Apologetics

Southwestern
Journal of Theology

Southwestern Journal of Theology • Volume 60 • Number 2 • Spring 2018

God, Atheism, and the Origins Debate

Paul M. Gould
President of the Two Tasks Institute

Twenty-first century Western culture is post-secular. Religion did not go away, as sociologists at the end of the twentieth century predicted.[1] For the Christian, this sociological fact might be welcomed as good news. But the devil is in the details, as they say. While people within the West are largely post-secular, the elites within the West—i.e., those who possess symbolic, cultural, and political power to shape culture and define reality—are overwhelmingly secular.[2] As a result, the world is perceived by many people, including many religious people, as disenchanted. The world is no longer seen in its proper light; it is no longer seen as sacred or full of deep mystery and beauty and goodness. Given this now dominant way of perceiving the world, not only is unbelief possible, belief in God is more difficult too.[3]

One area where traditional Christian belief has become more difficult in this day and age is in the area of human sexuality. Beginning with the advent of the Sexual Revolution in the 1960s, homosexuality, transgenderism, pornography, same-sex marriage, and sexual promiscuity have gone from aberrant to normative at breakneck speed. As the culture goes, unfortunately, so goes many within the church too.[4]

It is easy to think that we must simply assert traditional Christian views more often or louder, and Christians will fall into line. While clear and consistent Christian teaching on human sexuality is necessary, by itself, this will not fix the problem. The problem runs deeper. Traditional views on human sexuality no longer seem *plausible* or *desirable* to many Christians.[5] And this, I submit, is because the deeper issue is *metaphysical*. What is needed, as Rod Dreher has recently argued, is a "cosmological response" to

[1] Douglas Jacobsen and Rhonda Hustedt Jacobsen, "Postsecular American: A New Context for Higher Education," *The American University in a Postsecular Age*, ed. Douglas Jacobsen and Rhonda Hustedt Jacobsen (Oxford: Oxford University Press, 2008), 10.

[2] See James Davison Hunter, *To Change the World* (Oxford: Oxford University Press, 2010), where it is argued that elites and the institutions they inhabit are the ones who get to shape culture and define reality.

[3] This is one of the points made by Charles Taylor in his mammoth *A Secular Age* (Cambridge, MA: Harvard University Press, 2007).

[4] See e.g., David Kinnaman and Gabe Lyons, *Unchristian* (Grand Rapids: Baker, 2007), 46–48.

[5] For an excellent book that addresses the plausibility problem with respect to the question of homosexuality, see Ed Shaw, *Same-Sex Attraction and the Church* (Downers Grove, IL: InterVarsity, 2015).

the Sexual Revolution.[6] Sexual autonomy is "not only morally wrong, but a metaphysical falsehood."[7]

What is the metaphysical falsehood that undergirds the Sexual Revolution? The falsehood has to do with the nature and origin of the cosmos itself. For the purveyor of disenchantment, there is no sacred order to things. Fundamental reality is just elementary particles and forces. Everything else is derivative at best or illusion at worst. Consider the words of theoretical physicist and atheist Sean Carroll:

> Categories such as "male" and "female" are human inventions—stories we tell because it helps us make sense of our world. The basic stuff of reality is quantum wave function, or a collection of particles and forces—whatever the fundamental stuff turns out to be. Everything else is overlay.[8]

In other words, according to Carroll, there are no *essences* in the world—no ways things are, no natures—just particles in motion. Thus, there is no essence to gender, marriage, sexuality, or human flourishing. Everything besides fundamental physics is just "socially constructed . . . ways we talk about the world."[9] Many in the West, including many within the church, view the world basically the same way as Carroll. The metaphysical falsehood then, embraced by Carroll and unwittingly or not by many others, is the rejection of *essentialism*.

Carroll rightly notes that "Religious doctrine is the wellspring of essentialism."[10] No God, then no essences. As the Canadian philosopher Charles Taylor puts it, "The entire ethical stance of moderns supposes and follows on from the death of God (and of course, of the meaningful cosmos)."[11] If we want to help others see the plausibility and desirability of traditional Christian teaching on human sexuality, we must do more than simply report the rightness or wrongness of various ethical acts. Rather, we must also embed our ethics in ontology, which means we must face the question of cosmology. We must go back to the beginning—the wellspring—and determine whether or not there is in fact a sacred order of things. As Francis Schaeffer famously writes, "Everything goes back to the beginning. . . . Everything begins with the kind of God who is 'there.' This is the beginning and apex of the whole, and everything flows from this in a non-contradictory way."[12] What we have then in this age of disenchantment, is a battle over beginnings. At the most basic level, bedrock reality is either divine (as theists

[6] Rod Dreher, *The Benedict Option* (New York: Sentinel, 2017), 216.
[7] Dreher, *The Benedict Option*, 201.
[8] Sean Carroll, *The Big Picture* (New York: Dutton, 2017), 142.
[9] Carroll, *The Big Picture*.
[10] Carroll, *The Big Picture*, 141.
[11] Taylor, *A Secular Age*, 588, quoted in Dreher, *The Benedict Option*, 203.
[12] Francis A. Schaeffer, *Escape From Reason* (Downers Grove, IL: InterVarsity, 1968), 25.

argue) and the world came into being through another, or it is fundamental particles and forces (as atheists argue) and the world has always existed in one physical state or another.

If Christians are ever to make progress—within the church, within culture—in advancing biblical views on meaning, purpose, human flourishing, and value (human sexuality was just the foil to illustrate the deeper problem facing Christians in an age of disenchantment), we (i) must see reality once again in its proper light—as sacred, as gift from a creator—and (ii) invite others to see reality as sacred also.

