Atheist Myths and Scientism

Steve Cable exposes some atheist myths and the false ideology of scientism, all designed to destroy people's faith.

A Two-Pronged Attack Against Christianity



Atheist attacks against American Christianity are gaining more traction in our society. Their success can be readily seen in the growth of the number of American young adults who do not profess to be Christians. Tracking recent trends, around 50% of American Millennials fall in this category, with most of those identifying as atheist, agnostic or nothing in particular. More identify as nothing in particular than as atheist, but the atheist attacks certainly have a role to play in their ambivalent feelings about Christianity.

What have atheists done to create a cultural milieu that is drawing more and more young Americans away from Christianity? In this article, we will focus on two prominent prongs of the attack against Christianity. Those prongs are:

1. Fabricating myths around the premise that Christianity and modern science are enemies of one another and have been so since the advent of modern science, and

2. Promoting the philosophy of scientism as the only way to view science.

First, the myths are an attempt to cause people to believe that the Christian church and a Christian worldview were and are anti-science. They want us to believe that the findings of science are counter to the make-believe teachings of

Christianity and the Bible. They want us to look back at history and believe that the church was actively opposing and trying to suppress scientific knowledge. As Michael Keas tells us in his 2019 book *Unbelievable*, "These stories are nothing but myths. And yet some leading scientists . . . offer these stories as unassailable truth. These myths make their way into science textbooks . . . (and) enter into popular culture, whereby the myths pass as accepted wisdom."{1}

However, many historians and philosophers have correctly pointed out that the Christian worldview of an orderly universe created by an involved God produced the mindset that gave birth to the scientific revolution. In his book *How the West Won*, sociologist Rodney Stark states, "Christianity was essential to the rise of science, which is why science was a purely Western phenomenon . . . science only arose in Christian Europe because only medieval Europeans believed that science was possible and desirable. And the basis of their belief was their image of God and his creation."{2} In this article, we consider the key figures who propagated this myth and some of the falsified stories they have foisted upon us.

Second, they want us to accept scientism as the only valid way to view the role of science in our understanding of the universe. What is scientism? In his 2018 book *Scientism and Secularism*, professor of philosophy J. P Moreland defines it this way: "Scientism is the view that the hard sciences provide the only genuine knowledge of reality. . . . What is crucial to scientism is . . . the thought that the scientific is much more valuable than the non-scientific. . . . When you have competing knowledge claims from different sources, the scientific will always trump the non-scientific."{3}

But scientism "is not a doctrine of science; rather it is a doctrine of philosophy . . . (In fact,) scientism distorts science."{4} This philosophical doctrine came into favor among the public not because of scientific results, but rather as the result of proponents presenting it in popular ways as if

it were the undisputable truth. As Moreland points out, “It is not even a friend of science but rather its enemy.”{5}

Myths about Christianity and Science

Atheists want to create stories to demonstrate that Christians are and have been the enemies of scientific exploration and discovery. Why this drive to recreate the past? They want to encourage people to turn away from Christianity as an enemy of science and weaken the faith of believers.

As Michael Keas makes evident in *Unbelievable*, this thinking is not based on reality. Instead, historical myths have been created to bolster their position either as a result of ignorance of the actual history or intentional deceit. After creating these myths, they use the educational system and mass media to ingrain these myths into the thinking of the masses.

Keas specifically looks at seven myths used for this purpose which we find embedded in our textbooks and proclaimed by popular television programs. To understand the nature of these myths, let’s consider two of the ones discussed by Keas.

Many of you learned of the Dark Ages, a period of time between A.D. 500 and 1500 where textbooks have claimed that science and the arts were stifled by the control of the church which opposed scientific understanding. In truth, this view is not supported by historical evaluations of that time. As reported in Stark’s revealing book, *How the West Won*, “Perhaps the most remarkable aspect of the Dark Ages myth is that it was imposed on what was actually “one of the great innovative eras of mankind.” During this period technology was developed and put into use on a scale no civilization had previously known.{6} Keas found that this myth first appeared in textbooks in the 1800s but did not surface with an anti-Christian slant until the 1960s. Carl Sagan, and later Neal deGrasse Tyson, would help promulgate this myth on television through their *Cosmos*

series.

Another myth exploded by Keas is that "Copernicus demoted humans from the privileged 'center of the universe' and thereby challenged religious doctrines about human importance."{7} In fact, Copernicus as a Christian did not consider his discovery that the earth orbited the sun a demotion for earth or humans. What Copernicus saw as unveiling the mysteries of God's creation over time began to be pictured as a great humiliation for Christians. In the 1950s some scientific writers began using the term "the Copernican principle" to refer to the idea "that the Earth is not in a central, specially favored position"{8} in the cosmos. As one Harvard professor has noted, "This is the principle of mediocrity, and Copernicus would have been shocked to find his name associated with it."{9}

Keas also documents how this atheist strategy also pretends that many early scientists were not Christians. Johannes Kepler, known for his discovery of the three laws of planetary motion, is cited by Sagan in *Cosmos* as someone who "despaired of ever attaining salvation,"{10} implying that Kepler always felt this way. Sagan leads one to believe that in his astronomical discoveries Kepler was somehow freed from this concern. Yet from Kepler's own writing it is very clear that he was a Christian, telling people shortly before his death that he was saved "solely by the merit of our savior Jesus Christ." And speaking of his scientific endeavors he wrote, "God wanted us to recognize them [i.e. mathematical natural laws] by creating us after his own image so that we could share in his own thoughts."{11}

Much of the reported relationship between science and Christianity is a myth made up to strengthen the atheist position that science repudiates Christianity and makes it superfluous and dangerous in today's enlightened world. Nothing could be further from the truth, as a Christian worldview was foundational for the development and application

of the scientific method.

Methodological Naturalism: A Farce

What about the prevalence of scientism, a belief system claiming that the hard sciences provide the only genuine knowledge of reality?

When considered carefully, the whole concept of scientism is a farce. Why? Because as philosopher J. P. Moreland points out, "Strong scientism is a philosophical assertion that claims that philosophical assertions are neither true nor can be known; only scientific assertions can be true and known."{12} So the premise is self-refuting. They are saying that only scientific facts can be objectively true. Thus, the statement that only scientific facts can be true must be false because it is a philosophical assertion, not a scientific fact.

Another example of the faulty philosophy behind scientism comes in their insistence on adopting methodological naturalism as a criterion for science. Methodological naturalism is "the idea that, while doing science, one must seek only natural causes or explanations for scientific data."{13} This idea immediately demotes science from being the search for the truth about observable items in this universe to being the search for the most plausible natural cause no matter how implausible it may be.

Although they appear to be unsure as to whether to apply the concept uniformly to all forms of science, its proponents are sure that it definitely should be applied to the field of evolutionary science. They make the *a priori* assumption that life as we know it originated and developed by strictly impersonal, unintelligent forces. No intelligence can be allowed to enter the process in any way. This approach to trying to understand the current state of life on earth is certainly an interesting exercise leading to a multitude of

theories and untestable speculations. It is a challenging mental exercise and is valuable as such. However, scientism does not stop there. They declare that their unsupported (and I would say unsupportable) theories **must be the truth** about our origins, at least until replaced by another strictly naturalistic theory.

This approach seems to be an odd (and unfruitful) way to go after the truth due to at least three reasons. First, many other areas of science which include intelligent agents in their hypotheses are respected and their results generally accepted, common examples being archaeology and forensic science. Second, the current state of evolutionary science primarily appears to be tearing holes in prior theories, e.g. Darwinian evolution, rather than closing in on a plausible explanation. And, third, scientists are continuing to find evidence supporting a hypothesis that intelligent actions were involved in the formulation of life on earth.

If the sum of the available evidence is more directly explained by the involvement of some intelligent agent, then it would be reasonable to accept that potential explanation as the leading contender for the truth until some other answer is developed that is more closely supported by the available evidence. This is the attitude embraced by the intelligent design community. They embrace it because so much of the evidence supports it, including

1. the inability of other hypothesis to account for the first appearance of life,
2. the complexity of the simplest life forms with no chain of less complex forms leading up to them,
3. the relativity sudden appearance of all types of life forms in the fossil record,
4. the fine tuning of the parameters of the universe to support life on earth, and
5. the emergence of consciousness within humans.

In contrast, those supporting theistic evolution appear to do so in order to conform to the methodological naturalism of their peers. They claim to believe that God does intervene in nature through acts such as the miracles of Jesus and His resurrection. But they claim that God did not intervene in the processes leading up to the appearance of mankind on this planet. In my opinion, they take this stance not because the evidence demands it, but because methodological naturalism does not allow it. As Moreland opines, "Methodological naturalism is *one bad way* to put science and Christianity together."{14}

Things Science Cannot Explain / God of the Gaps

As we have seen, scientism is a philosophy that says the only real knowledge to be found is through application of the hard sciences and that no intelligence can be involved in any of our hypotheses. So, they believe hard science must be capable of explaining everything (even if it currently doesn't).

In this section we will consider some very important things that science cannot now nor ever be able to explain. In his book, *Scientism and Secularism*, J. P. Moreland lists five such things for us.

First, the origin of the universe cannot be explained by science. Why? Science has been able to identify that the universe most likely had a beginning point. But as Moreland points out, "Science can provide evidence that the universe had a beginning; it cannot, even in principle, explain that beginning; that is, it cannot say what caused it. . . No real thing can pop into existence from nothing."{15} He points out three specific logical reasons science cannot address this issue:

1. A scientific explanation cannot be used to explain the

universe because scientific explanations presuppose the universe.

2. Science cannot explain the origin of time and without time no explanation can be considered.

3. Coming-into-existence is not a process which can be reviewed and explained because it is an instantaneous event. Something either does or does not exist.

Second, the origin of the fundamental laws of nature. All scientific explanations presuppose these laws. We can conceive of a universe where these laws might be different resulting in a different reality, but we cannot explain how our universe came into being with the laws we see active around us.

Third, the fine-tuning of the universe to support life. As far as science is concerned the parameters of the forces within this universe can be observed but we cannot know what caused them to assume the values they do. However, in recent years it has been discovered that our universe "is a razor's edge of precisely balanced life permitting conditions."{16} Over one hundred parameters of this universe, such as the force of gravity, the charge of an electron, the rate of expansion of the universe, etc., must be precisely balanced or there could be no life in the universe. Science cannot answer the question of why our universe can support life.

Fourth, the origin of consciousness. In this context consciousness is the ability to be aware of oneself and entertain thoughts about things which are outside of oneself and possibly outside of one's experience. From a naturalist point of view, "the appearance of mind is utterly unpredictable and inexplicable."{17} However, God may choose to create conscious beings; beings that are capable of asking about and discovering the works of their creator.

Fifth, the existence of moral laws. As the late atheist philosopher Mackie admitted, the emergence of moral properties

would constitute a refutation of naturalism and evidence for theism: “Moral properties constitute so odd a cluster of properties and relations that they are most unlikely to have arisen in the ordinary course of events without an all-powerful god to create them.”{18}

These five important questions can never be answered if scientism’s flawed premise were true. However, Christian theism answers each of these questions and those answers are true if God is the real creator of the universe.

Integrating Christianity and Science

Scientism claims that you cannot integrate Christianity and science. Instead, they claim all theology is nonsense and only science exists to give us the truth. As Moreland points out, “One of the effects of scientism, then, is making the ridicule of Christianity’s truth claims more common and acceptable (which is one of scientism’s goals).”{19}

If this view is clearly wrong, how should we as Christians view science and its relationship with Christianity and the Bible? First, we need to understand that the topics addressed by science are in most cases peripheral to the topics covered in the Bible. The Bible is primarily concerned with God’s efforts to restore people from their state as enemies of God back into eternal fellowship with Him.

One area of significant interaction is the question of how this universe came to exist in its current state. How one views that interaction (i.e. as adversarial or as complementary) depends on whether they are clinging to the unsupported myth of unguided evolution or to the new science of intelligent design. As Moreland states, “Science has done more to confirm the Christian God’s existence than to undermine it, and science has provided little or no evidence against belief of theism. Science has, however, raised

challenges to various biblical texts, and Christians need to take those challenges seriously."{20}

Moreland suggests there are five ways to relate issues in science and Christian philosophy. Let's consider two of those methods. One is the complementarity model. In this model, two disciplines are addressing the same object or feature but from different, essentially non-overlapping perspectives. "Neither one purports to tell the whole story, but both make true claims about reality."{21} This is the model used by advocates of theistic evolution who take as gospel the latest claims of evolutionary science while saying of course God kicked off the whole process including us in His plan for the universe.

Another way to interact is called the direct interaction model. In this model, theories from theology and from science may directly interact with one another on some topic, either positively or negatively. One area might raise rational difficulties for the other. This approach has the most potential for bringing information from different fields together into a fuller picture of truth. Intelligent design is an area where this model is applied as it questions the validity of eliminating intelligence from the options considered in understanding the development of life on earth.

Since scientism swears that science is the only source of truth, even when scientists cannot agree as to what that scientific truth is, they want to discount inputs from any other source no matter how helpful. So the direct interaction model is a difficult road to take. What are the rational criteria for going against the experts? Moreland suggests there are four criteria for Christian theologians to decide to take this road.

1. Make sure there is not a reasonable interpretation of the Bible that resolves the tension.

2. There is a band of academically qualified scholars who

are unified in rejecting the view held by a majority of the relevant experts. In this way, we know that there are people who are familiar with the details of the majority view, who do not believe that it is true.

3. There are good non-rational explanations for why the expert majority holds the problematic view. For historical, sociological, or theological reasons, the majority is not ready to abandon their position rather than because their evidence is overwhelming. "For example, the shift from creationism to Darwinism was primarily, though not exclusively, a shift in philosophy of science."{22}

Given the large amount of evidential support for a Christian worldview, any view that is counter to central components of a Christian worldview should be rejected precisely for that reason. Any view meeting the first three criteria that also attempts to undermine key parts of a Christian worldview will be overwhelmed by the significant rational support for a Christian worldview.

