; instead, this person argues, the biological complexity and diversity that we see in the world can only have been the result of God’s extraordinary providence exercised outside of the workings of evolution. This is a more qualified version of the previous claim, but it would still be inconsistent with mere theistic evolution, as it would entail the falsity of the third principle in our characterization.

It’s important to see, however, that not all miracle claims concerning the origin of some species, or the development of this or that biological feature, will be inconsistent with theistic evolution in our sense. In particular, miracle claims of this sort will be fully compatible with theistic evolution so long as they are consistent with the affirmation that the complexity and diversity of life are best explained by appeal to evolutionary processes over long periods of time. This is only puzzling if we forget that the best explanation of some target phenomena is not always a *comprehensive* or *exclusive* explanation of those phenomena. In keeping with this, claims that God acted miraculously, and outside of evolutionary processes, in order to effect or alter some species or biological feature, may be entirely consistent with mere theistic evolution. Whether they are so consistent or not will depend entirely on whether they are the kinds of claims that are compatible with an endorsement of evolutionary processes as the best explanation—not exhaustive or exclusive, but best—for the complexity and diversity of life. Given this, theistic evolution could easily be consistent with the claim that, say, the development of a single biological feature, or a small set of such features, is due to God’s acting via extraordinary providence and through nonevolutionary processes. For these kinds of claims need not rise to the status of a challenge to evolution as the best account of the

9. See also the discussion in SPTC, 661–5, in John Collins’s chapter, which includes more biblical examples in which typical events and processes are said to be under God’s providential control.

diversity and complexity of life. In contrast, and as noted above, theistic evolution would not be consistent with the claim that all species originated in this way. Nor would it be consistent with any other position on which miraculous activity is deemed crucial to explaining much of the world's biological complexity and diversity in light of alleged explanatory deficiencies in evolutionary theory. But there is plenty of room between positions that most clearly count as theistic evolution, on the one hand, and positions that include enough skepticism about evolution's explanatory power that they have crossed a threshold and no longer count as clearly within the fold. And thus the theistic evolutionist enjoys quite a bit of freedom to affirm miracles of all sorts—not only those miracles that are recounted in the Bible and those that are reported today, but prehistorical miracles in the biological domain.

By analogy, we might consider the explanations that are used by scientists to explain weather patterns, that is, the science of meteorology. One might hold that meteorological science provides the best explanation for the patterns of weather even though those explanations are not comprehensive—because, for example, when Jesus calms the wind and the waves (Mark 4:39), that specific change in the weather is produced by a miracle rather than by ordinary meteorological processes. If God indeed causes such miracles, then there are some weather events that meteorological science does not and will not explain. But this fact would not lead us to question the explanatory power of meteorological science.

The temptation to think otherwise—the temptation to think that miracles are impossible or implausible if theistic evolution is true—appears to stem from an assumption that “theistic evolution” means something far more substantive and specific than it actually means. In particular, Moreland seems to think that commitment to theistic evolution comes with commitment to additional theses not listed in our characterization, most notably the theses that the sciences can provide no evidence for the existence of God and that God cannot be involved in evolutionary processes.¹⁰ He then marshals these considerations into a case that belief in miracles is problematic for a theistic evolutionist:

If science has shown that, since the Big Bang until the emergence of *Homo sapiens*, there is no good reason to believe in God, isn't it special pleading to embrace this deity when it comes to biblical miracles? Surely history, archeology, and related disciplines have, under the same methodological naturalist constraints, “shown” that biblical miracles are legendary myths that helped Israel and the early church make sense of their subjective religious experiences.

...Clearly, if we need to postulate an active God to explain the origin and development of life, as intelligent design advocates claim, then before we step into the door of a church we are already warranted in believing biblical supernaturalism, and biblical teaching fits easily in our worldview. But if we come to church as theistic evolutionists, a supernatural, intervening God and a knowledge-based Bible are less at home in our worldview and, indeed, may fairly be called *ad hoc*.¹¹

The argument seems to be as follows: If theistic evolutionists must deny that the sciences give us any reason to believe in God, and especially if this denial (or some other aspect of theistic evolution)

entails a reading of the Bible that treats miracle claims as false, then the theistic evolutionist cannot reasonably endorse the thesis that God brought about the miracles attested in the Bible.

The obvious reply to this line of reasoning is that theistic evolution does *not* require the claim that the sciences give us no reason to believe in God. This is clear in our characterization of mere theistic evolution, which is silent on whether the sciences can or do furnish us with evidence in favor of theism. We will return to this issue in the section below. For now, the important point is that this mistaken assumption is key to Moreland's argument, and thus the argument as a whole does not go through.

It's also important to see that God's use of extraordinary providence to guide evolutionary processes is compatible with those processes being unguided, in the biologist's sense of “unguided.” The argument for this is perfectly parallel to the argument we saw at the end of the previous section, and so our treatment here will be brief. If we take into account the kinds of facts and principles that are standardly used in evolutionary biology, we can accurately predict that mutations are unguided, in the biologist's sense that beneficial mutations are neither more nor less likely to occur than nonbeneficial mutations. But this is entirely consistent with mutations being guided in a different (but no less bona fide) sense by *theological* factors that evolutionary biologists do not take into account—namely, by God's providential governance of these mutations. And this conclusion applies just as much to God's miraculous guidance of mutations as it does to His guidance via ordinary providence; both kinds of divine providence are compatible with theologically guided mutations remaining unguided in the biologist's sense.

In the end, there is simply no cause to conclude that belief in miracles is a problem for theistic evolutionists. For the two sets of commitments are clearly compatible, just as we saw was true of theistic evolution and belief in ordinary divine providence.

5. Theistic Evolution and Scientific Evidence for Belief in God

Toward the end of the previous section we stated that theistic evolution does not preclude the view that the sciences give us reason to believe in God. Similarly, theistic evolution need not include any commitments as to which methods are appropriate to the sciences—for example, principles concerning the appropriateness of invoking or inferring supernatural causes in scientific contexts. This should be clear in our characterization of mere theistic evolution, which is silent on both the evidential role of the sciences for (or against) theism and on the boundaries of proper scientific methodology.