In what follows, as an aid toward this goal of seeing and showing the sacred order of things, I shall argue that God is the best explanation for the origin of the universe, life, species, and humans. With respect to each origin question, I shall summarize the current "state of play" with respect to the evidence and show how theism explains the evidence better than atheism. The upshot is this: We will have four independent lines of evidence in support of a theistic origin of all things. Thus, "if God exists" and "if God exists, then essences exist," then it follows logically (and inescapably) that essences exist too.[13] In other words, if God exists, we have good reasons to think there is an essence to marriage, gender, human sexuality, human flourishing, and more. We also will be equipped to offer a "cosmological response" to the ills of our age. We begin with the origin of the universe.

The Origin of the Universe

In the *Timaeus* Plato asks whether the universe began or always existed. His answer is that the universe had a temporal origin. His reason for thinking the universe came into being a finite time ago is metaphysical rather than physical: "[the universe] is visible, tangible and corporeal, and all such things are perceptible by the senses, and . . . perceptible things . . . come into being and are generated."[14] For Plato, reality can be carved into two basic domains: the eternal and unchanging realm of immaterial Forms and the temporal and changing realm of physical things. The eternal is apprehended by reason whereas the temporal is apprehended by sense perception. Since the universe

[13] I assume without argument the truth of "if God exists, then essences exist." I realize that this assumption is controversial, even among theists. It could be that God and a sacred order exist without essences, as the theistic nominalist might argue. It could be that God exists yet there is neither a sacred order of things nor essences in the world. While both options are possible, I think the burden of proof lies on those theists who endorse these options for at least two reasons. First, for most of the Christian tradition (especially prior to Darwin), belief in a sacred order and essences was the norm. Second, a *prima facie* reading of Scripture seems to presuppose essences (e.g., Genesis 1 and its "kind" language, the incarnation and Christ's taking on a human nature, etc.). For an excellent and highly sophisticated attempt to ground modal truths, including essentialist facts, in God's nature and intentions without appeal to this-worldly essences, see Brian Leftow, *God and Necessity* (Oxford: Oxford University Press, 2012).

[14] Plato, *Timaeus*, 28b, in *Timaeus and Critias*, trans. Desmond Lee and T.K. Johansen (New York: Penguin), 18–19.

is perceptible and full of corporeal (and changing) bodies, it belongs to the realm of becoming. The universe began to exist. But, argues Plato, "everything that becomes must do so owing to some cause; for nothing can come to be without a cause."[15] Hence, it follows that the universe has a cause. We have in Plato's *Timaeus* an early articulation of an influential form of the cosmological argument for God's existence, an argument that had profound influence on early and medieval Christian, Jewish, and Muslim thought.[16]

The argument from the temporal origin of the universe to God, called the Kalam cosmological argument (KCA), can be formulated as follows:

1. Whatever begins to exist has a cause.
2. The universe began to exist.

Therefore,

3. The universe has a cause.

While the KCA played a prominent role in the debate over God's existence in the Middle Ages, it fell out of favor, along with all versions of the cosmological argument (e.g., the Leibnizian and Thomistic versions) in the modern era following Kant's famous critique of natural theology.[17] Twentieth-century advances in cosmology have led to the resurgence of the KCA in recent years, most notably in the works of the philosopher William Lane Craig.[18]

Like Plato, we can give philosophical reasons supporting premise 2. The philosophical arguments do not hinge on the distinction between the eternal and unchanging and temporal and changing, however, but involve the notion of infinity. If the universe were eternal, the global causal structure of reality would involve an actually infinite temporal regress of physical events. But, it is argued, actual infinities of physical events are impossible. Moreover, even if they were possible, such infinite temporal regresses could never be "traversed" such that we could arrive at the present moment. Since we have arrived at the present moment, it follows that the universe is not past eternal.[19] While these philosophical arguments are important, for many

[15] Plato, *Timaeus*, 28a.

[16] For a discussion of the argument in its historical context, see William Lane Craig, *The Cosmological Argument from Plato to Leibniz* (London: Macmillian, 1980).

[17] See Immanuel Kant, *Critique of Pure Reason*, trans. Werner S. Pluhar (Indianapolis: Hackett, 1996), 578–608.

[18] For Craig's most recent articulation and defense of the Kalam cosmological argument, see William Lane Craig and James D. Sinclair, "The Kalam Cosmological Argument," in *The Blackwell Companion to Natural Theology*, ed. William Lane Craig and J.P. Moreland (Malden, MA: Blackwell, 2012), 101–201.

[19] For more on the "argument from the impossibility of an actual infinite" and the "argument from the impossibility of the formation of an actual infinite by successive addition," see Craig and Sinclair, "The Kalam Cosmological Argument," 103–25.

(especially those less philosophically inclined), the most impressive evidence in support of a temporal universe comes from science.

Well into the twentieth century, scientific consensus held that the universe was static and eternal. This picture began to crumble with Einstein's 1917 Theory of General Relativity, which seemed to imply an expanding universe. If, however, the universe is expanding, then the universe has a history. Moreover, by extrapolating back in time, we arrive at a temporal boundary to the universe. In other words, if the universe is expanding, it has a temporal beginning. To avoid the unwanted implication, Einstein regrettably introduced a "fudge factor" into his gravitational field equations.[20] Others such as the mathematician Alexander Friedmann and the astronomer Georges Lemaître, building on Einstein's General Relativity, independently formulated the field equations to reveal an expanding universe.[21]

Empirical evidence for an expanding universe was first discovered in 1929 by Edwin Hubble. Looking through the telescope at Mount Wilson observatory, Hubble noted that light from distant stars, which travels to us in electromagnetic waves, had shifted to the red end of the visible wave spectrum. Redshift occurs when a light source is moving away from a stationary observer. Thus, the discovery of redshift provided empirical confirmation of an expanding universe, a predication that was made on theoretical grounds years earlier by Friedmann and Lemaître.

As a result of Hubble's discovery and additional empirical discoveries such as the presence of microwave background radiation throughout the universe and the abundance of light elements at early stages in the history of the universe, the Big Bang Model became, by the mid-1960s, the new orthodoxy.[22] According to the Big Bang Model, all matter, energy, time, and space came into being 13.72 billion years ago out of an initial cosmic singularity.[23] This singularity represents the boundary of the physical universe, a state of infinite density equivalent to nothing! For the theist, the Big Bang is the creation event: God created *ex nihilo* the visible universe just as Genesis 1:1 and Hebrews 11:3 proclaim.