As followers of the God of real truth, Christians need to realize that the so-called truths being taught to justify science over theology are in fact myths and/or self-refuting statements. Every Christian needs to be able to address these fallacies in today's popular science culture. Equip your young adults with this understanding and more by attending our summer event called Mind Games Camp. More information can be found at probe.org/mindgames.

Notes

1. Michael Keas, *Unbelievable: 7 Myths About the History and Future of Science and Religion*, ISI Books, 2019, 2.
2. Rodney Stark, *How the West Won: The Neglected Story of the Triumph of Modernity*, ISI Books, 2014 p. 304, 315.
3. J. P. Moreland, *Scientism and Secularism: Learning to Respond to a Dangerous Ideology*, Crossway, 2018, 26 and 29.

4. Ibid., p. 23.
5. Ibid., p. 55.
6. Stark, p. 76.
7. Keas, p. 4 and Chapter 6.
8. Herman Bondi, *Cosmology*, Cambridge University Press, 1952.
9. Owen Gingerich, *God's Universe*, Belknap Press, 2006.
10. Sagan, 1980 *Cosmos* TV series, episode 3.
11. Kepler, letter to Herwart von Hohenburg, April 9/10, 1599.
12. Moreland, p. 52.
13. Ibid., p. 131.
14. Ibid., p. 159.
15. Ibid., p. 138.
16. Ibid., p. 146.
17. Ibid., p. 151.
18. J. L. Mackie, *The Miracle of Theism*, Oxford, 1982, p. 115.
19. Moreland, p. 31.
20. Ibid., p.174.
21. Ibid., p. 184.
22. Ibid., p. 192.

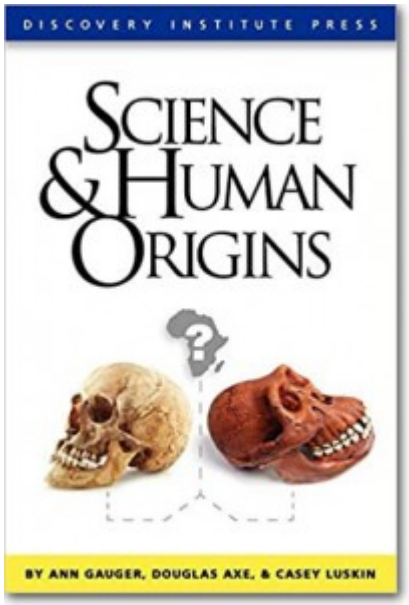
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Science and Human Origins

Dr. Ray Bohlin explains how the Discovery Institute's book "Science and Human Origins" reveals why evolutionary theory cannot account for human origins.

Just What Needs to be Accomplished From Ape-like Ancestor to Humans?

In 2012 the Discovery Institute published an edited volume discussing the possibilities of human evolution from an ape-like ancestor by Darwinian evolution mechanisms. In this article I will offer an overview of the book, *Science and Human Origins*{1} and investigate the state of research into human origins from an evolutionary perspective.



First I'd like to discuss the first chapter by Ann Gauger. Ann is a research scientist with Biologic Institute with laboratory experience at Harvard and the University of Washington. Initially Ann points out two things that are necessary for there to be a link by common ancestry between humans and some ape-like ancestor. First there must be a step-wise adaptive path to follow. Neo-Darwinism depends on a slow, gradual path between two forms, genes or proteins. Rapid large jumps are likely to be too disruptive to the organism's state of being. Either survival or reproduction will be compromised.

Second, standard unguided Darwinian mechanisms such as mutation, selection, random drift and genetic recombination have to be sufficient for the task. Modern evolutionary theory is quite insistent that only natural unguided processes are necessary for evolution to occur no matter what the transition being considered.

To better understand the problem, the book discusses the numerous types of biological changes needed to transition from a primarily arboreal monkey adjusted to life in the trees to a walking, running, hunting gathering, intelligent, talking human being. Compared to the other great apes, humans possess longer legs, shorter arms, different pelvis and rib cage, refined muscles for fingers, lips and jaw, eyes that can focus straight ahead and still see where we are walking, larger and

unique brain structures, a head that sits directly on top of the spine and a spine that will support upright walking and running. Now add to that our unique capacities for language, art and abstract thought and you can easily understand that a lot needs to happen.

The usual series of fossils links together Lucy, the australopithecine closest to humans and Turkana Boy (*Homo erectus*), the first full member of our genus Homo. Lucy is said to have lived 3.2 million years ago (mya) and Turkana Boy about 1.5 mya. This is indeed a very short time span in evolutionary terms, especially considering all that must change. One recent paper from the journal *Genetics* suggested that it would take about 6 million years for a single mutation to be fixed in a primate lineage. This transition probably needs tens of mutations. If you need two mutations, forget it. That would require 216 million years.

It's not too hard to see that standard evolutionary processes are wholly insufficient to cause the transition between australopithecines and humans.

The Earliest Fossils Leading to Humans

Now I want to discuss the evidence for human evolution from the fossils. Study into ancient humans is called paleoanthropology. Casey Luskin breaks down his discussion into two parts, Early Hominin Fossils and Later Hominins: The Australopithecines. Let's start with the early hominins. As the story goes, humans and chimpanzees share a common ancestor about six million years ago. The fossil record of six million years ago has been pretty stingy. Not much to choose from for a human/chimp ancestor until the last twenty years.

The Toumai Skull (*Sahelanthropus tchadnesis*) was first reported in 2002 and is widely referred to as the oldest fossil in the hominin line. But when you dig a bit deeper as

is always necessary when discussing human evolution, not everyone agrees. Some suggest that the Toumai Skull has far more in common with apes than anything resembling a human. All this skull really shows is how complex the evolutionary story has become.

A second fossil known as "Orrorin" (*Orrorin tugenensis*) or "original man" in a local Kenyan language was designated as the earliest human link in 2001.{2} But it was little more than a few bone fragments from an arm, thigh, lower jaw and a few teeth. As usual, there were some saying that Orrorin walked on two feet and others who said there isn't enough information to determine how this organism moved. Another fossil found on the island of Sardinia is truly an ape but had some indications that it too was bipedal. But Oreopithecus is thought to have arrived at its bipedal gait independently. This would clearly indicate that just because an ape-like fossil had bipedal adaptations doesn't mean it was ancestral to humans.

Last is the curious story of "Ardi" (*Ardipithecus ramidus*). Ardi is a 4.4 million year old fossil announced in 2009. Ardi quickly rose in fame and attention, being hailed by some as the oldest human ancestor found and the key to understanding how human bipedalism evolved. But Casey Luskin informs us that Ardi was originally found in the early 1990s. It took over a decade to piece the fossil together because it was found literally crushed and extremely brittle. How did they know how it all really fit together? Within a year other paleontologists indicated Ardi had little to do with human evolution and was simply overhyped. That's become a familiar story. So much change to cover and so little evidence.

From "Lucy" to "Turkana Boy"

We now turn to the appearance and nature of a very important fossil category. If humans have evolved by a Darwinian process

from an ape-like ancestor, then there must be some species or group of species that show clear signs of being intermediate between fossil apes and humans. For many years that position has been occupied by the "australopithecines." More specifically a particular species (*Australopithecus afarensis*) has been represented for decades as that ancestor, represented by a fossil known as "Lucy."

As Casey Luskin carefully documents, Lucy is a fossil that represents about 40% of the original organism so it is very incomplete, although far more representative that any earlier fossils. He also notes that the original fossil was found scattered over a hillside and may not truly represent a single individual. But significantly, Lucy is not necessarily closely related or descended from the Toumai Skull, Orrorin, or Ardi that I discussed above. There is much about Lucy that is very ape-like, and many anthropologists even question whether Lucy can be considered as truly ancestral to humans.

Most significant about Lucy is the contention by some that she possessed a form of bipedalism that was very much or at least similar to human locomotion. But even that is highly contested by the evolutionary experts. Lucy's skull is small and quite ape-like. The chest cavity is shaped in a way that would make upright walking difficult and her arms are long like apes and her legs are short like apes. Much is made about the shape of her pelvis. But as Luskin points out, the shape may have been an error in reconstruction since that part of the skeleton was found severely crushed.

Even more to the point, Lucy shows numerous characteristics that require significant reworking compared to the earliest human-like fossils (*Homo erectus*) usually represented by "Turkana Boy." This two-million-year-old fossil shows itself to be entirely human. Even its small brain is within the range of modern humans and the brain architecture is also entirely human and nothing like Lucy. As Luskin points out there needs to be a sort of "Big Bang" between Lucy and Turkana Boy.{3}

What we have then is a large gap between apes and Lucy, and a large gap between Lucy and humans. So even though the fossil record could be interpreted to show a modest progression from apes to humans over time, there are no true transitional forms to document how this important transition took place.

DNA Doesn't Lie

In a well-documented chapter, Casey Luskin examines the claims of evangelical scientist, Francis Collins, that there is explicit and undeniable genetic evidence that humans and chimps evolved from a common ancestor. Collins has earned a stellar reputation as a medical geneticist for first discovering the gene responsible for cystic fibrosis, leading the Human Genome Project for over a decade, and then in 2009 being named by President Obama as the head of the prestigious National Institutes of Health (NIH). In between Collins's role as head of the Human Genome Project and his current role at NIH, he founded an organization, BioLogos, dedicated to convincing the church in America that evolution is indeed is a fact and we need to adjust both our science and preaching to reflect that fact.

In preparation for BioLogos he published a book titled *The Language of God*.{4} In this book, Collins presents a two-fold line of evidence that humans and chimps evolved from a common ancestor. First he appeals to what are known as repetitive elements in our DNA. All mammalian genomes have relatively short sequences that can be very specific to species and groups of species, spread throughout the genome. It appears as if these sequences make copies of themselves and randomly insert the copy elsewhere in the genome. These repetitive elements are frequently found in the same place in the genome in distant species such as mice and humans. These are referred to as Ancient Repetitive Elements (ARE). These AREs are assumed to have no functional significance in the organism. This renders them as what is referred to as "selfish DNA"

which exists only to survive and reproduce.

Some AREs are found in the same chromosomal location in mice and humans as well as humans and chimps. This sure seems like evidence of common ancestry, as Collins claims. But the assumption I just mentioned, that these sequences have no function, has been widely disproved in just the last ten years. As a result of the Human Genome Project that Collins led, we can now search all DNA sequences for some kind of function. Relying on work published by Richard Sternberg, Luskin lists twenty newly discovered functions for different types of repetitive elements in mammalian and human genomes.{5}

The chapter discusses two other now disproven evidences for common ancestry of humans and chimps. I hope you can see that new and mounting evidence is making the common ancestry of humans and chimps even more difficult to defend.

How Many Humans at the Start?

In the final chapter of *Science and Human Origins*, Ann Gauger discusses a bit more of an academic argument for humans having evolved from an ape-like ancestor. Some evolutionary geneticists have described an argument that the level of genetic variation for particular human genes could not have arisen from a beginning of just two people. They state that standard genetic equations indicate that the human population most likely descends from a population of around 100,000 individuals. Just two people could not have generated this much variation in 100,000 years, let alone less than 10,000 years. If their analysis is true, then the Biblical account of Adam and Eve becomes a theological story with no historical significance. So let's take a look.

Gauger investigates in detail the most variable gene in humans. This gene codes for a protein involved in the immune

system. One section of this gene is what geneticists call “hypervariable.” Evolutionist Francisco Ayala and others researched this gene in the mid-1990s. Ayala’s conclusion was that the original human population that separated from the line that evolved into chimps contained at least 32 copies of the gene in its population. Each of us has only two copies of each gene, so 32 copies requires at least 16 people. But since, over time, different gene copies are lost, Ayala estimated a human population of at least 10,000 individuals with an average closer to 100,000.

Gauger points out that Ayala misused several assumptions. He assumed a small mutation rate and he assumed no selection. When Gauger corrects for these errors and examines the studies of others, she determines that the equations, when the proper assumptions and mutation rates are used, the original human population could have had as few as 4 copies of this gene. Let’s see, two copies per person, four copies, only needs two people. How about that!

Obviously in this short article I have intentionally glossed over the technical details. Ann Gauger gives you the details as well as more non-technical summaries along the way. I strongly encourage you to purchase the book. At 122 pages, it’s readable in a Saturday. Considering all I have covered this week, my doubts about human evolution have only been strengthened. It becomes even more obvious over time that Darwinian evolutionary mechanisms are proving less and less adequate.

Notes

1. Gauger, Ann, Douglas Axe, and Casey Luskin, *Science and Human Origins* (Seattle: Discovery Institute Press, 2012).
2. Ibid., p. 51.
3. Ibid., p. 65-70.
4. Francis Collins, *The Language of God: A Scientist Presents Evidence for Belief* (New York: Free Press, 2006).

5. Gauger, Ann, et al., *Science and Human Origins*, p. 87-88.

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Darwinism: A Teetering House of Cards



Steve Cable examines four areas of recent scientific discovery that undermine evolution.

The Origin of Life: A Mystery

Confidence in Darwinism erodes as new discoveries fail to produce supporting evidence. Three books released in 2017,

- *House of Cards* by journalist Tom Bethel
- *Zombie Science* by biologist Jonathan Wells
- *Undeniable* by biologist Douglas Axe

address areas where Darwin's grand idea is weaker now than 150 years ago. As Bethel states, "Today, it more closely resembles a house of cards, built out of flimsy icons rather than hard evidence, and liable to blow away in the slightest breeze."{1} It is not just critics who recognize this weakening. In 2016, the

Royal Society in London convened a meeting to discuss "calls for revision of the standard theory of evolution."{2}

Four areas where Darwin hoped future work would support his theory will be examined. The first area is the origin of reproducing beings.

