

EVOLUTION AND CREATION

What Both Sides Miss



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By Wallace G. Smith

Many claim that life has evolved over billions of years through blind forces of nature. Others declare that not only the earth, but also the whole universe was created by God only 6,000 years ago. Both ideas can't be right. But both can certainly be wrong.

*What are the facts that both sides fail to see?
Can the Bible be reconciled with science?
And what is the true history of the earth—and of life?*

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Chapter I

The Highest of Stakes

We live on a remarkable planet. In every corner of our world, from the harshest environments to the most inviting, life abounds, displaying variety and diversity that seems virtually endless. As far as we can tell, Earth is unique—an island of life within an otherwise lifeless universe.

But where did this life come from?

The common answers to that question are as different from each other as night and day, yet both are held as certainties by their advocates.

For some, the answer is *evolution over billions of years*: the idea that all life on earth has evolved—constantly changing and diversifying—over three to four billion years from a single-celled ancestor through mindless, unguided, natural processes.

For others, the answer is *creation by God about 6,000 years ago*: the idea that the God of the Bible divinely created the universe, the earth, and everything on it only six millennia ago.

One would be hard pressed to find two answers that differed more dramatically. And one would be equally hard pressed to find two answers so passionately defended by their advocates as absolute certainties.

Both of these propositions cannot be right, though both of them can be wrong.

Does the physical evidence around us compel belief in evolution? Does a literal understanding of the Bible compel belief in a young earth? Or are there facts that both sides miss in this debate?

The Highest of Stakes

Consider the consequences if either proposition is true. In the case of evolution, the implications of the theory are grave and have been made plain by some of the theory's most respected advocates.

Famous evolutionist George Gaylord Simpson concluded, "Man is the result of a purposeless and natural process that did not have him in mind. He was not planned."¹ More recently, Richard Dawkins, arguably the most well-known of evolution's promoters, has bluntly attested, "You are for nothing. You are here to propagate your selfish genes. There is no higher purpose in life."²

Such thinking—the natural consequence if evolution is true—is summarized plainly by the late William Provine, popular evolutionist and professor of biology at Cornell University:

Let me summarize my views on what modern evolutionary biology tells us loud and clear—and these are basically Darwin's views. There are no gods, no purposes, and no goal-directed forces of any kind. There is no life after death. When I die, I am absolutely certain that I am going to be dead. That's the end of me. There is no ultimate foundation for ethics, no ultimate meaning in life, and no free will for humans, either.³

Such ideas are catching on. A 2016 poll of more than 3,000 Americans reported that 43 percent of respondents believed that "Evolution shows that no living thing is more important than any other," and 45 percent agreed that "Evolution shows that human beings are not fundamentally different from other animals."⁴

Yet according to many evolutionists, 45 percent is not nearly enough, and the "gospel" of man's supposed equality with animals must be spread to all the earth.

This idea—the natural consequence of evolutionary thinking—moved David P. Barash, Professor Emeritus of Psychology at the University of Washington, to argue that it is virtually a moral imperative to produce human-chimpanzee hybrids, perhaps through modern gene-editing techniques. In his reasoning, it is "a terrific idea," as it would finally destroy "the most hurtful theologically-driven myth of all times: that human beings are discontinuous from the rest of the natural world"—that is, that humanity is any different from the

animal world. As Dr. Barash admits, any hybrid individuals that might be produced may consider their grotesque nature and find themselves in a “living hell,” but he notes that “it is at least arguable that the ultimate benefit of teaching human beings their true nature would be worth the sacrifice paid by a few unfortunates.”⁵

Barash is joined in his thinking by none other than Dawkins, who considers the belief that humans occupy a special position compared to animals a moral evil he dubs “speciesism,” declaring it the equivalent of apartheid. He, too, has mused that the creation of a human-chimpanzee hybrid would help humanity to cast aside what he sees as silly notions of human specialness.⁶

Such thoughts may seem extreme, and I fully admit that I have selected this example for just how extreme it is. Yet these men are highly respected and are simply following the logic of evolution to its natural conclusions.

Is it so irrational to believe that when society sees “no ultimate foundation for ethics, no ultimate meaning in life, and no free will for humans,” civilization will turn brutal—in ways subtle and not-so-subtle? Is it so irrational to suspect that in seeing ourselves as mere animals, we begin to treat each other as mere animals?

There are those who quickly answer that such concerns are irrational, but the current state of global political discourse and the growing chaos in public mores should give them pause.

The Bible's Credibility

The implications of “young earth” theories are also extremely serious. Advocates of those theories insist that the credibility of Scripture and the existence of the God of the Bible is at stake. Either planet Earth is no older than 6,000 years (or, according to some, around 10,000 years), or—as young-earth creationists claim—the Bible is false, and therefore cannot be God’s word. That is a serious claim!

The faith of many is at stake. Many long to believe that the Bible is true but find such claims hard to swallow. Many scientists claim the earth is 4.5 billion years old, almost a million times longer than the mere six millennia of young-earth advocates. If the book at the center of their faith is founded on fiction and fantasy—untrustworthy in even its very first chapter—then how can the rest of its claims be trusted?

Does a literal understanding of the Bible truly require a young earth? If it does, then far more than the theory of evolution must be rejected. If the Bible *does* require such a view of the physical universe around us, as young-earth creationists say it does, then either a vast amount of what we understand to be scientific evidence is fundamentally wrong, or the Bible is fundamentally wrong.

If the creation itself can be called as a testimony against the Creator, no one can deny that the stakes are high. Whether or not the Bible teaches a young earth, an old earth, or something else entirely is a question that cannot be ignored.

Examining the Central Claims

In the chapters ahead, we want to examine the central claims of both of these theories: evolution and young-earth creationism. We will consider whether scientific evidence supports the claim that evolution is a fact, and we'll examine what the Bible truly says about the creation of the world and whether it demands a young earth.

What are those “central claims”? For the sake of clarity, let us define them here at the beginning of our discussion, starting with evolution.

It is uncontroversial that animals can change within limits—often called “microevolution.”⁷ Bacteria grow resistant to antibiotics. Dogs can be bred to “create” new kinds of dogs. The claim is that, given enough time, bacteria-like creatures can do more than become different bacteria—they can, essentially, become dogs. Or blue whales. Or palm trees. Or bald eagles. Or human beings. In fact, all of the above.

When we speak of “evolution” in this discussion, we are speaking of the theory that natural processes—unguided, purposeless, and completely materialistic—have produced all life on earth in all its variety and complexity, over billions of years, from a simple, single-celled organism like a bacterium.

This idea that all life has progressed from a single, simple ancestor through “universal common descent” is powered primarily by the theory first put forth by Charles Darwin in his 1859 watershed book, *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*—or, more simply, *On the Origin of Species*.

In that book, he theorized that the natural processes accomplishing such a feat were random variation and natural selection. *Random variation* refers to the changes that randomly occur within the offspring of an organism—say, a beak that is a little longer or fur that is a little thicker—and *natural selection* refers to the way such changes are “rewarded” or “punished” in the struggle to survive. Creatures with random changes that better enable them to survive and reproduce—and, thus, pass on their genes to their offspring—are said to be “selected” by nature to survive. In this way, Charles Darwin envisioned natural selection acting on the random, unplanned variations that occur in all organisms, and thus shaping all life over time as successful changes accumulate and transform populations into a growing variety of different creatures.

His ideas were revolutionary. Before Darwin, the concept of evolution had no realistic mechanism that could explain how mindless natural forces could even come close to producing the variety and complexity of life. After Darwin, the world looked different. As Richard Dawkins once said, “Darwin made it possible to be an intellectually fulfilled atheist.”⁸

The ideas of Charles Darwin breathed life into the theory of evolution, and those ideas continue to be the central pillar that supports the entire edifice.

So, we take this as the central claim of evolution: *All life on earth, in all of its variety and complexity, has gradually evolved over billions of years from a common, simple, single-celled ancestor; primarily through the process of natural selection acting on minute, random, inheritable variations.*⁹

Concerning this claim, many evolutionists echo the belief of biologist Jerry Coyne: “Evolution is a fact. And far from casting doubt on Darwinism, the evidence gathered by scientists over the past century and a half supports it completely, showing that evolution happened, and that it happened largely as Darwin proposed, through the workings of natural selection.”¹⁰ We will examine whether or not such a conclusion is justified.

On the *other* side of the spectrum, we find young-earth creationism. The central claim of this idea requires far less explanation: *The Bible teaches that the universe—and thus the earth and all life upon it—was created around 6,000 years ago¹¹ and, before that, there is no*

“history” of life or the world to speak of. This position is sometimes depicted as *the* alternative to evolution, and the debate concerning the origins of life often characterized as being between belief in evolution on an old earth and belief in creation on a young one.

We will address whether the Bible actually teaches young-earth creationism, and we will examine whether these are truly the only two options available.

What Is the Truth?

These questions aren’t simply for the religious to ponder. Rather they are vital questions for anyone interested in the truth. For example, respected atheist Thomas Nagel is no believer in God or the Bible, nor does he accept that the world around us is intelligently created. Yet he also doubts the materialist nature of evolutionary theory:

It is *prima facie* highly implausible that life as we know it is the result of a sequence of physical accidents together with the mechanism of natural selection.... My skepticism is not based on religious belief, or on a belief in any definite alternative. It is just a belief that the available scientific evidence, in spite of the consensus of scientific opinion, does not in this matter rationally require us to subordinate the incredulity of common sense.¹²

Ultimately, these questions about evolution and creation are questions about *truth*. The claims of evolutionists and young-earth creationists cannot both be true—but they can both be false.

In the pages that follow, we will examine these claims. We will begin with evolution and examine whether or not the physical evidence really does establish that the theory is a “fact.” Then, we will turn to the Bible to see whether it really does teach that all of creation came into existence only 6,000 years ago, or whether it teaches something else entirely. Finally, we will conclude with recommendations for all concerning what steps we can take next.

Chapter 2

What the Fossils Tell Us

For many, the word *evolution* conjures mental images of *fossils*—those remnants of ancient life-forms found as petrified bones or impressions made in rock. What child, staring at a museum’s reassembled skeleton of a Tyrannosaurus Rex, hasn’t been filled with wonder about the sort of creatures that once roamed the earth?

Fossils tell us a great deal. They tell us that the world “then” was very different in many ways from the world “now.” The record of the rocks shows us a vast menagerie of beasts—both small and very, very, *very* large—most of which no longer exist today. And, as in the case of the aforementioned Tyrannosaur, most of us are delighted that they are no longer around!

A Record of Change—and of Evolution?

Even before Darwin’s time, the fossil record inspired many to wonder about the world in which such creatures lived. Some take fossils as unmistakably clear evidence that animals evolve over time and that all living creatures share common ancestors.

That the fossils indicate commonality among living things is indisputable. While some similarities between past and present life-forms are obvious—ribcages, skulls, body types, and the like—other similarities are quite subtle, and require a closer look.

Consider, as one specific example, the pentadactyl (five-fingered) nature of many animal limbs. The hand and foot of a human, the foot

of a crocodile, and the wing of a bat possess elements in common, being based on five finger-like bones. Others seem comparable, but a little more removed. The bone structure of a whale's flipper, for instance, is reminiscent of the structure of the human hand, though one of the whale's "fingers" is a mere nub.

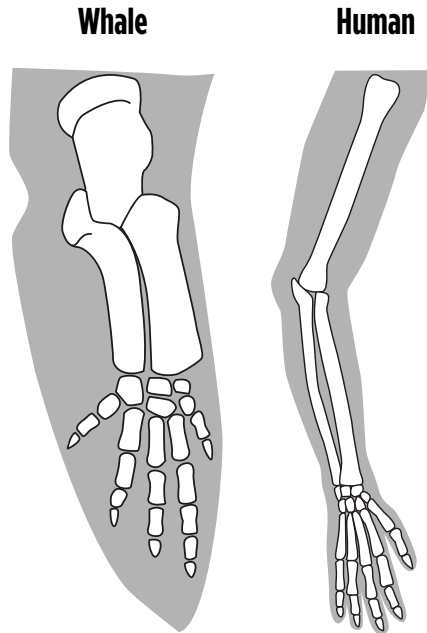
Why would the bone structure of a whale's flipper resemble that of a human hand in any way at all?

For evolutionists, the answer is obvious: Common ancestry. That humans, bats, and whales share such a feature is taken as evidence that they each evolved from a common ancestor possessing that same feature. Over millions of years, different mutations, favored by natural selection, moved animals to change in ways that produced very different results: the human hand, the bat's wing, and the whale's flipper.

But for those who believe that life was actively designed, there is another answer, just as obvious: not a common ancestor, but a common Creator.

Are evolutionists right? Is the fossil record the story, written in stone, of life's gradual, slow climb from a single common ancestor to the immense variety we see today? Does the fossil record demand agreement with the theory of evolution?

Quite the contrary. On the whole, the fossil record witnesses *against* the theory of gradual, incremental evolution.



Whales and humans share a pentadactyl (five-fingered) nature in their limbs. Some take this to be evidence of a common evolutionary ancestor. Others take this to be evidence of a common designer.

Gradual Climb or Dramatic Leaps?

Upon reviewing the status of the known fossil record in his day, Charles Darwin recognized the challenge it presented to his theory. As he wrote in *Origin of Species*,

But, as by this theory innumerable transitional forms must have existed, why do we not find them embedded in countless numbers in the crust of the earth?

...Geology assuredly does not reveal any such finely graduated organic chain; and this, perhaps, is the most obvious and gravest objection which can be urged against my theory. The explanation lies, as I believe, in the extreme imperfection of the geological record.¹

If life, having begun billions of years ago from something bacteria-like, changed slowly and gradually—through continuous, cumulative, miniscule mutations—to become the wondrous variety of organisms we now see, then Darwin understood that the fossil record should show abundant evidence of that. The record should be dominated by *transitional forms*.

In Darwin's day, it was clear that the fossil record did *not* contain the abundance of transitional fossils that his theory predicted. His hope was that, as more and more fossils were revealed in the earth beneath us, the truth of a “finely graduated organic chain”—a smooth spectrum of animal forms showing small, transitional differences between each other—would also be revealed as the “norm.”

This has not been the case.

In an often-cited passage that is usually in want of some context, the late paleontologist Stephen Jay Gould expressed concern about his colleagues' attitudes toward the fossil record and their general unwillingness to admit what was obvious in the rocks (emphasis added):

The extreme rarity of transitional forms in the fossil record persists as the trade secret of paleontology. The evolutionary trees that adorn our textbooks have data only at the tips and nodes of their branches; the rest is inference, however reasonable, **not the evidence of fossils...**

Darwin's argument [that the fossil record is incomplete] still persists as the favored escape of most paleontologists from the embarrassment of a record that seems to show so little of evolution directly. In exposing its cultural and methodological roots, I wish in no way to impugn the potential validity of gradualism (for all general views have similar roots). I wish only to point out that it was never "seen" in the rocks.²

It should be stated explicitly that Gould was very much a believer in evolution, including the driving role of natural selection, and he had his own theory for why abundant and dramatic gaps exist in the fossil record in contradiction to the Darwinian doctrine of gradualism. He also took a great deal of heat for the "ammunition" his honest observations gave creationists and other assailers of Darwin—a fact that left him a bit "bitter" by his own admission.³

In the years that have passed since the late Dr. Gould's honest evaluation of the fossil record, the situation has not improved. As anthropologist Jeffrey Schwartz noted,

We are still in the dark about the origin of most major groups of organisms. They appear in the fossil record as Athena did from the head of Zeus—full-blown and raring to go, in contradiction to Darwin's depiction of evolution as resulting from the gradual accumulation of countless infinitesimally minute variations.⁴

Like Stephen Jay Gould, Dr. Schwartz has offered an explanation of the gaps in the record (for Gould, "punctuated equilibrium"; for Schwartz, *Hox* gene mutations). It seems that many evolutionists find themselves publicly acknowledging evidence against Darwinian theory only when they have an alternative idea to champion in its place—a phenomenon that occurs so consistently, popular evolution and Intelligent Design writer Casey Luskin has given it a name: "retroactive confessions of ignorance." But while no theory has earned a fraction of Darwinian evolution's reputation for rational plausibility, the fossil evidence continues to provide far more disappointment than encouragement for Darwin's theory. And if the facts don't match the theory, how truly plausible is it?

Biochemist Michael Denton summarizes the impact of the fossil record's lack of abundant transitional forms:

The overall picture of life on Earth today is so discontinuous, the gaps between the different types so obvious, that, as Steven Stanley reminds us in his recent book *Macroevolution*, if our knowledge of biology was restricted to those species presently existing on earth, “we might wonder whether the doctrine of evolution would qualify as anything more than an outrageous hypothesis” ... Without intermediates or transitional forms to bridge the enormous gaps which separate existing species and groups of organisms, the concept of evolution could never be taken seriously as a scientific hypothesis.⁵

Without a doubt, some fossils have been discovered that could be labeled “transitional” in that their appearance suggests that they could lie along a hypothetical sequence of development. Paleontologists often tout theoretical reconstructions of whale evolution (from an ancient land-dwelling mammal called *Pakicetus*, through several hypothetical “transitional” forms like that of the water-dwelling *Ambulocetus* and *Dorudon*, to modern-day whales) and that of horses (a sequence of several theoretically related animals, beginning with the dog-sized *eohippus* and ending with the modern horse). These and a few others are common features in textbooks on evolution.

However, the reason why these and a few other hypothetical examples of “transitions” are so common in textbooks is that they are the rare exceptions to the rule. In the fossil record, vast *gaps* are the rule, not smooth transitions. Even if one accepts the standard timeline of millions and billions of years of life on earth, the overwhelming story of the fossil record would have to be considered one of long periods in which animals did *not* noticeably change at *all*. Rather than gradual change, the fossil record depicts dramatically different forms suddenly “appearing” without sufficient evolutionary precursors or expected “transitional” forms bridging the gaps between kinds of creatures.

The few hypothetical reconstructions of fossil lineages and collections of transitional forms simply can't outweigh the incriminating evidence of great *voids* in the fossil record where there should be none.

As philosopher of science David Berlinski wrote in response to those criticizing his reasoned analysis of the lack of evidence for Darwinism,

I did not say in my essay that the fossil record contains no intermediate forms; that is a silly claim. What I did say was that there are gaps in the fossil graveyard, places where there should be intermediate forms but where there is nothing whatsoever instead... It is simply a fact. Darwin's theory and the fossil record are in conflict. There may be excellent reasons for the conflict; it may in time be exposed as an artifact. But nothing is to be gained by suggesting that what is a fact in plain sight is nothing of the sort.

...That there are places where the gaps are filled is interesting, but irrelevant. It is the gaps that are crucial.⁶

In short, you can *claim* that the fossil record is the tale of gradual evolution. But the rocks still bear witness against you.