There are, of course, some theistic evolutionists who have strong views in these areas. In particular, a number of theistic evolutionists are openly committed to *methodological naturalism*. This is a principle that forbids appeal or inference to anything other than naturalistic factors in scientific contexts, thereby forbidding explanations in the sciences that involve reference to God. There may also be some theistic evolutionists who defend the stronger view that the sciences give us no reason to believe in God—that is, that there are no good philosophical or theological arguments for the existence of God that turn crucially on claims from one or more of the sciences. But it is important to see that each of these facts is irrelevant to the

10. SPTC, 649, 650.

11. SPTC, 651–2.

issue at hand. This point is similar to one we made in a previous section. What matters for present purposes is not the number or prestige of those theistic evolutionists who affirm methodological naturalism or deny that the sciences can provide evidence for theism. Rather, what matters is what theistic evolution in its essential form requires. What is important, in other words, is whether or not there are versions of theistic evolution, as we have characterized it, that permit non-naturalistic approaches in the sciences and count the sciences as potential sources of evidence for conclusions about God. And as noted in the paragraph above, mere theistic evolution is consistent with both of these; it does not require methodological naturalism or reject science as a source of evidence for theism. The conclusion is straightforward: there are versions of theistic evolution that do not include commitment to methodological naturalism, and versions that accept the sciences as sources of evidence for theological conclusions.

We believe that clarity on these issues—especially the reminder that theistic evolution as a position is not forever defined by the nonessential commitments of some of its proponents—is sufficient to settle matters. Even so, because theistic evolutionists are sometimes saddled with one or both of the charges above, it will be useful to say a bit more to bring the point home.

First, it's worth pointing out that even if theistic evolution did require its proponents to deny that the sciences weigh in favor of Christian commitments—a claim that we have shown above to be false—this would not imply that Christian theistic evolutionists are unwarranted in holding their religious beliefs. Moreland seems to assume something like this in the passage quoted at the end of the section above, but the implication simply does not hold. For even with such restrictions in place, Christian theistic evolutionists could still depend on *nonscientific* evidence for the warrant for their religious beliefs. Such evidence might include the inner witness of the Holy Spirit, the emergence of virtues that are suggestive of sanctification, and the testimony of those members of their community that they take to be authorities on these matters, not to mention more intellectually-oriented sources of evidence like cosmological and moral arguments for the existence of God. Similar considerations show that even if theistic evolution required methodological naturalism—which, again, we have shown above to be false—this would not leave theistic evolutionists with no evidential warrant for Christian belief.

But second, and more to the point, it is a simple matter to demonstrate just how theistic evolution can allow for nonnaturalistic approaches in the sciences, and how it can count the sciences as potential sources of evidence for conclusions about God. For the theistic evolutionist may, without any fear of inconsistency, appeal to considerations like cosmological fine-tuning, evolutionary convergence, and (on a broad reading of “science”) the historical argument for Jesus’s resurrection as *scientific* evidence in favor of Christian theism. These are all examples of scientific—or at the very least, *empirical*—evidence for Christian claims, where the evidence that is cited is clearly consistent with what mere theistic evolution affirms. Relatedly, there is nothing about theistic evolution per se, in our sense, that entails that theistic explanations of fine-tuning or evolutionary convergence don't belong in the sciences.

Indeed, mere theistic evolution is even consistent with the claim that discoveries concerning this or that biological feature—as opposed to more general phenomena like convergence—furnish us with evidence

for God's existence, and with the claim that theistic accounts of these features are permissible in the sciences. So long as these claims do not require the denial of any of the three principles that characterize theistic evolution—for example, so long as these claims are consistent with an endorsement of evolution as the best explanation of biological complexity and diversity—then there is full compatibility.

We want to make one final, related point before we end this section. There are a couple places in SPTC where the contributors advance what seems to us to be a curious objection. The idea in each case seems to be that theistic evolution is unmotivated or otherwise inferior to rival approaches because, taken on its own, it provides no positive evidence for theism and it adds nothing of explanatory value concerning biological phenomena. The clearest example comes from Stephen Meyer's criticism of geneticist and NIH director Francis Collins's view of theistic evolution:

[Collins's] formulation implies that the *appearance* or *illusion* of design in living systems results from the activity of an *apparently* undirected material process (i.e., classical and neo-Darwinism) except that this apparently undirected process is itself being used by a designing intelligence—or at least it *could* be, though no one can tell for sure.

...[Collins's] view of the origin of living systems adds nothing to our scientific understanding of what caused living organisms to arise. As such, it also represents an entirely vacuous explanation. Indeed, it has no empirical or scientific content beyond that offered by strictly materialistic evolutionary theories. It tells us nothing about God's role in the evolutionary process or even whether or not he had a role at all. It, thus, renders the modifier “theistic” in the term “theistic evolution” superfluous. It does not represent a theory of biological origins, but a reaffirmation of some materialistic version of evolutionary theory restated using theological terminology.¹²

The charges are clear. The theistic evolution endorsed by Collins fails to add anything to our scientific understanding of biological phenomena over and above what naturalistic approaches offer. And it fails also to provide any detailed account of God's role in the evolutionary process, or (relatedly) any evidence that God played such a role in the first place. Therefore, Collins's view, and by extension many other theistic-evolutionary approaches, appears to be unmotivated—“an entirely vacuous explanation.”

We think this kind of objection betrays an important misunderstanding of the epistemic value of theistic evolution, and that clarity on this point will benefit future discussion. Crucially, theistic-evolutionary approaches are not best interpreted as sources of positive evidence for theism. Similarly, they are not best viewed as proposals that aim to explain one or more biological features of the world. Rather, *the epistemic value of theistic evolution lies primarily in its power to unify or synthesize two sets of claims*. On the one hand, we have a set of theological claims concerning the God who created the world and providentially governs His creatures; on the other, we have a set of scientific claims that posit evolutionary explanations for the complexity and diversity we see in biology. Theistic evolution provides a coherent synthesis of these two sets of claims, and this is its primary epistemic value.

12. SPTC, 48. See also Moreland, SPTC, 650–1.

With this understanding in place, we can now see that Meyer's objection, and others like it, fail to hit the mark. It is not a weakness of theistic evolution that it doesn't provide evidence of God's existence, or that it doesn't add explanatory value with respect to biological phenomena, because it was never intended to serve these purposes in the first place. Rather, as explained above, its epistemic value lies elsewhere.