Darwin only hoped that life may have originated in a "warm little pond." But as one scientist states, "The origin-of-life field is a failure—we still do not have even a plausible coherent model, let alone a validated scenario, for the emergence of life on earth."{3}

Darwin assumed the first reproducing cells were very simple. In truth, the simplest cells are composed of impressively complex machines which could not have arisen directly from inorganic components. But there are no known simpler life forms. As Michael Behe commented, "The cell's known complexity has increased immeasurably in recent years, and points ever more insistently to an intelligent designer as its cause."{4}

The probability of even one of the amino acids necessary for life appearing by random mutations is effectively zero even given billions of years. As Doug Axe writes, "(Examining how) accidental evolutionary processes are supposed to have invented enzymes without insight, we consistently find these proposals to be implausible."{5}

Another professor states, "Those who think scientists understand the issues of prebiotic chemistry are wholly misinformed. Nobody understands them. . . . The basis upon which we . . . are relying is so shaky we must openly state the situation for what it is: a mystery."{6}

Facing insurmountable odds against life appearing, some materialists propose an infinite number of parallel universes.{7} With infinite chances, even the most unlikely events could occur. But, as Axe points out, "The biological inventions that surround us (are) fantastically improbable,

with evolution explaining none and the multiverse hypothesis explaining only those absolutely necessary for wondering to be possible, . . . this hypothesis fails to explain what we see."{8}

Even after resorting to unobservable fantasy situations, the challenges presented by the origins of life cannot be overcome. A Darwinian model begins with a self-replicating life form. Currently, this appears to be a hill that no one knows how to climb.

An Example of Macro-evolution: Still Searching

Darwin's theory is dependent upon the unobserved concept of macro-evolution, i.e. intergenerational differences accumulating into different species over time. Darwin believed his magic wand of natural selection could direct this process toward increasingly complex beings. Has further research confirmed his belief?

Let's begin with fossil evidence.

The number of fossils studied has blossomed over the last 150 years. All the types of species which exist today appear in the fossil record over a relatively short period of time.{9} And, in most cases, with no transitional forms between them undermining Darwin's theory. As science historian Stephen Meyer concludes, "As more . . . fossils are discovered (failing) to document the great array of intermediate forms, it grows ever more improbable that their absence is an artifact of either incomplete sampling or preservation."{10}

And evolution proponent Stephen Gould wrote, "The extreme rarity of transitional forms in the fossil record persists as the trade secret of paleontology. The evolutionary trees . . . have data only at the tips and nodes of their branches; the rest is inference."{11} *Nature* editor Henry Gee put it this

way: “To take a line of fossils and claim that they represent a lineage is not a scientific hypothesis that can be tested, but an assertion that carries the same validity as a bedtime story.”{12}

Cleary, the fossil record challenges rather than supports conventional evolutionary theory.

Let’s continue by looking at experimental evidence.

Perhaps someone has recreated macro-evolution in the lab. Studies of fast replicating populations have shown no ability to accumulate multiple changes. Attempts to create macro-evolution in fruit flies, bacteria and viruses concluded “Neither in nature nor under experimental conditions have any substantial effects ever been obtained through the systematic accumulation of micro-mutations.”{13}

Bethel points out, “The scientific evidence for evolution is not only weaker than is generally supposed, but as new discoveries have been made . . . , the reasons for accepting the theory have diminished rather than increased.”{14}

Yet biology departments still spout their unfounded belief in the “magic wand” ability to produce an unimaginable array of advanced creatures in what “amounts to the triumph of ideology over science.” Even some materialists see through this charade. One geneticist at Harvard wrote, “If scientists are going to use logically unbeatable theories about the world, they might as well give up natural science and take up religion.”{15}

“Darwin might well have been dismayed (at) the meager evidence for natural selection, assembled over many years. . . . It is worth bearing in mind how feeble this evidence is any time someone tells you that Darwinism is a fact.”{16}

The Challenge of Irreducible Complexity

Darwin wrote his theory would "absolutely break down" if an organ could not be formed by "numerous, successive, slight modifications."{17} Have such organs been found? Irreducible complexity and functional coherence say yes.

Irreducible complexity means that some known functions require multiple parts that have no purpose without the other parts. For a Darwinian process to create these functions would require useless mutations to be indefinitely maintained until combined with other useless mutations. Michael Behe's analysis has shown the 4 billion years of the earth's existence are not sufficient for such complex functions to be created by random mutations.

Even if an improbable series of events occurred allowing **one** of these complex forms to arise through a set of random mutations, it would need to happen thousands, if not millions, of times to produce our complex life forms.

In *Undeniable*, Axe introduces "functional coherence," defined 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 examines the role of functional coherence as a microscopic level and concludes, "The fact that mastery . . . of protein design is completely beyond the reach of blind evolution is . . . evolution's undoing. . . . The evolutionary story is . . . something much less plausible than hitting an atomic dot on a universe-size sphere over and over in succession by blindly dropping subatomic pins."{18}

In *Zombie Science*, Jonathan Wells considers the number of irreducibly complex subsystems required to evolve fully aquatic whales. These features include flukes with specialized muscles, blowholes with elastic tissues and specialized muscles, internal testicles with a countercurrent heat

exchange system, specialized features for nursing, and many others. For Darwinism, these changes are insurmountably large. Whales certainly appear to be the product of design, not unguided evolution.

He also points to advanced optical systems. The process by which light detection becomes an intelligent signal to the brain is irreducibly complex. Two scientists wrote, "the prototypical eye. . . cannot be explained by selection, because selection can drive evolution only when the eye can function at least to a small extent."{19} These scientists determined the eye was irreducibly complex and could not be developed by natural selection.

Richard Lewontin, a committed materialist, does not believe natural selection can explain complex life forms. He cannot conceive of any gradual set of useful incremental changes resulting in a flying being. Unless a small change gives an advantage, "the change won't be selected for, and obviously, a little bit of wing doesn't do any good."{20}

So we can agree with Darwin on this issue: his theory "absolutely breaks down."

DNA and Molecular Science Muddy the Scenario

Has uncovering the role of DNA filled the gaping holes in Darwinism or created more?

A species's DNA sequence, we are told, contains all the information needed to create new members. But Douglas Axe states, "(We) would be shocked to know the . . . state of ignorance with respect to DNA. The view that most aspects of living things can be attributed neatly to specific genes has been known . . . to be FALSE for a long time."{21}

The higher-level components making up a species are not

entirely specified by its DNA. As Wells explains, “After DNA sequences are transcribed into RNAs, many RNAs are modified so they do not match the original transcript. . . . (changing) over time according to the needs of the organism.” The claim that “DNA makes RNA makes protein” is false.”{22}

Creating new complex functions requires multiple changes in the DNA sequence AND in other elements making the chance of random mutations creating new species untenable.

The original conflicting “trees of life” were created examining the morphology, i.e. the structures of species. These trees suggest different major nodes but almost no transitional forms. Can DNA analysis help? Research has shown that groupings based on morphology are not supported by DNA analysis. As Wells notes, these conflicts “are a major headache for evolutionary biologists.”{23}

This disconnect from recent gene research is not limited to a few cases. As reported in 2012, “incongruence between (trees) derived from morphology . . . , and . . . trees based on different subsets of molecular sequences has become pervasive.”{24}

But DNA analysis alone has a great degree of uncertainty. In one study looking at fifty genes from seventeen animal groups, multiple conflicting ideas on the evolutionary relationship between the animal groups were proposed.{25} All had seemingly absolute support from the DNA evidence, but all could not be true.

Originally scientists thought DNA was primarily junk sequences not contributing to the characteristics of a species. This junk represented functions which were replaced or had no current usefulness. As Francis Crick, one of the discoverers of DNA’s structure, said, “The possible existence of such selfish DNA is exactly what might be expected from the theory of natural selection.”{26}

But recent research shows at least eighty percent of the human genome contributes. As Wells reports, "The evidence demonstrates that most of our DNA is transcribed into RNA and that many of those RNAs have biological functions. The idea that most of our DNA is junk, . . . is dead."{27}

The facts uncovered about the functioning of DNA and other elements in passing on characteristics to the next generation appear to make more holes in evolutionary theory.

A Philosophy Props Up Its Poster Child

Recent, scientific insights have weakened Darwin's theory. Yet many are unwilling to discuss its weakness. Why this reluctance? It falls into two camps: 1) a commitment to materialism and 2) a desire for academic acceptance. Materialism is a religious viewpoint where everything has a natural explanation. A spiritual component or events resulting from an outside force are rejected. Science is not materialism. Science attempts to identify and quantify the forces that make the universe. A materialist scientist adds a religious restriction: only natural forces can be considered.

Bethel states, "Although Darwinism has been promoted as science, its unstated role has been to prop up the philosophy of materialism and atheism."

Wells suggests, "Priority is given to proposing and defending materialistic explanations rather than following the evidence wherever it leads. This is materialistic philosophy masquerading as empirical science, . . . zombie science."{28}

Atheist Colin Patterson offers an honest view regarding the theory of evolution as "often unnecessary" in biology. Nevertheless, it was (taught as) "the unified field theory of biology," holding the whole subject together. Once something has that status it becomes like religion."{29}

Until they have a better theory, they will stand behind it

rather than consider alternatives. They fear any uncertainty will lead to questioning other aspects of materialism, such as that free will and love for others are simply a façade promoted by natural selection.

Bethel points out, “If our minds are . . . accidental products of a blind process, what reason do we have for accepting materialist claims as true?”{30} After all, our minds are selected to improve our survivability, not to discern what is true.

Many scientists are not die-hard materialists. They believe there may be a spiritual aspect of our existence. Yet they promote the materialistic view. For most, this inconsistent approach is a reaction to the threat of censure from the establishment.

Axe claims, “The religious agenda is the enemy that threatens science. . . . Everything that opposes the institutionalized agenda is labeled ‘anti-science.’”{31}

The same arguments used against intelligent design apply more accurately to Darwinism. Bethel states, “(Some) have said that design can’t be measured and therefore it is a religious belief. . . . They might also have said the macro-evolution has not yet been measured, or so much as observed.”{32}

In this review, we have seen

1. No materialistic concept for life’s origin
2. Little evidence f transitional life forms
3. Strong evidence complex functions could not arise through random changes
4. DNA playing havoc with the basic tenets of Darwinism.

Now we wait for the façade raised by supporters of a flawed concept to collapse.

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Is Theistic Evolution the Only Viable Answer for Thinking Christians?

Steve Cable examines Francis Collins’s arguments for theistic evolution from his book The Language of God *and finds them lacking.*

Francis Collins and Theistic Evolution

Dr. Francis Collins, recipient of the Presidential Medal of Freedom for cataloging the complete human DNA sequence, put forth his views on science and Christianity in his 2006 book, *The Language of God*{1}. Could his theistic evolution view

resolve the apparent conflict between modern science and the Bible? In this article, we will examine this belief and his arguments for it.



Collins grew up agnostic but became an atheist in his student years. At twenty six, he took on the task of proving Christianity false. Like many before him{2}, this hopeless task resulted in accepting Christianity as true: Jesus as God in the flesh bringing us eternal life. In his role as a medical researcher into the genetics of man, he found himself dealing in a world where many questioned the validity of Christian thought as anti-science.

These conflicting forces led him to develop views reconciling the current positions of science and the truths of the Bible. As Collins states, "If the existence of God is true (not just tradition, but actually true), and if certain scientific conclusions about the natural world are also (objectively) true . . ., then they cannot contradict each other. A fully harmonious synthesis must be possible."{3} Certainly, this statement is one we all should agree on if we can agree on which scientific conclusions are objectively true.

His resulting beliefs rest on the following premises{4}:

1. God formed the universe out of nothingness 14 billion years ago.

2. Its properties appear to have been precisely tuned for life.

3. The precise mechanism of the origin of life remains unknown,

4. Once evolution got under way, no special supernatural

intervention was required.

5. Humans are part of this process, sharing a common ancestor with the great apes.

6. But humans are unique in ways that defy evolutionary explanation, pointing to our spiritual nature.

Rather than interceding as an active creative force, God built into the Big Bang the properties suitable for receiving the image of God at the appropriate time. Purely random mutations and natural selection brought about this desired result. Being outside of time, God would know that this uninvolved approach would result in beings suitable to receive the breath of God.

The Argument for Theistic Evolution

Is Francis Collins' theistic evolution the way to reconcile theology and science?

Collins argues the Big Bang and the fine-tuning of this universe are clearly the work of God. After that, no intelligent intervention occurred, even though scientists have no idea how life began.{5} At some point, God intervened—first, by giving humans moral and abstract thinking, and second, by sending Jesus Christ to perform miracles, be crucified and resurrected, and bring us eternal life.

In Collins's view, God is allowed to perform miracles to redeem mankind, but not in creating physical humans. The alternative theories make the scientific process messy and unpredictable. This position allows him to side with the naturalist scientists who hold sway today. However, it does not prevent naturalists from laughing at your silly faith.

He also appears to believe we are looking forward to new glorified bodies living in a new earth with Jesus. Apparently, at that time, God will disavow His penchant for not making

changes in nature.

Collins wrote{6} that our DNA leads him to believe in common ancestry with chimpanzees and ultimately with all life. His conclusion is partially based on the large amount of "junk DNA" similar across humans and other animals. If similar segments of DNA have no function, these must be elements indicating a common ancestry.

Subsequent research undermines this belief. "DNA previously dismissed as "junk" are . . . crucial to the way our genome works,. . . . For years,. . . more than 98% of the genetic sequence . . . was written off as 'junk' DNA."{7} Based on current research,{8} almost every nucleotide is associated with a function. Over 80% of the genome has been shown to have a biochemical function and "the rest . . . of the genome is likely to have a function as well."{9} Collins agrees that his earlier position was incorrect.{10}

In this case, the argument of reuse by an intelligent designer now makes more sense.