The Mystery of the Cambrian Explosion

Perhaps no “gap” damages the credibility of Darwinian evolution so much as the earliest one of all: the virtual void of animal life that precedes the remarkable period known as the Cambrian Explosion. Dated by traditional measures to approximately 500 million years ago, the Cambrian Explosion is a period in the fossil record when—seemingly out of nowhere—there suddenly appeared a *bounty* of life forms in the fossil record whose supposed “evolutionary ancestors,” if they existed, left virtually no trace at all.

The fossils of the Cambrian Explosion contain examples of two-thirds of *all animal body plans currently extant in the world*, but the fossil record shows *no* significant precursors to these.

The sudden appearance of advanced animals in the Cambrian era's fossil record troubled Charles Darwin, and he honestly said as much in his *Origin of Species*. His theory predicted that this vast variety of new and exotic animals found in Cambrian fossils should have a *larger* number of ancestors also showing themselves in the fossil record. Yet, with scant exception, they are absent. Why? Darwin was not sure, but he recognized his dilemma:

To the question why we do not find records of these vast primordial periods, I can give no satisfactory answer... But the difficulty of understanding the absence of vast piles of fossiliferous strata, which on my theory no doubt were somewhere accumulated before the Silurian [Cambrian] epoch, is very great.⁷

Around 160 years later, the Cambrian event is still just as vexing. As prestigious *Science* magazine summarized, “The grand puzzle of the Cambrian explosion surely must rank as one of the most important outstanding mysteries in evolutionary biology.”⁸

Evolution cannot abide complex, fully developed animals appearing in history out of “nowhere.” And yet, out of nowhere they appear. To be sure, there are some fossils in the geologic record that precede the Cambrian Explosion, but—to borrow Berlinski’s words—while this is interesting, it is irrelevant. What is crucial is the remarkable lack of the sort of fossils evolution tells us to expect.

Putting wishful thinking and hypothetical whale and horse evolution reconstructions in perspective, we see that fossil evidence is not



Fossil imprints of trilobites, which lived during the Cambrian geologic period. The explosion of life during the Cambrian remains just as much a mystery to scientists today as it was to Charles Darwin. Evolutionary theory demands a long history of ancestors to Cambrian life-forms, but few are to be found in the fossil record.

a convincing record of smooth transitions from the ancient past to the modern world. Rather, it is a record indicative of *unbridged gaps*—huge vacuums in which abundant fossils *should* be found demonstrating evolutionary transitions, but in which they are, with rare exception, meaningfully more absent than present.

Either the fossils are terribly shy, or the theory that predicts their existence is simply wrong.

The “Gravest Objection”?

The fossil record could at least have helped establish the plausibility of the gradual accumulation of small changes that Darwin’s theory requires. This would not have been enough to prove evolution’s case, but had the rocks cooperated, they could have brought the theory great support.

Instead, almost 160 years after Charles Darwin himself so described it, the fossil record remains “the most obvious and gravest objection which can be urged against my theory.”

Or does it? Are there, perhaps, even graver objections to his theory and to naturalistic evolution, which, given the state of science in his day, Darwin could never have imagined?

There are, indeed. We examine them next.

Chapter 3

The Eyes Have It

Far more than the dry bones of the ancient past, it is the bewildering collection of living things around us today that presents more readily available evidence concerning the theory of evolution. The living apparatus and complex organs we see within the bodies of creatures today seem as though they would defy any attempt to explain them by purely mechanistic, unguided means. *How could a complicated and coordinated organ like the eye “develop” over time without a designer? How could integrated and advanced structures such as the avian lung simply “come together” without being intelligently planned and engineered?* Such questions come easily—and came easily to Charles Darwin, himself. Under the heading “Organs of Extreme Perfection and Complication,” Darwin wrote,

To suppose that the eye, with all its inimitable contrivances for adjusting the focus to different distances, for admitting different amounts of light, and for the correction of spherical and chromatic aberration, could have been formed by natural selection, seems, I freely confess, absurd in the highest possible degree.¹

However, his comment should not be taken out of context, as if he believed the eye could not evolve. He continued:

Yet reason tells me, that if numerous gradations from a perfect and complex eye to one very imperfect and simple, each

grade being useful to its possessor, can be shown to exist; if further, the eye does vary ever so slightly, and the variations be inherited, which is certainly the case; and if any variation or modification in the organ be ever useful to an animal under changing conditions of life, then the difficulty of believing that a perfect and complex eye could be formed by natural selection, though insuperable by our imagination, can hardly be considered real.²

This belief is at the heart of evolutionary theory: that functional, purposeful, utterly complex structures such as the human eye can be “created” through tiny, unguided, unplanned increments over long periods of time.

Darwin sought to make such impossible scenarios not only possible, but *expected*. He believed it could be so, and evolutionists often claim that there is no room for doubt that it is, indeed, so. But is there truly no room for doubt?

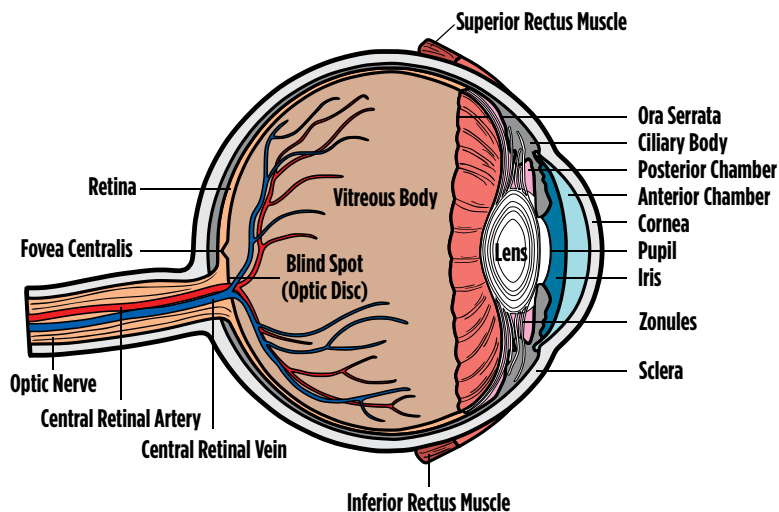
Among the living creatures of the world, the number of organs and other functional systems that could fit Darwin’s description of “extreme perfection and complication” is vast. The exquisite arms of the octopus, the explosion chamber of the bombardier beetle, the remarkable avian lung—such examples could be multiplied without end. But for our purposes, let us focus on the eye.

The Tale of the Eye’s Evolution

And a worthy example it is. No one pondering its function could fail to wonder at the remarkable capabilities of the “camera eye” possessed by human beings. Space permits us only a ridiculously minimal summary of how the eye works, but even a summary will suffice for our purposes.

Light enters your eye through the *cornea*, which both shields the eye and helps to begin focusing the light, then through the *iris* and *pupil*, which vary the exposure, and then through the crystalline *lens*, which organically changes shape to help perfect the light’s focus. Each of these elements work together as a coordinated, “intelligent,” automatic system that adjusts in the most minute of ways—and at astonishing speeds—to precisely focus an image on your *retina*. There, a chemical cascade begins, resulting in electrical signals that are sent through your *optic nerve* to your brain, which, in turn, decodes those

The Complex Human Eye



signals, turning them into detailed visual information. And this happens continually—even as the scenery before you (including these very words) is in constant motion, changing from one instant to the next.

Perhaps due to Darwin's own mention of the eye as a challenge he believed his theory could address, this remarkable organ has been a favorite target of evolutionists seeking to prove that natural selection and random variation can conquer the odds and overcome all doubts. On multiple occasions, Richard Dawkins has explained a hypothetical evolutionary path along which the human eye could be developed from a simple, light sensitive cell. YouTube can provide one with multiple instances of his tale (often with props!), but for those truly interested in the details, it is hard to beat his in-depth explanation in the fifth chapter of his book, *Climbing Mount Improbable*. Complete with diagrams and Dawkins' trademark eloquence, his richly explanatory account is virtually the gold standard in evolutionary storytelling concerning the eye.

However, truth depends on facts, not eloquence. And even the worst of lies can be well told.

For those who do not currently have the time to read Dawkins' own lengthy explanation of how simple light-sensitive cells can

evolve over time into the complex human eye, biologist Jerry Coyne includes a shorter version in his popular book, *Why Evolution Is True*:

A possible sequence of such changes begins with simple eye-spots made of light-sensitive pigment, as seen in flatworms. The skin then folds in, forming a cup that protects the eye-spot and allows it to better localize the light source. Limpets have eyes like this. In the chambered nautilus, we see a further narrowing of the cup's opening to produce an improved image, and in ragworms the cup is capped by a transparent cover to protect the opening. In abalones, part of the fluid in the eye has coagulated to form a lens, which helps focus light, and in many species, such as mammals, nearby muscles have been co-opted to move the lens and vary its focus. The evolution of a retina, an optic nerve, and so on follows by natural selection. Each step of this hypothetical transitional "series" confers increased adaption on its possessor, because it enables the eye to gather more light or form better images, both of which aid survival and reproduction. And each step of the process is feasible because it is seen in the eyes of a different living species. At the end of the sequence we have the camera eye, whose adaptive evolution seems impossibly complex. But the complexity of the final eye can be broken down into a series of small, adaptive steps.³

At least, that's how the story often goes.

But Could It Actually Happen?

While the story is common, less common than it should be is the natural follow-up question: *Could it actually happen?*

Among the problems with the story as it is normally told is the fact that what are described as small, simple steps are—in reality—anything but. Fundamentally, the changes that need to be considered are at the genetic level: the programming within DNA and its regulatory mechanisms that the cells of an organism use to build the different parts of the eye. However, we are saving a look inside the cell and its molecular programming for the next chapter, and there's no need to go that deep to see the problems with the "eye evolution" story.

We should ask: Just how small are some of these supposedly “small steps”? For example, what sort of structural changes were needed in the tissue beneath the light-sensitive spots to begin the indentation that will become the eye-cavity? Why was it so localized to the area of those cells? What sort of changes caused it to become deeper and more bowl-like?

Questions about the story multiply quickly. How exactly did the collection of nerves and nerve networks change in order to communicate more sophisticated information? In what ways did the developing retina need to be re-engineered to receive more complicated images?⁴ Retinas such as those in humans actually do some *pre-processing* before sending the image to the brain—what steps were necessary to enable that? Within the brain, itself, what functions and neural pathways needed to develop in order to even begin to process more highly detailed images, and, further still, to convert them into responses?

If the transparent mucus in the forming eye cavity thickens near the pinhole opening in the mutated offspring, why? What sort of structures are forming to maintain that density differential? How did they form? If the lens is forming from a covering over the hole, how did it develop? What cellular machinery had to be invented to produce such a substance—and in that particular location? And what biomechanical features were innovated to make it a better lens? What makes it so reasonable to think that those features represent a “small” change?

In fact, through studying the structures of various animal eyes, scientists have learned that many of these “steps” would not be small at all, but would be *massive* leaps that would require sophisticated and coordinated physiological changes. Studying the lens, all by itself, shows it to be a remarkably complicated and finely tuned structure consisting of multiple parts, the construction of which involves multiple details governed and coordinated by multiple genetic mechanisms and regulators.⁵ It is easy to declare the development of these structures “small, adaptive steps,” but the facts disagree.

Such complications are routinely ignored in these sorts of evolutionary stories, or else passed over as they were in the story quoted above—as if merely mentioning the words “natural selection” suddenly makes the story believable.

And we must consider: None of these steps, large or small, is allowed the assumed luxury of happening in isolation. For example, no improvements to focusing power are of survival advantage if light-sensitive cells are not biochemically ready to deal with receiving a better image. There is no advantage to a more focused image without a network of nerves capable of communicating that better image to the brain, nor is there an advantage if the brain has not developed the systems needed to process that better image. (Multiple systems in the human brain, for instance, process images, analyzing for shape, color, motion, and other factors.) Without supporting systems in place, there is no advantage to the more focused image for natural selection to “reward.” In fact, focusing mechanisms generally *reduce* the amount of light that enters the eye, which can be a negative for the organism unless the nervous system is not already prepared to process more detailed images. In cases like that, natural selection would work *against* the “improvement.” Yet there is no reason for the brain to grow in image-processing capacities unless there are *already* better images ready to be processed.

The entire system, which is even more complicated than we have described, must evolve in concert to provide benefit. But a complicated, interconnected and interdependent system, evolving in a multi-faceted and *coordinated* manner is not what the simple “eye story” has to sell. Quite the contrary. The “eye story” sounds like the tale of a lone hiker, making his pleasant way up a simple mountain trail, one simple step at a time, when what would actually be required is a multi-man assault up a sheer cliff face—working together as a unit, planning every step of the way, and coming to the cliff well-prepared.

But *that* sort of story, the latter one, is not the sort of story evolution is *allowed* to tell. It certainly is not the story of a gradual, unplanned accumulation of minute and barely noticeable changes.

When the former story is examined as a scientist *should* examine it—with an eye (pun intended) for realistic, unrelenting detail concerning what *truly must take place* and not with complacent acceptance of vague statements that mask intricate but absolutely *essential* details—then it is seen for what it is: a “just-so story.” It is an imaginary tale in which everything that needs to happen in a particular way in order to produce the desired result *does* happen *just so*. The only “evidence” that can truly be offered is that an evolutionary pathway

for the eye can be *imagined*—and even then, only as long as essential details are actively ignored. Once the details are no longer ignored, the fantasy quickly begins to unravel, as most fantasies do.

Imagination is not evidence. It cannot tell us whether the fantasized events actually happened, nor whether they are even *possible*. And there is good evidence that they are not.⁶

Honest Moments

When their audience narrows (that is, when they are mainly addressing the choir), evolutionists are often far more forthright with each other. In their 2006 article for the *New York Review of Books*, pro-evolution authors Israel Rosenfield and Edward Ziff note:

The weakness of Darwinian theory—and one that has been seized upon by secular critics of evolutionary theory—is its failure to explain how the gene determines the observable traits of the organism. From an evolutionary point of view, how can complex organs such as eyes, arms, or wings evolve over long periods of time? What about the intermediary forms?⁷

Rosenfield and Ziff admit: Evolutionary theory fails to explain the development of complex organs. They continue:

Concerning the human eye, for example: How is it possible for the different parts of an eye to evolve simultaneously—the lens, the iris, the retina, along with the blood vessels necessary for supplying the eye with oxygen and nutrition as well as the nerves that must receive signals from the retina and send signals to the muscles of the eye? Could these precise nerve and vascular networks be created by gradual random changes in genes over long periods of time, as Darwin claimed?⁸

They then point out that the same concerns apply to the evolution of complex organs in general—the need to evolve not just “functioning arms, legs, and eyes,” but the entire integrated systems needed to *allow* them to function, such as bone and muscle, vascular networks carrying blood, and nervous systems communicating signals.

The systemic challenges pointed out by Rosenfield and Ziff are exactly the sort of complications ignored in the just-so stories about organ evolution, as we noted above.⁹

These questions are not significantly closer to being answered than they were in Darwin's day. And if no answers are known, if all we truly have are *stories* to prop up as evidence, then how can so many intelligent people be so convinced? How can so many people consider a tale of imagination—with no clear evidence that it *did* happen, or even that it *can* happen—to be sufficient evidence to declare the evolution of the eye an absolute *fact*?

A Well-Justified Shudder

In a letter to his dear friend, Harvard botanist Asa Gray, Charles Darwin concisely summarized his fear and hope concerning the marvel of the eye and his theory: “The eye to this day gives me a cold shudder, but when I think of the fine known gradations, my reason tells me I ought to conquer the cold shudder.”¹⁰

Yet, after almost 160 years of research since Darwin expressed his concerns about organs such as the eye, we see the same concerns reflected among even pro-evolution scientists in their honest moments.

It seems that his instinct to shudder was the correct one.

No one can reasonably claim that such unsubstantiated just-so stories serve as sufficient evidence to declare evolution is a “fact.” They are no more evidence for evolution than stories about a red-robed man coming down a chimney are evidence about the origin of Christmas presents.

Still, perhaps the evidence of evolution's status as a “fact” of nature lies deeper than the flesh and bones we've covered so far. After Charles Darwin published his theory, the actual molecular mechanisms of genetics were discovered, and our view of his theory—and of life itself—would never be the same again. In our evaluation of evolution's central claim, we turn next to the domain where evolution truly happens, if it happens at all: the microscopic realm of the cell.

Chapter 4

Realm of the Cell

Modern science has access to realms of life the likes of which the biologists of Darwin's day could only dream. The individual, living cell, the smallest unit of life, has since been opened to us. From single-celled organisms, such as bacteria, to living things composed of multiple trillions of different cells, such as human beings, the mechanisms of life within these microscopic worlds hold the key to understanding the phenomena Charles Darwin sought to explain.

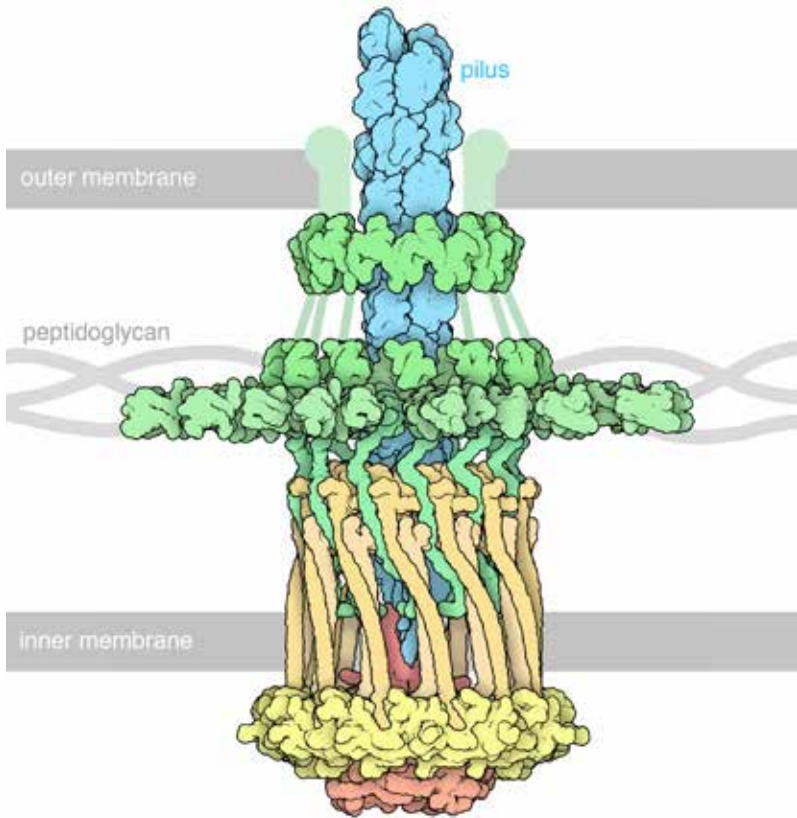
If evolution happens at all, *this* domain—the biochemical world within the cell—is where it must truly take place. Everything that makes an organism what it is originates from the processes within its cells. If there is to be anything innovative produced in a creature—a new, random variation that natural selection can “reward,” eventually creating wings or eyes or lungs and driving evolution forward—the origin of that change must take place inside the cell.