An analogy should help. *Molinism* is the name of a sophisticated proposal that aims to unify two sets of commitments: commitment to human free will, on the one hand, and to God's providential control over all the world's events, on the other.¹³ The epistemic value of Molinism, insofar as it is successful, lies in its power to synthesize these two sets of claims into a coherent whole. Many have been puzzled as to how God's providence could extend even to free human action, and Molinism promises to solve this puzzle. That is what it aims to do. It does *not* aim to provide any positive evidence for the existence of God or for the reality of human free will. Nor does it aim to explain human agency in any illuminating sense. To object to Molinism on the grounds that it does neither of these things is to fail to understand its value.

The same is true of theistic evolution. Its value does not depend on its ability to provide evidence for theism or to explain anything in the biological domain, and so objections that highlight inabilities of this sort are misguided. Rather, as explained above, the value of theistic evolution lies in its power to *unify*.

6. Theistic Evolution and Nonphysical Souls

The last philosophical challenge to theistic evolution in SPTC that we will consider here is the objection that it precludes, or renders implausible, the doctrine that humans have nonphysical souls. Given its importance within the Christian tradition, across denominations, it would be significant if this doctrine were problematic within a theistic evolutionary framework. Does theistic evolution cause problems for souls?

In keeping with our approach in a previous section, we want first to point out that mere theistic evolution, as we characterized it earlier, is silent on the question of whether physicalism is true. It does not commit either way on questions in this space, and thus it is consistent with a variety of positions on the nature of human persons—positions that range from mind-body physicalism to those that posit nonphysical substances.

Some might balk at this claim, on the grounds that one cannot consistently accept both the reality of nonphysical souls and the third principle in our characterization of theistic evolution. The thought, in other words, might be that on pain of contradiction one cannot believe in nonphysical souls and, at the same time, affirm that the complexity and diversity of life are best explained by appeal to evolutionary processes. But this is simply false. Note in particular that if there is no demand that souls play some explanatory role that competes with the explanatory roles attributed to factors in our best evolutionary treatments of relevant phenomena, then the posit of souls will yield no conflict with evolution whatsoever. Importantly, the suggestion here is not that nonphysical souls play no explanatory (or causal) role whatsoever, or that whatever role they play in this

respect is redundant given evolutionary explanations. The suggestion, rather, is that the explanatory work attributed to souls, on the one hand, and the explanations that factor in standard evolutionary accounts, on the other, are compatible rather than mutually exclusive.

And crucially, nothing in evolutionary biology rules out the existence of souls of this sort. This is easy to see once we realize just how tall an order it would be to prove, on relevant grounds, that such souls couldn't exist. For in order to do so, one would need to show that our best biological theories make it impossible for humans to have nonphysical souls that play some compatible role within these accounts. But anyone familiar with the relevant literature in the philosophy of mind will know that physicalists haven't been able to prove this conclusion based on all the available evidence—evidence from philosophy, physics, chemistry, biology, neuroscience, and so forth. Since souls of this sort have not been ruled out based on evidence from all domains, we know that they have yet to be ruled out by evidence from only one domain—evolutionary biology—and we should be skeptical that an impossibility proof of the latter sort will be forthcoming.¹⁴ In light of all this, nonphysical souls are clearly a live option for the theistic evolutionist.

It's important not to misunderstand our case here. We have not argued that there is something about evolutionary biology that provides positive evidential *support* for the existence of nonphysical souls, or that the domains noted above provide such support. That would require a different set of arguments and evidence. Rather, we have argued that nothing in evolutionary biology has shown nonphysical souls to be impossible, which in turn means that commitment to theistic evolution is clearly compatible with the doctrine that humans have souls of this sort. Indeed, if (as above) the explanatory roles attributed to souls do not compete significantly with explanations that factor in standard evolutionary accounts, then even positions like the official Catholic view on this issue—that is, the doctrine that each individual soul is created by God via extraordinary providence—is fully compatible with theistic evolution as we have characterized it.¹⁵

How does SPTC deal with this issue? As best we can tell, there are only two passing arguments in the volume for the conclusion that theistic evolution precludes (or renders implausible) nonphysicalistic approaches, and they take the same form. In respective chapters, Moreland and Tapio Puolimatka (citing Moreland) appear to argue as follows: nonphysical souls make sense within a theistic-evolutionary framework only if souls are emergent; but emergentist proposals of this sort are implausible; therefore, theistic evolution cannot account

14. Moreland himself seems to accept something in the neighborhood of this conclusion. See esp. the first full paragraph on SPTC, 655, which includes this passage: "Dualism and physicalism are empirically equivalent views consistent with all and with only the same scientific data. Thus, the authority of empirical data cannot be claimed on either side."

15. Catechism of the Catholic Church, 366.

13. Flint, *Divine Providence*, chap. 2.

for the reality of nonphysical souls.¹⁶ We think a brief clarification and response will be sufficient to address this argument.

Emergentism, in the sense at issue here, can be glossed as the view that a person's mind—the seat of their thoughts, desires, memories, experiences, intentions, emotions, and so forth—is not identical to their brain or any part of it, but is instead a nonphysical object that is causally generated when their brain reaches a certain stage of development.¹⁷ This “emergent” mind, or soul, typically remains causally paired with the person's brain until death. For present purposes, the most salient feature of emergentism is the idea that individual souls are not created by God via an act of extraordinary providence, as on the Catholic position mentioned just above; rather, nonphysical souls emerge naturally at a very early stage within the normal developmental trajectory of human lives. And if members of some other species have souls, then a similar account would apply in their case as well, where differences between species' souls—for example, the cognitive differences between humans and tigers—would be due at least in part to the differences in the developing brains that naturally generate the souls.

Now, we are not convinced by the brief argument given in the chapters by Moreland and Puolimatka that emergentism is a nonstarter.¹⁸ But we will leave the defense of emergentism to the several distinguished Christian philosophers of mind who have argued for some version of the view in recent years.¹⁹ For present purposes,

we will simply restate our prior conclusion: it is false that emergentism is the only way to make sense of nonphysical souls within theistic-evolutionary approaches, for reasons we have already provided above. And this means that the arguments by Moreland and Puolimatka are unsound.