On theistic evolution, Collins could be right and it would not tarnish the absolute truth of the Bible. However, in all likelihood, Collins is wrong. From both Scripture and current observations, it appears much more likely God actively interceded in creation.

Irreducible Complexity

One area of Intelligent Design Francis Collins attacks is the concept of irreducible complexity.

ID researchers define it as: "[A] system of several well-matched, interacting parts that contribute to the basic function, wherein the removal of any one of them causes the system to cease functioning. [It] cannot be produced directly by slight, successive modifications of a precursor system, because any precursor . . . that is missing a part is by

definition nonfunctional."{11} A mindless evolutionary process cannot create a number of new, unique parts that must function together before creating any value.

However, Collins believes nothing is too hard for evolution given enough time. He states, "Examples . . . of irreducible complexity are clearly showing signs of how they could have been assembled by evolution in a gradual step-by-step process. . . Darwinism predicts that plausible intermediate steps **must have existed**, . . . ID. . . sets forth a straw man scenario that no serious student of biology would accept."{12}

One of Collins's examples, the bacterial flagellum, is "a marvelous swimming device"{13} which includes a propeller surface and a motor to rotate it. ID researchers identify it as an irreducibly complex. Collins suggests this conclusion has been "fundamentally undercut," stating that one protein sequence used in the flagellum is also used in a different apparatus in other bacteria. "Granted, [it] is just one piece of the flagellum's puzzle, and we are far from filling in the whole picture (if we ever can). But each such new puzzle piece provides a natural explanation for a step that ID had relegated to supernatural forces, . . ."{14}

Today, seven years later, ID researchers are not backing off. A recent article concludes, "The claim . . . to have refuted . . . the bacterial flagellum is unfounded. Although there are sub-components . . . that are dispensable . . ., there are numerous subsystems within the flagellum that require multiple coordinated mutations. [It] is not the kind of structure that one can . . . envision being produced in Darwinian step-wise fashion."{15}

Evolutionists have been trying for over 15 years to attack irreducible complexity. Rather than discrediting the theory, their efforts have shown how difficult it is to do so. Collins's claims put him in the company of those relying on the ignorance of their audience to cow them with logically

flawed arguments.

God of the Gaps and *Ad Hominem* Attacks

Francis Collins states, “ID is a ‘God of the gaps’ theory, inserting . . . the need for supernatural intervention in places its proponents claim science cannot explain.”{16}

This statement mischaracterizes Intelligent Design. “ID is not based on an argument from ignorance.”{17} It looks for conditions indicating intelligence was required to produce an observed result. The event must be exceedingly improbable due to random events and it must conform to a meaningful pattern. “Does a forensic scientist commit an ‘arson-of-the-gaps’ fallacy in inferring that a fire was started deliberately. . .? To assume that every phenomenon that we cannot explain must have a materialistic explanation is to commit a converse ‘materialism-of-the-gaps’ fallacy.”{18}

ID researchers identify signs that are consistent with intelligent design and examine real world events for those same signs. In addition, a number of non-ID scientists having reached the conclusion that Darwinism is not sufficient, are looking at other mechanisms to explain certain features of life.

Another aspect of Collins’s defense of theistic evolution is using overstated and unsubstantiated attacks to discredit other views.

Of the young earth creationists, he states, “If these claims were actually true, it would lead to a complete and irreversible collapse of the sciences of physics, chemistry, cosmology, geology, and biology.”{19} This is a gross overstatement. In truth, belief in a young earth creation does not prevent one from making predictions based on micro-evolutionary effects or investigating the physical laws of the universe from a microscopic to an intergalactic level.

Collins also states, "**No serious biologist** today doubts the theory of evolution."{20} And, "ID's central premise . . . sets forth a straw man scenario that **no serious student** of biology would accept."{21} So, those differing with Collins are not even serious students of biology. Collins ignores the over 800 Ph.D.s who signed a document questioning the ability of Darwinian theory to explain life.{22}

In discrediting ID, he misrepresents the premise of this field, saying ID is designed to resist an atheistic worldview. As one researcher, William Dembski, explains, "Intelligent Design attempts only to explain the arrangement of materials within an already given world. Design theorists argue that certain arrangements of matter, especially in biological systems, clearly signal a designing influence."{23}

Collins would rather pursue an answer that was wrong and exclude the actions of an intelligent designer, than consider the possibility of intelligent design.

Perverting the Views of C. S. Lewis

Did C. S. Lewis support theistic evolution? Francis Collins quotes Lewis{24}, postulating God could have added His image to evolved creatures who then chose to fall into sin. Although consistent with theistic evolution, Lewis' thoughts are more consistent with ID tenets.

Lewis begins, "For long centuries, **God perfected** the animal form which was to become the vehicle of humanity and the **image of Himself**. **He gave it** hands whose thumb could be applied to each of the fingers, . . ."{25} So, God was actively involved in bringing about the human form; God intervened to produce the desired outcome. This view contrasts with Collins's view that God took whatever evolution produced and breathed into it His image.

BioLogos extends the thought, stating "(Lewis) is clearly a

Christian Theistic Evolutionist, or an Evolutionary Christian Theist."{26} They point out passages from Lewis showing the evolutionary theory of physical change was not contradictory to the gospel. They suggest Lewis would accept today's theories as truth and reject ID.

John West's research{27} finds Lewis was not saying evolutionary theory was definitely true, but rather that it did not refute Christian belief. Lewis wrote, "belief that Men in general have immortal & rational souls does not oblige or qualify me to hold a theory of their pre-human organic history—**if they have one**."{28} In *Miracles* he wrote, "the preliminary processes within Nature which led up to" the human mind "**if there were any**"—"were **designed** to do so."{29} In both these quotes, Lewis caveats evolutionary theory by adding a big "if."

Lewis did not embrace a simple-minded view of natural science as fundamentally more authoritative or less prone to error than other fields of human endeavor. Lewis argued that scientific theories are "supposals" and should not be confused with "facts." . . . We must always recognize that such explanations can be wrong.{30}

Clearly, Lewis did not feel that a young earth view a necessity. But, he was adamantly against the thought that science trumped theology. Although, one cannot know with certainty, it appears that Lewis would resonate with the methodology and claims of Intelligent Design theorists.

I appreciate Collins' faith journey. However, I wish he would say "We really don't know the details of man's creation, but we know God was intimately involved."

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The Five Crises in Evolutionary Theory

Dr. Ray Bohlin discusses five crises in evolutionary theory: 1) the unsubstantiation of a Darwinian mechanism of evolution, 2)The total failure of origin of life studies to produce a workable model, 3) The inability of evolutionary mechanism to explain the origin of complex adaptations, 4) The bankruptcy of the blind watchmaker hypothesis, and 5) The biological evidence that the rule in nature is morphological stability over time and not constant change.

 *This article is also available in Spanish.*

The Case of the Missing Mechanism

The growing crisis in Darwinian theory is becoming more apparent all the time. The work of creationists and other non-Darwinians is growing and finding a more receptive ear than ever before. In this discussion I want to elaborate on what I believe are the five critical areas where Darwinism and evolutionary theory in general are failing. They are:

1. The unsubstantiation of a Darwinian mechanism of evolution
2. The total failure of origin of life studies to produce a workable model
3. The inability of evolutionary mechanism to explain the origin of complex adaptations
4. The bankruptcy of the blind watchmaker hypothesis
5. The biological evidence that the rule in nature is morphological stability over time and not constant change.

Much of the reason for evolution's privileged status has been due to confusion over just what people mean when they use the word evolution. Evolution is a slippery term. If evolution simply means "change over time," this is non-controversial. Peppered moths, Hawaiian drosophila fruit flies, and even Galapagos finches are clear examples of change over time. If you say that this form of evolution is a fact, well, so be it. But many scientists extrapolate beyond this meaning. Because "change over time" is a fact, the argument goes, it is also a fact that moths, fruit flies, and finches all evolved from a remote common ancestor. But this begs the question.

The real question, however, is where do moths, flies, and finches come from in the first place? Common examples of natural selection acting on present genetic variation do not tell us how we have come to have horses, wasps, and woodpeckers, and the enormous varieties of living animals. Evolutionists will tell you that this is where mutations enter the picture. But mutations do not improve the scenario either.

In speaking of all the mutation work done with bacteria over several decades, the great French zoologist and evolutionist Pierre-Paul Grasse' said:

> What is the use of their unceasing mutations if they do not change? In sum, the mutations of bacteria and viruses are merely hereditary fluctuations around a median position; a swing to the right, a swing to the left, but no final evolutionary effect.

When I speak of evolution or Darwinism, it is the origin of new biological forms, new adaptive structures, morphological and biochemical novelties that I am referring to. This is precisely what has not yet been explained. When people question the popular explanations of the origin of complex adaptations such as the vertebrate limb, or sexual reproduction, or the tongue of the woodpecker, or the reptilian hard-shelled egg, they are usually given a litany of reasons why these structures are beneficial to the organisms. More precisely, the selective advantage of these structures is offered as the reason they evolved. But this begs the question again. It is not sufficient for an evolutionist to explain the function of a particular structure. What is necessary is to explain the mechanistic origin of these structures!

Natural selection does explain how organisms adapt to minor changes in their environment. Natural selection allows organisms to do what God commanded them to do. That is to be fruitful and multiply. Natural selection does not, however, explain the crucial question of how complex adaptations arose in the first place.

The Origin of Life

We have been led to believe that it is not to difficult to conceive of a mechanism whereby organic molecules can be manufactured in a primitive earth and organize themselves into a living, replicating cell. In fact, the ease by which this

can (allegedly) happen is the foundation for the popular belief that there are numerous planets in the universe which contain life. Nothing could be further from the truth.

Early experiments suggested that it was relatively simple to produce some of the building blocks of life such as amino acids, the components of proteins. However, the euphoria of the Miller- Urey experiment of 1953 has given way to a paradigm crisis of 1993 in origin of life research. The wishful, yet workable atmosphere of ammonia, hydrogen, methane, and water vapor has been replaced by the more realistic, but stingy atmosphere of nitrogen, carbon dioxide, carbon monoxide, hydrogen sulfide, and hydrogen cyanide. This is the stuff that volcanoes belch out. This atmosphere poses a much more difficult challenge. Molecules relevant for life would be much rarer. Even more damaging is the possibility of the presence of molecular oxygen in the atmosphere from the break-up of water vapor. Molecular oxygen would poison any reaction leading to biologically significant molecules.

Coacervates, microspheres, the “RNA world,” and other scenarios all have serious flaws obvious to everyone in the field except those who continue work with that particular scenario. Some have privately called this predicament a paradigm crisis. There is no central competing model, just numerous ego-driven scenarios. Even the experiments in which researchers try to simulate the early earth have been severely criticized. These experiments generally hedge their bets by using purified reactants, isolated energy sources, exaggerated energy levels, procedures which unrealistically drive the reaction toward the desired product and protect the products from the destructive effects of the energy sources which produced them in the first place.

The real situation was summed up rather well by Klaus Dose:

> More than 30 years of experimentation on the origin of life in the fields of chemical and molecular evolution have led

> to a better perception of the immensity of the problem of the origin of life on earth rather than to its solution. At present all discussions on principal theories and experiments in the field either end in stalemate or in a confession of ignorance." [From *Interdisciplinary Science Review* 13(1988):348-56.]

But all of these difficulties together, as staggering as they are, are not the real problem. The major difficulty in chemical evolution scenarios is how to account for the informational code of DNA without intelligence being a part of the equation. DNA carries the genetic code: the genetic blueprint for constructing and maintaining a biological organism. We often use the terms of language to describe DNA's activity: DNA is "transcribed" into RNA; RNA is "translated" into protein; geneticists speak of the "genetic code." All these words imply intelligence, and the DNA informational code requires intelligent preprogramming, yet a purely naturalistic beginning does not provide such input. Chemical experiments may be able to construct small sequences of nucleotides to form small molecules of DNA, but this doesn't make them mean anything. There is no source for the informational code in a strictly naturalistic origin of life.

The Inability to Account for Complex Adaptations

Perhaps the single greatest problem for evolutionary biologists is the unsolved problem of morphological and biochemical novelty. In other words, some aspects of evolutionary theory describe accurately how existing organisms are well adapted to their environments, but do a very poor job of explaining just how the necessary adaptive structures came about in the first place.

Darwinian explanations of complex structures such as the eye and the incredible tongue of the woodpecker fall far short of

realistically attempting to explain how these structures arose by mutation and natural selection. The origin of the eye in particular, caused Darwin no small problem. His only suggestion was to look at the variety of eyes in nature, some more complex and versatile than others, and imagine a gradual sequence leading from simple eyes to more complex eyes. However, even the great Harvard evolutionist, Ernst Mayr, admits that the different eyes in nature are not really related to each other in some simple-to-complex sequence. Rather, he suggests that eyes probably had to evolve over forty different times in nature. Darwin's nightmare has never been solved. It has only been made 40 times more frightening for the evolutionist.

In his 1987 book, *Theories of Life*, Wallace Arthur said:

> One can argue that there is no direct evidence for a Darwinian origin of a body plan—black *Biston Betularia* certainly do not constitute one! Thus in the end we have to admit that we do not really know how body plans originate.

In 1992, Keith Stewart Thomson wrote in the *American Zoologist* that:

> While the origins of major morphological novelties remain unsolved, one can also view the stubborn persistence of macroevolutionary questioning…as a challenge to orthodoxy: resistance to the view that the synthetic theory tells us everything we need to know about evolutionary processes.