How Life Is Built

A work such as this lacks the space needed to offer a more detailed description of the inner, molecular workings of the cell, but we can summarize them sufficiently for our purposes. The components that concern us are these: proteins, DNA, and RNA.

Proteins: These often-massive molecules are the workhorses of the cell. They are composed of smaller subunits, 20 molecular

compounds called *amino acids*. These amino acids are assembled into long chains in much the same way that the 26 letters of English are assembled into specific words, except the chains of amino acids can be far longer than any word in any language. The largest human protein, *titin*, is a sequence of around 30,000 amino acids, whereas the most common human protein, *collagen*, is formed from a chain of around 1,050 amino acids.



This protein motor is a type IVa pilus machine that assembles and manipulates pili, long filaments used by some bacteria to move. The blue structures represent the beginning of the pilus. The remaining structures are the machine, embedded in the bacterial cell wall and composed of 78,216 atoms and eight unique chains. The information for building protein machines like this one is stored in the organism's DNA. (Image courtesy of the Protein Data Bank (pdb101.rcsb.org), CC-BY-4.0 license.)

As these sequences of amino acids are assembled in the cell, they fold and twist origami-like into specific and complex shapes. These shapes give the many different kinds of proteins their functional power to act as virtual robots that can cut, move, reshape, capture, examine, and assemble other molecules, including other proteins. Some proteins accomplish little alone, but work with other proteins to accomplish larger tasks together, as a unified complex.



One of the most elegant and iconic molecules of life, DNA within the cells of every living being contains the information used to build bodies and manage their functions. (Image courtesy of the Protein Data Bank (pdb101.rcsb.org), modified to focus on atomic detail, CC-BY-4.0 license.)

The designs of these molecular marvels are stored in DNA.

DNA: Short for *deoxyribonucleic acid*, DNA is genetic material that serves as the blueprints for building all the proteins in an organism—essentially, the instructions for building you.

An astonishingly elegant and ingenious molecule, DNA looks a bit like a spiral staircase, the rails of which are composed of sugars and phosphates. The steps connecting the sides are called *base pairs*: either a pairing of adenine (A) and thymine (T) or of cytosine (C) and guanine (G). Thus, as one moves along one side of a DNA molecule, one encounters a sequence of these four bases.

Just as the sequence of 1's and 0's of computer code stores the information needed for the computer's programming, the sequence of the bases A, C, G, and T in the DNA strand is the code that stores the biological information of the cell. In the case of DNA, the sequence codes information for different amino acids used to build proteins. For example, in ASCII computer code, the sequence 011000110110000101110100 would encode the English word "cat." Similarly, in

DNA the sequence CAGAAGCCA would encode the information needed for cellular machinery to produce the amino acid chain *glutamine-lysine-proline*.

All proteins are built based on the designs encoded within DNA. This makes the biochemical processes that read and manipulate DNA matters of *information processing*, similar to what we see in computer software. As biophysical chemist Peter Willis explains, “DNA-based molecular biological computation can be said to control, perhaps even ‘direct,’ the entire panoply of biochemical events occurring in cells.”¹

We often refer to DNA code as “genetic information,” and portions of the DNA strand that code for particular purposes are called “genes.” Individual genes form the fundamental units of programming for biological functions and can vary widely in length; for example, individual human genes embedded in DNA can range in size between about 1,000 to 38,000 base pairs.² Often, the information stored in multiple genes is used in concert to build a structure. For instance, the human eye requires the use of at least 94 different genes.³

RNA: *Ribonucleic acid*, or RNA, is capable of carrying the same information as DNA. In short, RNA is used to transmit the protein building instructions contained in DNA, copying it and carrying it outside of the nucleus, where molecular apparatus awaits to assemble new proteins.⁴

This sequence, in which information stored in DNA is copied by RNA and then used to assemble proteins, is called the “central dogma” of molecular biology and is credited to Francis Crick, one of the co-discoverers of the structure of DNA.

It is the information coded within DNA that is used to build the proteins that build organisms—that build *you*—and it is the information coded within DNA that is passed on from parent to offspring.⁵ It is how life works, and how life carries on from generation to generation.

With a basic understanding of this astonishing system in place, we are equipped to address the question at hand: Does what we’ve learned about life at the most basic level demonstrate that the central claim of evolution—that bacteria can become blue whales—is, indeed, a “fact”?

From Fuzziness to Focus

To be sure, much of the vagueness that has dominated our discussion of evolution so far becomes very specific now that we are finally at the level of genetics.

Looking into the cell, we see that Darwin’s “random variations” mean that the *information used to build the organism* has changed—which means that *DNA has changed*. And, indeed, DNA does experience many random changes. While, overall, the protein machinery that the cell possesses to correct errors in DNA copying is remarkable (on average, only one change in every hundred million nucleotides for each generation of the cell)⁶, we also know that errors *do* happen. Nucleotides (the 1’s and 0’s of the DNA code: A, C, G, and T) are occasionally miscopied, genes are duplicated more than they should be, bits of code are accidentally inserted into new locations—the ways in which errors take place are numerous.

The ability to experience random variation is good news for evolution, because that randomness is the fundamental “creator” in evolution, not natural selection. Why? Because natural selection can only do as its name suggests: *select*. It does not *create* any innovations or changes. Rather, natural selection can only “reward” or “punish” the innovations that randomness generates.

As evolutionary biologist Andreas Wagner summarizes, “The power of natural selection is beyond dispute, but this power has limits. Natural selection can *preserve* innovations, but it cannot *create* them.”⁷

So, with this knowledge, the “fuzzy” stories of evolutionary possibilities come into sharp focus. For instance, the story of the eye’s supposed evolution moves from being about some sort of “lens” just suddenly beginning to “form” to being about DNA experiencing random changes in its code so that it begins to design new proteins that can act as components of a lens.

DNA represents information, the language of that information (the code for amino acids) is understood, and the structure of proteins created with that information can be analyzed. That means we now stand at a place in the history of science where the possibilities and limitations of evolution—its probabilities and likelihoods—can be calculated with a measure of precision.

When we do subject the possibilities of evolution to this level of scrutiny, we find that the implications for the central claim are not good.

Evolution's Successes—and Limits

One thing we find is that, to a limited degree, Darwinian evolution can and *does* take place. For example, Darwinian mechanisms have been seen in the longest running evolution experiment in history: biologist Richard Lenski's Long-Term Evolution Experiment (LTEE) with *E. coli* bacteria. This experiment has run continuously since 1988, eventually producing a culture of bacteria that was seen to gain the ability to metabolize citrate when a certain gene, normally turned off in those conditions, was turned on.⁸

However, all known, verifiable successes of evolutionary change also shine a bright light on its limits. For example, the modest improvement in Dr. Lenski's bacteria took almost 20 years and 31,500 generations of bacteria⁹ (the equivalent of 600,000 to 1,000,000 years for humans), yet it involved no new information or truly novel functionality being generated at all. The change was primarily a simple repurposing and redeploying of information that already existed in the genome.

Studies have shown that such changes in DNA—the *destruction* of information or the repurposing of structures for which the cell *already has* information—are, by far, the primary means by which evolution acts.¹⁰ And if one is to claim the title of “creator of all life on earth,” it is simply not enough to merely rearrange things that already exist or break them so that they cannot be used any longer.

Building a blue whale out of a bacterium requires the addition of vast amounts of *new information* to the creature's DNA. Breaking things and reshuffling things won't do the job. It requires the creation of *new things*.

And as we've seen, that means the creation of new *proteins*. Yet, all we have learned about how these wonder machines of the cell are built demonstrates that this is no simple task.

Attempt #1: Building a New Protein from Scratch

Remembering that it is *randomness* that creates and innovates in the cell—and that natural selection only rewards the winning innovation with the opportunity to randomly change further—we should first ask: Can randomness generate completely new proteins?

According to the math, absolutely not.

For example, Nobel Prize-winning biochemist Manfred Eiger—a respected legend in the science of understanding large DNA molecules and

evolution—stated definitively: “[N]ot even *one single protein molecule* with specified structure (and function) could come about by random assembly.”¹¹ He concluded this by considering that a protein of only 100 amino acids—quite modest by protein standards—would have only a 1 in 10^{130} probability of ever forming by chance.

If you recall from your high school days, exponential notation allows us to concisely write numbers that would otherwise be monstrously large. In this case, 10^{130} is just such a monster that would otherwise have to be written as a “1” followed by *130 zeros*. By contrast, estimates of the number of atoms in the entire universe tend to vary around 10^{80} —a “1” followed by 80 zeros. While 10^{80} is truly big, it is virtually *nothing* in comparison to 10^{130} . We can be confident that no event of such a dramatically low probability has ever happened anywhere in the entire universe since its beginning.

This is no way to build an eye. Andreas Wagner, discussing how just one protein, *opsin*, might have formed by chance in this way, noted this impossibility: “If a trillion different organisms had tried an amino acid string every second since life began, they might have tried a tiny fraction of the 10^{130} potential ones. They would never have found the one opsin string. There are a lot of different ways to arrange molecules. And not nearly enough time.”¹²

Even if we aren’t looking for a specific *protein* to form by chance, but just *any* working protein at all, the problem seems impossible. If amino acids are simply strung together randomly, what are the odds they could ever form a functional protein that can do at least *something*? Biochemist Douglas Axe has experimentally explored that possibility to determine that the odds of randomly assembling a protein that is functional in *any way at all* is only 1 in 10^{64} (a “1” followed by 64 zeros)—once again, an astronomically low number.¹³ It is the mathematical equivalent of saying that it will never happen.

Eiger’s conclusion is rock solid. A protein cannot be expected to *ever* form by pure randomness.

Attempt #2: Building a New Protein from an Old One

Now, many evolutionists might understandably object to all of this, claiming that a Darwinian approach would not be to build an entire protein from *scratch*. Rather, evolution would, perhaps, build a new protein from an *old* one. Simply allow the old protein to experience random

mutations and, just as life does with whole organisms, bad changes to the protein will not survive, while good changes to the protein—where the new protein is, say, more stable or performs its task more efficiently, or performs a new job—will be preserved by natural selection.

Douglas Axe and colleague Ann Gauger sought to explore this possibility in concrete terms by taking one functioning protein and examining the probability that—through minute, evolution-like random changes—it could evolve into an extremely similar protein of slightly different shape. They selected a protein that required only seven nucleotide changes in a DNA strand (like changing only seven 1's and 0's in a computer program) to accomplish the small “evolutionary” step. They found that, at known rates of random mutation, it would take 10^{27} years for such a change to be achieved¹⁴—again, that's a “1” followed by 27 zeros. This, in a universe that is only 10^{10} years old. Again, the probability of such an event occurring even *one single time* in our universe is effectively zero.

These experimental results have been seen in practice, as evolutionary methods have met their limits in genetic engineering facilities.

For example, respected Finnish bioengineer Matti Leisola has used the principles that undergird evolution—natural selection acting on random variation—to modify bacteria to produce the sugar substitute *xylitol*.¹⁵ His team accomplished this by accelerating the mutation rates (that is, the rates at which random variations occur) by bombarding bacteria with UV rays. As expected, most mutations were harmful, but one mutation accomplished what they desired, and that bacteria culture was kept (equivalent to natural selection).

However, the mutation achieved the desired effect by doing what mutations so frequently do: by breaking a currently existing process, not by generating *new* information.¹⁶

This is a consistent pattern in biological work such as Leisola's. Random mutation and selection can be used to achieve simple changes that involve breaking or destroying already existing processes, or even refining those processes in small ways. However, when real innovation is needed, even when the innovation is relatively modest, the innovation is completely out of reach for evolutionary methods. Evolution has very clear limits.

As Leisola summarizes, “Proteins can be modified with random and specifically designed methods—but *only within narrow limits*: the

changes are not fundamental—*basic structures cannot be changed*” (emphasis added).¹⁷

Of course, even if this problem were solved, we are still left with the original problem: For a process to create new proteins from old ones, we must *first have old ones*. And, as we’ve already seen from “Attempt #1,” the odds against the random formation of even one functional protein in the history of the universe are astronomical.

The dogma that Darwinism is capable of creating the abundant variety of life we see around us from vastly simpler forms persists as a reigning philosophy of biology because, frankly, no other theory even comes close to being coherent enough to take its place.

“But,” as David Berlinski notes in his usual, inimitable manner, “neither an orchestra nor an explanation becomes good by being the only game in town.”¹⁸

Evidence of Design

When we open up the cell, we see a world in which evolution cannot achieve the very things that *must* be achieved for the theory to be true. In fact, we see a world that suggests quite the opposite has taken place. We see a world filled with evidence of complexity, planning, and purpose. Reasonable individuals would conclude that we see a world in which *intelligent design* has played a role.

That is the natural, intuitive conclusion when one ponders the sophisticated, complex machinery of the cell: It has been designed to accomplish a purpose.

The question at hand is whether such a conclusion should be cast aside to make way for the “fact” of unguided evolution through purely natural forces. The evidence of modern biochemistry is clarifying: The inner realm of the cell reveals mechanisms and innovative solutions and systems that seem far beyond the reach of undirected and unintelligent processes like evolution. Far from moving us to cast aside the conclusion of design, the evidence moves us to embrace it.



Chapter 5

Of Mountains and Moons

To conclude this part of our journey, let us remind ourselves of the central claim of evolution: that unguided, unintelligent, purely natural forces took a primitive, single-celled organism and transformed it over time into the remarkable abundance of life we see on this planet today, in all of its resplendent diversity and complexity. We are expected to believe that blind forces of nature began with nothing more than a microscopic, bacteria-like creature and—from it—created blue whales, bats, blackberry bushes, beetles, barracudas, and human beings. In fact, we are to take this as an established *fact*, beyond the reach of question or doubt.

It seems impossible on the surface, but evolutionists tell us it is not impossible but inevitable. It is to be expected.

In his book *Climbing Mount Improbable*, Richard Dawkins acknowledges the vast differences we see between creatures, such as bacteria and blue whales, and designs a metaphor to help us understand how one has become the other. That metaphor asks us to imagine a mountain, with the lowly bacterium at the bottom and the magnificent blue whale at the peak, high above. Evolution, then, is just a matter of journeying from the bottom of the mountain to the top. Dawkins explains that the manner in which the bacteria reaches the blue whale is the same as how a climber reaches the top of the mountain: not by means of some giant leap, but, rather, through a slow and steady *climb*. Inch by inch, over millions and billions of years, taking the tiniest, incremental steps up the slope, the summit

is eventually achieved. In like manner, we are told, the simple, single-celled creature can, indeed, become the enormous and complex master of the oceans—by accumulating millions of tiny, miniscule changes over billions of years. The summit is reached, we are told, because the climber need only take one small step at a time.

Dawkins' metaphor is beautiful and simple. But reality has left it inert and impotent—a good story spoiled by the facts.

The Central Failure

For all the successes that evolutionary science has achieved, for all the processes evolutionary biologists may have discovered, and for all the interesting programs, products, and philosophies that may have been influenced by evolutionary thinking, a vital fact remains: The central claim of evolutionary theory remains unproven. It has not been established that all life has descended from a single, simple, common ancestor.

Even worse: It has not been shown that such a transformation is even *possible* to begin with. The situation was summarized well by Dr. David Berlinski:

A great deal of the evidence for evolution... arises from a grand and unsupported extrapolation. The speckled moth changes its wing coloring; bacteria develop drug resistance. Why should this count in favor of the thesis that whales are derived from ungulates [hoofed mammals], or men from fish? Plodding steadily upward on any given mountain, the Darwinian climber (a.k.a. Something Eager) is bound to find that there are certain places forever out of reach—the surface of the moon, for example. The Darwinian argument of evolution by accretion is itself missing a crucial step, one that would demonstrate either from first principles or from close observation that complex biological structures are accessible to a Darwinian mechanism, and so function as a mountain peak rather than as the surface of the moon.¹

In his characteristically colorful manner, Berlinski notes that Dawkins' "Mount Improbable" metaphor assumes too much. What if, for bacteria, complex creatures such as blue whales, bats, and

human beings are on the moon, and not waiting for them atop their mountain? If so, no matter how gentle the slope of the mountain and no matter how skilled the climber, the hopeful bacterium will never reach them.

How do we know that the central claim of evolution is even *possible*, let alone that it has actually taken place?

That blind, natural forces have transformed one creature's descendants, given enough time, into a host of vastly different and more complex creatures is the definitive claim that evolution by natural selection makes as a theory. Yet, not only has it not been demonstrated that this did, indeed, happen, it has not even been shown that it is *possible*. The theory's central claim is also its central failure.

Darwin of the Gaps

Consider the following questions in light of *actual evidence*—in light of what has actually been *demonstrated* to be true.

Do we have a naturalistic account of how the hypothetical “first life” arose from non-living matter here on earth? No, we don't. Do we have an account of how it arose elsewhere and was brought here? No, we don't. Do we have a satisfying and empirically grounded explanation for why, rare exceptions aside, the fossil record appears so disjointed and so very different from the history of smooth, gradual change that Darwinian evolution predicts we should see? No, we don't. Do we have a demonstrated naturalistic, mindless mechanism that has shown itself capable of producing over time such complex and integrated structures and systems such as the human eye, the immune system, the avian lung, or even complex-but-microscopic protein machines within the cell? No, we don't.

What we do have, however, is a confident faith, held by a large number of scientists, that—somehow—Darwin's ideas really can bridge all of those chasms.

When believers face phenomena they can't explain and declare that “God must have done it” they are accused of believing in a “God of the Gaps.” By the same token, it seems evolutionists have their own faith in a “Darwin of the Gaps.”

Whether their faith is more fact-based than yours is a question worth asking. But let no one convince you that science has settled the answer in favor of Darwin. It hasn't even come close. And the

evidence—or rather, the emptiness where evidence *should be*—is very clear.

Worldview over Evidence

So, if the evidence has not established evolution as a “fact,” why is it so passionately defended as factual by so many? Why is it so unquestioningly accepted and believed as dogma? What ties the zealously faithful to evolution?

In a widely quoted and admirably honest comment in the *New York Book Review*, evolutionist Richard Lewontin very plainly explained the worldview at work.