Summing up: nothing about evolutionary biology has shown that non-physical souls are impossible, which in turn means that theistic evolution as we have characterized it is clearly compatible with the doctrine that humans have souls of this sort.

The conclusion here is of a piece with those we drew earlier with respect to divine providence, miracles, and the use of scientific evidence in arguments for the existence of a Creator. The philosophical challenges raised in SPTC are far less cogent than they might first appear, such that commitment to each of these traditional doctrines is still a live option for theistic evolutionists.

7. Theistic Evolution, Adam, and the Fall

Philosophical challenges to theistic evolution are not the only kind of challenges one encounters in SPTC, however. Scientific objections make up a large part of the overall subject matter. And a major portion of the volume is devoted to discussing biblical and theological concerns about theistic evolution. As with the chapters that discuss scientific concerns, the number and range of arguments and considerations posed in the latter portion of the volume cannot be adequately addressed in an article length review. However, there are some central lines of argument in this part of the book that deserve consideration here.

In his introductory chapter, Wayne Grudem claims that theistic evolutionists are committed to twelve problematic theological claims. They are as follows:

1. Adam and Eve were not the first human beings (and perhaps they never even existed).
2. Adam and Eve were born of human parents.
3. God did not act directly or specially to create Adam out of dust from the ground.
4. God did not directly create Eve from a rib taken from Adam's side.
5. Adam and Eve were never sinless human beings.
6. Adam and Eve did not commit the first human sins, for human beings were doing morally evil things long before Adam and Eve.
7. Human death did not begin as a result of Adam's sin, for human beings existed long before Adam and Eve and they were always subject to death.
8. Not all human beings have descended from Adam and Eve, for there were thousands of other human beings on the earth at the time God chose two of them as Adam and Eve.
9. God did not directly act in the natural world to create different “kinds” of fish, birds, and land animals.
10. God did not “rest” from his work of creation or stop any special creative activity after plants, animals, and human beings appeared on the earth.

16. See Moreland, SPTC, 654, and Tapio Puolimatka, SPTC, 749, both of which are quoted in part in a note below. We note that Moreland also appeals to an alleged consensus that if humans have evolutionary origins then they are entirely physical beings (SPTC, 653), as well as to the claim that the acceptance of evolution as a theory of human origins is a motivating factor for many individuals who accept or champion physicalism (SPTC, 653–4). But we have not counted these as parts of an argument, because they are irrelevant to Moreland's conclusion. For he gives us no reason to believe that the alleged consensus is based on good reasons, or that the motivation is due to a proper understanding of the relation between evolution and physicalism.

17. For an introduction to emergentism generally, see Timothy O'Connor, “Emergent Properties,” in *Stanford Encyclopedia of Philosophy*, ed. Edward Zalta, accessed April 8, 2019, <https://plato.stanford.edu/entries/properties-emergent>. For more on substance emergentism, which is our specific focus in the text, see William Hasker, *The Emergent Self* (Ithaca, NY: Cornell University Press, 1999); Dean Zimmerman, “From Property Dualism to Substance Dualism,” *Proceedings of the Aristotelian Society*, supplement, 84 (2010): 119–50, as well as Zimmerman, “Christians Should Affirm Mind-Body Dualism,” in *Contemporary Debates in Philosophy of Religion*, ed. Michael L. Peterson and Raymond J. VanArragon (Hoboken, NJ: WileyBlackwell, 2004), 315–26; and Timothy O'Connor and Jonathan D. Jacobs, “Emergent Individuals,” *Philosophical Quarterly* 53 (2003): 540–55.

18. Here is the closest we get to a clear objection, from each of the two authors: “Something does not come into existence from nothing, and if a purely physical process is applied to wholly physical materials, the result will be a wholly physical thing, even if it is a more complicated arrangement of physical materials! And claiming that consciousness is ‘emergent’ is just a name for the problem, not a solution.” (Moreland, SPTC, 654). “Moreland argues in detail that there is no naturalistic, combinatorial explanation of the appearance of simple properties of consciousness....The naturalistic claim that these properties are ‘emergent’ is not a solution: rather, it just provides a placeholder or a name to the problem.” (Puolimatka, SPTC, 749) The idea in both cases appears to be that emergentism is implausible as a theory of nonphysical features of the world because it fails to explain exactly how complex biological states do (or could) generate these features. In other words, it is not enough to argue that nonphysical features are emergent in this way. One must, in addition, explain just how emergence works in the relevant cases, or else emergentism is a nonstarter.

19. See, e.g., the work on emergence by O'Connor, Hasker, Zimmerman, and O'Connor and Jacobs cited in a previous note.

11. God never created an originally “very good” natural world in the sense of a world that was a safe environment, free from thorns and thistles and similar harmful things.
12. After Adam and Eve sinned, God did not place any curse on the world that changed the working of the natural world and made it more hostile to mankind.

As we have emphasized above, mere theistic evolution is a *minimalist* position that addresses primarily the question of whether or not the complexity and diversity of life is best explained by the mechanisms invoked by contemporary evolutionary biology. Various defenders of theistic evolution augment this position in ways that incorporate additional theological theses and biblical hermeneutical stances. But in many cases these additional theses are not required or entailed by mere theistic evolution. Given this, it’s worth asking: just how many of the claims in Grudem’s list must one endorse as a result of endorsing mere theistic evolution?

As with many of the issues discussed in the review, the answer will depend in part on having a clear definition of the terms. In this case, the theological discussion concerning human origins involves a few key phrases which connote important and relevant concepts. One such phrase is “*Homo sapiens*,” which refers to our biological genus and species. According to the best evidence we have now, our species has been in existence for 200,000 years (although some more recent findings have pushed that back to 300,000 years). Another key phrase is “human being.” Unlike *Homo sapiens*, this second phrase has very different connotations in the works of different thinkers. For some, it is used to refer to all of the creatures that fall in the biological category of *Homo sapiens*. Others use it to refer to creatures that bear “the image of God.” And still others mean “human beings” to refer only to Adam, Eve, and their descendants.