The ability to explain major morphological novelties is not the only failing of evolutionary theory. Some argue that molecular structures are even more difficult to explain. The molecular architecture of the cell has recently described by molecular biologist Michael Behe as being irreducibly complex systems which must have all the components present in order to be functional. The molecular workings of cilia, electron transport, protein synthesis, and cellular targeting readily

come to mind. If the systems are irreducibly complex, how do they build slowly over long periods of time out of systems that are originally doing something else?

While publishing hundreds of articles pertaining to molecular homology and phylogeny of various proteins and nucleic acids over the last ten years, the *Journal of Molecular Evolution* did not publish one article attempting to explain the origin of a single biomolecular system. Those who make molecular evolution their life's work are too busy studying the relationship of the cytochrome c molecule in man to the cytochrome c molecule in bacteria, rather than the more fundamental question of where cytochrome c came from in the first place!

Clearly then, whether we are talking about major morphological novelties such as the wings of bats and birds, the swimming adaptations of fish and whales, the human eye or the molecular sub- microscopic workings of mitochondria, ribosomes, or cilia, evolutionary theory has failed to explain how these structures could arise by natural processes alone.

The Bankruptcy of the Blind Watchmaker Hypothesis

In his 1986 book, *The Blind Watchmaker*, Richard Dawkins states, "Biology is the study of complicated things that give the appearance of having been designed for a purpose." He explains that

> Natural selection is the blind watchmaker, blind because it does not see ahead, does not plan consequences, has no purposes in view. Yet the living results of natural selection overwhelmingly impress us with the appearance of design as if by a master watchmaker, impress us with the illusion of design and planning.

Darwinism critic, Philip Johnson, has quipped that the

watchmaker is not only blind but unconscious!

Dawkins later suggests just how this process may have brought about the development of wings in mammals. He says:

> How did wings get their start? Many animals leap from bough to bough, and sometimes fall to the ground. Especially in a small animal, the whole body surface catches the air and assists the leap, or breaks the fall, by acting as a crude aerofoil. Any tendency to increase the ratio of surface area to weight would help, for example flaps of skin growing out in the angles of joints…(It) doesn't matter how small and unwinglike the first wingflaps were. There must be some height, call it h, such that an animal would just break its neck if it fell from that height. In this critical zone, any improvement in the body surface's ability to catch the air and break the fall, however slight the improvement, can make the difference between life and death. Natural selection will then favor slight, prototype wingflaps. When these flaps have become the norm, the critical height h will become slightly greater. Now a slight further increase in the wingflaps will make the difference between life and death. And so on, until we have proper wings.

This can sound rather seductively convincing at first. However there are three faulty assumptions being used.

The first doubtful assumption is that nature can provide a whole chain of favorable mutations of the precise kind needed to change forelimbs into wings in a continuous line of development. What is the larger miracle, an instantaneous change or a whole series of thousands of tiny changes in the proper sequence?

The other assumption is "all things being equal." These mutations must not have secondary harmful effects. How is the creature's grasping ability compromised while these wingflaps grow? These little shrew-like animals may slowly be caught

between losing their adaptiveness in the trees before they can fully utilize their “developing” wings. Or there might be some seemingly unrelated and unforeseen effect that compromises survivability.

A third faulty assumption is the often used analogy to artificial selection. “If artificial selection can do so much in only a few years,” so the refrain goes, “just think what natural selection can do in millions of years.” But artificial selection works because it incorporates foresight and conscious purpose, the absence of which are the defining qualities of the blind watchmaker. In addition, artificial selection actually demonstrates the limits to change since an endpoint in the selection process is usually reached very quickly.

The blind watchmaker hypothesis, when analyzed carefully, falls into the category of fanciful stories that are entertaining—but which hold no resemblance to reality.

The Prevalence of Stasis over Mutability

Rather than observing organisms gradually evolving into other forms, the fossil record speaks of “sudden appearance” and “stasis.” New types appear suddenly and change very little after their appearance. The rarity of gradual change examples in the fossil record were revealed as the trade secret of paleontology by Steven J. Gould of Harvard. Gould also refers to stasis as “data” in the paleontological sense. These are significant observations.

Darwin predicted that there should be innumerable transitional forms between species. But the reality of paleontology (the study of fossils) is that new forms appear suddenly with no hint of the “gradual” change predicted by evolution. Not only that, but once these new forms have appeared, they remain relatively unchanged until the present day or until they become extinct.

Some animals and plants have remained unchanged for literally hundreds of millions of years. These “living fossils” can be more embarrassing for the evolutionist than they often care to admit. One creature in particular, the coelacanth, is very instructive. The first live coelacanth was found off the coast of Madagascar in 1938. Coelacanths were thought to be extinct for 100 million years. But most evolutionists saw this discovery as a great opportunity to glimpse the workings of a tetrapod ancestor. Coelacanths resemble the proposed ancestors of amphibians. It was hoped that some clues could be derived from the modern coelacanth of just how a fish became preadapted for life on land, because not only was there a complete skeleton, but a full set of internal organs to boot. The results of the study were very disappointing. The modern coelacanth showed no evidence of internal organs preadapted for use in a terrestrial environment. The coelacanth is a fish—nothing more, nothing less. Its bony fins are used as exceptionally well-designed paddles for changing direction in deep-sea environment, not the proto-limbs of future amphibians.

Nowhere is the problem of sudden appearance better demonstrated than in the Burgess Shale found in the Canadian Rockies. The Burgess Shale illustrates that in the Cambrian period (which evolutionists estimate as being over 500 million years ago) nearly all of the basic body plans (phyla) of animals existing on earth came into existence in a geological instant (defined as only 20-30 million years), and nothing that new has appeared since that time. The Cambrian explosion as it is called is nothing less than astounding. Sponges, jellyfish, worms, arthropods, mollusks, echinoderms, and many other stranger-than-fiction creatures are all found to suddenly appear in the Cambrian without a hint of what they descended from nor even how they could all be related to each other. This is the opposite expectation of Darwinism which would have predicted each new body plan emerging from pre-existing phyla over long periods of time. The Cambrian

explosion is a direct contradiction of Darwinian evolution.

If Darwin were alive today, I believe he would be terribly disappointed. There is less evidence for his theory now than in his own day. The possibility of the human eye evolving may have caused him to shudder, but the organization of the simplest cell is infinitely more complex. Perhaps a nervous breakdown would be more appropriate!

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Jerry Coyne's Illusions

Dr. Ray Bohlin critiques evolutionary biologist Jerry Coyne's materialistic claim that our brain is only a meat computer.

Jerry Coyne Says Science Proves We Make No Real Choices



Let's see. This morning I chose my black t-shirt, tan dress slacks, black shoes, and black socks. After gathering all my things for the trip to the office, I put on my now-famous Grand Canyon felt hat and headed out the door, deciding I didn't need an umbrella for the short walk in the rain.



Oops! Wait a minute! According to evolutionary biologist, Jerry Coyne, I made none of those choices. Now I did do all those things, but my brain determined those "choices." After all, my brain is just a meat computer,

destined to obey the laws of physics to combine my genetic history, past environmental cues, and my latest experiences to make those decisions. “I,” meaning me as a person apart from the meat computer, don’t exist! Enter with me into the wacky world of evolutionary naturalism where all there is, is matter and energy.

Dr. Jerry Coyne is a Professor at the University of Chicago in the Department of Ecology and Evolution. In many ways he has broken political ranks with many of those seeking to improve education in evolution by actively proclaiming that evolution entails atheism. He lines up with those like Richard Dawkins, Sam Harris, and the late Christopher Hitchens. Religion is the greatest evil on the planet, they decry, and we need to dispose ourselves of all religious nonsense such as freedom of choice.

You see, our mental decisions are just chemical reactions in our brains which just happen. There is no purpose or even a choice in making our choices!

Now that I probably have you thoroughly confused, let me try to let Jerry Coyne speak for himself.

In January of last year, Coyne published a commentary in the online version of *USA Today* titled, “Why you don’t really have free will.”{1} He stated, “You may feel like you’ve made choices, but in reality your decision to read this piece, and whether to have eggs or pancakes, was determined long before you were aware of it—perhaps even before you woke up today. And your ‘will’ had no part in that decision. So it is with all of our other choices: not one of them results from a free and conscious decision on our part. There is no freedom of choice, no free will.”

Despite Coyne’s blatant certainty, he only offers, using his phrase, two lines of evidence. Notice even Coyne refers to them as just lines of evidence. There’s no real fact or

certainty.

Coyne's Ultra-naturalism "Predetermines" His Conclusions

Let me allow Coyne to speak for himself as he explains his first line of evidence, a materialistic assumption. He says,

> *We are biological creatures, collections of molecules that must obey the laws of physics. All the success of science rests on the regularity of those laws, which determine the behavior of every molecule in the universe. Those molecules, of course, also make up your brain – the organ that does the "choosing." And the neurons and molecules in your brain are the product of both your genes and your environment, an environment including the other people we deal with. Memories, for example, are nothing more than structural and chemical changes in your brain cells. Everything that you think, say, or do, must come down to molecules and physics.*

It may be true that science depends on the regularity of the laws of physics, but Coyne makes no defense of whether there is anything else to our minds other than chemistry. He assumes without saying so that the material brain is all there is to our mind.

In 2007 neuroscientist Mario Beauregard and journalist Denyse O'Leary published *The Spiritual Brain*.{2} Quoting from the dust jacket, Beauregard and O'Leary demonstrate that scientific materialism like Coyne's "is at a loss to explain irrefutable accounts of mind over matter, of intuition, willpower, and leaps of faith, of the 'placebo effect' in medicine, of near death experiences on the operating table, and of psychic premonitions of loved ones in crisis." For each of these phenomena, they provide numerous examples where people's minds understood, observed, changed, or perceived

physical realities they simply could not know about in a purely physical sense.

Jerry Coyne's first line of evidence turns out to be an unverified materialist assumption that has plenty of physical evidence that cannot be explained on a materialist basis. So much for convincing evidence. But to his credit, Coyne proceeds to scientific evidence he says demonstrates that brain measurements indicate our "decisions" can be predicted by observing blood flow to certain areas of the brains seconds before we actually feel we have "decided."

Does Our Brain "Decide" Before We're Conscious of the Decision?

Coyne's second line of evidence consists of brain experiments claiming to predict our decisions by observing blood flow in decision-making areas of our brain seconds before we are aware of our decision. Coyne says,

> *Recent experiments involving brain scans show that when a subject "decides" to push a button on the left or right side of a computer, the choice can be predicted by brain activity at least seven seconds before the subject is consciously aware of having made it. (These studies use crude imaging techniques based on blood flow, and I suspect that future understanding of the brain will allow us to predict many of our decisions far earlier than seven seconds in advance.) "Decisions" made like that aren't conscious ones. And if our choices are unconscious, with some determined well before the moment we think we've made them, then we don't have free will in any meaningful sense."*

This is certainly interesting research. My first reaction is to note that these are the simplest decisions we can make. Just choose left or right. No thinking involved, no

consequences. What if the choice were far more substantial, such as “Should I buy this house based on my set of pros and cons of the decision?” Or what about those “split-second” decisions to avoid a collision in a vehicle or whether to stop or go when the traffic light unexpectedly turns yellow? Each of those decisions takes far less than seven seconds.

Granted, Coyne’s article is a simple commentary in an online newspaper, but I expect more solid and convincing evidence that this. Coyne leaves us with little else than his materialist assumptions as reviewed previously.

Coyne is Required to Pretend He Has Choice

I’d like to turn my attention to Coyne’s attempts to spell out our options, once we are convinced, as he is, that we really don’t make any choices.

Coyne dismisses various philosophical attempts to rescue some sort of free will. It’s clear Coyne is scornful of philosophy in general. Maybe that explains why he is such a bad philosopher. I say that because he continues by expressing that it’s impossible to just throw up our hands and despair that life is not worth living if I don’t really make choices. Coyne says:

> *So if we don’t have free will, what can we do? One possibility is to give in to a despairing nihilism and just stop doing anything. But that’s impossible, for our feeling of personal agency is so overwhelming that we have no choice but to pretend that we do choose, and get on with our lives. After all, everyone deals with the unpalatable fact of our mortality, and usually do so by ignoring it rather than ruminating obsessively about it.*

Now that’s a mouthful. First, Coyne rejects despairing

nihilism simply because we are bound by the laws of physics. That's my understanding of his rationale that our "feeling" of personal agency is so overwhelming. But I hope you caught the absurdity of the following comment. Coyne says, "for our feeling of personal agency is so overwhelming that we have no choice but to pretend that we do choose." Really? We have no choice (was the pun intended?) but to "pretend" that we do choose?

I have to say that when your worldview requires you to pretend that reality is something other than what you perceive, your worldview clearly can't be trusted.

This reminds me of a class back in grad school when I asked about meaning and purpose in life in the evolutionary world view. They said that as just another animal, our only purpose is to survive and reproduce. I asked again, "What difference does it make, though, when I'm dead and in the ground?" According to evolution, my existence is over. One prof responded by saying that ultimately it doesn't really matter. So I asked, "Then why go on living, why stop at red lights, who cares?" The same professor responded by saying, "Well, in the future, those that will be selected for will be those who know there is no purpose in life, but will live as if there is."

So not only do we need to pretend that we choose but we also need to pretend that our lives have meaning. Doesn't that make you want to get up in the morning?!

How Does Knowing Our Brain's Illusions Lead to a "Kinder" World?

Towards the end of Coyne's commentary he tries to discern what we should do with our understanding that we don't have any free will. First, as you might suspect, he disparages religion, specifically Christianity. He concludes that, since

we have no real choice, none of us can really choose Jesus or reject him. It's all predetermined by our genetic and environmental history. So, "If we have no free choice, then such religious tenets—and the existence of a disembodied 'soul'—are undermined, and any post-mortem fates of the faithful are determined, Calvinistically, by circumstances over which they have no control." Well, there you have it, Reformed theology according to Jerry Coyne.