Our willingness to accept scientific claims that are against common sense is the key to an understanding of the real struggle between science and the supernatural. We take the side of science *in spite* of the patent absurdity of some of its constructs, *in spite* of its failure to fulfill many of its extravagant promises of health and life, *in spite* of the tolerance of the scientific community for unsubstantiated just-so stories, because we have a prior commitment, a commitment to materialism. It is not that the methods and institutions of science somehow compel us to accept a material explanation of the phenomenal world, but, on the contrary, that we are forced by our *a priori* adherence to material causes to create an apparatus of investigation and a set of concepts that produce material explanations, no matter how counter-intuitive, no matter how mystifying to the uninitiated. Moreover, that materialism is absolute, for we cannot allow a Divine Foot in the door.²

Though we will not pretend Dr. Lewontin would agree with our conclusion, his words do provide solid support for it. Why do the evolutionary faithful cling to evolution’s “unsubstantiated just-so stories”? Why are they willing to commit so passionately and completely to evolution in the face of the “patent absurdity of some of its constructs”?

In Lewontin’s words, it is not that the “methods and institutions somehow compel” such zealous commitment. Rather, it is “a prior commitment, a commitment to materialism... [and] that materialism is absolute.” It is a *conscious choice of worldview*.

Evolutionists *choose* to see the world the way they do. As long as evidence can be made to fit that worldview, it will be made to fit. And when it is seen to be a *poor* fit? Then they wait as long as it takes, believing that the answers will come eventually—walking by faith and not by sight.

Such frankness as Lewontin's about metaphysical presuppositions should be welcome. It should be the norm among both scientists and non-scientists, alike. But it is not. And so we hear tales of "irrefutable evidence" with no mention of the *faith* that has been employed in interpreting that evidence, filling in the gaps of that evidence, and philosophizing about the meaning of that evidence.

Yet the parallels between devotion to evolution and devotion to God are hard to miss. Consider how no matter the question—even when the questions contradict each other—the answer for evolutionists is always "evolution." When animals change over time from simple to complex? *That's evolution.* But if they change in reverse, from complex to simpler forms? *That's evolution, too.*

If animals possess "useless" organs or structures? *Evolution has made them useless.* Yet, when animals possess organs and structures of profound complexity and usefulness? *Evolution built those.*

Does an organism possess remarkably efficient biological processes? *That's evolution's genius.* But does one possess inefficient and "clunky" biological processes? *Well, evolution is blind and undirected.*

When animals are unchanged over vast periods of time? *Evolution has preserved their forms.* Yet, when they are believed to have changed at such a breakneck pace that they leave little trace of any transition at all? *Indeed, evolution can work very fast!*

Our higher capacities for rational thinking, art, music, and poetry? *Evolution is amazing.* Our more base, "animalistic" characteristics? *Evolution only cares about survival.*

Unique and extreme features in a species? *That's crazy old evolution, for you.* Extremely similar features in wildly different animals? *Sure, evolution often converges on the same features.*

Changes due to small, beneficial mutations? *Of course, since that's how evolution works!* Other changes that aren't accessible by accumulated beneficial mutations? *Well, evolution works in mysterious ways...*

Is changing the name of the deity from "God" to "evolution" sufficient to make something non-religious? To make your faith somehow *not* faith?

Summarizing What We've Seen

In short, we are often told that it is a “fact” that all life has gradually evolved over time from a single, simple ancestor, but the evidence does not justify such a conclusion. Yes, life does seem able to change over time, but the ability to change without bound has not been demonstrated in the slightest.

The fossil record does not demonstrate Darwin’s hoped-for history of incremental development of life on earth, and it remains as troubling to his theory today as it seemed to him in 1859. And not only do Darwin’s concerns about the eye continue to be just as valid as they were more than a century and a half ago, they also remain just as unresolved—with nothing but stories and suppositions serving as “evidence.” And when we focus our attention on the realm where the fundamental, gradual changes demanded by evolution must take place—the information and machinery of the cell—we find that “implausible” is too generous a word. The tale of naturalistic, unguided evolution seems *impossible*.

That microscopic world that forms the foundation of life is far more advanced and complicated than Darwin could have ever understood in his day, and far more indicative of a grand Designer than of blind forces of nature—a Designer who has intelligently created the programming of life on which every living organism on Earth depends.

Charles Darwin’s theory is, in its own way, a remarkable example of observation and reasoning—an elegant theory, with large aspirations and grand claims to make about the world and all that is in it.

It simply lacks the virtue of being true.

Chapter 6

Is Earth Young? Understanding Genesis 1

Having examined the extreme claims of Darwinian evolution, let us turn our attention to the extreme claims of young-earth creationism: the claim that the Bible teaches the earth—in fact, the entire universe and all that is in it—was created by God only 6,000 years ago.

We focused our look at evolution through the lens of science, finding it to fall short of the claims many make that it is a fact beyond dispute. But what of young-earth creationists' claims? How factual are they? The perspective from which they arise is, beyond all doubt, far different from that of evolutionists. Before we proceed, this difference of perspective should be discussed.

Credit Where It Is Due

Evolutionists proceed from an assumption of naturalistic materialism, a position that requires every explanation of every fact to be based solely in the realm of the material world of natural causes. The supernatural cannot be allowed to occupy even a theoretical role, regardless of whether that role would make rational sense—hence the position of Richard Lewontin we emphasized (and praised for its honesty) in the previous chapter.

There are, of course, other views of the world, and it is on one of those views that young-earth creationists stake their claim: the view that the Bible is inspired by God Himself and is utterly trustworthy in all that it says. In this view, observation is nice, but *revelation* also

plays a role. In fact, it plays the *primary* role. If God says something is so, then it *is* so. After all, He's God, and He would know.

Even assuming that the Bible is true in all of its claims, there are vulnerabilities for those who hold this view. Among them is vulnerability to wrong interpretation. Even if the Bible is true, we, faulty humans that we are, can still be wrong if we misunderstand it. In this chapter, we will begin exploring this possibility, by checking the beliefs of young-earth creationists—that the universe and all that is in it, including life, was created from nothing about 6,000 years ago—against what the Bible actually says.

But before we do that, let us first give credit where it is due: The view of the Bible as the inspired, true word of God is absolutely correct. The commitment displayed by young-earth creationists to the principle of biblical inerrancy is to be commended.

The Apostle Paul put it well: “Indeed, let God be true but every man a liar” (Romans 3:4). If God says something, it is true beyond doubt. If evidence seems to contradict His words, you can be sure of one of two things: You have misunderstood the Bible, or you have misunderstood the evidence.

Often, taking such a firm stance on God's word is mocked by atheistic scientists and described as “blind faith.” Certainly, there are many who have never proven God's existence or the trustworthiness of His word for themselves. If you have never explored whether or not God exists, or whether or not the Bible is His word, you should.¹

Once you have proven God's existence for yourself and have proven that the Bible is His word, those facts become foundational evidence to be applied in interpreting the world around us. Only God has always existed, and therefore God alone is a trustworthy witness to the events that preceded human history.

Famous young-earth creationist Ken Ham noted this in his first public debate with “pro-science” television personality Bill Nye: “I admit that my starting point is that God is the ultimate authority. If someone does not accept that, then man has to be the ultimate authority. And that's really the difference when it comes down to it.”²

That principle is true, and Ham is to be commended for embracing it.³ As Jesus Christ said so plainly in His prayer to His Father the night before He was crucified, “Your word is truth” (John 17:17).

Does the World Bear Witness to Young-Earth Claims?

However, beginning with a right principle, even a brave one, does not guarantee correct conclusions. We will dive into what the Bible actually says about the origin of the world, and the implications of its teachings for young-earth creationism, in just a moment. But, before we do, we should ask: Does the physical evidence around us proclaim a “young earth”?

In short, no, it does not. The efforts of young-earth creationists to interpret the evidence of geology, astronomy, physics, and the other sciences in terms of their theory are admirable, but unconvincing.

Claims that God created the world with an *appearance* of age and maturity, just like He created Adam and Eve as adults instead of infants, fail to explain why the earth shows not just age, but *history*. Adam was created mature, but he was not created with surgical scars from past operations, a chipped tooth from when he had slipped and fallen, or a thickened location on his leg bone where it had mended from a break. Earth shows evidence of a long history.

And the attempts to cram all of that history into 6,000 years—or to attribute the signs of history to effects of Noah’s flood—are just as problematic. For instance, the layers of earth beneath our feet and the contents of those layers are explained far better by theories that allow them to have been laid down over vast periods of time than by the idea that one worldwide flood created those features.⁴ Presuming



Layers of rock, such as these, and their contents are clearly explained better by “old earth” theories than “flood geology” explanations. However, young-earth creationism rests on a more important question than how to interpret the physical evidence: What is the correct understanding of the Bible’s testimony?

the universe around us to be created within the last 6,000-or-so years only adds to young-earth problems, either painting God as one who creates false histories of astronomical events—changes and events related to stars whose first light, being more than 6,000 lightyears away, has supposedly not even reached us yet—or assuming changes to the laws of physics that cause more problems for the theory than they solve.

Yet, again, this is not the *real* issue for young-earth advocates. At their heart, they are in the same position as the evolutionists. They “know” their theory to be true and presume that the evidence, even when it *doesn't* fit, eventually will. The only difference is that they see the Bible as their primary evidence.

Are they right? Does the Bible teach that the universe, the earth, and life was all created a mere 6,000 years ago? Or does it teach something else entirely?

Rightly Dividing the Word of Truth

To discover the full truth about any matter from a biblical perspective, the entirety of God's word must be considered, from beginning to end. As Isaiah proclaimed,

Whom will he teach knowledge? And whom will he make to understand the message? Those just weaned from milk? Those just drawn from the breasts? For precept must be upon precept, precept upon precept, line upon line, line upon line, Here a little, there a little (Isaiah 28:9–10).

As the psalmist declares, “The *entirety* of Your word is truth” (Psalm 119:160), and the whole of it must be considered to understand the complete picture of God's mind on a matter. It must be considered carefully and diligently, “rightly dividing the word of truth” (2 Timothy 2:15). Applying only part of the Bible, or misapplying any of it, results in inaccurate conclusions (cf. Mark 12:18–24).

God's word teaches much that can be learned only through His revelation—truths beyond the reach of the scientific method, as useful as that tool may be. While the Bible may not answer *every* question we ask, when considered as a whole it answers far more questions than many realize.

And its answers are always true. Though the Bible was not written to be a science text, its witness is consistent with the facts of science to a degree that only God—the Creator of all nature and the Witness to all history—can ensure.

Let us look at what God has revealed about the history of the world, and let us do so with hearts softened by humility and minds open to what He has to say! If there is an answer to be found concerning the origin of creation, it is an answer to be revealed by the Creator.

Understanding Genesis 1:1 and 1:2

The first verse of the Bible is one of the most famous passages in all the writings mankind possesses. Genesis 1:1 reads, “In the beginning God created the heavens and the earth.”

Powerful in its simplicity, this verse unequivocally declares that all reality—from the dirt under our feet to the stars above us—is the creation of the Almighty! All that exists was brought into existence at God’s command.

Once God’s role in creating all things has been clearly stated, we are told in Genesis 1:2, “The earth was without form and void; and darkness was on the face of the deep. And the Spirit of God was hovering over the face of the waters.”

The words in this verse that are translated “without form and void” in the *New King James* version have spurred questions for millennia. They derive from two Hebrew words, *tohu* (“without form”) and *bohu* (“void”), which can be translated in a number of ways. *Tohu* can mean a desolation, a wilderness, or a wasteland, indicating a state of confusion and chaos. It appears twenty times in the Hebrew scriptures, and according to the *Theological Wordbook of the Old Testament*, “In most if not all of these cases, *tōhū* has a negative or pejorative sense.”⁵ The word *bohu* only appears with *tohu*, carrying a sense of emptiness and waste.

Regardless of the specific manner in which the words are translated, it should be clear that a condition of *tohu* and *bohu* is not pleasant! Still, how should these words be understood? Some have suggested that they could be translated “unformed and unfilled”⁶ with a very neutral connotation, implying something equivalent to a lump of clay, waiting to be shaped into something useful by the Master’s hand. But is this the right way to understand the words?

The word “was” does not help one way or the other, besides keeping open the possibilities. In the statement “The earth was without form and void,” the Hebrew word translated “was” is *hayah*, which admits of different interpretations. For example, it is used in the story of Lot and his flight with his wife and daughters from Sodom and Gomorrah. When Lot’s wife looks back at the destruction, we read, “But his wife looked back behind him, and she *became* a pillar of salt” (Genesis 19:26). The word translated “became” is, once again, the Hebrew word *hayah*.

Clearly, Lot’s wife wasn’t *always* a pillar of salt (which certainly would have made for an odd marriage). Rather, in that moment, having looked back, she was a pillar of salt, where before she had not been. This is why the *New King James* translation of the Bible uses “became” instead of “was”—both apply, but “became” provides a sense that this was a new condition.

A Challenging Verse

Because of these and other outstanding questions, the precise meaning of Genesis 1:2 has long been debated. Some believe that the entire universe was created on that “first day” of the Genesis “creation week,” and that God created the earth in this chaotic, unorganized state to await the shaping and forming that commences in the next several verses. Others have noted that the *tohu* and *bohu* condition of the earth is a state that it experienced *before* the seven days of the “creation week” began, pointing out that the period of time in which the earth inhabited this state is left ambiguous by the text.

Scholars wrestle over this short verse, invoking obscure grammatical “rules” and teasing out tenses. Ken Ham claims, “Verse 2 uses a Hebrew grammatical device called a ‘waw-disjunctive’... [This] indicates that the sentence is describing the previous one; it does not follow it in time.”⁷ Other scholars, such as the translators of *The Living Bible*, take different points of view. While that translation is a paraphrase, its *footnotes* provide more disciplined insight into the original languages of Scripture. The editors of *The Living Bible*—which translates the statement in Genesis 1:2 as “the earth was a shapeless, chaotic mass”—note alternate, valid translations in their footnote for the verse: “*the earth was*, or ‘the earth became.’ *A shapeless, chaotic mass*, or ‘shapeless and void’... There is not one correct way to translate these words.”⁸

Meanwhile, still other scholars take additional points of view. Richard Elliott Friedman—a Jewish Theological Seminary and Harvard scholar and an expert in the languages and cultures of the ancient Near East—writes in his commentary on Genesis 1:2, “In the Hebrew of this verse, the noun comes before the verb (in the perfect form). This is now known to be the way of conveying the past perfect in Biblical Hebrew.” This grammatical construction, writes Dr. Friedman, “means that ‘the earth *had been* shapeless and formless’” *before* the beginning of the seven days of creation described in the remainder of the text.⁹

The idea that the meaning of Genesis 1:2 is going to be indisputably unraveled by the technical reading of the Hebrew language is, regrettably, unfounded. And history provides no assistance, either. While, to be certain, there is historical evidence that many individuals have treated Genesis 1:1–2 as a description of activity on the first day of “creation week,” there is also ample evidence that many others have considered Genesis 1:2 to be a condition in which the earth existed for a period, unknown in length, *before* that week.

For instance, early in the third century AD, Origen—the ancient theologian of what would become the Roman Catholic Church—wrote in his work *De Principiis* that the “present heaven and the earth” were derived from an earlier creation mentioned in Genesis 1:1.¹⁰ And in the Targum Onkelos, a significant Aramaic translation of Genesis and other books, written around 80 to 120 BC, the Hebrew “*tohu and bohu*” statement of Genesis 1:2 is translated *tzadya ve-reikanya*—Aramaic phrasing which communicates a sense of desolation, ruins, and emptiness.¹¹

Such thoughts have continued through time. In the early 1100s, Hugh of Saint Victor stated, concerning the first verses of Genesis, “From these words it is plain that in the beginning of time, or rather with time itself, the original matter of all things came into existence. But how long it remained in this confused and unshapely condition the Scripture clearly does not tell us.”¹² Five centuries later, Dionysius Petavius (Denys Pétau) wrote in the early 1600s of the chaotic and ruined earth described in verse 2, “How long that interval may have lasted, it is impossible to conjecture.”¹³

This is just a sampling of opinions and interpretations, but they suffice to illustrate that the timing of the original creation of the earth and the circumstance in which it is found before the first day of the

famous “creation week” of Genesis has been an open question for some time. It is an error to claim that the only interpretation of Genesis 1:1–2 with any linguistic credibility or ancient pedigree is the one claiming the universe came into existence only 6,000 years ago. There are many who read the Hebrew of those verses and conclude that *before* the first day, in which God said, “Let there be light” (Genesis 1:3), the earth and the universe had already existed for some period beforehand, and that sometime during that period after their initial creation, the earth came into a state of *tohu* and *bohu*—desolation and waste.

Yet, merely identifying possibilities does not settle the truth of the matter. How should the first two verses of Genesis be understood? When was the original creation of the earth? How did it come to be in a state of *tohu* and *bohu*? Was it originally so? If not, why do we see it in such a state as God begins fashioning the world during the Genesis “creation week”?

As usual, when it comes to questions of its meaning and interpretation, the Bible provides its own answers! We come to understand the meaning of this passage when we look at other verses describing the earth’s “pre-history,” allowing the Bible to interpret the Bible.

A World in *Tohu* and *Bohu*—But Why?

Was the world simply *created* in a condition of *tohu* and *bohu*? Are these words to mean that the world was created simply “unformed” and “unfilled”—waiting for God’s continued work? Or are they to mean that the world was in “devastation” and “ruin,” a world that had somehow been brought to destruction?

Many have noticed Isaiah 45:18, which states, concerning the earth, that God “did not create it in vain [*tohu*].” This could suggest that when God *originally* created the world, it was *not* in a state of confusion and desolation but was later subject to that condition. Some have argued, however, that “create” in that passage should be understood to refer to the final product of the *completed* earth. Are there any other passages that can clarify the meaning of these words?

Absolutely. The Bible gives us other instances in which this description from Genesis 1:2, *tohu* and *bohu*, is used. And in these passages, the implications are very clear.

Consider the fourth chapter of Jeremiah. There, the prophet laments the sinful nature of the people and their depraved rebellion

against their Creator (Jeremiah 4:14–17), and the people are told that their sins bring consequences (v. 18).

Those consequences are utter devastation. Jeremiah describes with anguish the armies descending on Jerusalem with desolation in their wake, saying, “Destruction upon destruction is cried, for the whole land is plundered. Suddenly my tents are plundered, and my curtains in a moment” (v. 20). The people are “wise to do evil,” God notes, “but to do good they have no knowledge” (v. 22).