[20] Craig and Sinclair, "The Kalam Cosmological Argument," 125.

[21] Craig and Sinclair, "The Kalam Cosmological Argument,"125.

[22] For a nice summary of how microwave background radiation and the abundance of light elements support a Big Bang universe, see Gerald Rau, *Mapping the Origin Debate: Six Models of the Beginning of Everything* (Downers Grove, IL: InterVarsity, 2012), 59–72. While aspects of the standard Big Bang Model have subsequently been adjusted (e.g., it is now thought that the early universe briefly experienced inflation and is also currently accelerating, whereas the standard model predicts a constant expansion of the universe throughout its history), the model still upholds a finite universe with a temporal beginning.

[23] Young Earth Creationists will argue that the universe appears 13.72 billion years old, but in fact is 6,000–10,000 years old. The debate over the age of the earth is an "in-house" debate among Christians, a debate I shall side-step in this paper. The salient point is this: Whatever the age of the universe, it is finite. For more on how Young Earth Creationists interpret the evidence of an old universe as apparent, see Rau, *Mapping the Origin Debate*, 73–80.

The atheist, on the other hand, must get rid of the singularity in order to avoid the unwanted theistic implication of a universe coming to be out of nothing. A popular move is to argue that our universe is part of an eternal multiverse. If so, then the singularity that represents the origin of *this* universe is not the first state of physical reality itself. The problem for beginningless models of the universe is that they either are physically implausible (e.g., appealing to cyclical or imaginary time or notions such as infinite contraction) or fail to remove the singularity.[24] For example, on one currently popular multiverse model, the *eternal inflationary model*, physical reality is pervaded by an inflation field that is forever expanding. Our universe came into being as one domain within the inflation field underwent rapid expansion. This rapid expansion caused the temperature of the domain space to decrease, spawning a "droplet universe."[25] Since inflation is eternal, droplet universes are continually being produced, perhaps as many as 100^{500} universes if coupled with string theory.[26] The problem with this model is that research has demonstrated that any inflationary multiverse model capable of explaining this universe must also have a beginning.[27] After surveying prominent non-standard models in cosmology on offer, William Lane Craig summarizes, "The history of twentieth century cosmogony has, in one sense, been a series of failed attempts to craft acceptable non-standard models of the expanding universe in such a way as to avert the absolute beginning predicted by the Standard Model."[28] There are good reasons, coming from philosophy and science, to think the universe began a finite time ago and that the cosmic singularity "cannot be a physical porthole to some previous universe."[29]

Premise 1 of the KCA seems impeccable, confirmed everyday by experience and scientific practice. Still, even here, atheists press. For example, in his book *A Universe from Nothing*, the physicist Lawrence Krauss audaciously argues that the universe spontaneously came into being out of nothing.[30] If correct, we have a counter-example that renders premise 1 false. Is Krauss correct in thinking the universe came into being uncaused out of nothing? As it turns out, Krauss's "nothing" is not nothing. Rather, it is the *quantum vacuum*—a physical state that has properties and obeys physical laws. The quantum state is not nothing, it is something! Thus, even if the uni-

[24] For the details, see Craig and Sinclair, "The Kalam Cosmological Argument," 131–82.

[25] Timothy O'Connor, *Theism and Ultimate Explanation: The Necessary Shape of Contingency* (Malden, MA: Wiley-Blackwell, 2012), 106.

[26] Jeffrey Koperski, *The Physics of Theism: God, Physics, and the Philosophy of Science* (Malden, MA: Wiley-Blackwell, 2015), 88.

[27] Jeff Zweerink, "Multiverse," in *Dictionary of Christianity and Science*, ed. Paul Copan, Tremper Longman III, Christopher L. Reese, and Michael G. Strauss (Grand Rapids: Zondervan, 2017), 456.

[28] William Lane Craig, *Reasonable Faith*, 3rd ed. (Wheaton: Crossway, 2008), 139.

[29] Koperski, *The Physics of Theism*, 86.

[30] Lawrence M. Krauss, *A Universe from Nothing: Why There is Something Rather Than Nothing* (New York, NY: Atria, 2012).

verse could come into being via a quantum fluctuation of a quantum vacuum state—a questionable thesis in its own right—it does not follow that the universe came into being uncaused out of nothing.[31] Quantum fluctuations of quantum vacuum states are not genuine counter-examples to the truth of premise 1.

It seems that premises 1 and 2 are more plausible than their denials. In other words, we have good reasons to think premises 1 and 2 true. Since the argument is deductively valid such that the conclusion is logically inescapable given its premises, we have a sound argument for a first cause of the universe. While questions remain about the nature of the first cause, importantly, naturalism is ruled out. This first cause must be non-physical since "prior" to the Big Bang there was no physical reality. Moreover, this first cause must be uncaused since otherwise it too would need a cause for its existence. Finally, given the exquisitely fine-tuned universe for life (more below), we have reason to think this immaterial, uncaused being is a personal agent.[32] While we do not yet have the fully determinate God of Abraham, Isaac, Jacob, and Jesus, we do have a transcendent being consistent with the God of the Bible. Further details about the identity of this first cause will be filled in as we consider the evidence for the origin of life, species, and humanity.

The Origin of Life

Life is at once awe-inspiring and mysterious. Yet, the purveyors of disenchantment would have us believe there is nothing special to see here. According to Carroll, life is just "a set of things happening . . . a way of talking about a particular sequence of events taking place among atoms and molecules arranged in the right way."[33] Life itself is in constant flux. If anything ought to move us to awe and wonder, it is the staggering *diversity* of life that has arisen naturalistically by Darwinian natural selection![34] Life itself just happens. We will come to the question of the amazing diversity of life shortly. In this section, we shall consider the question of life's origin.