His second observation is that since we are little more than marionettes responding to the laws of physics, this should influence how we deal with criminals. We may decide for the sake of society that some need to be removed from circulation, so to speak – sent to prison for our protection. But we certainly can't hold them responsible. According to Coyne, "What is not justified is revenge or retribution—the idea of punishing criminals for making the 'wrong choice.'"

Well if all this is really true, then why is Jerry Coyne trying to convince us of anything? We have no real choice. Coyne is an atheist because he can't help it. That would mean I'm a Christian because I can't help it. So why is he trying to convince me I have made a "wrong choice"? Obviously the internal contradictions abound.

Lastly, Coyne says our knowledge of no free will or real choices should lead to a kinder world, presumably because revenge is outdated. "Further, by losing free will we gain empathy, for we realize that in the end all of us, whether Bernie Madoffs or Nelson Mandelas, are victims of circumstance—of the genes we're bequeathed and the environments we encounter. With that under our belts, we can go about building a kinder world."

Just one word: Huh?

Well, personally I have gained empathy for Jerry Coyne because his commentary is just a product of circumstance, so I can

just ignore it.

Thanks for reading.

Notes

1. Jerry Coyne, “Why you don’t really have free will,” *USA Today*, Jan. 1, 2012, usat.ly/WBnUBi. All Coyne’s quotations are from this commentary.
2. Mario Beauregard and Denyse O’Leary, *The Spiritual Brain: A Neuroscientist’s Case for the Existence of the Soul* (Harper One: New York, NY, 2007).

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“I’m a Girl Because That’s What Mommy Wanted!” – The Ethics of Screening for Gender Using IVF

The brave new world of the future is not so far away anymore. Fertility clinics, originally created to assist infertile couples have children, can now screen for numerous genetic traits. Are we ready for the responsibility and future ethical questions? My experience says we are woefully unprepared. In our consumer oriented society of the 21st century, we want what we want, when we want it. If a couple has the financial resources and says they are willing to take the medical risks, who can say what they can and can’t do?



Watch Dr. Bohlin on WFAA-TV video

In July 2015 an article appeared on Yahoo Parenting{1} about a couple in Frisco, Texas, north of Dallas. Rosa (36) and Vincent (37) Costa spent $100,000, enduring seven rounds of In Vitro Fertilization (IVF), including one miscarriage, just to ensure their third child would be a girl. Numerous fertility clinics allow infertile couples to genetically screen their embryos for nearly 400 genetic disorders. One additional benefit is that the embryos can also be screened for gender. Gender is a fairly simple assessment. Males will contain an X chromosome and a Y chromosome. Females are XX. These chromosomes are easily identified and distinguished.

This service is becoming more commonplace for couples since a round of IVF can cost around $12,000. If for an additional $6,000, screening can focus on healthy embryos, why not? Identifying the sex of the embryos is an added bonus. But in the last few years, couples like the Costas have mushroomed. Some clinics report a rise of 250%. As one who has addressed the issue of genetic engineering for over twenty years, I have regularly discussed the possibility of choosing the sex of your next child. The primary method used by fertility clinics is to assess gender before implantation. If you desire a girl, then only female embryos are implanted. Embryos of the “wrong” sex can be discarded, frozen for later use, made available for adoption or donated to “science” for stem cell research. Most frozen embryos end up in limbo. They do not stay viable forever. Some frozen embryos have been successfully revived after 5 years in storage. But many are simply discarded. Embryos donated for stem cell research are also ultimately killed. In order to retrieve the valuable embryonic stem cells, the embryo is destroyed.

Consequently, this IVF procedure to guarantee the sex of your child ultimately results in the death of numerous perfectly healthy embryos. So you have perfectly healthy parents sacrificing healthy embryos just to get the male or female child they desire. This cost is far more consequential than the dollar amount. I'm opposed to even discarding genetically challenged embryos for healthy embryos. Now we have crossed the line to create human life in the laboratory with the full intention of sacrificing embryos of the wrong sex. In another article{2}, fertility specialist, Dr. Jeffrey Steinberg, acknowledges he has had the technology to screen for eye-color since 2009. He delayed making it available then due to an outcry from the public. Saying he has a waiting list of 70-80 people, he's getting ready to make it available again.

But despite the clear loss of innocent human life in our search for a "balanced family" or even worse, children of the preferred eye color, we run into the specter of facing up to responsibilities too few have considered. The Costas, for instance, want a little girl. There is nothing wrong with that necessarily. But what are they really expecting? After all, they've spent $100,000 in the effort. The article mentions they will be decorating the new nursery in pink. But what if Olivia, their chosen name, ends up not liking pink? What if she's a tomboy who doesn't even like dresses? Or even more extreme, what if she decides as a little girl, she's really a boy! What do you do then? Even when selecting a child's gender, you likely have some concept in your mind of what a boy or girl will be like-otherwise, why choose gender at all?

It seems we are unwilling to ask the hard questions. Fertility experts will likely cater to what their clients want. There is competition, after all. One fertility specialist even believes that withholding these technologies puts him in the role of "playing god." He won't withhold something a client wants when the technology is available. That equates the consumer as a "god." The American Idol is not just a performer looking to

win a contest to land a lucrative recording contract. The American Idol is personal choice. As I said earlier, if someone says they understand the risks, has the money and wants to pursue a medical technology, whose is going to say no? Should we say no? We have known for some time that absolute power corrupts absolutely. Do we just stand by and allow people to make choices that show an utter disregard for innocent human lives in the pursuit of personal preferences? Life becomes cheap across the board. Everyone is suddenly at risk. Where do we draw the line?

My great concern is that public demand, not reasonable ethical considerations, will guide medical decisions. Do we really not have the collective will to say there are some medical procedures or even experiments we will not do?

Notes

1. Why One Mom Spent 100K to Guarantee Baby No. 3 Is a Girl Accessed July 14 2015.

2. Couple Spends 50K to Choose Baby's Sex, Shining Light on Trend Accessed July 14, 2015.

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DNA, Information, and the Signature in the Cell

Where did we come from? Heather Zeiger uses Stephen Meyer's book Signature in the Cell *to logically show that the best answer is an intelligent cause—God—rather than natural causes.*

Where Did We Come From?

Where did we come from? A simple question, but not an easy answer. Darwin addressed this question in his book, *On the Origin of Species*. Although he never really answered how the universal common ancestor first came to life, he implied that it was from natural causes. In this article, we are going to look at Darwin's method of deducing occurrences in the past based on observations we see today. This is now referred to as the *historical* or *origins science* method. We will find that purely naturalistic causes fall short of explaining what we know about DNA, but intelligent design seems to be a promising alternative. Then we will look at scripture and see how Christians can use these evidences for design to talk about who that designer is. We will be using Stephen Meyer's new book, *Signature in the Cell,* to guide us on the science and method of approaching this question.

Charles Darwin's book, *On the Origin of Species* discusses his theory on how natural selection acts on living things so that the fittest organisms for a particular environment survive, and how this process eventually leads to novel species and body plans. Implied in his work is the notion that all living things came from nature and from natural causes. So his presupposition is that life must have first come from impersonal things like matter and energy. Because of this, origin-of-life scientists have been trying for years to demonstrate how life may have come from non-life.

Let's try to figure out how a cell could form from purely naturalistic processes. Better yet, since we now know that natural selection acts on random mutations within the genome, let's focus in on DNA, the instruction booklet for the cell. Without DNA, cells would not function.

DNA is part of a complex information-processing systems{1} DNA is a long, helical structure found inside the nucleus and mitochondria of the cell. It is made of a four-molecule

alphabet arranged in a very specific order. This sequence is like an instruction book telling the cell what parts to use to build a protein. But this instruction book needs to be decoded with other proteins. The difficult thing is that proteins are needed to make more DNA, but DNA is needed to make proteins. And the cell cannot function without proteins. This means that the first DNA molecule must have been made differently than how it is made today.

DNA is a very complex information processing system. In fact, Bill Gates has compared it to a computer program but far, far more advanced than any software ever created.{2} DNA is more than just an improbable sequence of bases; it is functional. It tells the cells what to do. So the question we really need to answer is, how can this kind of information arise in the first place?

Origins and Operations Science

We are investigating what science can tell us about the origin of life. Did we just come out of a chemical soup, or was it something else? First, we need to answer this question: How did DNA, the body's instruction book, first get here? In order to answer the question, we need to decide what method to use to investigate this question. Since we are looking at the science, we should use the scientific method. However, we need to make a distinction between approaching something that is a re-occurring, testable phenomenon, and a singular event in the past.

As a scientist, I usually work in the area of *operations science*. This is the type of science we learn in school. You start with a hypothesis, then you conduct an experiment to test your hypothesis. Repeat your experiment several times, collect data, and make conclusions about your hypothesis. Operations science deals with regular, repeatable things that can usually be described by mathematical formulas. Oftentimes,

operations science is looking at some kind of naturally occurring process.

But there is another type of science that forensics experts and archeologists use. It is called origins science. Origins science determines what caused a singular event in the past. The role of origins science is to first determine if something was caused by chance, natural laws, or intelligence. For example, one could find a rock formation that looks very similar to a human head. Was this formation caused by chance and natural laws, such as wind and rain wearing away the rock? Or was it caused by intelligence? Did someone carve the rock to look this way?

Origins science operates under a different set of rules than operations science because the event in question has already happened, and it is not a reoccurring, observable phenomenon. The best that we can do is look at clues to give us a reasonable guess as to what might have happened. In *Signature in the Cell*, Meyer uses origins science to determine if DNA is a result of chance, natural laws, or intelligence:

> *Thaxton and his colleagues argued that inferring an intelligent cause was legitimate in origins science, because such sciences deal with singular events, and the actions of intelligent agents are usually unique occurrences. On the other hand, they argued that it was not legitimate to invoke intelligent causes in operations science, because such sciences only deal with regular and repeating phenomena. Intelligent agents don't act in rigidly regular or lawlike ways, and therefore, cannot be described mathematically by laws of nature.{3}*

DNA replication happens all of the time, but it requires proteins. But proteins are made by instructions from DNA. So the first DNA molecule must have been made in a special, atypical way, meaning it qualifies as origins science. Origins

science allows for singular acts of intelligence to explain certain phenomena.

This means we need to investigate, using origins science, how the first DNA molecule with its information-carrying capacity was produced.

What Are the Possibilities?

DNA is the code for life. If we determine where it came from, then we are one step closer to determining the origin of life. Let's look at the typical origin of life theories posed by scientists as our first step in our origins science method, and see where theories are lacking or where they are helpful. Two things these theories all have in common is that they presume no designer, but only natural causes, and none of them can explain the origin of information.

The first option is that DNA might have arisen by chance. When scientists talk about chance, they are not saying that some entity called Chance did something. They mean random chemical shuffling, and out of that came DNA. But it's not good enough to explain how random chemicals came together. Think of scrabble pieces. To say that DNA came about by chance would be similar to saying that someone shook a bag of scrabble pieces and threw them on the floor and it spelled out a sentence. And this would not be just any sentence, but step-by-step instructions on how to build a cellular machine. Chance is not a good explanation for the origin of DNA, because the probability of getting something as specified and complex as DNA is well beyond the accepted probability of zero.

The other option is DNA might have come about because of necessity or natural law. Maybe there is some chemical or natural reason that forced the DNA molecules to form. Two examples of this type of origin of life theory are *self-organization* and *biochemical predestination*. The idea behind

both of these is that the molecular alphabet in DNA arranged itself because of chemical properties or environmental factors. Unfortunately, scientists have found that the molecules in DNA do not chemically interact with each other because they are stuck to a phosphate backbone, not to each other.{4} On top of that, there isn't even a chemical attraction between these DNA sequences and the protein parts they code for (known as a *codon*). Since there is not a self-organizing motivation for this, and there is not an environmental factor that would favor certain combinations over others, necessity seems to fall short of explaining the functional information of DNA.

Some scientists propose that it is a combination of chance and necessity. The most popular origin of life models are based on this theory. However, Stephen Meyer shows in his book that the two most popular models, the *RNA-first world* and the *Oparin* model, do not explain how functional information first arose. Ultimately these theories boil down to claiming that random chance causes functional information.

So if all of the naturalistic theories of origin of life fall short, then perhaps we should expand our options to theories that allow for intelligent agents.

What if We Allow Intelligence?

It seems that all of the naturalistic explanations for the origin of life fall short of accounting for the information-rich molecule, DNA. As Meyer points out, apart from DNA and the machinery in cells, such specified information is not found anywhere in the natural world.{5} The only time we see these properties is in human language and writing. So if DNA has the properties of something that was designed, then why not entertain the idea that it was designed?

Today design is not permitted as an explanation in science.

However, historically, this has not been the case. In fact, it was a belief in an intelligible and coherent world created by God that motivated early scientists such as Newton, Boyle, and Pascal.{6} However, after the Enlightenment (mid-1700s), many scientists started operating under different assumptions. They assumed that only natural causes, such as chance and necessity, are permitted to explain observations.

Flash forward to Charles Darwin's time (1860s). Darwin looked at presently acting conditions to extrapolate back to the origin of all living things. He saw that environmental factors select for certain traits, such as beaks on finches. And he saw that things like dog breeding will select for certain desired traits. He therefore concluded that maybe the various animals and body plans came from conditions similar to this. He named this selective force, this breeder, natural selection. This was based on what Darwin knew in the 1850s, and some assumptions about intelligent causes influenced by Enlightenment thinking. At that time Darwin knew nothing about DNA. It would not be discovered until the 1950s.