What is the end result of the sin and depravity of the people? Jeremiah describes the scene:

I beheld the earth, and indeed it was without form, and void; and the heavens, they had no light. I beheld the mountains, and indeed they trembled, and all the hills moved back and forth. I beheld, and indeed there was no man, and all the birds of the heavens had fled. I beheld, and indeed the fruitful land was a wilderness, and all its cities were broken down at the presence of the LORD, by His fierce anger (vv. 23–26).

The phrase “without form, and void” at the beginning of the passage is the pair *tohu* and *bohu*, just as in Genesis. Here, it is very clear that these words are used to describe the utter devastation brought about by sin.

This passage is not alone. The pairing of *tohu* and *bohu* is used only one other time in Scripture, in the 34th chapter of Isaiah. There, a warning is extended to all of creation (v. 1) as scenes of the utter desolation and ruin brought about by sin are described, including slaughter, streams turned to pitch, and dust turned to brimstone (vv. 2–9).

Of interest is the prophet’s description in verse 11 of what God is doing with such destruction: “And He shall stretch out over it the line of confusion and the stones of emptiness.” The ancient Hebrew shows here what modern readers miss in their translations: The word translated “confusion” in this verse is *tohu* and the word translated “emptiness” is *bohu*.

These two *unquestionably clear* passages of God’s word connect a condition of *tohu* and *bohu* with the desolation, devastation, and destruction that comes upon the land as a *consequence of sin*. But how can it be that Genesis 1:2 describes the earth in a state caused by sin?

If Adam and Eve, the first of mankind, were not created until the sixth day of the Genesis “creation week,” how could any *sin* exist before the first day of that week?

Throughout the physical creation, only humanity is capable of sin—the morally culpable act of defying our Creator. Plants don’t sin. Animals don’t sin. When a lion kills, it isn’t a murderer. It’s just hungry!

If a state of *tohu* and *bohu*—a state of devastation and destruction—came to exist *before* the “creation week” as a consequence of sin, we have to ask ourselves: Did any morally accountable, intelligent, free-will agents exist before the time described in Genesis 1:2?

The Bible’s resounding answer is “Yes!” The *angelic realm* existed before the earth, and its role in the history of creation is fascinating and illuminating. We examine what the Bible says of that history next.

Chapter 7

Of Rebellion, Ruin, and Restoration

When considering the history of all created things, we must consider the *angels*. God’s word reveals that these spirit entities are *created* beings—superior to humanity for now, but serving mankind through their work, and ultimately destined to be under our authority when God’s plan is complete (Hebrews 1:7, 14; 2:7; 1 Corinthians 6:3).

The Bible makes undeniably plain that these beings were created *before* our planet was ever brought into existence. When God begins to reveal Himself and His divine power to the patriarch Job, He challenges Him concerning the very beginnings of the earth, asking in Job 38:4–7,

Where were you when I laid the foundations of the earth?
Tell Me, if you have understanding.... Or who laid its corner-
stone, when the morning stars sang together, and all the sons
of God shouted for joy?

While “sons of God” is used in multiple ways within Scripture to reference both angels and men, in Job the phrase is reserved exclusively for the angels (Job 1:6; 2:1), and the reference to “stars” here makes the assignment clear. (Revelation 12:4 also uses stars to symbolize angels.)

At the laying of the “foundations” and the initial “cornerstone”—the very *beginning* of the creation of the earth—we find that the angels

were already in existence, shouting for joy at the sight! Scripture clearly demonstrates that the angels existed *before* the very foundations of the earth

It also clearly teaches that they are morally accountable individuals with free will. It states in no uncertain terms that at some unspecified point in the distant past, some of these angels sinned and rebelled against their Creator.

The Sin of Heylel—or Lucifer

While the prophecies of Ezekiel 28 and Isaiah 14 directly concern *human* individuals, both of them weave into their words references to an angelic power moving *behind* the thrones of men. In the brief glimpses they provide, a tale is told of a tragic fall from righteousness.

Shifting subtly from the “prince” of the city of Tyre to a “king of Tyre” (Ezekiel 28, compare v. 2 and v. 12), the prophet Ezekiel records words that clearly describe someone *greater* than the physical, human ruler of that ancient land:

You were the anointed cherub who covers; I established you; you were on the holy mountain of God; you walked back and forth in the midst of fiery stones. You were perfect in your ways from the day you were created, till iniquity was found in you (vv. 14–15).

This angelic being—previously “full of wisdom and perfect in beauty” (v. 12), resplendent and filled with creativity from the moment of his creation (v. 13)—*sinned* and became filled with violence, and was cast “out of the mountain of God,” profane and corrupted (v. 16).

What had taken place? What was the iniquity that filled and polluted this mighty cherub? More details are given in Isaiah’s prophecy, including the cherub’s name: *Lucifer*.

How you are fallen from heaven, O Lucifer, son of the morning! How you are cut down to the ground, you who weakened the nations! For you have said in your heart: “I will ascend into heaven, I will exalt my throne above the stars [or angels] of God; I will also sit on the mount of the congregation on the farthest sides of the north; I will ascend above the heights of the clouds, I will be like the Most High” (Isaiah 14:12–14).

“Lucifer” is actually a word borrowed from the Latin Vulgate translation of the Bible. In Hebrew, the word translated here as “Lucifer” is *Heylel*. This cherub, Heylel, sought to be more powerful than even His Creator, the “Most High”! This is the “origin story” of none other than Satan the Devil, whom Jesus says He saw fall from heaven like lightning (Luke 10:18). Upon his defeat, he was no longer Heylel or Lucifer—meaning, “light-bringer” or, as Isaiah 14:12 says, “son of the morning”—but had become *Satan*, a word that means “adversary.”

Revelation 12:4 seems to indicate that Lucifer, now Satan, convinced a third of the angels to follow him in rebellion. This doomed ascent into heaven against the Creator explains other passages that speak of “the angels who sinned” (2 Peter 2:4) and “angels who did not keep their proper domain, but left their own abode” (Jude 6).

But Where Was He?

There are fascinating details tucked away in Isaiah’s description of this angelic rebellion that often go unnoticed! For instance, note that Lucifer says, “I will *ascend* into heaven” and “I will ascend *above the heights of the clouds*” (Isaiah 14:13–14).

If one must *ascend above the clouds*, then one is clearly *below* the clouds! Before his rebellion, Satan the Devil was *below the clouds* and on the earth. This scriptural association of the devil with the earth is significant, showing up in places such as Job 1:7 and Job 2:2, where Satan speaks of the time he spends *on earth*. And no lesser an authority than the Savior Himself, Jesus Christ, calls Satan “the ruler of this world” *three times* in Scripture (John 12:31; 14:30; 16:11).

Satan himself explains why he has such authority on the earth. While tempting Christ in the wilderness at the beginning of His ministry, the devil shows Jesus a vision of “all the kingdoms of the world” (Luke 4:5). He then makes his “pitch” to the Son of God:

And the devil said to Him, “All this authority I will give You, and their glory; for this has been delivered to me, and I give it to whomever I wish. Therefore, if You will worship before me, all will be Yours” (vv. 6–7).

Jesus, of course, rebukes the devil, explaining that only God is to be worshiped (v. 8). But notice: not once does the Son of God *disagree*

with the devil's assertion! Quite the contrary, He accepts that God has given Satan such a position of power in the world. When Christ called Satan "the ruler of this world," He meant it!

The full picture emerges when we put all of these scriptures together. The archangel Lucifer was given charge of the earth, along with possibly a third of the angels, for whatever purposes the Creator had in mind. However, filled with pride and sinful ambition, Lucifer came into a state of iniquity—ultimately resulting in a foolish attempt to seize God's own throne for himself, as he led an army of angels into rebellion against the Almighty!

The Apostle Paul warns the evangelist Timothy to be careful of assigning responsibilities to novices, lest they be overcome with ambition and pride, and "fall into the same condemnation as the devil" (1 Timothy 3:2–6). The tale of Satan's beginnings certainly explains the apostle's concerns!

Angelic Sin Brings Devastation

Note carefully that when we first "meet" the devil, tempting Eve in the guise of the Garden of Eden's serpent (Genesis 3:1), he is *already in rebellion!* These events—the assigned responsibility of Lucifer and his subordinate angels over the earth, his swelling pride and vanity, his growing ambition and politicking among the angels, his rebellion and ascension above the clouds in revolt, and his defeat and being cast back down to the earth—take place *before* the "creation week" described in Genesis!

Earlier, we asked what morally accountable, intelligent, free-will agents could possibly have existed and sinned before Adam and Eve, and hence caused a ruined and desolated condition of *tohu* and *bohu* to befall the earth. Turning to the Bible, we have found *just such a tale* woven together by the inspired words of Scripture.

Apparently, the *tohu* and *bohu* brought about on the earth—the state of chaos, ruin, and devastation mentioned in Genesis 1:2—was the result of sin and rebellion against the Creator, just as it is depicted in Isaiah 34:11 and Jeremiah 4:23. Whether it was directly the result of the angels' sinful *mismanagement* of their responsibility or the Almighty's direct punishment of their rebellion is irrelevant. *Sin causes destruction*, and always has. This is a law of the universe, applicable to entire civilizations as well as to the life of every individual person!



The ruins of man's civilizations litter the earth, but none of them compare to the devastation of the whole world that occurred during the angelic rebellion.

With this understanding, we see that what God accomplished over the course of those seven amazing days described in Genesis was not the creation of the world from nothing, but a remarkable *restoration*. He restored a beautiful world He had created earlier but which had been devastated by the sinful rebellion of its appointed stewards. Genesis 1:1–2 truly *can* be translated,

In the beginning, God created the heavens and the earth. But the earth was [since it *had become*] a wasteland and a desolate ruin; and darkness was on the face of the deep. And the Spirit of God was hovering over the face of the waters.

The picture is clear. Sometime in the past, God created *all things*—first the spirit realm and the angelic beings, then the physical realm, including the earth—as the theater in which His plan would unfold. According to His purposes, the new earth was placed under the stewardship of Lucifer and his angels, who eventually rebelled against their Creator, leaving the world a devastated wasteland. Upon defeating that rebellion, God restored the world 6,000 years ago, exactly as the biblical chronology describes, over the mere span of one

week. And the world so restored is the world in which we now live—the world remaining under the rule of Satan the Devil, who is due to be replaced by the King of kings, Jesus Christ, upon His return.

Observations and Objections

Several things should be noted about this understanding of the history of the world—about how it is grounded, about what it says, and about what it doesn't say.

- This understanding is grounded in *Scripture*—not in attempts to reconcile the Bible with geology and evolution, nor in the historical attempts of others to do so.
- The seven days of the “creation week” (which, as we see now, was a “re-creation week”) remain seven *literal* 24-hour periods, one after the other, 6,000 years ago.
- This understanding of history does not provide many details about the earth before the time we can call the *Tohu-Bohu Divide* that separated the world under angelic stewardship from the world re-created and refashioned by God. It does not tell us how long the “original” earth existed before the Tohu-Bohu Divide, nor does it explain what sort of physical life may have been present on it during that time.
- Scripture makes clear that *mankind was not created until 6,000 years ago* when Adam was formed from the dust and Eve from his rib. Regardless of what life-forms populated the earth before the Tohu-Bohu Divide, Adam was the *very first man* (1 Corinthians 15:45, 47).
- It is also clear that whatever life-forms did exist before the Tohu-Bohu Divide, none of them seem to have survived the destruction wreaked by the angelic rebellion. The earth was completely renewed during “creation week.” That is not to say that God did not re-create some plants and animals that existed before the destruction, or create new plants and animals of a similar kind to the old, but that period before the Genesis “creation week” during which Earth was in a state of chaos and desolation due to the angels' sin represents an impassable bar-

rier in time for physical life. All life on earth began anew with the “creation week” of Genesis 1.

To be sure, this understanding of the beginning of Genesis is not without its critics, but most of the criticisms are easily addressed. The four most significant of these are outlined by young-earth creationist Ken Ham, in his book *The Lie: Evolution/Millions of Years*:¹

1. Any interpretations, such as this one, that claim to see an older earth in the Bible “were essentially nonexistent prior to 1800” and were created as “an attempt to accommodate the long ages promoted by uniformitarian science.”
2. The grammar of Genesis 1:2 precludes any great amount of time between the initial creation and the state of *tohu* and *bohu* described in that verse.
3. Exodus 20:11 precludes the possibility of the heavens and earth being older than the Genesis “creation week.”
4. This understanding means that death and suffering had to exist in creation before Adam’s sin (presumably violating Romans 5:12).

As you may note, several of these points have already been addressed. For example, we have seen that the first criticism is simply unwarranted and inaccurate. Belief in the existence of an indefinite period before the first day of “creation week” has an ancient pedigree. As one more example, Simon Episcopi² taught in the early 1700s that, between the creation “out of nothing” in Genesis 1:1 and the state of the world described in Genesis 1:2, there was a period of time that was needed to “account for the fall of the wicked angels.”² Clearly, such understandings existed long before Charles Darwin ever laid eyes on a single finch’s beak. They cannot be dismissed as rooted in an effort to compromise with evolution.

That having been said, the record of written history concerning these understandings is irrelevant compared to whether or not they are *true according to the Bible*. And as we have established, this understanding is founded in an effort to allow the Bible to be interpreted by the Bible, not according to the imaginations, speculations, or even scientific endeavors of human beings.

We have also already addressed the criticism concerning Hebrew grammar, noting that a number of linguistic and Hebraic scholars *do* see room in Genesis 1:1–2 for a time span of unindicated duration to exist before “creation week” began. There is no unanimity at all on the idea of “grammar” being somehow prohibitive of this understanding—in fact, some, such as Dr. Richard Friedman, are quite adamant that the grammatical language of Genesis 1:2 *requires* the condition of *tohu* and *bohu* to precede the first day of “creation week.”

Concerning Exodus 20:11, the answer is a simple one. Contained within the fourth commandment, which concerns the keeping of God’s seventh-day Sabbath, the verse states, “For in six days the LORD made the heavens and the earth, the sea, and all that is in them, and rested the seventh day. Therefore the LORD blessed the Sabbath day and hallowed it.” But there is no argument here about “creation week” itself, which did indeed last seven *literal* 24-hour days: six days in which God fashioned (“made”) the beautiful world of Adam and Eve from the chaotic desolation of the past, followed by the seventh day of that week, in which God created the Sabbath, not by His work but by His rest. Also, the Hebrew word “made” in Exodus 20:11 is *ʿasah*, which has a meaning consistent with making something out of pre-existent material. For example, Noah was told to “make”—*ʿasah*—the ark out of gopherwood in Genesis 6:14, not to create the ark out of “nothing.”

There is no contradiction, at all, between God’s marvelous work of “creation week” 6,000 years ago, described in Exodus 20:11, and the ruin of the earth that preceded that work.³

Death and Suffering Before Adam?

Finally, does the concept of destruction, devastation, and animal death before the existence of Adam and Eve and the first sin of humanity somehow disagree with Romans 5:12?

In that verse, the Apostle Paul tells us that “through one man sin entered the world, and death through sin, and thus death spread to all men, because all sinned.” The “one man” here is clearly Adam, and it must be accepted as a foundational spiritual truth that we experience suffering, pain, and death due to the initial sin of Adam and Eve. Every human being after them—other than Jesus Christ—has repeated their mistake, “for all have sinned and fall short of the glory of God” (Romans 3:23). Other verses make similar claims (e.g., 1 Corinthians 15:21–22).

Does this contradict the idea that angelic sin and devastation occurred before Genesis 1:2? Not at all.

We must first note that Romans 5:12 is clearly focused on *human* death: Adam's sin (and all sin that followed) ensured that "death spread to *all men*, because *all sinned*." That is, because all *humans* other than Jesus Christ have sinned.

However, that is not the only factor to consider. Clearly, Satan's sin preceded Adam's. Did Satan's sin somehow *not* cause suffering? Does sin ever fail to produce suffering?

If there were any animal life-forms in existence during the period before the Tohu-Bohu Divide, when the angels were custodians of the world, the growing rebellious nature of Lucifer and his subordinates would surely have impacted them, and the impact of sin is always one of suffering, strife, and pain. Indeed, the evidence we have of the world of the dinosaurs certainly matches such a description.

Yet, *our* world could have been different! After the complete physical restoration of the world and the creation of mankind, God declared before His Sabbath rest that all He had done was "very good" (Genesis 1:31). There was no reason why it could not have remained so. Had Adam and Eve chosen to listen to their Creator instead of the devil, it *would* have remained so! But they did not. And through their choice—a choice we have all repeated in our own ways—suffering, pain, and death entered the restored world.

Clearly, the understanding we have described is not in contradiction with Romans 5:12.

None of this is to say that this understanding does not come with unanswered questions. It does, as do all other explanations of the earth's origins. We would argue that this understanding provides *better* answers than those explanations, answers more consistent with *all* the facts considered as a *whole*. Still, the Apostle Paul's comments to the Corinthians that, in this life, we only "know in part" (1 Corinthians 13:9, 12) should remind us that humans will never find an answer to every last question before Jesus Christ's return.

Before we conclude, however, let us address two questions that are among the most frequently asked: Where do the dinosaurs fit in all of this? And *what about man?*



Chapter 8

What About the Dinosaurs?

With such an understanding of the biblical timeline in place, the possibilities for understanding the history of life on earth are far more open than young-earth creationists are willing to grant, yet still more narrow than evolutionists will allow themselves to perceive.

It is possible, even probable, that the saga of the dinosaurs—and so many other prehistoric creatures whose fossils have been preserved for us—played out *entirely before* the Tohu-Bohu Divide of 6,000 years ago and before the re-creation we see in Genesis. If so, then the traditional “millions or billions of years” timelines assembled by geologists and other scientists may be largely accurate—with the exception of those most recent millennia when man comes into play.

A World “Red in Tooth and Claw”

If these creatures existed only during the ages before the Tohu-Bohu Divide, then the world they occupied was under the guidance of the cherub Lucifer and his angelic hosts, but the Bible says little else about that time. However, our experience in *this* world does give us some basis upon which to speculate. After all, that cherub, now called Satan, is still the ruler of this world (John 14:30) and the “god” of this “present evil age” (2 Corinthians 4:4; Galatians 1:4). What is our world today like under his influence?

The evidence is all around us. In the memorable words of Alfred Tennyson, our world is “red in tooth and claw.” Predators prey on the

weak and vulnerable. All fight to live from day to day. Compete. Eat or be eaten. Survive, or become the food of those who do.

This is what all realms become when those given custody of them are consumed by sin.

Surely, Lucifer's rebellion would have influenced the world of the dinosaurs in similar ways. But what we do *not* know from Scripture is how long that world lasted. When there are no humans around to note the passing of time, what is the passage of a thousand years—or even a million—to those of the spirit realm? We know that with God, a thousand years passes like a day (2 Peter 3:8). And we know, too, that God often waits to act in the world until cultures of sin have reached their utter fullness (cf. Genesis 15:16; Daniel 8:23). It is possible that the ancient world before the Tohu-Bohu Divide saw very little *other* than an angelic custodianship that was increasingly tainted by sinful attitudes.

