

An Adventist Scientist Looks at Origins and Catastrophism

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Over the course of recorded history, the idea of a Creator God has been constantly called into question. A millennium before the birth of Christ, David declared that: "The fool hath said in his heart, there is no God." Four centuries later, the Chavarka philosophers of India were boldly denying the existence of the supernatural; "There is no heaven, no final liberation, nor any soul in another world"¹ according to Brihaspati, the founder of Charvarka philosophy. Shortly thereafter in the west, Epicurean philosophy emerged from earlier atomistic philosophy and blossomed into a complete denial of divine action. Cicero put these words into the mouth of an exponent of Epicurean philosophy:

For he [Epicurus] who taught us all the rest has also taught us that the world was made by nature, without needing an artificer to construct it, and that the act of creation, which according to you cannot be performed without divine skill, is so easy, that nature will create, is creating, and has created worlds without number. You on the contrary cannot see how nature can achieve all this without the aid of some intelligence...²

At around the same time, during the century before Christ's birth, the Roman poet and popularizer of Epicureanism, Titus Lucretius Carus, laid out an outline remarkably similar to the modern Darwinian view of history:

The atoms did not intend to intelligently place themselves in orderly arrangement, nor did they negotiate the motions they would have, but many atoms struck each other in numerous ways, carried along by their own momentum from infinitely long ago to the present. Moving and meeting in numerous ways, all combinations were tried which could be tried, and it was from this process over huge space and vast time that these combining and recombining atoms eventually produced great things, including the earth, sea, and sky, and the generation of living creatures.³

¹ Brihaspati is quoted in: Mádhava Áchárya. c1360. *The Sarva Darsana Sangraha or Review of the Different Systems of Hindu Philosophy*. EB Cowell and AE Gough Translators 3rd Ed. 1908. Kegan, Paul, Trench, Trübner and Co. London. P 10.

² Marcus Tullius Cicero - *De Natura Deorum* <http://www.epicurus.net/en/deorum.html>.

³ This is my own translation of the original Latin as printed in Titus Lucretius Carus, circa 55 B.C., *De Rerum Natura*, Book 5, lines 416-31. *Lucretius: On the Nature of Things*, trans. W. H. D. Rouse, rev. Martin F. Smith (Cambridge, MA: Harvard UP, 1992). The Latin text is reproduced below:

416 Sed quibus ille modis coniectus materiai
417 fundarit terram et caelum pontique profunda,
418 solis sunai cursus, ex ordine ponam.
419 nam certe neque consilio primordia rerum
420 ordine se suo quaeque sagaci mente locarunt
421 nec quos quaeque darent motus pepigere profecto,
422 sed quia multa modis multis primordial rerum
423 ex infinito iam tempore percita plagis
424 ponderibusque suis consuerunt concita ferri
425 omnimodique coire atque omnia pertemptare,

The formula for denial of the Creator God has remained remarkably simple over the course of history: First deny the possibility of design in nature, then substitute blind laws interacting under unguided conditions over an incredible period of time in a really big universe. In more recent times, the Darwinist apologist Richard Dawkins put it this way:

“Given infinite time, or infinite opportunities, anything is possible. The large numbers proverbially furnished by astronomy, and the large time spans characteristic of geology, combine to turn topsy-turvy our everyday estimates of what is expected and what is miraculous.”⁴

From the beginning, Christians have consistently opposed this denial of design in the creation. For example, the Apostle Peter says:

“[T]here shall come in the last days scoffers, walking after their own lusts, And saying, Where is the promise of his coming? for since the fathers fell asleep, all things continue as *they were* from the beginning of the creation. For this they willingly are ignorant of, that by the word of God the heavens were of old, and the earth standing out of the water and in the water.”⁵

Peter’s prophecy about the end of time seems to be related to one of the great prophecies of Revelation. In Revelation 14:6,7 an angel described as having the “everlasting gospel” to preach to everyone on earth proclaims:

“Fear God, and give glory to him; for the hour of his judgment is come: and worship him that made heaven, and earth, and the sea, and the fountains of waters.”

As a Seventh-day Adventist scientist working at the interface of science and the Christian faith, it is difficult not to be constantly aware of the long history of disagreement over the issue of origins as well as the special time in which we currently live. Adventists emphasise both the creation, spending an entire day each week celebrating it, as well as the time in Earth’s history for which God has raised up the Seventh-day Adventist Church. Peter prophesied that during this end-time, just before Christ’s Second Advent, Christians would face an exceptional kind of mockery and denial of God’s creatorship. John recorded the first angel of Revelation 14 giving a special urging to God’s children at the end of time to worship the Creator God.

426 quacumque inter se possent congressa creare,
427 propterea fit uti magnum volgata per aevom,
428 omne genus coetus et mortus experiundo,
429 tandem convenient ea quae convecta repente
430 magnarum rerum fiut exordia saepe,
431 terrain maris et caeli generisque animantum.

⁴ Dawkins R. 1989. *The Blind Watchmaker: Why the evidence of evolution reveals a universe without design*. W. W. Norton and Co. New York. P139.