Stephen Meyer discusses how presently there are no known natural causes for the kind of functional information we see in DNA. The only place we see this is in human language and writing. So perhaps we cannot assume natural causes. Maybe DNA arose by intelligent design. Furthermore, experimental efforts to try to produce DNA or RNA in the lab show that a chemist or a computer programmer must be involved in the experiment in order to obtain functional information. Natural selection cannot act as a breeder, because it does not have the end goal in mind.

Intelligent Design is a strong possibility for explaining the origin of DNA. It is something that we see in operation today. And it is experimentally justified.

What Does This Have to Do with Christianity?

We have been looking at the properties of DNA and how it has all of the characteristics of a written code. Using the methods of origins science that Stephen Meyer used in *Signature in the Cell*, we can conclude that intelligent design is the best explanation for the origin of DNA. Intelligence is causally adequate to produce a code like DNA. It is observable, in the sense that today intelligent agents produce codes. And any experiments that try to reproduce DNA seem to require the input of information by an intelligent agent to make anything meaningful. This is why Meyer calls DNA the signature in the cell. However, the science alone cannot tell us whose signature it is, so we need to look elsewhere for that. That's where Christianity comes in.

As Christians we believe that God reveals himself through general and special revelation. General revelation is God revealing things about himself in nature. Think of it like God's fingerprints on creation. Special revelation is what God has specifically revealed in the Bible. If we want to find out whose signature is in the cell, we need special revelation to inform us on that. And the Bible says this much. Right before Paul says that creation reveals the attributes of God in Romans 1:18-20, he says it is the gospel that brings salvation in verses 16 and 17.

From the science it is reasonable to say DNA first arose by intelligent design. DNA is one of many extra-Biblical clues pointing us to a designer. This evidence, taken with many other extra-biblical evidences such as the fine-tuning of the universe for life, the moral law on our hearts, and even the way that we know gravity works the same today as it did yesterday, makes one suspicious that there must be a designer. Now take the evidences for the authority of Scripture from archeology and the Bible's internal structure and consistency

and we have many reasons to believe that this designer is the God of the Bible. As Paul says in Romans 1, “His invisible attributes, namely, his eternal power and divine nature, have been clearly perceived, ever since the creation of the world, in the things that have been made. So they are without excuse” (v. 20). So, even though the science will not bring someone to a saving knowledge of Christ, they are without excuse because it does reveal God’s attributes. Maybe when someone sees the Signature in the Cell, they will ask, whose signature is it?

Notes

1. “After the early 1960s advances in the field of molecular biology made clear that the digital information in DNA was only part of a complex information-processing system, an advanced form of nanotechnology that mirrors and exceeds our own in its complexity, storage density, and logic of design.” Stephen C. Meyer, *Signature in the Cell* (HarperOne, 2009), 14.

2. Bill Gates, *The Road Ahead* (Viking, 1995), 188; quoted in Meyer, *Signature*, 12.

3. Meyer, *Signature*, 29.

4. The only time the nucleotides in DNA interact with each other is when they are paired, A-T, C-G, and they do this through hydrogen bonding. However, this pairing is with nucleotides across from each other and serves to protect the DNA molecule. The coding has to do with the sequence of bases next to each other, and there is no chemical reason for one nucleotide to “prefer” being next to another.

5. “Apart from the molecules comprising the gene-expression system and machinery of the cell, sequences of structures exhibiting such specified complexity or specified information are not found anywhere in the natural—that is, the nonhuman—world.” Meyer, *Signature*, 110.

6. In the radio transcript, I included James Maxwell in this

list. While he is among scientists whose belief in God did influence his work, he lived from 1831-1879 which was after the beginning of the Enlightenment. I chose to take his name out here for clarity, although he is a good example of someone who did not hold to the typical presuppositions of the Enlightenment.

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A Fine-Tuned Universe

Heather Zeiger makes an argument for why the earth and the universe are so fine-tuned for life.

Answering the Big Questions of Life

Let’s pretend that you go outside to find your front yard full of trash and debris. The first question that probably comes to mind is, “Did someone do this on purpose, or was this an accident?” In hopes of determining a cause, you begin by looking at clues. Does the neighbor’s yard have debris in it? If so, then it’s possible the wind blew the trash and debris into both your yards. If not, then you become suspicious. Why are you suspicious? The probability that the wind would blow trash in your yard, but not your next door neighbor’s yard is low. But it is possible, so you look for more clues. Upon further examination you find that the debris stops right at the property line between your yard and your neighbor’s yard. This makes you even more suspicious because the probability of this happening by chance is now lower than it was before. Although you were not there to see the trash thrown in your yard, you are fairly certain someone did this on purpose. Although you may intuit the cause, the reason why you assume foul play is because with each clue comes a probability of its

occurrence. With multiple clues, the probabilities multiply, so finding two clues that are improbable makes the entire event even more improbable.

Taking our scope beyond your backyard to the earth and to the universe, the question becomes, “Why are the universe and earth here after all? Why is it the way it is?” When it comes down to it, just like with your front yard, we are left with two causal options: either life, the universe, and everything in between were put here on purpose, or it was an accident.

Every effect has a cause, but if we take cause and effects back far enough, eventually we will find something that is eternal or the ultimate cause. Therefore, we have two options: either that eternal thing is natural or it is supernatural. Or put another way, either the universe itself (or at least the matter and energy that makes up the universe) is eternal, or something outside of the universe and nature is eternal.

This article will look at the clues within our universe that will help us answer whether the universe arose by accident or was put here on purpose. We will be looking at some very improbable fine-tuned parameters that not only allow for stars and galaxies to be here, but also parameters that allow for life. Finally we will look at parameters that seem to be in place not just for any life, but for us in particular.

Not to give away the ending, but the Bible tells us that “the heavens declare the glory of God,”{1} and it turns out there are some clues that seem to indicate intentionality or purpose in design. However, the Bible also says that man will suppress the truth. So even though the clues seem to point towards design, we will see examples of how some scientists explain these clues without invoking any kind of designer or supernatural agent. Basically, we will see how they can still have an eternal universe instead of something eternal that is outside of the universe.

The Fine-Tuned Parameters for Life{2}

Physicists have concluded that certain features of the universe have to be almost exactly as they are, otherwise the universe wouldn't be here. For example, the universe is expanding outward. If it expanded any faster, it would overcome gravity, and galaxies, stars, and planets would fly apart. If it expanded any slower, gravity would take over and everything would come crashing back together.

On a much smaller scale, the same idea applies to the atom. When asked what he was thankful for, a friend of mine replied, "That my atoms don't just explode."{3} If you think about it, why don't our atoms just fly apart? Just like the expanding universe, the properties of protons, neutrons, and electrons are just right so that the electrons don't come crashing into the atom or the atom doesn't fly apart. Without atoms, nothing would be here, and yet the forces that hold the atom together are apparently so balanced that they seem to be resting on a knife's edge.

Not only is our universe fine-tuned for existence, but the earth is fine-tuned for life. You may not realize this, but water is a unique substance with very uncommon properties. Most substances are denser when they are a solid than when they are a liquid, but water is not. It is denser as a liquid, so we observe ice floating instead of sinking. What's the big deal? The big deal is that we need this property to survive. The ocean has an entire ecosystem including plants and bacteria. The oceanic plants and bacteria account for a large amount of oxygen in our atmosphere. Thanks to water freezing from the top down, these organisms can continue to live underwater, even if the top of the water is frozen.

Interestingly, Earth is in just the right temperature range for water to be a liquid. This is a very narrow temperature range compared to the ranges for steam or ice. Given all of the possible temperatures and pressures in the universe, you

will most likely find water as a solid or a gas. But Earth just happens to be in that narrow range for water to occur as a liquid. Considering that we need water to survive, I find this rather convenient.

Physicists have come to the conclusion that the universe is remarkably fine-tuned. There are constants, such as the gravitational constant or the gas constant, that are just the right values for life. Gravity and the atomic forces seem to be perfectly balanced for life. So the question is, what does this remarkable fine tuning mean? Is there someone who has set the dials of the universe to make it just right for us? Or is this the result of random chance?

Goldilocks Explains Fine-Tuning

The fine-tuned parameters of the universe that allow for its existence and allow for life are highly improbable. Many people try to explain away these very improbable factors by appealing to chance or natural laws. But the fine-tuned factors are so improbable that they would seem to be impossible.

One way to try to explain this is to assume that maybe the universe is infinite; after all, given an infinite amount of time, even the improbable can become possible, right? It turns out the universe is not infinite. Physicists have concluded, using evidence from Erwin Hubble's studies and Einstein's theories, that the universe had a beginning that they call the Big Bang.

If scientists want to appeal to chance, they are confined to a given amount of time. However, the fine-tuned parameters are so improbable that even fifteen billion years is not enough time. Some scientists try to find a way to have an infinite universe anyway because they wish to circumvent the God question.{4} The only way to do this, given fine-tuning, is to

increase your probabilistic occurrences. The most popular theory is the *multiverse* or many universes theory. This idea is that there are many universes, and the one we're in happens to be well-suited for life. Our fine-tuned parameters are not fine-tuned at all; they are just one set among many sets of parameters, each within its own universe.

Remember Goldilocks and the three bears? "This porridge is too hot . . . this porridge is too cold . . . this porridge is just right!" Given three options, Goldie found one that was just right. According to multiverse theory, there are an infinite number of universes: some too hot, some too cold. But if there are an infinite number to choose from, certainly one must be just right.

However, there is no evidence for there being any universes other than our own. Physicists readily admit that we do not have access to the other universes, but we must assume they are there. Essentially, they have constructed a theory that postulates something infinite and beyond ourselves, something wholly other than our universe and not necessarily measurable from our finite perspective. It seems that in order to get away from a creator, physicists have posed a theory which appeals to something that we can never know to be true and must take on faith. But unlike the Christian faith, this is faith in something that has no evidence of its existence.

String Theory Explains Everything . . . or Nothing{5}

Many scientists want to find a mathematical theory of everything in hopes that maybe *this* will answer the question as to why the universe is here.

Scientists have several theories to explain how the major forces interact with each other. There are theories for electricity and magnetism and for the forces that hold an atom

together. But the one thing that still has physicists baffled is gravity. How do we explain gravity in relation to these other forces? Some scientists believe that if we can find a way to relate gravity to all of the other forces, then maybe we will understand how the universe came into existence.

In the last twenty years, physicists have developed a theory called string theory that tries to combine gravity and quantum mechanics. String theory began by describing the parts that make up protons (known as hadrons) as particles that behave as if they are on the ends of strings. The mathematics for this looks a lot like that of harmonic oscillators (springs). However, these strings are not particles, they are strings of energy. Okay, reasonable enough. We know that electrons and photons act like both particles and waves, and one can think of these strings as standing waves. But because of issues with the mathematics, either everything has to be fundamentally made up of strings of energy or nothing.

String theory mathematics, though, led to some interesting features, including the fact that there has to be ten dimensional space, not our normal three dimensions plus time. So those other dimensions either have to be hiding somewhere or the math fails. Scientists have proposed theories that describe the other dimensions as being “compacted.”

String theory math is complex and perhaps inelegant, but it is compelling because it does a better job than any other theory of relating gravity to quantum mechanics. I think there is some promise to the ideas of string theory, but scientists seemed too eager to make it a theory of everything in hopes that the purpose of the universe can be explained through mathematics and physical laws. We can never really be sure of the validity of string theory because it is impossible to test it experimentally.{6} However, we should note that scientists don’t escape the fine tuning issue. String theory math works in ten dimensions and ten dimensions only. So string theory is itself finely tuned. Fine tuning doesn’t arise from it. In

fact, any equation or theory of everything would still be fine tuned. It seems to point towards a designer (or Mathematician, if you would prefer).

Ultimately, natural laws or equations cannot explain fine tuning because it still boils down to this question: Are the laws put here on purpose or did they arise by chance? If you refuse purpose, then you are left with chance.

Fine-Tuned for Life and for Discovery

What if the fine tuning of the universe is the result of some kind of design or something supernatural beyond our universe? Does this hypothesis help explain some other inexplicable coincidences? It seems that if the universe and earth were designed for life, maybe it was also designed, not just for organic life, but with us intellectual beings in mind.

The fine-tuned parameters of the universe beg to be explained. However, as William Lane Craig says, explaining these observations puts the physicist in the realm of philosophy because he is trying to explain the purpose for the observation of fine-tuning. "The theistic philosopher can therefore without apology or embarrassment introduce his metaphysical commitment to theism as an at least equally plausible, if not superior, alternative explanation to metaphysical, naturalistic accounts of the complex order of the universe."{7}

The fine-tuning of life seems to point to some of the attributes of God. Psalm 19 says, "The heavens declare the glory of God, and the sky above proclaims his handiwork."

This perspective has explanatory power.{8} We are able to explain things that naturalists have passed off as a coincidence. For example, the earth's moon is important for life because it affects the tides which circulate nutrients in the ocean. But the moon also happens to be the perfect size

such that from the Earth's viewpoint, it can completely block out the sun [during an eclipse]. The sun is 400 times farther away from the earth than the moon, but it is also 400 times larger. In other words, the moon's size is exactly proportional to the Earth's distance from the sun. This isn't needed for life, but it *is* needed for discovery. Thanks to total solar eclipses, relativity theory was confirmed. We have also learned about the composition of the sun, the activity of the sun, and many other features of our sun.

And if that isn't suspicious enough, it turns out the Earth is in a perfect position in our galaxy to study astronomy. If we were anywhere other than in between two of the spiral arms of the Milky Way, the sky would be too bright to use telescopes.

And what about our atmosphere? Yes, the Earth's atmosphere has the perfect balance of nitrogen, oxygen, hydrogen, and carbon dioxide to allow for life, but it also happens to be clear enough to allow us to look out into the heavens. All of this might be attributed to chance coincidences, but if we allow that the universe was designed for life, then perhaps it was designed with us in mind. And why not? Psalm 8 says, "When I look at Your heavens, the work of Your fingers, the moon and the stars, which You have set in place, what is man that You are mindful of him?"{9} But the Psalm continues by describing man as very valuable to God; he is only a little lower than the heavenly beings, and God has crowned him with glory and honor.