There is broad scientific consensus that the question of how life began remains unsolved. This does not mean God has anything to do with it, however. Carroll is representative of the hopeful optimism of many scientists in the academy:

[31] For a nice overview of the conceptual and empirical problems with a physical universe beginning out of some preexisting quantum vacuum state, see Erica W. Carlson, "Quantum Vacuum State," in *Dictionary of Christianity and Science*, 555.

[32] Philosopher Timothy O'Connor thinks the evidence from fine-tuning is most helpful in sorting out the identity of the first cause. See his *Theism and Ultimate Explanation*, 109–10.

[33] Carroll, *The Big Picture*, 219.

[34] Doug Axe, *Undeniable: How Biology Confirms Our Intuition* (New York: HarperOne, 2016), 75.

> There is no reason to think that we won't be able to figure out how life started. No serious scientist working on the origin of life, even those who are personally religious, points to some particular process and says, "Here is the step where we need to invoke the presence of a nonphysical life-force, or some element of supernatural intervention." There is a strong conviction that understanding abiogenesis is a matter of solving puzzles within the known laws of nature, not calling for help from outside of them.[35]

This hopeful optimism is unwarranted. Life is too complex, the time frame too short, and the early earth too hostile for it to have arisen by chance or physical necessity or a combination of the two.

First, consider the time frame available for life to have originated on earth through gradual naturalistic processes. The scientific consensus is that the earth formed about 4.5 billion years ago.[36] For the first quarter to half-billion years, the earth's crust was too hot to support life. Minerals have been dated to around 4.2 billion years old, thus it is reasonable to think the earth was sufficiently cooled roughly around that time to support the formation of life.[37] Until recently, the oldest widely accepted evidence of life—a strand of fossilized Stromatolites from the Pilbara region of western Australia—dates to 3.48 billion years ago.[38] This means that the amount of time for life to develop on earth is roughly 720 million years. Geologically speaking, this is a very short amount of time for life—given life's complexity (see below)—to arise via unguided and blind naturalistic processes. Interestingly, in a newly exposed outcrop of rocks in Greenland, scientists have discovered an even older set of Stromatolites dating 3.7 billion years ago.[39] While the viability of this evidence is still being assessed, if these new discoveries are in fact the earliest traces of life, the time frame for life's appearance on earth shrinks by 220 million years. Either way, in geological time, life, including all the macromolecules necessary for life—DNA, RNA, proteins, metabolic systems, etc.—developed virtually overnight.[40]

[35] Carroll, *The Big Picture*, 270.

[36] Of course, if the universe is young (roughly 10,000 years old), these numbers are wildly inflated.

[37] Rau, *Mapping the Origins Debate*, 83.

[38] M.R. Walter, R. Buick, and J.S.R. Dunlop, "Stromatolites 3,400–3,500 Myr old from the North Pole area, Western Australia," *Nature* 284 (03 April 1980): 443–45.

[39] Allen P. Nutman, Vickie C. Bennett, Clark R.L. Friend, Martin J. Van Kranendonk, and Allan R. Chivas, "Rapid emergence of life shown by discovery of 3,700-million-year-old microbial structures," *Nature* 537 (22 September 2016): 535–38.

[40] David Klinghoffer, "Greenland Fossils, Earth's Oldest, Pose an Evolutionary Dilemma," *Evolution News & Science Today*, September 1, 2016, https://evolutionnews.org/2016/09/greenland_fossi/. The situation might be much worse for the naturalist. The earth was heavily bombarded by asteroids from 4.1 billion to 3.8 billion years ago. If life could not evolve until the Heavy Bombardment period was finished, then the window for life to appear by unguided processes is even smaller—100 million years.

Second, we might ask, where on earth did life begin? Ever since Darwin postulated his "warm pond" as the place where carbon and hydrogen and free energy mixed together at just the right time and in just the right way to form proteins and other microscopic parts of the cell, scientists have postulated various terrestrial locations as suitable environments for this prebiotic soup. The current proposals on offer include deep sea vents, the edge of the ocean, the atmosphere, and the surface of clays.[41] Some scientists, including Francis Crick, the co-discoverer of DNA, and Stephen Hawking, the brilliant Cambridge theoretical physicist, think that life originated in space and was transported to the earth either by asteroids or by other intelligent beings.[42] This latter option, called panspermia, simply pushes the question back: if life didn't originate on earth, how did it originate in space (or on some other suitable planet)? More to the point: there is no evidence of biological life beyond earth, simple, complex, or intelligent (nor could DNA—or other macromolecules—survive the cold temperatures on its journey, however long, through space). Even if a suitable place on the earth could be identified for the appearance of life, many problems remain, including the problem of how cells—the basic unit of life—could ever evolve by unguided naturalistic processes. It is to this last problem, the issue of the complexity of life, to which we now turn.

Once thought to be relatively simple, we now know the cell is a "functionally coherent whole"[43] with many sub-systems that themselves are functionally coherent assemblies that work together to perform all the processes of life including reproduction, growth, compartmentalization, and metabolism. As Gerald Rau explains, "the cell is a highly complex integrated system, with molecular machinery as sophisticated as any human factory."[44] Cells are composed of proteins and other microscopic parts. Proteins, in turn, are built out of complex chains of amino acids. If the sequence of amino acids (there are twenty *kinds* of amino acids) along a protein chain has the right properties, the whole chain folds to form a three-dimensional object. The shape of this newly folded object is crucial to its function. The shape of proteins is specified by the sequence of amino acids, and the sequence of amino acids is determined by the genetic code. Genes are regions of chromosomes found within a cell that are themselves long molecules of double-stranded DNA, molecules made up of four *kinds* of nucleotide bases that are well suited for the storage and transmission of information.

The magnitude of information contained in a living organism is mind-boggling. The number of base pairs of DNA required to produce

[41] Rau, *Mapping the Origins Debate*, 84.

[42] For a transcript of a lecture by Stephen Hawking on the origin of life from outer space, see "Life in the Universe," http://www.hawking.org.uk/life-in-the-universe.html.