It is easy to see how the meanings of claims 1–12 could vary significantly depending on how one understands this latter phrase. Take claim 7 for example: “Human death did not begin as a result of Adam’s sin, for human beings existed long before Adam and Eve and they were always subject to death.” If by “human beings” one means not *Homo sapiens* but rather Adam, Eve, and their descendants, then the mere theistic evolutionist might well deny this claim. For on that understanding, one might hold that while *Homo sapiens* lived and died before Adam and Eve, Adam and Eve and their offspring (who are only a subset of the complete set of *Homo sapiens*) were not subject to death until Adam’s sin.

In any case, like well-intentioned and theologically orthodox defenders of intelligent design, those who adopt mere theistic evolution have attempted to interpret the biblical texts that appear to bear on questions of human origins in ways that are both (i) faithful to those texts themselves and (ii) consistent with our best scientific explanations. This begins with an attempt to understand what the text itself seems to affirm. But there are widely divergent opinions within the community of evangelical scholars of the Old Testament on this matter. Some argue that the relevant passages intend to provide historical accounts of human origins. Others argue that the text refers not to discrete, historical individuals but to archetypes of humanity. Still others argue that these are literary texts which intend to communicate important theological truth without communicating any historical information.

Those who adopt mere theistic evolution span these different hermeneutical approaches. As a result, even after the meaning of the relevant terminology is clarified, theistic evolutionists will still disagree among themselves with respect to the claims on Grudem’s list. Perhaps especially surprising is the fact that those who adopt mere theistic evolution need not endorse *any* of the twelve claims (again, depending on how the terms are defined).

We cannot, in an article length review, explain how the defender of mere theistic evolution could consistently reject each of the 12. But we can illustrate by focusing on one of these claims—one that readers might be particularly surprised to learn is not required by mere theistic evolution. Consider claim 9: “God did not directly act in the natural world to create different “kinds” of fish, birds, and land animals.” How, one might wonder, can someone deny that claim and still affirm mere theistic evolution?

Here is one option. Recall our earlier discussion of extraordinary providence, or miracles. There we argued that theistic evolutionists can affirm that God acted miraculously in order to bring forth various species, without having to deny any of the principles essential to theistic evolution. Indeed, as noted in sections above, theistic evolution is even compatible with at least some sets of claims that affirm that God acted miraculously *outside of evolutionary processes* to bring about changes in the biological domain. Therefore, if the denial of “direct” divine action in claim 9 is interpreted as a denial of miraculous divine action of any of these sorts, then it is open to theistic evolutionists to reject this claim, affirming instead that God *does* act directly in the natural world to create different species.

Another striking feature of Grudem’s chapter, and of the later chapters on theological and biblical matters, is their failure to explain how intelligent design, the favored alternative of the volume, fares with respect to claims like those above. This is striking but not surprising. For advocates of intelligent design have tended primarily to focus on specific questions about the adequacy or inadequacy of natural processes to explain the complexity and diversity of life. They have not developed a unified approach, or a unified range of approaches, to theological claims like those in Grudem’s list. But intelligent design theorists tend to share a number of commitments that make it an open question just where they stand on many of the claims above. For example, they tend as a rule to accept that the universe is billions of years old, that the earth has been a host to life for billions of years, that organisms have become increasingly complex over time, and that *Homo sapiens* came on the scene at least 200,000 years ago. Such commitments raise questions about whether— and if so, how—they would affirm several of the items on Grudem’s list, such as claims 6, 7, 8, 11, and 12.

We haven’t raised this last issue as a way of suggesting that intelligent design advocates *cannot* affirm all of 1–12. Rather, our point is that we shouldn’t draw any conclusions as to whether theistic evolution or intelligent design is more compatible with Christian doctrine until proponents of the latter view provide clearer indications and explanations of their doctrinal positions.

8. Theistic Evolution and Intelligent Design

At this point, many readers will no doubt have begun to wonder just how *distinctive* theistic evolution is from positions that are typically cast as its rivals. In particular, if mere theistic evolution permits all

the commitments discussed above—providential guidance of evolutionary processes, miracles of all sorts, the use of scientific (including biological) evidence in arguments for the existence of God, alternatives to methodological naturalism, nonphysical souls, and the host of traditional doctrinal positions suggested by Grudem’s list—then how exactly is it different from a position like Intelligent Design?

We do not think the best way to answer this question is to distinguish theistic evolution in all of its incarnations from each and every form of Intelligent Design. Indeed, it may not even be possible to do so, even in principle. Rather, we believe that the most helpful response to the question above will be to provide a little more clarity about the conditions under which a position counts or fails to count as a version of theistic evolution, and to compare these to the conditions under which a position counts or fails to count as a version of Intelligent Design. Readers should be warned in advance that what we propose does not generate a tidy classification of every possible position as being either clearly inside or clearly outside the category of theistic evolution. But this seems to us to be the right result, as we think it plausible that an accurate classification will allow for some vague cases.

Let’s start with two straightforward cases, and then move on to some more complicated examples.

We can first sketch a clear case of theistic evolution. This will, of course, be a position that satisfies all three of the conditions for mere theistic evolution. And to make the example concrete, let’s say that the specific position in this case is one that (i) endorses all four of the traditional doctrinal commitments discussed in the philosophically-oriented sections above (with non-physical souls created miraculously by God rather than emerging via natural processes); (ii) is committed to some of the traditional positions suggested by Grudem’s list and agnostic on others; and (iii) affirms that the vast majority of the complexity and diversity of life can in principle be explained in terms of evolutionary processes (guided by God’s ordinary and extraordinary providence). In light of the previous sections, there should be no question that this position counts as a version of theistic evolution.

Turn now to an example of a position that is clearly not a version of theistic evolution, but clearly is a version of Intelligent Design. Let’s say that the specific position in this case is one that affirms the first and second principles that characterize mere theistic evolution—it is theistic and it takes the earth to be very old—but it denies the third principle, claiming instead that the complexity and diversity of life is not best explained by appeal to evolutionary processes. In particular, and with a nod back to the section on miracles, we can imagine this position as one according to which evolutionary processes are able to explain very little of the complexity and diversity of life. And let’s say, furthermore, that the position claims that the bulk of the complexity and diversity we see in biology *must* have been the result of God’s exercising His miraculous activity outside of evolutionary processes. Finally, we can round out the account by assuming that the position provides a number of detailed arguments for the latter two conclusions, that is, the explanatory failures of evolution and the plausibility of theistic inferences from biological evidence. Such a position seems clearly to be one that should not be placed in the theistic evolution category and, just as clearly, one that counts as an instance of Intelligent Design.