These things having been said, we do need to be careful. First, we must remember that we are only speculating. Jesus said to His Father, "Your word is truth" (John 17:17), and unless what we say is confirmed by God's word, the possibility remains that it could be wrong. It is possible, for instance, that some dinosaur-like creatures were created after the Tohu-Bohu Divide. Perhaps the vast majority existed over the millions of years *before* the life-destroying devastation of the Satanic rebellion, while some similar animals were also part of the *re*-creation. The Bible does speak of some animals that certainly call to mind fearsome, dinosaur-like characteristics—namely Behemoth and Leviathan (Job 40:15–41:34). Perhaps some of these later creatures, as parts of the post-Eden world, became the basis for man's tales of dragons and great serpents. Again, we can only speculate.

Creations of the Devil or God?

We also need to be careful concerning the conclusions we might be tempted to draw about dinosaurs. Some look at the fearsome features of the famous Tyrannosaurus Rex and carelessly assume that anything that vicious must have been a "creation" of the Devil and not of God. However, the Bible never credits the Devil with creating *anything*—at least not in the way that God is able to create. In fact, if anyone thinks that only the creatures of the ancient past can be vicious, he needs to watch a few more nature documentaries! The scene of a hungry lion capturing a lone gazelle and beginning to eat

the wounded animal while its body is still warm should be enough to convince anyone that the past has no monopoly on vicious animals.

Yet God takes credit for the lion's ability to hunt and kill its food, just as He deserves credit for all of the marvelous design we see in nature, every portion of which brings Him glory (Psalm 148). We should never give the devil honor and glory that belongs only to God. The Almighty made all things through Jesus Christ, just as the Bible declares: "All things were made through Him, and without Him nothing was made that was made" (John 1:3). You would be hard pressed to find a more definitive statement than that.

Even when mankind enters the picture and actively breeds animals to accentuate and heighten specialized skills and characteristics—say, the ability of a bloodhound to detect the faintest of scents, or the intelligence of a border collie—we are simply taking advantage (for good or ill) of the remarkable machinery and programming of life, for which, again, God receives all credit.

This applies just as much to the dinosaurs. These creatures were equipped by God to survive in their world, just as lions, cobras, and grizzlies are equipped by God to survive in ours. Anyone looking at the fossilized skeleton of a fierce Allosaurus or that of a towering 41-foot tall Brachiosaurus in Berlin's *Museum für Naturkunde* and feeling moved to praise God for the power and grandeur reflected in the design of these animals is justified in doing so. God Himself uses the terrible and fearsome qualities of the creature Leviathan to communicate His own majesty to Job.

Dinosaurs and Man?

If the vast majority of the history of the world lies in the ancient past—before the Tohu-Bohu Divide of 6,000 years ago and before the Garden of Eden—and if all or most of the dinosaurs lived during that time, it would explain why there is so little evidence to suggest that man and dinosaurs lived at the same time. Mankind has only existed since its creation 6,000 years ago, after the earth's restoration from desolation and destruction. Those dinosaurs and other extremely ancient life-forms would never have seen a single human being.

Young-earth creationists often tout evidence that could be interpreted as suggesting mankind and dinosaurs lived together, and what they have to say shouldn't be ignored without consideration. When

Mary Schweitzer found “soft tissue” in a fossilized Tyrannosaurus Rex bone dated to 68 million years ago, many of her paleontologist colleagues dismissed the possibility. The conventional wisdom held that tissue such as red blood cells could never survive for so long, and that fossilization destroyed all such “soft tissue” components.

And yet, there it was under her microscope lens. Hard evidence of soft tissue.

It was only the first discovery. Since then, paleontologists have discovered additional samples, however small, in fossilized bone—not enough to re-create Jurassic Park, but enough to make for fascinating study. Speaking of these results, and the lesson learned from Schweitzer’s persistence, paleontologist Thomas Holtz noted, “There’s a lot of really basic stuff in nature that people just make assumptions about.”¹

Her discovery was trumpeted by young-earth creationists as evidence that fossilization happens far more rapidly than supposed and that the dinosaur bones must be far younger than believed, much to Dr. Schweitzer’s disappointment. Though she considers herself a Christian, she disagrees with such conclusions, noting that she is absolutely sure of the age of the layer in which the bones were found: 68 million years. “They [some young-earth creationists] treat you bad,” Schweitzer told *Smithsonian Magazine*. “They twist your words and they manipulate your data.”²

That characterization should not be taken as a blanket description of all young-earth advocates, most of whom are very sincere in their desire to understand. But none of us are immune to the temptation to cherry-pick our data—quickly praising results that support our favorite theories, but just as quickly dismissing those that seem to counter them. And when it comes to “evidence” that man lived alongside dinosaurs, cherry-picking seems to abound.

For some time, footprints in the Paluxy River valley near Fort Worth, Texas, were claimed by some young-earth creationists as evidence of humans and dinosaurs walking together at the same time. More recently, young-earth advocates have distanced themselves from that conclusion.³ Evidence of human carvings that some interpret as showing dinosaurs are often revealed to have far more mundane explanations, especially when considered more closely. As already mentioned, historical references to dragons and other similar

beasts, if they are rooted in any facts at all, could be taken as being based on human experiences with dinosaur-like beasts created after the Tohu-Bohu Divide, and do not prove that man co-existed with actual dinosaurs.

To his credit, Ken Ham has taken other young-earth supporters to task for jumping too quickly on some “discoveries”—claiming them as “evidence” of their theory and using them to battle the “evidence” of the other side.⁴ But many still practice such cherry-picking, much to the damage of their side’s credibility.

Any honest observer would have to agree that the “evidence” of cohabitating humans and dinosaurs is virtually non-existent. And, given what an impression it would have made in human history if mankind and dinosaurs *had* existed together in the same time period, the lack of credible records or evidence saying that they did should be considered positive evidence that they did *not*.

A Far More Interesting Question

Whether all the dinosaurs lived entirely in the world managed by the angels before the desolation of the Tohu-Bohu Divide, or whether some of them—or something like them—may have lived in the world God renewed and re-created 6,000 years ago is certainly an interesting question. But it is not the *most* interesting question.

More than where the *world* came from, most of us want to know where *we* came from. What is the origin of *humanity*? Did mankind evolve? What are we to think of human “evolutionary trees” we find in our biology and anthropology textbooks?

The history of the world is fascinating. But it is the history of *us* that commands our attention.



Chapter 9

What About Man?

While the evolution and creation debate may continue until Jesus Christ returns to settle it in person, much of it centers on one particular question: Did humanity evolve?

Even after evolution has been taught in our schools for decades, the question is far from settled in the minds of the public—even among the irreligious. For example, in relatively secular Canada, a three-year survey reported that 38 percent of Canadian atheists (people who believe God does not exist) did not believe evolution could explain human consciousness, and 31 percent believed that evolution “cannot explain the origin of human beings.”¹ Again, these were the percentages for *atheists*, not believers in God. Clearly, such doubt is motivated by more than religious concerns and questions.

But is there room for doubt? After all, the depiction of a monkey- or chimp-like creature turning, step-by-step, into a modern human (or at least a “cave man”) is one of the most popular symbolic depictions of evolution in the public consciousness. While some may doubt, many others take man’s evolution as a given.

Earlier, we wrote about the very few hypothetically complete “transitional fossil” lineage reconstructions, such as those proposed for horses and whales. Yet the supposed fossil lineage often touted as the most *completely filled and understood* is that of *humanity*. As Casey Luskin writes in *Science and Human Origins* (emphasis added),

Evolutionary scientists commonly tell the public that the fossil evidence for the Darwinian evolution of humans from ape-like creatures is incontrovertible. For example, anthropology professor Ronald Wetherington testified before the Texas State Board of Education in 2009 that **human evolution** has “arguably the **most complete sequence of fossil succession of any mammal in the world**. No gaps. No lack of transitional fossils.... So when people talk about the lack of transitional fossils or gaps in the fossil record, it absolutely is not true. And it is not true **specifically for our own species**.” According to Wetherington, the field of human origins provides “a nice clean example of what Darwin thought was a gradualistic evolutionary change.”²

And yet, as Luskin notes, “Digging into the technical literature, however, reveals a story starkly different from the one presented by Wetherington and other evolutionists engaging in public debates.”³

In fact, doesn’t Dr. Wetherington’s statement seem suspect on its face? Why would the rocks bearing the fossil record be so biased as to provide human beings their *own* lineage as opposed to that of other “animals”? Why should humanity somehow dominate the fossil record for the last few million years? How do we understand these supposed “human ancestors”?

Before we dive into the science, let us remind ourselves about the truth of God’s word concerning mankind. For while God makes it plain that mankind is a part of His creation—even created on the same day as the animals during His restoration of the world—He also makes it just as plain that mankind is not *merely* a part of that creation.

A Creation Apart

The testimony of God in the pages of Scripture, reviewed earlier in this book, is absolutely clear: Man was the result of divine creation. While there may have been a world under the care of the angels *earlier* than 6,000 years ago—a world devastated by their sin and in need of renewing by the hand of God—mankind was first brought into existence on Day Six of that “creation week.” We are told in Genesis 1:26–28,

Then God said, “Let Us make man in Our image, according to Our likeness; let them have dominion over the fish of the sea, over the birds of the air, and over the cattle, over all the earth and over every creeping thing that creeps on the earth.” So God created man in His own image; in the image of God He created him; male and female He created them.

Then God blessed them, and God said to them, “Be fruitful and multiply; fill the earth and subdue it; have dominion over the fish of the sea, over the birds of the air, and over every living thing that moves on the earth.”

As the only creatures on earth uniquely made in the very image of God, man and woman were also given responsibilities and authority that mirrored those of God, such as dominion over the earth and those creatures lesser than them. Even the command to “be fruitful and multiply” reflects the purpose of the Father and the Son to reproduce Themselves through the creation of humanity.⁴

This is the story given by God in the Bible of the origins of mankind almost 6,000 years ago—the creation of the first man and woman, Adam and Eve, from the dust of the earth.

Biblically, there is no reason to consider this tale a mere metaphor or something symbolic. It may be at odds with the desires of today’s naturalistic materialists and their “no God” approach to understanding the world, but that doesn’t make it false. All references to this couple in Scripture, including those of the Apostle Paul and Jesus Christ, Himself, treat them as real human beings, the first of their kind, who are the physical father and mother of all humanity (e.g., Romans 5:14; Matthew 19:4). And the biblical details provided concerning lifespans and the lengths of various reigns date their creation to about 6,000 years ago. On these things, the witness of God’s word is clear.

So, if mankind was brought into existence only six millennia ago, and if Adam and Eve were truly the first of their kind, created to reflect God’s own image, then what are we to make of the bones and fossils on display in museums around the world, described as the remains of ancient human ancestors and claimed as evidence of mankind’s development from ape-like ancestors who lived millions of years ago?

Just how solid is the evidence of human evolution? An exhaustive review of the claims of evolutionists is beyond the scope of this book, but even a brief review of the science of “human origins” reveals much room for doubt.

Understanding the Hominins

Their bones—usually their skulls—and their currently assigned species names are often arranged on evolutionary trees for us in textbooks and in science documentaries. Some of them clearly seem human. Some, not so much.

They are the *hominins*, the name assigned by some paleoanthropologists to the presumed evolutionary lineage of humanity going back millions of years.

For the sake of simplicity in this chapter, we will use the word *hominin* to refer to this entire group (and, in references, sometimes the slightly different word, *hominid*), but do not let our use of the term for purposes of convenient discussion imply that grouping these creatures together as a lineage of descendants and ancestors is *correct*.⁵ As we will see, even outside of the Bible’s inspired testimony, there is good scientific cause to question the accuracy of these supposed “family trees.” In fact, there is good reason to question almost everything that is claimed about them.

The science of paleoanthropology, the study of fossils and other remnants in an attempt to understand what is supposed to be human evolution, is one filled with challenges. A primary difficulty is that the fossils that have been found to date are relatively few and relatively rare—often no more than mere bone fragments. Stephen Jay Gould wrote in his famous book, *The Panda’s Thumb*, “Most hominid fossils, even though they serve as a basis for endless speculation and elaborate storytelling, are fragments of jaws and scraps of skulls.”⁶ The situation has changed little since Gould wrote almost 40 years ago. There are some impressively complete (and rare) skeletons here and there, but “fragments and scraps” is still the rule more than the exception.

Yet, while the evidence is sparse, emotions are high. As paleoanthropology writer Roger Lewin wrote in his book, *Bones of Contention*, “There *is* a difference. There *is* something inexpressibly moving about cradling in one’s hands a cranium drawn from one’s own ancestry.”⁷

Only the naïve would assume that such emotions do not make a difference in terms of how fossil finds are interpreted. After all, who wants to claim discovery of an ancient *chimpanzee* ancestor or ancient *gorilla* ancestor, when a far more “inexpressibly moving” interpretation is so tempting?

Yet, setting emotions aside, assembling an accurate evolutionary tree (assuming, for the sake of argument, that one exists) from the scraps we have found represents a technical challenge that is rarely recognized in public—and the results possess a level of uncertainty and speculation that is also rarely mentioned.

For example, in 1999, anthropologists Mark Collard of University College London and Bernard Wood of George Washington University tested the reliability of creating evolutionary trees for humanity based upon craniodental features (skull and tooth measurements). Ingeniously, they took the *same* craniodental techniques applied to hominin fossils and applied them to the bones of various primates, such as baboons, gorillas, macaques, orangutans, and chimpanzees. This allowed them to test the resulting primate “evolutionary tree” against the relationships we already know about these animals.

The resulting “tree” did not match the real relationships between the animals at all. The techniques used to group and arrange supposed human ancestors failed miserably to correctly group the known primates.

As Collard and Wood summarized (emphasis added), “[T]hese results indicate that little confidence can be placed in phylogenies [evolutionary trees] generated solely from higher primate craniodental evidence. The corollary of this is that **existing phylogenetic hypotheses about human evolution are unlikely to be reliable.**”⁸

Adding to the unreliability of such efforts to create “evolutionary trees” is the fact that nothing is known of each specimen’s “soft tissue” biology (e.g., organs) and, other than clues from artifacts, little to nothing is known of the creature’s habits, behaviors, and capabilities.

Given to Personal Interpretation

The small number of fossils available, the absence of much information beyond the fossils, and the passions and politics involved in the practice of paleoanthropology make the science of “human origins” one filled with a great deal of speculation and personal interpretation.

Often the discoverers don't know whether their small collection of bones all come from the same organism or different individuals—or even different species.

Lewin comments on this aspect of the temptation to apply personal interpretation when seeking to explain hominin remains, quoting prominent Harvard anthropologist Earnest Hooten (emphasis added):

The tendency towards aggrandizement of a rare or unique specimen on the part of its finder or the person to whom its initial scientific description has been entrusted, springs naturally from human egoism and is almost ineradicable... [An individual is likely] to leave no bone unturned in **his effort to find new and striking peculiarities** which he can interpret functionally or genealogically. Unless he is very experienced, he is prone to discover new features which are **partially the creations of his own concentrated imagination.**⁹

Well-known paleoanthropologist Richard Leakey has commented on the unavoidable nature of such work, noting of the supposed human ancestor *Homo habilis*:

Of the several dozen specimens that have been said at one time or another to belong to this species, at least half probably don't. But there is no consensus to which 50 percent should be excluded. No one anthropologist's 50 percent is quite the same as another's.¹⁰

It is easy to think that such foibles might only affect individual discoveries (or discoverers) and not the study of “human origins” *systemically*, or as a whole. “After all,” one might think, “the details might be fuzzy, but surely the whole picture cannot be far from the truth.”

Such thinking would be mistaken, and the possibility of vast error was powerfully illustrated by a single discovery in Dmanisi, Georgia, just north of the nation's border with Armenia.

The Dmanisi Five

In 2013, *Science* published a study several years in the making, analyzing five hominin skulls found at the same location in Dmanisi,

dated using conventional methods to be approximately 1.8 million years old.

By any standard, the find in Dmanisi is dramatic. One of the skulls, creatively dubbed “Skull 5,” is understood to be the most complete skull ever found from that period. The discovery of these skulls and their analysis has generated controversy that continues today, primarily due to the variety exhibited in the collection—even the startling variety present in the single Skull 5, presumed to be that of a *Homo habilis*.

Together, the skulls were so different from each other that one of the study authors remarked that it would be tempting to declare them all to be from separate species. But seeing as how the skulls are all from the same geographic region and the same narrow window of geologic time, they should be from the very same species.¹¹ Later analysis supported the idea that paleoanthropologists have been “multiplying” human species unnecessarily, suggesting that at least three ancient “human” species—*Homo erectus*, *Homo habilis*, and *Homo rudolfensis*—were actually not three separate evolutionary lineages at all, but were the *same* species.¹²

Excavation leader David Lordkipanidze explained (emphasis added), “If you found the Dmanisi skulls at isolated sites in Africa, some people would give them different species names. But one population can have all this variation. **We are using five or six names, but they could all be from one lineage.**”¹³

Tim White, Director of the Laboratory of Human Evolutionary Studies, notes, “Some paleontologists see minor differences in fossils and give them labels, and that has resulted in the family tree accumulating a lot of branches.” But much of that “tree” may be an illusion. According to Dr. White, “The Dmanisi fossils give us a new yardstick, and when you apply that yardstick to the African fossils, a lot of that extra wood in the tree is dead wood. It’s arm-waving.”¹⁴

The debate about the Dmanisi Five still rages. But consider the implications: A *single discovery* has the potential to completely redraw the commonly accepted “evolutionary tree” of humans and essentially delete multiple (presumed) human species from existence. Just how fragile are the theories on which those conclusions are based?

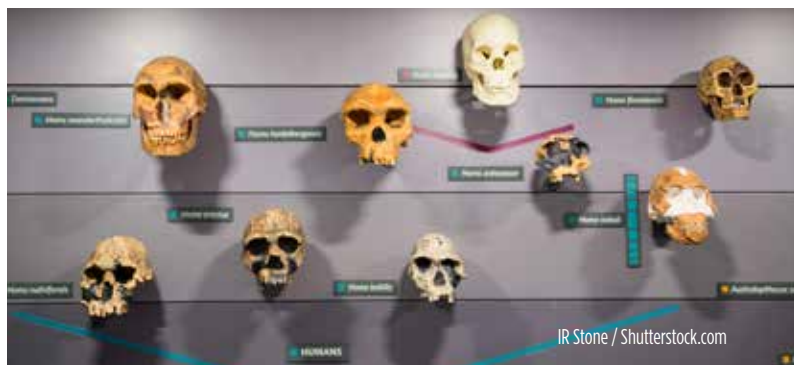
Regardless of the confidence we see displayed in hypothetical human “evolutionary trees” presented by museums, textbooks, and

television documentaries, when one looks more deeply he finds ample cause to question the “orthodoxy” of human evolution.