[43] Doug Axe describes functional coherence as "the hierarchical arrangement of parts needed for anything to produce a high-level function—each part contributing in a coordinated way to the whole." Axe, *Undeniable*, 144.

[44] Rau, *Mapping the Origins Debate*, 88.

the necessary proteins for life in the most basic single-celled organism is estimated to be between 318,000 and 562,000.[45] More complex life requires millions and millions of base pairs to code all the necessary proteins for life (e.g., the human genome contains over 3 billion base pairs of DNA). The question that origin of life researchers need to answer is this: How did the first cell acquire the genes—the information content within DNA—necessary for life in the first place? Our intuition, as biologist Doug Axe points out, is that the cell (including its sub-components) must be designed; such complexity and ingenuity could never be produced by chance nor physical necessity.[46] Still, intuitions can differ. It would be better if there was an argument to show that something as complex as a cell could not appear through unguided naturalistic processes.

In the last few decades, intelligent design theorists have proposed empirical criteria as markers of design. The mathematician and philosopher of science William Dembski argues that objects or processes containing "specified complexity" cannot be the product of chance or necessity.[47] Likewise, Lehigh University biochemist Michael Behe has argued that there are biological organisms found in nature that are "irreducibly complex" such that they could never appear by step-wise evolutionary processes.[48] Even more recently, Doug Axe, through his research on proteins, has argued that it is physically impossible for life to have evolved via accidental and unguided processes.

Axe's research has demonstrated the extreme rarity of functional proteins: for every good protein sequence, there are 10^{74} possible bad ones![49] Given the fact, as argued by biologist Michael Denton, that there are no more than 10^{40} possible proteins that could have ever existed on earth since its formation, "it becomes increasingly unlikely that any functional proteins could ever have been discovered by chance on earth."[50] Of course, generating a functional protein out of a prebiotic soup requires other steps and component parts that make the odds even more fantastic. Stephen C. Meyer puts it this way:

> This calculation can be made by multiplying the three independent probabilities by one another: the probability of incorporating only peptide bonds (1 in 10^{45}), the probability of incorporating only left-handed amino acids (1 in 10^{45}), and the probability of

[45] Stephen C. Meyer, *Darwin's Doubt: The Explosive Origin of Animal Life and the Case for Intelligent Design* (New York: HarperOne, 2013), 163.

[46] Axe, *Undeniable*, 30.

[47] See e.g., William Dembski, *Intelligent Design: The Bridge between Science and Theology* (Downers Grove, IL: InterVarsity, 1999).

[48] Michael Behe, *Darwin's Black Box: The Biochemical Challenge to Evolution* (New York: The Free Press, 2006).

[49] Axe, *Undeniable*, 57.

[50] Michael Denton, *Evolution: A Theory in Crisis* (London: Burnett Books, 1985), 323; quoted in Axe, *Undeniable*, 31.

> achieving correct amino-acid sequencing (using Axe's 1 in 10^{74} estimate). Making that calculation (multiplying the separate probabilities by adding their exponents: $10^{45+45+74}$) gives a dramatic answer. The odds of getting even one functional protein of modest length (150 amino acids) by chance from prebiotic soup is no better than 1 chance in 10^{164}.[51]

How are we to make sense of 1 chance in 10^{164}? According to Axe, such a number is fantastically big, a number that exceeds 100 digits in length and is therefore so big that it is "beyond physical representation."[52] In other words, fantastically big numbers represent physical impossibilities.[53] Therefore, it is physically impossible for one functional protein to arise by chance (or necessity or a combination of the two) from a prebiotic soup, let alone the kind of information and complexity necessary for a single-celled life. The conclusion is inescapable: life could not have happened by accident. Life is the result of design.

The Origin of Species

Since Darwin's 1859 release of *On the Origin of Species by Means of Natural Selection*, evolution has become the dominant explanation for the diversity of life on earth. Again, Sean Carroll is representative of those in the academy, effectively marginalizing all who would challenge the grand Darwinian story with the claim that "Essentially every working professional biologist accepts the basic explanation provided by Darwin for the existence of complex structures in biological organisms."[54] The basic idea is that there is an unbroken chain of living organisms from simple to complex, all of which share a common ancestor in the first single-celled organism that emerged out of Darwin's prebiotic soup over three billion years ago. "Evolution," writes Carroll, "is the idea that provides the bridge from abiogenesis to the grand pageant of life."[55] The evidence during Darwin's day came primarily from paleontology. Today, given the advent of genetics in the twentieth century, biological evolutionists focus on the genome and the idea that evolution works by selecting advantageous mutations in genes of organisms that are conducive to survival.[56]

[51] Stephen C. Meyer, *Signature in the Cell: DNA and the Evidence for Intelligent Design* (New York: HarperOne, 2009), 212.

[52] Axe, *Undeniable*, 126. It is beyond physical representation because there are only 10^{80} atoms in the universe. Thus, a single 80-character line of text would suffice to write out the number of atoms in the universe, and the total number of physical events over the universe's history would only require another half line (10^{116}). Axe, *Undeniable*, 125.

[53] Axe, *Undeniable*, 132–34.

[54] Carroll, *The Big Picture*, 226.

[55] Carroll, *The Big Picture*, 273.