So far, so good. But not all cases are like these first two. Take a case that is, in relevant respects, roughly midway between these first two. In particular, let’s imagine a position that affirms that evolutionary processes explain most of the complexity and diversity of life, but claims nevertheless that divine activity working independently of evolutionary processes is crucial to explaining a significant, although minority, share of this phenomena as well. Would such a position count as versions of theistic evolution? We submit that in this case there is simply no fact of the matter about how the view should be classified. It is a vague case. Even so, the position in question seems clearly to be one that counts as a version of Intelligent Design. So here we have an example that counts as a version of Intelligent Design, and yet there is no fact of the matter about whether it is a version of theistic evolution.

There may be a great many positions that resist classification in this way, in virtue of the fact that our criteria for mere theistic evolution are not sharp enough to exclude vague cases. But this is no cause for concern, and for two reasons. First, bracketing our three principles and approaching the matter intuitively, we think it plausible that the right judgment in many cases like those just above is that it is in fact a vague matter whether the positions count as versions of theistic evolution. And second, we need not worry that tolerance of vagueness here will prevent us from being able to speak and write clearly about these matters. For just as the vagueness of predicates like “tall” and “bald” do not prevent us from using these terms with confidence in a great many cases—we know that Abraham Lincoln was tall and James Madison was not, that Mahatma Gandhi was bald and Albert Einstein was not—so also we can confidently identify many positions as within the fold of theistic evolution and many others as outside that fold. And this is all that is needed for present purposes.

Thus far, we have discussed examples of three kinds of positions: those that count as instances of theistic evolution, those that count as instances of Intelligent Design and fail to count as instances of theistic evolution, and those that count as instances of Intelligent Design but do not clearly count as inside or outside the category of theistic evolution. We can round out our taxonomy by discussing two more forms that a position might take with respect to the categories we’re considering.

The first of these needs only a brief explanation. Certain positions will fail to qualify as versions of either theistic evolution or Intelligent Design. This would be true, for example, of fideistic young-earth creationism. Such a position would not count as a theistic-evolutionary approach in light of its affirmation of a young earth and its rejection of evolution as the best explanation of biological complexity and diversity. And because it eschews rational and empirical evidence as irrelevant to theological conclusions—this is just what is meant here by *fideism*—it would not qualify as Intelligent Design. As very few readers who have made it this far in the paper are likely to be tempted by such positions, we will move on without further discussion.

The final kind of position is one that would take the exact opposite form of the one just above, namely, a position that counts as both a version of theistic evolution and a version of Intelligent Design. It might seem wrongheaded at first blush to float this as a possibility, given that theistic evolution and Intelligent Design tend to be cast as rivals in much of the relevant literature. And maybe it is ultimately

wrongheaded to do so. But it's worth exploring the possibility that a position could be placed in both categories.

One argument for this possibility goes as follows. Consider some of the versions of theistic evolution that were sketched in earlier sections, such as theistic-evolutionary approaches that reject methodological naturalism and see evidence for a Creator in the sciences. These positions involve inferences from scientific evidence to the existence of God, an inferential strategy that is typical of Intelligent Design. So why should we refrain from counting them as versions of Intelligent Design? We might wonder, furthermore, if the same reasoning applies to positions of the sort described in even earlier sections, on which God guides evolutionary history via ordinary or extraordinary providence.²⁰ These involve, at the very least, commitment to a God who is carrying out something akin to design in His guidance of evolutionary history. So why not also count these as versions of both theistic evolution and Intelligent Design?

In response, we do not believe that the matter is as straightforward as this argument suggests. Rather, whether a position fits both categories in this way depends importantly on certain other facts about the case. We take this up briefly below.

In thinking through this issue, it is important to remember that words and phrases can take on connotations that go beyond their simpler and more literal meanings. For example, while the vast majority of Americans believe in democracy, far fewer would describe themselves as *Democrats*, given that the latter term connotes much more than an endorsement of democratic government. Similarly, the number of people in the U.S. who are happy to live in a republic outstrip the number who would self-identify as *Republicans*. Closer to home, while we are sure that most contributors to the SPTC volume believe that God created the universe, we suspect that very few of them would label themselves *creationists*. And at least part of the reason for this is that the term "creationist" connotes much more than just a commitment to a Creator.

The same sort of principle, we believe, applies to *Intelligent Design*. Plausibly, one can believe in a maximally *intelligent* Creator God who *designed* the universe, and yet fail in some contexts to count as someone who is committed to Intelligent Design. This is because in certain contexts the latter term now connotes much more than belief in a divine intelligent designer—more, even, than belief in a divine designer on scientific grounds. In particular, in the contexts we're considering, the term connotes (among other things) a rejection of the third principle in our characterization of mere theistic evolution. In such contexts, an endorsement of intelligent design would connote a denial that the complexity and diversity of life is best explained by appeal to evolutionary processes of the sort included in (but not necessarily limited to) the modern evolutionary synthesis.²¹ In light of this, theistic-evolutionary positions of the sort mentioned just above do not ipso facto count as forms of Intelligent Design.

Nevertheless, there are independent grounds for concluding that a position can simultaneously count as a version of both theistic

evolution and Intelligent Design. All that would be required is that the position satisfy some plausible characterization for Intelligent Design approaches while simultaneously affirming all three of the conditions on mere theistic evolution. In particular, the position would need to have the kind of content that plausibly qualifies it as an Intelligent Design approach, while simultaneously affirming that evolutionary processes best explain (even if they do not exhaustively or exclusively explain) the diversity and complexity of life. This certainly seems to us to be a genuine possibility; at any rate, we are optimistic that there are plausible characterizations of Intelligent Design that would be consistent with this kind of confidence in the explanatory power of evolutionary biology. We see no reason, then, to dismiss the possibility of positions that are instances of both theistic evolution and Intelligent Design, despite the fact that these are typically presented as rival approaches.