Still, what should we think of hominin fossils? Let’s consider a few possible ways these remains may fit within the truth God has revealed concerning creation and mankind.

Of Apes and Men

What strikes many who are not quite as beholden to evolutionary orthodoxy is the distinct differences between two groups of these supposed human “ancestors” and “relatives.” Some fossils are very clearly reminiscent of humans and others are far more similar to apes and chimpanzees.



Hominin fossils are assigned evolutionary relationships to each other that often don't stand up to scrutiny.

Those fossils that fall into the category of *Australopithecines* seem to be far more obviously of the ape-like variety. Though presumed to be ancestors (or at least evolutionary relatives) of humanity, this connection between these creatures and humanity is just that: a *presumption*. Beyond the desire among scientists to establish a human “evolutionary tree” and the presumption that such a tree *can* be established, there is no solid reason at all to believe that these creatures are human ancestors.

Yet other fossils, many of those of the *Homo* genus, certainly do seem far more human-like.

Evolution-based biases have often influenced artists to depict these creatures as ape-like or animalistic and primitive. But when those biases are set aside, artistic renderings of creatures such as *Homo neanderthalensis* (more commonly called “Neanderthals”) and *Homo erectus*, based merely on their bones, tend to make them look like one of *us*. In fact, labels such as *Homo neanderthalensis*, *Homo erectus*, and even *Homo sapiens* (the designation given to modern humans) are just that: man-made labels. They don’t represent borders drawn by God, but designations made by humans struggling to make sense of the world—often without the guidance of God and under the assumption that human evolution is a fact.

Would all the descendants of Adam and Eve look exactly like we do, today? Would they all possess the same average height and build? Even setting aside the beautiful variety we see in today’s human race, the Bible actually describes an even greater variety in ages past. Goliath of “David and Goliath” fame was, according to the Masoretic Text of 1 Samuel 17:4, “six cubits and a span” in height—between nine and ten feet (or around three meters). Other biblical passages speak of “giants,” such as Genesis 6:4 and Numbers 13:33. If humanity is capable of such variety, does it take much to imagine that Neanderthals may be just another variety of human being, made in God’s image?

After noting that the brain capacities of *Homo erectus* and *Homo neanderthalensis* skulls are within the known range of modern human skulls, Casey Luskin writes concerning Neanderthals that modern researchers have had to revise earlier descriptions and images that depicted them as “bungling, primitive precursors to modern humans.” Instead, time has shown that we would probably

find Neanderthals to be very similar to ourselves—in other words, “just people.”¹⁵

Descendants of Adam?

Are they descendants of Adam and Eve, like the rest of us alive today? The primary challenge to accepting such a possibility is the standard geologic timeline assigned to these species: typically dates as far back as two million years ago.

But is the timeline correct? To be sure, if the traditionally determined time scales of hundreds of thousands or even millions of years is correct, then these creatures *cannot* be human—that is, cannot be descendants of Adam and Eve. As we’ve noted, the Bible is clear that mankind was created 6,000 years ago and placed in the Garden of Eden. Even if all other fossils match the ancient dates traditionally assigned them by modern science—placing them before the Tohu-Bohu Divide discussed earlier—we know that mankind did *not* exist before the re-creation described in Genesis. Man and woman are a unique creation of God that exists only on this side of the cataclysm that resulted in the desolation mentioned in Genesis 1:2.

So, if the methods used to date these hominin fossils are correct, then they are definitely not human beings and not descended from Adam and Eve. At best, they might represent some sort of “advanced bipedal ape,” but they would not be humans made in God’s image.

Yet, there is good cause to question the dating methods used to determine the age of some hominin fossils. Exploring the scientific principles and presumptions behind many of these methods is beyond the scope of this book, but suffice it to say that there is room for considering multiple possibilities. Among the *biblical* factors that could affect estimations of time are questions about the condition of the world from Eden to the great flood of Noah.

While the Genesis Flood cannot solve all the problems that confront a “young earth” scenario, it is still true that the world God personally restored 6,000 years ago may have been different in ways that we don’t yet fully understand. In Genesis 6:13, God told Noah not only that He would destroy “all flesh” other than the sea creatures and those protected on the ark, He also said, “I will destroy

them with the earth.” And, clearly, the environmental conditions of the world were dramatically different during the time *after* the Flood compared to how they existed during the roughly 1,500 years between the pristine re-creation and the beginning of the Flood—as evidenced by the dramatic decrease seen in the life spans of the patriarchs, as recorded in the book of Genesis. The details of how that environment may have differed—such as atmospheric differences or radiation levels—are lost to us.

Regardless, we know the Bible places man’s creation at around 6,000 years ago. Therefore, human civilization, in the truest sense of the word, goes back no further than that time. Yet scientists claim evidence of human cultures that go back much further, even tens of thousands of years by their reckoning.¹⁶ If those cultures are truly human, then their dating methods are incorrect. In such a case, we may find that creatures such as the Neanderthals are not at all some sort of advanced animals but are, instead, true humans—fellow descendants of Adam and Eve, created, as all humans are, in the image of God and destined for a purpose beyond imagination.

Being Honest About What We Know and What We Don’t

The proper interpretation of the human- and ape-like fossils that we continue to discover is a work in progress, not only in the realm of religion, but also in the realm of secular, “godless” science. Far from writing the last chapter on the subject, paleoanthropology seems barely into the introduction.

Perhaps we’ll find that the standard timelines are accurate and many of the creatures that some claim to be ancestors of man are nothing more than bi-pedal, ape-like animals. The animal kingdom certainly displays many impressive examples of sub-human intelligence, which these ancient creatures may have also possessed, without crossing the line into the realm of exponentially greater human intelligence.

Or, perhaps we will find that those we call Neanderthals and *Homo erectus* are every bit as much descendants of Adam as modern-day *Homo sapiens* are, and the timelines are simply off. We’ve certainly seen reason to believe that may be the case. Meanwhile, creatures such as the *Australopithecines* and others which look far more ape-like would be exactly what they appear to be: non-human

creatures that lived before the Tohu-Bohu Divide, after that time, or a mixture of both.

On these possibilities, we must rule that the jury is still out.

Regardless of how the facts will eventually be understood, the truth will show itself to be in concert with God's word, and the facade of "human evolution" that has been erected in its place will be seen for what it is: myth in the guise of science. Indeed, as we've seen, the cracks in that facade are already becoming more obvious.

Chapter 10

Where Do We Go from Here?

We have come a long way together. Let us take some final moments to review what we have seen.

We have seen that evolutionists who claim it is an established *fact* that mindless, materialistic processes have produced all life on earth from a single ancestor are, to be kind, not being factual themselves. Thomas Nagel's observation, quoted in the introduction, continues to ring true: When we are confronted with the theory that all life has been produced by purposeless natural processes, disbelief is a rational and justifiable response. If evolutionists want the world to accept their theory as fact, they need to explain far more than they can today. Until then, the idea that the intricate complexity of life has been *designed* by a larger and greater intelligence is far more credible—with far more factual consistency.

We have also seen that, while they possess a right and admirable devotion to the literal truth of the Bible, young-earth creationists are pressing a requirement on creation that does *not* originate in God's word.

The Bible *does* speak of a creation event occurring 6,000 years ago, and humanity was a part of that event, brought into existence in the form of our first parents, Adam and Eve. But Scripture also shows us that this event was a *re-creation* of the world—a world that had been under the care of Lucifer and his angels and was devastated upon their rebellion against their Creator. Though God's word clearly places the Garden of Eden and the "creation week"—six days

of creation's renewal and a seventh-day Sabbath—at approximately 6,000 years ago, His word does *not* explain how long ago the Almighty first made the “heavens and the earth.” There was some period of time during which the world, under the angels' custodianship, came to destruction and ruin due to angelic sin. That destruction marks the Tohu-Bohu Divide in earth's history.

Where Do We Go from Here?

If this is the history of the world—based on an accurate reading of Scripture and allowing for a more reasonable understanding of scientific findings—then where do we go from here? How do we all move forward? The debate between the various parties of the “evolution versus creation” conflict has been so intense, *is* there any way forward?

There is. But it will require humility, which seems to be in short supply these days.

It might be too simple to ask everyone to just “get along,” but there are real, concrete steps everyone could take that would help turn the disparate efforts to explore life's origins into something better resembling a collective search for truth. Concerning those steps, we will address different groups separately.

To Evolutionists

First, be upfront and more openly public with the difficulties of your theories and the disagreements within your ranks. The robust discussions and strong differences of opinion need to appear in the public square, not just in the journals of your profession or niche periodicals. When a popular channel wishes to feature your favorite idea as “the” solution above all others, resist temptation. Those among you who publicly paint their preferred explanations of life's phenomena as the “one true way” (even while giving occasional lip service to other possibilities) are damaging your profession and the credibility of scientists everywhere. Many want to blame the loss of “faith” in experts on a gullible public willing to believe anything; they should consider, instead, the fact that the public has grown both weary and wary—tired of experts who make larger claims than they should, and increasingly cautious about which experts to believe. Instead of blaming the public, look to your own house and clean up your own act.

Hiding the difficulties and disagreements for fear of what “creationists” may say is not the solution. Radical truth, honesty, and transparency is the solution. Consider where the facts end and your interpretation of them begins and understand how both mix and mingle in what you communicate. It doesn’t mean that all your interpretations are wrong. It simply means that they must be honestly communicated as that: your interpretations, based on your presuppositions and your worldview.

Part and parcel of this is being willing to stop infantilizing your audience with words meant to shape their understanding without their involvement and active engagement. Stop quibbling over words like fact, theory, and hypothesis (even if “they” started it) and stop crafting your “message” in ways that are motivated more by fear of creationist “spin” than dedication to accurate communication.¹ The words of Stephen Jay Gould may be quoted by thousands of young-earth creationists, but there is a reason why he is seen as an honest communicator about evolution, a theory in which he believed, while Richard Dawkins is seen... well, let’s just politely say that Dawkins is seen differently.

All of that may be a lot to ask, but if you want your work to retain any sort of credibility, it is essential. And there are larger challenges ahead for you.

For example, you need to admit that it is not inherently unscientific to claim that life—in all of its many facets—displays elements best understood as the result of some sort of intelligence. To avoid even the admission that such a conclusion *can* be scientific is ridiculous. Not only does it add to the above-mentioned distrust of experts, it radically cuts you off from valid avenues of research and discovery.

The website *IntelligentDesign.org* states very simply, “The theory of intelligent design holds that certain features of the universe and of living things are best explained by an intelligent cause, not an undirected process such as natural selection.”² Can we all agree that—whether it is true or false—this is a *scientific* statement, capable of being evaluated scientifically?

If the motives of Intelligent Design theorists are suspect because some—even many—of them believe in God, should not the motives of many evolutionary theorists be suspect because some, even many, do not believe in God? Many of Darwin’s most ardent and passion-

ate supporters were motivated to celebrate and advance his theory because it matched their metaphysical leanings. Evolutionist and philosopher Michael Ruse noted of the early naturalists and researchers who latched onto evolutionary theory that, “like everyone else, they had been initially attracted to evolution precisely because of its quasi-religious aspects....”³

Should the work of these early evolutionists be called into question due to their “metaphysics” or “philosophy”? Should their ideas and research be discounted because they found the “quasi-religious aspects” of evolution appealing? Don’t such standards apply in both directions?

Call me an optimist, but I believe that most evolutionists, deep down, recognize that the philosophical barriers that they erect against Intelligent Design are mere tactical maneuvers—positions taken to ensure that the enemy has no comfort, not to serve the purposes of science.

Reconsider. Embrace the Intelligent Design movement as a scientific endeavor, at least in principle, and thereby reclaim some authority for the concept of following the evidence wherever it leads. That idea is far closer to the heart of what science should be than the “deny the apostates and burn the heretics” approach so often seen today.

And there is real evidence to suggest that Intelligent Design has merit. We will not attempt to summarize all of it here, but it exists. If anything, let the words of evolutionary heavyweights Francis Crick and Richard Dawkins guide you. For his part, Crick admonished, “Biologists must constantly keep in mind that what they see was not designed, but rather evolved.”⁴ Dawkins’ words provide similar testimony: “Biology is the study of complicated things that give the appearance of having been designed for a purpose.”⁵

When considered carefully, their denials become ironic confessions. In fact, combined with a hard look—dare we say, a scientific look—at the actual evidence, their “confessions” point more strongly to design than many care to admit. After all, if biologists must “constantly” keep in mind that life was “not designed,” perhaps it is because the evidence they routinely encounter forcefully argues in the opposite direction. Appearances are not always deceiving.

Imagine the benefits that could come from taking seriously those currently developing Intelligent Design theories, even if you don’t agree with their conclusions. As we’ve highlighted, many of your

colleagues and ideological brothers and sisters have already confessed the benefit of their work. The late Lynn Margulis admitted that their analysis of evolution's weaknesses was valid, even as she disagreed with their solution.⁶ Thomas Nagel has argued of evolution and Intelligent Design, "Either both of them are science or neither of them is."⁷

Can science be set free to pursue the truth again—to truly follow the evidence wherever it leads?

To Creationists

Concerning your approach toward evolutionists, it is certainly true that there are those among them who act as living, breathing examples of Paul's condemnation: "For the wrath of God is revealed from heaven against all ungodliness and unrighteousness of men, who suppress the truth in unrighteousness, because what may be known of God is manifest in them, for God has shown it to them.... [A]lthough they knew God, they did not glorify Him as God, nor were thankful, but became futile in their thoughts, and their foolish hearts were darkened" (Romans 1:18–19, 21).

But these words do not match all evolutionists. Many of them are sincere admirers of the same creation you admire, even if they don't understand that it actually *is* a "creation." They see the world through the lens they have been given—the only lens made available by the educational systems of much of the world.

There are times to rail against words, ideas, and speakers in the same way that Elijah confronted the worshippers of Baal. Ridicule is indeed sometimes the weapon of choice for even a godly warrior.

But so, too, is kinder speech, even when addressing those who disbelieve: "Walk in wisdom toward those who are outside, redeeming the time. Let your speech always be with grace, seasoned with salt, that you may know how you ought to answer each one" (Colossians 4:5–6).

Concerning the Bible, you are to be commended for your understanding that "the Scripture cannot be broken" (John 10:35). God is true, and what He reveals is true.

But you need at least two things to get your own house in order in this respect. First is the understanding that, while God's word is truth (John 17:17), we must let *it* speak to *us*—not *dictate* to *it*. At the same time, we must recognize that respecting the Bible also means respecting where it is silent.

Many of you have long resisted absolutely *enormous* pressure to give up and embrace a worldview that makes no room for God—that seeks to evict Him from His own creation. That sort of courage is not common today. It is the sort of courage that God is looking for in a world where individuals willing to stand in the gap are increasingly rare (cf. Ezekiel 22:30).

Our advice to you is not to abandon your devotion to the Bible, but to expand and deepen that devotion—to build on the love for Scripture you already possess.

A life dedicated to the truth of God requires a willingness to change and to passionately pursue possibilities that sometimes feel unnatural and uncomfortable—possibilities God Himself may be revealing to us through His word. In Acts 17, we see that Dionysius the Areopagite and Damaris, first-century Athenian converts, abandoned the modes of worship they had known their whole lives to follow the sound words they heard from the Apostle Paul. Their idols may have been comfortable, but the truth was more important to them.

Truly respecting God's word means respecting what it *actually* says, not clinging to the things we only *thought* it said. Many Jews of the first century faced such a challenge when their Messiah walked among them explaining that their ideas about what Scripture said were wrong, and that what He was telling them was what it truly *did* say.

In the search for truth, it is vitally important to be open to the possibility that the teachings of the Bible are sometimes different from what we may long have thought they were. The Bereans to whom Paul preached were praised for their fair-mindedness and their willingness to examine Scripture to confirm the truth of his message (Acts 17:10–12). But what can be missed in their example is that they weren't simply proving Paul's message by turning to the Bible. They were demonstrating a willingness to change their minds about what they previously believed the Bible said, based on new evidence regarding what it actually *did* say.

And they weren't looking merely into the age of the earth. They were evaluating some of their deepest understandings of the plan of God, how He worked in the world, how He didn't, and the nature of their true obligations to Him. In truth, these matters of belief are *far* more important than whether the earth is old or young—and what the Bible reveals about them, far more surprising.

If you have the courage to begin exploring *those* matters, I would encourage you to contact one of our offices for free copies of our resources *Restoring Original Christianity* and *Do You Believe the True Gospel?* If your devotion to God's word is as passionate as you believe it is, you'll want to understand what the Bible truly says.

To Everyone

The origin of life—of humanity—is one of the most significant mysteries you can seek to understand. It affects all other knowledge you could possess. And the ideas presented in this work represent radically different answers with radically different conclusions.

The question now is this: What do *you* believe about life's origin? As much as we can in a work as compact as this one, we have presented evidence—both scientific and biblical—that we believe is relevant and compelling. We believe that the evidence supports the idea that life has a divine origin, the world is likely to be far older than some want to say it is, and mankind has a unique, more recent origin in the Garden of Eden, having been created in God's image, just as Genesis describes.

But those facts mean nothing if those who believe them do not act in accordance with the truth they reveal. If God created you, He did so for a purpose, and He is ready to reveal that purpose. It is on display in the pages of your Bible, though few find it—or are even aware that such a purpose exists.

If we have answered the primary question of how life came to be, then perhaps you may wish to begin exploring the larger question: *Why* did God create us? We have a resource to help you answer that question. Just contact the regional office closest to you, listed at the back of this booklet, or visit us online at *TomorrowsWorld.org* and request a free copy of *What Is the Meaning of Life?* If you've come to understand life's origin, you need to understand life's purpose.