[56] Rau, *Mapping the Origins Debate*, 102. While the standard neo-Darwinian picture—natural selection by means of random mutations—is the dominant evolutionary theory, an increasing number of biologists today are calling it into question. As Meyer notes, "the

There are two features of the fossil record that are in need of explanation.[57] First, species exhibit no substantial change during their time on earth, looking pretty much the same wherever they are found. Second, various species appear abruptly without transitional forms. These two features of the fossil record—stasis and sudden appearance—are hard to explain on the Darwinian story.[58] Darwin's commitment to the gradual development of new complex biological life entails that there are "innumerable intermediate links" between the earlier and later species.[59] We would expect then the existence of these transitional links to be recorded in the fossil record. Instead—during Darwin's time as well as today—there are essentially no transitional species in the fossil record between major groups of animals.[60] Darwin recognized the gap in the geological record as "the most obvious and gravest objection" to his theory.[61]

This gap, according to Darwin, results from the imperfection of the fossil record.[62] Is the fossil record imperfect? In other words, of all the known species that have existed or do exist, how many are recorded within the fossil record? If we can answer that question, we can get a sense of how representative—how perfect or imperfect—the fossil record actually is. As it turns out, the fossil record is representative of the different types of organisms that have existed or do exist. To cite one example, consider:

> among 43 known living orders of terrestrial vertebrates (the level of classification just below classes and phyla), 42 have been found as fossils. Thus, 98 percent of extant terrestrial vertebrates at that level of classification were fossilized. It is therefore a good bet

technical literature in biology is now replete with world-class biologists routinely expressing doubts about various aspects of neo-Darwinian theory," Meyer, *Darwin's Doubt*, x. However, expressions of doubt are welcomed as long as the proposed fix is squarely within the naturalist and materialist camp. If the proposed fix to the theory invokes intelligent design, the view is uniformly ridiculed as religion masquerading as science. For more, see also Axe, *Undeniable*, 215–34.

[57] Stephen Jay Gould, "Evolution's Erratic Pace," *Natural History* 86, no. 5 (May 1977): 12–16.

[58] Of particular interest is the fact that every major group of organisms from every kingdom appears in the fossil record suddenly and without evolutionary precursors in a mysterious event known as the "Cambrian explosion" approximately 540 million years ago. For more, see Rau, *Mapping the Origins Debate*, 106.

[59] Charles Darwin, *On the Origin of Species* (Cambridge, MA: Harvard University Press, 2003), 279.

[60] While there have been a number of intermediate species proposed, such as the Archaeopteryx or the duck-billed, these oddities tend to fall within one category or another rather than an intermediate between two categories. William Dembski and Jonathan Wells, *The Design of Life* (Dallas: Foundation for Thought and Ethics, 2008), 62. At the level of phyla there are no known intermediates. See Rau, *Mapping the Origins Debate*, 106.

[61] Darwin, *On the Origin of Species*, 280.

[62] "The explanation lies, as I believe, in the extreme imperfection of the geological record," Darwin, *On the Origin of Species*, 280.

> that if there were other orders of terrestrial vertebrates, they too would have been fossilized.[63]

After surveying additional evidence at more specific levels of classification, evidence that confirms that the fossil record is a faithful preserver of the kinds of organisms that have existed and do exist, William Dembski and Jonathan Wells conclude, "The absence from the fossil record of transitional forms connecting organisms at higher levels of classification is therefore evidence that no such transitional forms ever existed in the first place."[64]

Interestingly, some Paleontologists argue that we should not expect to find transitional forms in the fossil record. Darwin's mistake was in thinking evolution is gradual. Instead, evolution is "jerky." The idea that evolution is jerky was originally proposed in 1972 by Niles Eldredge and Stephen Jay Gould.[65] In this story, species evolve in rapid bursts within isolated populations. The transitional species that did exist are too few and too short-lived to have been recorded in the fossil record. As such, we would expect a gappy record. The fact that the fossil record *is* gappy provides evidence, according to Eldredge and Gould, of "punctuated equilibrium."

The main problem with punctuated equilibrium is that there is no known material mechanism that accounts for the sudden bursts of evolutionary change that the theory predicts. Instead, the theory appears to be an *ad hoc* attempt to explain recalcitrant facts that suggest design. If God exists, however, we have a non-*ad hoc* explanation for the origin of species: complex biological life is the result of an intelligent designer. In theism, life itself as well as the diversity of life reveal the creativity and goodness of God.

The fossil record points to a deeper problem, a problem that has become more acute for the grand evolutionary story ever since James Watson and Francis Crick discovered in 1953 the information-rich character of life embedded within the double helix of DNA. Advances in molecular biology over the last half century have cast doubts on whether mutation and selection are powerful enough mechanisms to account for the diversity of life, especially given the functional information present within all forms of life. The fundamental problem for the neo-Darwinist, as Stephen C. Meyer puts it, "is the problem of the origin of new biological information."[66] The problem, simply stated, is that the mechanism of natural selection acting upon random mutations cannot produce the kind of information necessary to build new animal forms.

[63] Dembski and Wells, *The Design of Life*, 70.

[64] Dembski and Wells, *The Design of Life*, 71.

[65] Niles Eldredge and Stephen Jay Gould, "Punctuated Equilibria: An Alternative to Phyletic Gradualism," In *Models in Paleobiology*, ed. T.J.M. Schopf (San Francisco: Freeman, Cooper, and Co., 1972).

[66] Meyer, *Darwin's Doubt*, ix.

The neo-Darwinian story of how new species evolve is as follows.[67] New species require new body plans. New body plans require new cell types. New cell types require new kinds of (functional) proteins. New kinds of (functional) proteins require new genetic information. New genetic information is generated by random, unguided, mutations occurring in existing organisms. Mutations that contribute to the survival of an organism are passed on via natural selection to the next generation. Over time, as beneficial changes accumulate, a population changes and new species evolve.

There are two problems with this neo-Darwinian story of how species evolve. First, natural selection can only act upon already existing organisms and thus has no power to invent new species. Rather, selection can only preserve innovations within existing species. Doug Axe dubs this inability of natural selection to create new species as the "gaping hole" in evolutionary theory.[68] Selection is an "aimless wanderer, incapable of inventing."[69] As the Dutch botanist Hugo De Vries colorfully describes this gaping hole in his 1904 book, *Species and Varieties: Their Origin by Mutation*, "Natural selection may explain the *survival* of the fittest, but it cannot explain the *arrival* of the fittest."[70] The power of inventing must lie elsewhere. This leads to the second problem.