9. Cautions Concerning Scientific Claims

As with the theological sections of SPTC, no article-length book review essay can address the numerous scientific questions, challenges, and data that are discussed in a volume of this length. Without a doubt evolutionary theory, like every large-scale theory in the sciences, has anomalies, puzzles, and evidential gaps that need further scrutiny. And the scientific community, including advocates of Intelligent Design, continues to scrutinize them. This is good and healthy—a normal aspect of the intellectual scrutiny exemplified in the sciences.

But scientists, like all other human beings, are flawed. They sometimes allow biases to cloud their perception and judgment, a pitfall that is especially common when the topics of interest intersect with their political, personal, or theological identities. As a result, when it comes to the scientific discussion of theistic evolution and intelligent design, advocates on both sides need to embrace a healthy dose of self-scrutiny to ensure that these biases do not improperly influence their interpretations of data and arguments or their attempts to gain adherents.

While some of the authors of the present volume adopt this posture of caution and intellectual humility, not all of them do. As a result, readers without expertise in the relevant scientific fields are left in a difficult position. How can such readers have confidence that the information presented is accurate? How can they be sure that they are getting the whole story? This is an especially difficult issue to navigate in light of the fact that all of us—scientists, philosophers, theologians, and laypersons alike—are naturally disposed to favor evidence that supports the positions we already hold. We are less likely to scrutinize evidence that seems to confirm our views than we are to scrutinize evidence that seems to disconfirm them, a phenomenon known among cognitive psychologists as confirmation bias. For many reasons, then, the faithful Christian will want to tread carefully here, seeking as much as possible to make a clear and unbiased assessment of all the evidential considerations.

As noted above, we cannot hope to address all the key disagreements between theistic evolutionists and intelligent design theorists in a review like this. And we certainly cannot hope to do so in a way that will help nonspecialists, because they aren't equipped to adjudicate between conflicting authorities. Even so, we think it is important to show that there are some important flaws in the scientific

20. See SPTC, 43, 46.

21. See, e.g., the current *Encyclopaedia Britannica* entry on intelligent design, <https://www.britannica.com/topic/intelligent-design>. Note that we do not assume this entry to be an especially informed or sophisticated characterization of intelligent design. However, we do take it to be a reliable indicator of the connotations "intelligent design" carries in certain contexts.

argumentation in SPTC. To this end, in what follows we will identify and explain two kinds of mistakes in the volume that should be clear even to nonspecialists.

The first kind of mistake is one in which an author overestimates the implications of certain empirical findings for the viability of evolution or theistic evolution. A clear example of this mistake involves an argument by one of the authors that aims to show that the evolutionary claim concerning common ancestry, or the common descent of all living organisms, is unsustainable in light of a recent discovery. And this, in turn, is taken by the author to warrant the conclusion that evolutionary theory itself is in trouble.

Clearly it would be a momentous development if this anti-evolutionary argument were sound. But is it? In order to answer that question, we need to look carefully at the discovery that the author cites in his argument, and then determine if this discovery has the implications that it is alleged to have.

Prior to the 1970s, biologists largely understood the mechanisms of evolution in terms of variations among genes that are passed from parent to offspring, where those genes then allow offspring to survive and reproduce more or less successfully. However, in the last quarter of the twentieth century, biologists began to see that this picture was not quite right. When life first emerged on the planet, all living organisms were individual cells with contents that were relatively unstructured. They lacked nuclei and many of the other parts that we see when we look at the cells of multicellular organisms that emerged later in evolutionary history. What scientists discovered about these earlier, minimally structured single-celled organisms, is that they do not merely pass along genes from parent to offspring. They also pass genes *among themselves*. These cells could simply bump up against one another and exchange genetic material.

The discovery of this mode of exchange, known as “horizontal gene transfer,” scrambled our former way of thinking about the ancestry of living things. For imagine the following plausible scenario. One cell bumps up against ten other cells, each of which shares some genetic material with the first cell. The first cell then spawns a new “daughter cell,” and transmits to it some of the genetic material it received from each of the ten cells that previously bumped up against it. Such scenarios required us to revise our earlier understanding of what it is for a cell to count as a *parent* of a daughter cell. After all, if we think of parental ancestry in terms of the source of genetic material, then the parents are a whole community of other cells, and not just the cell from which the daughter cell was spawned.

Because of this discovery, we now know that when we look back to the very earliest phases of the evolution of life on earth, our lineage appears less like a tree (as Darwin originally conceived it). As we move further and further back in time from the present, we ultimately reach an era in which single-celled organisms share genes back and forth, in such a way that they constitute an interconnected community of organisms that is not easily described in terms of parents and offspring. In light of this, the idea that we can trace our biological lineage back through a series of parents, grandparents, great-grandparents, and so forth, all the way to the first living organisms, becomes unsustainable or at least problematic. And as a result, the thesis of common descent becomes hard to assess. Perhaps there was not some single organism, but rather a number of protocells (sometimes called “progenotes”) that traded genetic

material back and forth, and collectively (or “communally”) these entities were the font and source of all future life.

It is fair to conclude from this, as Paul A. Nelson does in his chapter in SPTC, that “the theory of common ancestry is in trouble; possibly very serious trouble, from which it may never escape.”²² But does this mean that evolutionary theory or theistic evolution is in trouble, as is also implied in Nelson’s chapter?²³ Not at all. Evolutionary biologists were in fact quite keen to adopt this insight, and to revise their understanding of the natural processes that governed the development of early life on our planet. The key discovery did not undermine the evolutionary account of life but rather provided an evidence-driven supplement to it. And note that once more sophisticated forms of life emerged (multicellular eukaryotes), this sort of sharing diminished and ancestral relations between parent and offspring became more regular— that is, more Darwinian and tree-like.²⁴

The lesson here is that in some cases, the arguments in SPTC that attempt to provide scientific evidence against evolution or theistic evolution miss their mark. Doubtless it is true that some of these scientific findings show that earlier accounts of evolution were incorrect. But rather than undermining the theory, they provide useful complements to it.

In addition to cases like the one above, in which an author overestimates the significance of one or more scientific findings for the viability of evolution or theistic evolution, there are places in the volume where the scientific evidence is not represented accurately. We turn now to this second kind of mistake.