The scientific observations tell us that the universe and the Earth seem remarkably fine-tuned for life and for discovery. Investigation of these clues seems to point towards some kind of purpose and design. If we take what we observe in nature with what is revealed in Scripture, there is compelling reasons to believe that God created the heavens and the earth, and He created them with us in mind.

Notes

1. Psalm 19:1 (ESV)
2. This section is a survey of common fine-tuned parameters taken from *The Privileged Planet* by Guillermo Gonzales and Jay W. Richardson. For a list of the fine-tuned parameters, see Reasons to Believe: www.reasons.org.
3. Quote from Todd Kappelman, Research Associate, Probe Ministries.
4. See Leonard Susskind, "Introduction," in *The Cosmic Landscape* (Back Bay Books, 2006).
5. The information from this section comes from Susskind, *The Cosmic Landscape*; Brian Greene, *The Elegant Universe* (Vintage Books, 2000); and articles by William Lane Craig.
6. We can never "see" a string because we do not have the technological capacity to study something that is that small (known as a Plank length), so there is no experimental way to confirm string theory by finding strings. Brian Greene identifies certain experimental possibilities if we had just a little more knowledge. These experiments could be evidence for string theory since they are based on presupposing strings. See his *The Elegant Universe*, chapter 9).
7. "The Teleological Argument and the Anthropic Principle" by William Lane Craig
www.reasonablefaith.org/site/News2?page=NewsArticle&id=5179
8. Examples of how the universe is fine-tuned for discovery are taken from *The Privileged Planet* by Jay W. Richards and Guillermo Gonzales.
9. Psalm 8:4 (ESV)

Additional References for String Theory:

String Theory is a complex theory. This article only touches the surface. Two sources that do a good job of explaining string theory without delving into the mathematics are:
- *The Cosmic Landscape* by Leonard Susskind
- *The Elegant Universe* by Brian Greene

Both of these books are from a naturalistic worldview. While they are both good descriptions of string theory, Greene and

Susskind take their theory beyond the realm of science and into the realm of philosophy and, I believe, make the implications of string theory into something more than it is. They also are forthright in their hope that string theory will solve the "problem" of an apparently fine-tuned universe.

Christian perspectives on string theory and multiverse theory:
• "Does God Exist?" by William Lane Craig
www.reasonablefaith.org/site/News2?page=NewsArticle&id=5507
• "Subject: Multiverse and the Design Argument" Q/A with William Lane Craig
www.reasonablefaith.org/site/News2?page=NewsArticle&id=5741
• Reasons to Believe's series on string theory:
www.reasons.org/astronomy/string-theory

Related Probe articles:

• Answer to Email: "What Do You Think of the Many Universes Theory?":
www.probe.org/what-do-you-think-of-the-many-universes-theory/
• "Are We Significant in This Vast Universe?" [Steve Cable]
www.probe.org/are-we-significant-in-this-vast-universe/
• "There is a God" [Michael Gleghorn]:
www.probe.org/there-is-a-god/
• Big Bang and a Just Right Universe ("The Origin of the Universe") [Rich Milne]:
www.probe.org/the-origin-of-the-universe/
• "The Case for a Creator" [Gene Herr]:
www.probe.org/the-case-for-a-creator/

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Creating Life in the Lab

Written by Heather Zeiger

The J. Craig Venter Institute recently announced their successful synthesis of a complete bacteria genome to an unsurpassed level of accuracy. Researchers were able to replace the genome of the host cell with the synthesized one. Several web sites and commentators have dispelled any aura of the miraculous by pointing out what exactly Venter's group did and what they did not do. For just a sampling (bolded emphasis is mine):

"What Venter and his team did was to determine the sequence of the DNA in one of the world's simplest bacteria, use the sequence information to synthesize a copy of that DNA from subunits sold by a biological supply company, then put the synthetic copy of DNA into a living bacterial cell from which the natural DNA had been removed."{1}

From the original research article on the Venter group's discovery: "We refer to such a cell controlled by a genome assembled from chemically synthesized pieces of DNA as a 'synthetic cell,' even though **the cytoplasm of the recipient cell is not synthetic**."{2}

"The idea that this is 'playing God' is just daft. What he has done in genetic terms would be analogous to taking an Apple Mac programme and making it work on a PC—and then saying you have created a computer. It's not trivial, but it is utterly absurd the claims that are being made about it."{3}

"To clarify the facts, 'the team put chemically synthesized pieces of the M. mycoides DNA into yeast which assembled the bacteria's genome. Then, the M. mycoides genome was transplanted into Mycoplasma capricolum and "booted up" to create a new synthetic version of M. mycoides'…For this 'proof of principle' instance, they tried to 'synthesize' a bacterium

as close to the original genome as they could, with the major 'new' genetic material being watermark protein messages (e.g. spelling "CRAIGVENTER"). They didn't use the original DNA as a template, but just as a 'standard' for comparison. **Since this was a test of concept, the goal was to generate something that already exists**."{4}

Neat Trick or Cause for Concern?

I think one of the most laudable feats of this group that should please many biochemists is that they were able to perfect the DNA synthesizing technology to the point that they reconstructed an entire bacterial genome—a much longer sequence than what is typically done in the laboratory setting—and they were able to do it with such accuracy that the cell's translational machinery read it. Exciting for biochemists, but advancements in laboratory technique and technology are hardly the stuff of headlines. As a chemist, I think it's a neat trick; as a bioethicist, I am concerned. My concern is not about the technology itself, but about the underlying presuppositions that seem to go unquestioned, even unnoticed.

The media response has been that of excitement and fear. At the heart of the fear surrounding genetic engineering is power. Why would anyone care about bacteria{5} unless he or she thought it implied something about human beings? Unless they are in the field, most people do not pay particular attention to the musing of a scientist about his research project on some esoteric species identifiable only by its Latin name. We do not care, that is, until that little bacterium has the potential to bring great harm or great good (or both) to human beings.

The fear or excitement (depending on your view of technology and scientists) is spread by two fundamental assumptions:

1) Since every organism, including human beings, is made up

> of genes, if scientists can manipulate one gene, then they can manipulate any gene, including human genes, and;
>
> 2) by manipulating genes scientists are manipulating life itself and the very essence of an organism's identity. This philosophical assumption, known as *reductionism*, is what we often assume without thinking about it.

These philosophical assumptions are grounded in a worldview of *materialism* (a.k.a. *naturalism*; I will use the term materialism throughout this article). The materialistic worldview says that matter and energy are all there is, there is no supernatural and there is nothing beyond what is in the natural world. If that is the case, then by definition, human beings are defined by their physical parts. There is nothing nonphysical which we can call our identity. That also means that the difference between something being alive versus not being alive must be defined by physical parameters. Since all organisms have a genome, scientists assume that there is some combination of nucleotides (the individual molecules of the genome) or a certain minimal number of nucleotides that makes something alive.

The Venter Group's Reductionist Project

The Venter group, from the beginning of their project, was quite up front with the goals of their research. When asked about the implications of their project, Craig Venter responded in an interview posted in *SciWatch* in 1997:

> What is life? I don't think there are that many biologists trying to answer that one . . . . We're . . . working on a reductionist view of trying to take the smallest genome that we have…and see if we can't understand how those . . .[genes] work together to create life . . . .{6}

This is the same sentiment held by James Watson, Nobel Laureate and co–founder of the structure of DNA. In his book,

DNA, he states:

> Our discovery had put an end to a debate as old as the human species: Does life have some magical, mystical essence, or is it, like any chemical reaction carried out in a science class, the product of normal physical and chemical processes? Is there something divine at the heart of a cell that brings it to life? The double helix answered that question with a definitive No.{7}

According to scientists who hold to materialistic presuppositions, life is chemistry. Who we are boils down to our chemistry, which puts those that can manipulate our chemistry in a position of power.

Given these beliefs, it is no wonder that people automatically jumped from the genome of a bacterium to the implications for people. But one thing science has shown us is that the leap from bacteria to man is not simple or straightforward. Man's genome is not much larger than many other, simpler organisms, yet scientists have found that human DNA is much more complex. As it turns out, it is more than an issue of connecting nucleotides together like a chain of beads in the right order.

Reductionism and the Human Genome Today: What Is New

Dr. Richard Sternberg of the Biologic Institute conducts research based on several findings that seem to indicate that the blueprint for an organism's overall body plan is not found by reading the genome on a nucleotide-by-nucleotide basis. There seems to be a more complex interaction between the genome and other cellular functions and between different parts of the genome in different ways that was once thought. His research seeks to identify those interactions and how they translate into an organism's blueprint.{8}

What scientists are finding is that the genome is not read as

a letter–by–letter array (one–dimensional), as was once thought, but that there are spatial and translational (three–dimensional) factors that help determine how our genome is interpreted. *No longer is it a simple issue of what letters code for what. Now it is what letters, located where, and interacting how, code for what. This flies in the face of reductionism because now we cannot assume that the chemistry codes for life. Apparently there is more to it than that.*

Reductionism and the Human Genome Yesterday: What Is Not New

Even before scientists discovered that there are layers of complexity to the genome, many researchers found that their experiments did not work as expected from a reductionist perspective because the step from bacteria to man is not a direct correlation. By looking back to the beginning of genetic engineering technology, we find that many people held reductionist presuppositions that fueled fear and concern. We also find that reductionism failed to account for the setbacks in going from simple organisms to man. Many people reacted to the discovery of recombinant DNA (rDNA) in the 1970's and 1980's with fear, concern, and anticipation.

RDNA involves building DNA strands and inserting them into organisms using something called vectors. Today this technology is frequently used in the lab, and it was used by the Venter group for their procedure. In the 1970's and 80's much of the ethical debate centered on the implications of using rDNA in human beings, even though the procedure was only being used in bacteria. We call the use of rDNA technology in humans, human genetic engineering. Ironically, after all of the hype surrounding this new technology, 30 years of using rDNA has not resulted in success in human genetic engineering.

Reductionists would say that because every organism is composed of genes and life must be defined by its physical

parts, if we can engineer and replace DNA in simple organisms, we can do the same in humans. However, in reality we still cannot replace portions of human DNA with synthesized DNA because there is a level of complexity in mammalian cells, and human cells in particular, that scientists still do not understand.

Conclusion: The Meaning of Life Is Not Found under a Microscope

The further down you go, even to the level of atoms, subatomic particles and quarks, you will never find the essence of life; at most you can understand structure. Those are two very different things that are confused when you have a commitment to a materialistic perspective. From a materialistic perspective, the essence is in the structure. Man is the sum of his parts. Contrast this to a theistic perspective. Man is made from similar elements as other organisms, connecting him with part of creation, but he is also beyond creation because of his relationship with or access to God. In a Christian theistic view, in particular, the essence of man is not in his parts but in how those parts combined with his spiritual component make him more than a creature. He is something, someone, made in the image of God. Part of that image is our creativity and ability to communicate original ideas, as well as our self–awareness, including our place in time and our mortality. These are all attributes that describe God. Yet these traits don't seem to be shared by animals, even animals that are genetically similar to human beings.

In a *Science* article from 1999, several ethicists considered the implications of Venter's group's goal to create a minimal genome. Prophetically, the authors caution against reductionist implications: "…a reductionist understanding of life, especially human life, is not satisfying to those who believe that dimensions of the human experience cannot be explained by an exclusively physiological analysis… **There is a**

serious danger that the identification and synthesis of minimal genomes will be presented by scientists, depicted in the press [ref removed], or perceived by the public as proving that life is reducible to or nothing more than DNA…"{9}

Now, eleven years later, one of the authors of that same article responded to the Venter group's recent announcement by saying:

> Venter and his colleagues have shown that the material world can be manipulated to produce what we recognize as life… Their achievement undermines a fundamental belief about the nature of life that is likely to prove as momentous to our view of ourselves and our place in the Universe as the discoveries of Galileo, Copernicus, Darwin, and Einstein.{10}

The author perpetuates the very assumption that the original ethics article cautions against! We should be careful to not assume so much. There is no reason to believe that the ultimate nature of life is locked away in our genes, and many reasons to believe that it is not. The Venter group did not create life; they studied and mimicked the structure of Someone else's creation.

Notes

1. Jonathan Wells, "Has Craig Venter Produced Artificial Life?" posted on May 24, 2010 on Discover Institute blog, *Evolution News & Views*, www.evolutionnews.org/2010/05/has_craig_venter_produced_arti035081.html.
2. Original research article published in Science Express online: www.sciencemag.org/cgi/content/abstract/science.1190719
3. Steve Jones, geneticist, quoted by Jonathan Sarfati in "Was life really created in a test tube? And does it disprove biblical creation?" May 25, 2010, creation.com/synthetic-life-

by-venter

4. Science Integrity, "Notes on 'Creation of a Bacterial Cell Controlled by a Chemically Synthesized Genome'," (link to cited article found here), scienceintegrity.net/SynthesizedGenome.aspx

5. The particular bacteria, M. mycoides, was selected because it has one of the simplest known genomes.

6. Quoted in Science vol 286, December 1999, p. 2087. Original quote from Anonymous, Sci Watch (September/October), 3 (1997).

7. Watson, James D., *DNA: The Secret of Life*, Random House, Inc. New York, 2003.

8. Richard Sternberg, "Current Research," www.richardsternberg.org/research.php. See also: www.biologicinstitute.org.

9. Science, vol. 286, December 1999, pg. 2087, emphasis added.

10. "Sizing up the 'synthetic cell'," online version of commentary in Nature, www.nature.com/news/2010/100520/full/news.2010.255.html.

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