The accidental invention of new functional proteins by random mutation is highly unlikely.[71] Recent studies in protein science have shown the extreme rarity of arrangements of DNA bases capable of generating new *functional* proteins. Summarizing the work of Doug Axe, Stephen C. Meyer writes,

> [Axe's] experiments revealed that, for every DNA sequence that generates a short *functional* protein fold of just 150 amino acids in length, there are ten to the seventy-seventh power *non*functional combinations—ten to the seventy-seventh amino acid

[67] Stephen C. Meyer, "Neo-Darwinism and the Origin of Biological Form and Information," in *Theistic Evolution: A Scientific, Philosophical, and Theological Critique*, eds. J.P. Moreland, Stephen C. Meyer, Christopher Shaw, Ann K. Gauger, and Wayne Grudem (Wheaton, IL: Crossway, 2017), 111–12.

[68] Axe, *Undeniable*, 97. As Axe summarizes, "Evolutionary theory ascribes inventive power to natural selection alone. However, because selection can only home in on the fitness signal from an invention after that invention already exists, it can't actually invent."

[69] Axe, *Undeniable*, 103.

[70] Hugo De Vries, *Species and Varieties: Their Origin by Mutation* (Chicago: Open Court, 1904), 4; quoted in Axe, *Undeniable*, 220.

[71] While I need not argue for the stronger claim here, Doug Axe, as discussed in the section on the "Origin of Life," argues that accidental invention by random mutation is physically impossible. See Axe, *Undeniable*.

> arrangements—that will not fold into a stable three-dimensional protein structure capable of performing a biological function.[72]

It is highly unlikely, then, that random genetic mutations would accidentally stumble upon a new DNA sequence that codes for a single new functional protein, let alone the *many* new functional proteins needed to generate new body plans and new species. How unlikely? Consider, during the entire 3.5 billion-year history of life on earth, "only ten to the fortieth individual organisms have ever lived—meaning that at most [there are] ten to the fortieth power [of opportunities to generate and pass on new gene sequences]. Yet ten to the fortieth power represents only a small fraction of ten to the seventy-seventh power—only one ten trillion, trillion, trillionth, or $1/10^{37}$ to be exact."[73] The implication, according to Meyer: "it follows that it is overwhelmingly *more likely than not* that a random mutational search would have *failed* to produce even one new functional (information-rich) DNA sequence and protein in the entire history of life on Earth."[74] Since every living organism represents a complex functional whole, it is vastly more probable that each new species is the product of intelligence. As Axe summarizes, "Each and every new form of life must therefore be a masterful invention in its own right, embodying its own distinctive version of functional coherence at the very highest level."[75] Theism, and not naturalism—along with its grand evolutionary story—offers the best explanation for the origin of novel biological species.

The Origin of Humans

According to the Hebrew Scriptures, God made man "and crowned him with glory and honor" (Ps 8:5, CSB). As divine image-bearers, man is unique among all living organisms (Gen 1:26). The honor and glory of man manifests itself in the human ability for language, art, and morality. This traditional theistic perspective on humans is sharply contrasted with the message from (atheistic) Darwinian science.[76] Again, Sean Carroll is

[72] In the Origin of Life section, the 10^{74} number was used to specify the ratio of functional to nonfunctional proteins of any length. The 10^{77} number used here is for the ratio of functional to nonfunctional proteins of 150 amino acids in length. Stephen C. Meyer, "Neo-Darwinism and the Origin of Biological Form and Information," in *Theistic Evolution*, 116. See the original results in Douglas Axe, "Estimating the Prevalence of Protein Sequences Adopting Functional Enzyme Folds," *Journal of Molecular Biology* 341 (2004): 1295–1315.

[73] Meyer, "Neo-Darwinism and the Origin of Biological Form and Information," 117.

[74] Meyer, "Neo-Darwinism and the Origin of Biological Form and Information," 118.

[75] Axe, *Undeniable*, 184.

[76] There are, of course, theistic evolutionists who think that evolution is sufficient to explain the origin of humans and that humans are unique and special, created (via evolution) by God. It is beyond the scope of this essay to assess the merits of theistic evolution. In this essay, I am concerned with the question of whether naturalism (and atheism) has the resources to explain the origin of the universe, life, species, and humans. For those theistic evolutionists who accept the full-blown evolutionary story, including the common ancestry thesis and the

representative: "We humans are blobs of organized mud.…Cosmically speaking, there's no indication that we matter at all."[77] Still, a balm is often offered too, "The universe is not a miracle…. We are the miracle, we human beings. Not a break-the-laws-of-physics kind of miracle; a miracle in that it is wondrous and amazing how such complex, aware, creative, caring creatures could have arisen in perfect accordance with those laws."[78] It is indeed a bit of a miracle, as Carroll puts it, if the laws of nature alone could produce something as "wondrous and amazing" as human beings. But is it true? Can purely naturalistic processes and events account for the origin of humans?

The two main areas of debate regarding the physical evidence for the origin of humans are fossils and the genetic similarities between apes and humans.[79] We consider the fossil evidence first. Despite bold public announcements from time to time from news or science sources that a "missing link" between apes and humans has been discovered, the evidence from fossils does not support Darwinian predictions. In reality, the hominin fossil record is fragmentary and sparse, revealing "a dramatic discontinuity between ape-like and human-like forms" and the sudden appearance of human-like fossils in the record "without clear evolutionary precursors."[80] How sparse and fragmentary is the hominin fossil record? Gerald Rau summarizes, "All together there are perhaps a few thousand fossils identified as human or human-like, most represented by only a few fragments of bones."[81] Consider the much-celebrated australopithecine fossil known as Lucy. Long described as a bipedal ape-like creature, and thus an ideal precursor to humans, significant doubts have been raised about whether she was in fact bipedal, a single individual, or human-like at all.[82] As the senior editor of *Science* magazine, Stella Hurtley, writes, "Our genus *Homo* is thought to have evolved a little more than 2 million years ago from the earlier hominid *Australopithecus*. But there are few fossils that provide detailed information on this transition."[83] The fossil record does not reveal a well-documented and continuous transition between apes and humans. Rather, it reveals the sudden appearance of distinct body plans without an evolutionary pathway.

blind-watchmaker thesis (that evolution is unguided), my critique will apply with equal force, however. For more on theistic evolution, see Moreland, Meyer, Shaw, Gauger, and Grudem, eds., *Theistic Evolution*. See also Matthew Barrett and Ardel B. Caneday, eds., *Four Views on the Historical Adam* (Grand Rapids: Zondervan, 2013).