Endnotes

Chapter 1: *The Highest of Stakes*

- 1 George Gaylord Simpson, *The Meaning of Evolution, Revised Edition* (New Haven: Yale University Press, 1967), 345.
- 2 Thomas Bass, “Interview with Richard Dawkins,” *Omni*, January 1990, 60.
- 3 “Darwinism: Science or Naturalistic Philosophy?—A debate between William B. Provine and Phillip E. Johnson at Stanford University, April 30, 1994,” Access Research Network, accessed November 1, 2018, <http://www.arn.org/docs/orpages/or161/161main.htm>.
- 4 *New Poll Reveals Evolution’s Corrosive Impact on Beliefs about Human Uniqueness* (Seattle: Discovery Institute, 2016), 1.
- 5 David P. Barash, “It’s Time to Make Human-Chimp Hybrids,” *Nautilus*, March 8, 2018, http://nautil.us/issue/58/self/its-time-to-make-human_chimp-hybrids.
- 6 Paola Cavalieri ed., *The Great Ape Project: Equality Beyond Humanity* (New York: St. Martin’s Press, 1993), 85–87.
- 7 “Definition of Evolutionary Terms,” Evolution Resources, National Academies of Sciences, Engineering, and Medicine, accessed 12/1/2018, <http://www.nas.edu/evolution/Definitions.html>. When we speak of *evolution* in this work, we are focused on what the National Academies define as *macroevolution*.
- 8 Richard Dawkins, *The Blind Watchmaker* (New York: W. W. Norton & Company, 1996), 6.
- 9 We recognize that there are other ideas about how evolution could occur. However, Darwinian evolution continues to be, as of the date of this publication, the most supported and most universally agreed upon understanding of how evolution can take place through natural means, alone. This statement is not meant to exclude, say, the effects of genetic drift and other influences, nor is it meant to dismiss up-and-coming ideas, such as evo-devo. Rather, it is meant to reflect that a Darwinian view of the driving force of natural selection acting on random variations continues to hold the primary seat as a working theory in biology. There is a reason that many—including scientific publications—continue to conflate Darwinism and the concept of evolution: for want of an equally credible alternative as evolution’s mechanism. The claim that evolution has taken place naturally, in a mindless, materialistic fashion, is an empty one unless a plausible, natural, mindless, materialistic mechanism is offered. Without one, the claim that evolution should be taken as “fact” is ironically an explicit request to accepted its truth on the “faith” that such a mechanism must exist—and to do so in the face of other claims that may seem far more intuitive and require far less “faith.” This aspect of such claims for evolution will be revisited in Chapter 5.
- 10 Jerry A. Coyne, *Why Evolution Is True* (Oxford: Oxford University Press, 2009), *xiii–xiv*.
- 11 We recognize that some claim the figure can be a little larger, such as 10,000 or 12,000 years. For our purposes, such differences will be irrelevant.
- 12 Thomas Nagel, *Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature Is Almost Certainly False* (Oxford, New York: Oxford University Press, 2012), 5–6.

Chapter 2: What the Fossils Tell Us

- 1 Charles Darwin, *On the Origin of Species by Means of Natural Selection* (London: John Murray, 1859), 172, 280.
- 2 Steven Rose, ed., “The Episodic Nature of Evolutionary Change,” *The Richness of Life: The Essential Stephen Jay Gould*, W. W. (New York, London: Norton & Company, 2007), 263.
- 3 Stephen Jay Gould, “Evolution as Fact and Theory,” *Hen’s Teeth and Horse’s Toes: Further Reflections in Natural History* (New York, London: W. W. Norton & Company, 2007), 259.
- 4 Jeffrey H. Schwartz, *Sudden Origins: Fossils, Genes, and the Emergence of Species* (New York: John Wiley & Sons, 1999), 3.
- 5 Michael Denton, *Evolution: A Theory in Crisis* (Chevy Chase: Adler and Adler, 1985), 157–158.
- 6 David Berlinski, et al., “Denying Darwin: David Berlinski and Critics,” *Commentary*, September 1996.
- 7 Charles Darwin, *On the Origin of Species by Means of Natural Selection* (London: John Murray, 1859), 307.
- 8 C. J. Lowe, “The Cambrian Explosion,” *Science* 340, iss. 6137 (June 2013): 1170.

Chapter 3: The Eyes Have It

- 1 Darwin, *Origin of Species*, 186.
- 2 Darwin, 186–187.
- 3 Coyne, *Why Evolution Is True*, 142–143.
- 4 Any reader who has heard that somehow the eyes of humans and other vertebrates are “backward” because their retinas are the reverse of what they “should” be—and, therefore, supposed evidence of the lack of an intelligent designer—will find the actual research (versus how it is often inaccurately described) of great interest. For many reasons, the “inverted” retina is actually an *optimal design* for certain visual species for a number of reasons, and the design “flaws” claimed by many are actually “features”: maximizing nutrient access for retinal cells, for instance, and providing other benefits over the “verted” design in, say, the octopus. A paper the reader may find interesting is Ronald H. H. Kröger and Oliver Biehlmaier’s “Space-saving advantage of an inverted retina” (*Vision Research* 49, iss. 18 (September 9, 2009): 2318–2321). Also, the much older article “The advantages of an inverted retina” (Alberto Wirth, Giuliano Cavallacci, and Frederic Genovesi-Ebert, *Special Tests of Visual Function: Basic Problems and Clinical Applications (Developments in Ophthalmology 9)*, ed. E. Zrenner (1984): 20–28) demonstrates that those who claim the design of the vertebrate eye is “backward” are either ignorant of the facts or not interested in them.
- 5 Aleš Cvekl and Ruth Ashery-Padan, “The cellular and molecular mechanisms of vertebrate lens development,” *Development* 141, no. 23 (2014): 4432–4447.
- 6 The work of Dan-Erik Nilsson and Susanne Pelger (“A pessimistic estimate of the time required for an eye to evolve,” *Proceedings of the Royal Society B: Biological Sciences* 256, iss. 1345 (April 1994): 53–58) is often cited (though sometimes grossly mischaracterized) as evidence that such steps *are* feasible and even that they can happen in relatively short succession. Those who make such claims should read the study more closely, or at least more honestly, as Nilsson and Pelger state that they have made the exact sort of oversimplifications that we have discussed in this chapter—saying, in fact, that they “deliberately ignored” those complications. In their own

- words, “Because eyes cannot evolve on their own, our calculations do not say how long it actually took for eyes to evolve in the various animal groups” (emphasis added).
- 7 Israel Rosenfield and Edward Ziff, “Evolving Evolution,” *The New York Review of Books*, May 11, 2006, <https://www.nybooks.com/articles/2006/05/11/evolving-evolution>.
 - 8 Rosenfield and Ziff, “Evolving Evolution.”
 - 9 It should be noted that Rosenfield and Ziff mention these failures of evolution in the context of the books they are reviewing in their article, which present hopeful solutions to the problem—such as the role of *Hox* genes. This is another example of what author Casey Luskin has dubbed evolutionists’ “retroactive confessions of ignorance.” Many scientists seem far more willing to admit a long-standing weakness in their theories only after a possible solution has been found. Until such moments, it seems, mum’s the word...
 - 10 “Letter from Charles Darwin to Asa Gray, February 8 or 9, 1860,” Darwin Correspondence Project, accessed November 18, 2018, <https://www.darwinproject.ac.uk/DCP-LETT-2701>.

Chapter 4: The Realm of the Cell

- 1 Peter R. Wills, “DNA as information,” *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 374, iss. 2063 (March 2016): <https://dx.doi.org/10.1098/rsta.2015.0417>.
- 2 Niclas Jareborg, et al., “Comparative Analysis of Noncoding Regions of 77 Orthologous Mouse and Human Gene Pair,” *Genome Research* 9, iss. 9 (1999): 816.
- 3 “Eye,” The Human Protein Atlas, accessed November 18, 2018, <http://www.proteinatlas.org/humanproteome/tissue/eye>.
- 4 This has been kept simple for the sake of discussion, but RNA comes in two very critical forms: messenger RNA (mRNA) and transcription RNA (tRNA). The former resembles half a DNA molecule, built to match one “rung” of the DNA ladder and containing that piece of DNA’s information. The latter exists in small pieces attached to specified amino acids. As tRNA molecules bring their associated amino acids in a sequence that matches ordered elements of the mRNA, containing the information copied from the DNA, proteins are assembled amino acid by amino acid.
- 5 In one sense, this is a large simplification. Biologists have learned that not only DNA, but regulatory information concerning how genes are expressed, even whether some genes are expressed or not, is also passed on, and more is being learned about the intricacies of genetic programming and heritage all the time. However, it is not an inappropriate oversimplification for our purposes, here.
- 6 Michael Behe, *The Edge of Evolution* (New York: Simon & Schuster, 2008), 11.
- 7 Andreas Wagner, *Arrival of the Fittest: How Nature Innovates* (New York: Penguin Random House, 2015), 5.
- 8 Zachary D. Blount, Christina Z. Borland, Richard E. Lenski, “Historical contingency and the evolution of a key innovation in an experimental population of *Escherichia coli*,” *Proceedings of the National Academy of Sciences U.S.A.* 105, iss. 23 (June 2008): 7899–7906.
- 9 Blount, et al., “Historical contingency,” Abstract.
- 10 Michael Behe, “Experimental evolution, loss-of-function mutations, and ‘the first rule of adaptive evolution’,” *The Quarterly Review of Biology* 85, iss. 4 (December 2010).
- 11 Manfred Eigen, “Selforganization of Matter and the Evolution of Biological Macromolecules,” *Die Naturwissenschaften* 58, iss. 10 (October 1971): 465–523.
- 12 Wagner, *Arrival of the Fittest*, 4.

- 13 Douglas D. Axe, "Estimating the prevalence of protein sequences adopting functional enzyme folds," *Journal of Molecular Biology* 341, iss. 5, (August 2004): 1295–1315.
- 14 Ann K. Gauger and Douglas D. Axe, "The Evolutionary Accessibility of New Enzyme Functions: A Case Study from the Biotin Pathway," *BIO-Complexity*, no. 1, (2011), 1–17.
- 15 Matti Leisola, "Evolution: A Story Without a Mechanism," in *Theistic Evolution: A Scientific, Philosophical, and Theological Critique*, ed. J. P. Moreland, et al. (Wheaton, Illinois: Crossway, 2017), 143–144.
- 16 Leisola, "Evolution: A Story Without a Mechanism," 143.
- 17 Leisola, 157.
- 18 David Berlinski, et al., "A Scientific Scandal?: An Exchange Between David Berlinski and His Critics," *Commentary*, July–August 2003, <https://www.commentarymagazine.com/articles/a-scientific-scandal-2/>.

Chapter 5: Of Mountains and Moons

- 1 David Berlinski, "Denying Darwin: David Berlinski and Critics," *Commentary*, September 1996, 4–39.
- 2 Richard C. Lewontin, "Billions and Billions of Demons," *The New York Review of Books*, January 9, 1997, <https://www.nybooks.com/articles/1997/01/09/billions-and-billions-of-demons/>.

Chapter 6: Is Earth Young? Understanding Genesis 1

- 1 At the *Tomorrow's World* website, we have free resources that can help those interested explore such questions, such as our free booklets *The Real God: Proofs and Promises* and *The Bible: Fact or Fiction?* Despite false claims made by some atheistic philosophers and scientists that faith is "belief without evidence," the God of the Bible invites us to examine His claims and put them to the test (e.g., Psalm 34:8; Malachi 3:10), noting that His existence is revealed in the creation He has made (Romans 1:18–21).
- 2 "Bill Nye Debates Ken Ham," filmed on February 4, 2014 at Petersburg, KY, Video, 36:13, accessed October 30, 2018, <https://www.youtube.com/watch?v=z6kgvhG3AKI>.
- 3 It should be noted that the official position of Answers in Genesis, Ken Ham's ministry, is specifically one of *presuppositionalism*. While the author and editors of this work do believe that the Bible is God's perfect and inspired word and agree with Answers in Genesis on that point, we do not intend the comments in this chapter to be an endorsement of that philosophy. As mentioned, we believe God invites people to put His word to the test and to prove that it is, indeed, His word. Interested readers are referred to our free booklet *The Bible: Fact or Fiction?*
- 4 I would not endorse every conclusion in these books, but two helpful resources in this regard are Greg Davidson's *The Grand Canyon, Monument to an Ancient Earth: Can Noah's Flood Explain the Grand Canyon?* (Grand Rapids: Kregel Publications, 2016) and David A. Young and Ralph F. Stearley's *The Bible, Rocks and Time: Geological Evidence for the Age of the Earth* (Downers Grove: Intervarsity Press, 2008). The evidence they discuss ranges from the technical to the simply reasoned (e.g., if geologic layers were laid by the flood, then how can such layers exist under the Euphrates, a river mentioned as early as Genesis 2:4?).
- 5 Ronald F. Youngblood, "2494a (tōhū)," in *Theological Wordbook of the Old Testament*, ed. Laird Harris et al. (Chicago: Moody Press, 2004).
- 6 As in the title of Weston Fields' work *Unformed and Unfilled: A Critique of the Gap Theory* (Green Forest: Master Books, 2005).

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- 7 Ken Ham, *The Lie: Evolution/Millions of Years* (Green Forest: Master Books, 2012), 208.
- 8 *The Living Bible* (Illinois: Tyndale House Publishers, 1971).
- 9 Richard Elliott Friedman, “Genesis 1:2” in *Commentary on the Torah* (Harper Collins, 2001), Kindle.
- 10 Origen, *De Principiis*, Book 2, Chapter 9, translated by Frederick Crombie. Taken from *Ante-Nicene Christian Library, Translations of the Writings of the Fathers Down to A.D. 325*, vol. 10, ed. Alexander Roberts and James Donaldson (Edinburgh: T & T Clark, 1869), 127. (See also *De Principiis*, Book 3, Chapter 5, Paragraphs 2–4.)
- 11 Marcus Jastrow, *A Dictionary of the Targumim, the Talmud Babli and Yerushalmi, and the Midrashic Literature*, Volume 2 (London: W.C., Luzac & Co., 1903), 1262 (entries for אִדָּב and related words).
- 12 Gerald Molloy, *Geology and Revelation: Or the Ancient History of the Earth, Considered in the Light of Geological Facts and Revealed Religion* (New York: G. P. Putnam & Sons, 1870), 311.
- 13 Molloy, *Geology and Revelation*, 310–311.

Chapter 7: Of Rebellion, Ruin, and Restoration

- 1 Ham, *The Lie*, 207–208.
- 2 Davis A. Young, Ralph F. Stearley, *The Bible, Rocks and Time: Geological Evidence for the Age of the Earth*, (Illinois: InterVarsity Press, 2008), 44.
- 3 As a side note, I would encourage those young-earth creationists interested in Exodus 20:11 to consider obeying the commandment in which the verse is found—just as their Savior did—instead of using it only in an effort to disprove a biblical understanding they dislike. For those interested, I cannot recommend our resource *Which Day Is the Christian Sabbath?* highly enough.

Chapter 8: What About the Dinosaurs?

- 1 Helen Fields, “Dinosaur Shocker,” *Smithsonian Magazine*, May 2006, <https://www.smithsonianmag.com/science-nature/dinosaur-shocker-115306469/>.
- 2 Fields, “Dinosaur Shocker”
- 3 See, for example, Dr. Elizabeth Mitchell’s comments on behalf of Answers in Genesis: “Paluxy River Tracks in Texas Spotlight,” *Answers in Genesis*, April 14, 2012, <https://answersingenesis.org/dinosaurs/footprints/paluxy-river-tracks-in-texas-spotlight>.
- 4 Ken Ham, “Searching for the ‘Magic Bullet,’” *Creation*, March 2003, 34–37.

Chapter 9: What About Man?

- 1 “Press Release: Results of major new survey on evolution,” *Science & Religion: Exploring the Spectrum*, September 5, 2017, <https://sciencereligionspectrum.org>.
- 2 Ann Gauger, et al., *Science and Human Origins* (Seattle: Discovery Institute Press, 2012), 45.
- 3 Gauger, *Science and Human Origins*, 45.
- 4 For more details on the plan of God and the purpose of mankind, please consider reading our free resource, *Your Ultimate Destiny*.
- 5 It should be noted that the word *hominin* can be confusing. It previously referred to all alleged ancestral lineages leading up to not just humans, but also to, for instance,

- chimpanzees, gorillas, and orangutans. That category has now been declared *hominid*, and *hominin* is reserved for the line presumed to lead more directly to humanity—say, after the human line is assumed to have split from its last common ancestor shared with those animals. However, even within the *hominin* line, there are species that are not assumed to have led to modern man but to be now-extinct branches of their own. The precision demanded of these words belies the confusion involved with the objects they label, as this chapter explains.
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 - 7 Roger Lewin, *Bones of Contention: Controversies in the Search for Human Origins*, (Chicago: University of Chicago Press, 1987), 21.
 - 8 Mark Collard, Bernard Wood, “How reliable are human phylogenetic hypotheses?” *Proceedings of the National Academy of Sciences*, U.S. National Academy of Sciences 97, iss. 9 (April 2000): 5003.
 - 9 Lewin, *Bones of Contention*, 26.
 - 10 Marvin L. Lubenow, *Bones of Contention: A Creationist Assessment of Human Fossils*, (Grand Rapids: Baker Publishing Group, 2007), 300–301.
 - 11 Sid Perkins, “Skull suggests three early human species were one,” *Nature*, October 17, 2013, <https://www.nature.com/news/skull-suggests-three-early-human-species-were-one-1.13972>.
 - 12 Perkins, *Nature*.
 - 13 Ian Sample, “Skull of *Homo erectus* throws story of human evolution into disarray,” *The Guardian*, October 17, 2013, amended online October 18, 2013, <https://www.theguardian.com/science/2013/oct/17/skull-homo-erectus-human-evolution>.
 - 14 Sample, *The Guardian*.
 - 15 Gauger, *Science and Human Origins*, 71.
 - 16 Just one example: Nick Crumpton, “‘Earliest’ evidence of modern human culture found,” BBC News, July 31, 2012, <https://www.bbc.com/news/science-environment-19069560>.

Chapter 10: Where Do We Go from Here?

- 1 See “Evolution as a fact? A discourse analysis” by sociologists Jason Jean and Yixi Lu for a fascinating study concerning how evolutionists modify their public descriptions of evolution and why they do so. (*Social Studies of Science*, vol. 48, issue 4, (August 2018), 615–632.)
- 2 “What Is Intelligent Design?,” accessed November 3, 2018, <https://intelligentdesign.org/whatisid>.
- 3 Michael Ruse, “Is Evolution a Secular Religion?” *Science* 299, iss. 5612, (March 2003): 1524.
- 4 Francis Crick, *What Mad Pursuit: A Personal View of Scientific Discovery* (New York: Basic Books, 1988), 138.
- 5 Richard Dawkins, *The Blind Watchmaker* (New York: W.W. Norton & Company, 1986), 1.
- 6 Dick Teresi, “Lynn Margulis Says She’s Not Controversial, She’s Right,” *Discover*, April 2011, <http://discovermagazine.com/2011/apr/16-interview-lynn-margulis-not-controversial-right>.
- 7 Thomas Nagel, “Public Education and Intelligent Design,” *Philosophy & Public Affairs* 36, (Spring 2008): 201–201.

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