Some of the most powerful evidence in favor of evolution has come from the decoding of the genome. Genomic data provides a means to compare the relationships between DNA sequences among various organisms, in ways that allow us to more clearly and accurately understand their ancestral relations. And these comparisons have shown us that ancestral relations match what was predicted by evolutionary theory prior to the genomic decoding—a striking confirmation of the theory.

One of the most fascinating findings of this sort concerns the relation between the genetic sequences in humans and other primates. We have known for some time that all primates have twenty-four pairs of chromosomes except human beings, who have only twenty-three. For years this was a source of puzzlement. If we share a relatively recent ancestor with these other primates, we should expect to have the same number of chromosomes. So what happened to the twenty-fourth pair? As scientists developed the tools to look more closely at our specific genetic make-up, they discovered the answer. And what they found was truly remarkable.

22. SPTC, 404.

23. See, e.g., SPTC, 406 and 421.

24. However, it is worth noting that even this last claim is under some scrutiny today. Scientists are now examining whether or not, and to what extent, horizontal gene transfer continues through to later stages of evolution. We know, for example, that 7 percent of the human genome arose from processes that incorporated viral genetic material directly into our genome. And there is reason to believe that some bacterial inhabitants of our body—our “microbiome”— might also have engaged in horizontal gene transfer with us. Once again, the picture is more complicated than we thought.

In order to understand this finding, it is important to know something about the structure of individual chromosomes. Each chromosome has a region in the center with a particular molecular makeup, a region known as a “centromere.” And each chromosome also has two terminal ends, called “telomeres,” that also have a specific molecular makeup. As a crude analogy, we can think of a rope with frayed ends and a knot in its middle: the chromosome’s two telomeres correspond to the frays at either end of the rope, while its centromere corresponds to the rope’s knotted middle.

So what we expect to see when we look at an individual chromosome is one centromere and two telomeres. However, when scientists decoded the human genome, they found that we have a kind of chromosome—referred to as “chromosome 2”—that is highly atypical in this respect. For one thing, this chromosome has *two centromeres*, not one. And in addition to having a telomere at each of its two ends, chromosome 2 has a region in the middle that looks like *two more telomeres that have been smashed together*. To return to our analogy, this particular rope looks very different from all the others; it looks, in fact, like two ropes—each with a knot in its middle and frayed ends—that have been glued together, end to end. This analogy is especially fitting given that the regions on either side of the smashed middle section of chromosome 2 look strikingly like *two distinct chromosomes that we see in our primate relatives*.

What are we to make of all this? The fairly straightforward conclusion is that when our line broke off from these relatives, two distinct chromosomes merged to become what is now a single, longer chromosome. The ends of two of our ancestors’ chromosomes fused together, in a way that yields the very structure we now find in human chromosome 2.

Critics of theistic evolution are well aware of this finding, and most agree that it is at least one strong piece of evidence in favor of the evolutionary position. But in their chapter in SPTC, Ann K. Gauger, Ola Hössjer, and Colin R. Reeves buck this trend, arguing instead that the finding shows nothing of the sort. Even more surprising, however, is the fact they cite the article that first revealed this finding in a way that suggests that the authors of the original study *agree* with their conclusion. In particular, Gauger, Hössjer, and Reeves provide a footnote that refers to that original article immediately after the following set of claims in their chapter:

When chimpanzee and human genomes are compared, our chromosome 2 appears to be a fusion of two chimpanzee chromosomes. The argument is made that this demonstrates our common ancestry with chimpanzees. However, the juncture where the supposed fusion took place is not made of typical telomeric sequences....Instead, degenerate sequences are found, sequences found elsewhere in the genome but not associated with breaks or fusions. (SPTC, 500)

However, contrary to what is implied in this passage, it is plain from the original article that the authors of that study are *affirming* the evolutionary conclusion that human chromosome 2 is a fusion of the

chromosomes of primate ancestors. Here is a relevant excerpt from that 2002 article, with italics added:

When observed at the sequence level, the ancestral chromosomes *appear to have undergone a straightforward fusion*. The sequence of RP11–395L14, like the cosmid partially sequenced by Ijdo et al. (1991), shows two head-to-head arrays of degenerate telomere repeats at the 2q fusion site, with no other sequence between the arrays. *This observation indicated that the two ancestral chromosomes had joined end-to-end* within the terminal telomeric repeats, with subsequent inactivation of one of the two centromeres. Kasai et al. (2000) showed using FISH that the chromosomes underwent no gross alteration in structure: *The relative order of 38 cosmids derived from 2q12–2q14 was the same on human chromosome 2 and the short arms of chimpanzee chromosomes 12 and 13.*²⁵

In this case, Gauger, Hössjer, and Reeves have either misunderstood or misused the actual scientific finding in their attempt to undermine confidence in the evidence favoring theistic evolution.

Given the acrimony and the theological tensions that are common in discussions about origins, it is important that Christian scholars who write in these areas report the findings clearly and accurately. Otherwise it will be impossible for the intelligent lay Christian to draw any reasonable conclusions about how to think through these difficult questions. In this case, the authors and editors of SPTC have fallen short of the duty of care when it comes to reporting on the relevant science.

10. Concluding Thoughts

In the preceding sections, we have labored primarily to show that there are versions of theistic evolution that hew largely to consensus views in biology and yet remain viable options for Christians with traditional commitments on certain key doctrines. We have not tried to show that theistic evolution is consistent with *all* traditional commitments. That task would take much more than a single paper, to be sure. But we hope the discussion above will motivate both advocates and critics of theistic evolution to examine this position with as much rigor and charity as possible, in order to determine where there is genuine tension with tradition and where the tension is merely apparent. We believe that in the long run the church is best served by a slow and careful approach to the issues in this space, an approach that avoids pronouncements of incompatibility until all relevant alternatives have been thoroughly investigated. Such an approach will require philosophers, biblical scholars, theologians, and scientists from various fields, working collaboratively to clarify just what is at stake in committing to theistic evolution.

25. Yuxin Fan, Elena Linardopoulou, Cynthia Friedman, Eleanor Williams, and Barbara J. Trask, “Genomic Structure and Evolution of the Ancestral Chromosome Fusion Site in 2q13–2q14.1 and Paralogous Regions on Other Human Chromosomes,” *Genomic Research* 12 (2002): 1651–62. (emphasis added) <https://doi.org/10.1101/gr.337602>

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