[77] Carroll, *The Big Picture*, 3, 49.

[78] Carroll, *The Big Picture*, 431.

[79] Rau, *Mapping the Origins Debate*, 130.

[80] Casey Luskin, "Missing Transitions: Human Origins and the Fossil Record," in Moreland, Meyer, Shaw, Gauger, and Grudem, eds., *Theistic Evolution*, 438–39.

[81] Rau, *Mapping the Origins Debate*, 133.

[82] Casey Luskin, "Missing Transitions: Human Origins and the Fossil Record," in Moreland, Meyer, Shaw, Gauger, and Grudem, eds., *Theistic Evolution*, 450–55.

[83] Stella Hurtley, "From *Australopithecus* to *Homo*," *Science* 328 (April 9, 2010): 133; quoted in Casey Luskin, "Missing Transitions: Human Origins and the Fossil Record," in Moreland, Meyer, Shaw, Gauger, and Grudem, eds., *Theistic Evolution*, 467.

Regarding genetics, it is widely reported that the human genome is roughly 98.5% identical to the chimp genome. This is taken as evidence that humans share a common ancestry with chimps. There are at least two reasons to resist this conclusion, however. First, the differences are larger and more significant than typically reported. Second, there is not enough time for the species-specific genes to have evolved by the mutation/selection process. Not all sections of the human and chimp genome match up perfectly for the simple reason that the human genome contains roughly 3 billion base pairs whereas the chimp genome has 2.7 billion.[84] In sections that do match, there are about 35 million base pair substitutions, which results in a difference between the two genomes of 1.23% (hence the widely reported figure of roughly 1.5%).[85] But, there are other differences between the human and chimp DNA that are relevant: in addition to the 10% difference in total base pairs, there are also differences in the number and location of repeating genetic elements, differences in the Y chromosomes of chimpanzee and human males, and copy number variations among protein-coding genes.[86] All told, according to Gauger et al., "there is at least a 5 percent difference in our DNA."[87] Importantly, even when the DNA of humans and chimps match, the *use* is often different. For example, humans and chimps share 99.4% of genes that code for protein.[88] However, there is a 20% difference in how the genes express themselves (e.g., making different amounts or different kinds of proteins, influencing the activity of neighbor genes, etc.), even though they have the same DNA sequence.[89]

Regarding the problem of time, consider that, of the 20,000 human genes, there are anywhere from 60–600 human-specific genes.[90] It is worth asking, how could even one novel gene, let alone 60 or 600, evolve by the mutation/selection process within the usual evolutionary time frame of roughly 6 million years? Given typical assumptions about mutation rates, population size, and generational time, population geneticists estimate that it would take between 1.5 million years to 6 million years to get a single mutation in a DNA binding site—let alone a novel gene.[91] If two mutations are needed, the estimated time increases to between 84 and 216 million years![92] The problem is much worse, of course, for mutations are rarely beneficial.

[84] Rau, *Mapping the Origins Debate*, 138.

[85] Rau, *Mapping the Origins Debate*, 139.

[86] Ann K. Gauger, Ola Hossjer, and Colin R. Reeves, "Evidence for Human Uniqueness," in Moreland, Meyer, Shaw, Gauger, and Grudem, eds., *Theistic Evolution*, 480–82.

[87] Gauger, Hossjer, and Reeves, "Evidence for Human Uniqueness," 481.

[88] Rau, *Mapping the Origins Debate*, 139.

[89] Rau, *Mapping the Origins Debate*, 139. For more on how human DNA is used differently that chimp DNA, see Gauger, Hossjer, and Reeves, "Evidence for Human Uniqueness," 482–91.

[90] Gauger, Hossjer, and Reeves, "Evidence for Human Uniqueness," 482.

[91] Gauger, Hossjer, and Reeves, "Evidence for Human Uniqueness," 495.

[92] Gauger, Hossjer, and Reeves, "Evidence for Human Uniqueness," 495.

Still, the overall point should be obvious: there is simply not enough time for evolution to do the work required to explain the origin of humans.

We have considered the physical evidence and seen, contrary to the scientific consensus, a consensus driven by materialism, reductionism, and (often) naturalism and atheism, that it does not support evolution. Rather, the fossil and genetic evidence point to a unique human origin best explained by a designer. We have not, however, considered the full scope of the evidence, which includes aspects of human existence, as C. John Collins notes, "that are *universally* human and that are *uniquely* human."[93] When we add the evidence from human morality and rationality, the credence for a theistic account of human origins only increases.[94]

Conclusion

I have argued that God is the best explanation for the origin of the universe, life, species, and humans. Atheism and her cohorts—naturalism, reductionism, materialism, nihilism, constructivism, etc.—are weak reeds on which to stand. The claim that Darwinian evolution is incontestable or overwhelming is hardly the case. The opposite, in fact, is true. The question of origins points to God and a sacred order. The universe has meaning because it is the product of an intentional agent who has invested it with order and function. This metaphysical fact—the fact of God's existence and his creative activity—provides the foundation for a deeper response to the ills of our age, for it provides resources to appeal to "essences" and "ways things ought to be."

[93] C. John Collins, "A Historical Adam: Old-Earth Creation View," in Matthew Barrett and Ardel B. Caneday, eds., *Four Views on the Historical Adam*, 165.

[94] For an excellent summary of the moral argument for God and the argument from reason to God, see the essays by Mark D. Linville and Victor Reppert, respectively, in William Lane Craig and J.P. Moreland, eds., *The Blackwell Companion to Natural Theology*.