⁵ II Peter 3:3-5 KJV

Both apostles were probably personally aware of the kind of mockery and the general outline of the opposition faced today by those who believe the creation account given in the Bible. In fact, the New Testament tells us that their fellow Apostle, Paul, debated with the Epicurean and Stoic philosophers in Athens.⁶ Peter, John and the other apostles interacted with the prevailing philosophies of their day just as those living at the time they prophesied about do. Ultimately, the prevailing philosophies are essentially the same. If the issue of God's creatorship is central to the "everlasting gospel," the special attack on the creation evident today is unsurprising, particularly to those who are heralding the coming of our Creator and Saviour by preaching the eternal gospel to all the world.

The issues today revolve around five main points: 1) Whether God created at all, 2) The goodness of God 3) Exactly how He did the creation if He did do it, and the related questions of 4) The six days, and 5) The six thousand years. None of these questions can be completely or definitively answered using the tools of empirical science alone; philosophy and/or theology must also play a role. In addition, the sources of knowledge on which one is willing to build one's epistemology may lead to dramatically different conclusions.

For a Bible-believing Christian and a scientist, the answers to these questions are informed by both empirical knowledge derived from science as well as the Truth God has revealed through Scripture. It is not surprising that tension exists between the conclusions drawn from empirical study of nature by those who reject the Bible as a source of knowledge, or that some claims of Scripture appear to be in tension with apparently reasonable interpretations of data from nature.

1) Whether God created at all

The first question, whether God created at all, is probably the one most clearly answered in both science and Scripture. Nature, and particularly living things, gives every appearance of being designed for a purpose. Both believers and many (but not all) unbelievers agree on this point. For example, the Darwinist George Gaylord Simpson wrote:

This appearance of purposefulness is pervading in nature, in the general structure of animals and plants, in the mechanisms of their various organs, and in the give and take of their relationships with each other. Accounting for this apparent purposefulness is a basic problem for any system of philosophy or of science.⁷

⁶ See Acts 17:18

⁷ Simpson G.G. 1947. Plan and Purpose in Nature, *Scientific Monthly*, 64:481-495 reprinted in Simpson G.G. 1964. *This View of Life: The World of an Evolutionist*. Harcourt, Brace & World: New York NY. PP190-191.

Even the ultra-Darwinist Richard Dawkins defined Biology as “the study of complicated things that give the appearance of having been designed for a purpose.” Both Simpson and Dawkins along with many other Darwinists have written libraries of books and articles attempting to show that the design in nature is only apparent and can be accounted for by some combination of chance and natural laws. Given all that effort, it is still reasonable to say that the Bible’s claim that nature is a product of God’s intelligence or mind – the “Word” or *λογος* of John 1:1 – is consistent with this observation. Tension arises from the observation that some designed looking aspects of nature also appear evil, but this question of theodicy is logically separate from the consistency evident between the observation of design and the claim of design in the Bible.

2) The goodness of God

Imperfection in the creation raises two quite different issues about God. The first relates to His competence as a designer when His designs fail and the second to His character when designs appear evil. Before the time of Christ, Lucretius raised questions about the competence of any divine creator:

The nature of the universe confirms it cannot have been created for us by divine power: it has so many faults.⁸

In more contemporary times, Stephen Jay Gould picks up the same argument: “Imperfection carries the day for evolution.”⁹

Gould believed the “thumb” of giant pandas to be an example of imperfection. While it works perfectly well for pandas as they manipulate bamboo, it is made from different wrist bones than human thumbs. Gould argued that the panda’s thumb is jury-rigged, thus not designed for the job it does and God would not have done it that way. This is clearly a theological and not a scientific argument. Deciding whether something is badly designed or just cobbled together requires an understanding of what the designer had in mind. What if God just wanted a little variety in the way thumbs are made? How do we know the panda’s thumb does not work better for its purposes than the kind of thumb we have?

Logically, an imperfect design does not mean something was not designed, the real questions are “What were the intentions of the designer?” and “How well were those intentions realized?” Aching backs and wisdom teeth among other things appear to be designs that fail. Christians may observe all the good design in nature along with the evidence of God’s goodness and love exemplified in the life of Jesus Christ and conclude

⁸ Lucretius, book 2, lines 180, 181: Nequaquam nobis divinitus esse creatam naturam mundi: tanta stat praedita culpa. Titus Lucretius Carus. circa 55 B.C. *De Rerum Natura*. Book 2 lines 180, 181 Translated by W. H. D. Rouse, revised by Martin F. Smith in *Lucretius: On the Nature of Things*. Harvard University Press, Cambridge, Massachusetts. 1992.

⁹ Gould SJ. 1980 *The Panda's Thumb: More Reflections on Natural History*. W. W. Norton, New York. p 37.

God is good, but that does not stop their backs from aching. From this they infer that God must be good, and that the rebellion of sin really does have horrifying consequences for all of nature.

Expecting perfection in something with an apparent purpose that fails in some way does look like a problem. For example, when a bridge collapses - whether because it deteriorated, had a design flaw or was overloaded - the failure was presumably not the designer's intention. Christians believe that we live in a world marred by sin in which even wonderful designs like the human body still ultimately fail. The once perfect world God created is no longer perfect, and all suffer as a consequence. This was spelled out by the Apostle Paul in Romans 8:22,23:

22 For we know that the whole creation groaneth and travaileth in pain together until now.

23 And not only they, but ourselves also, which have the firstfruits of the Spirit, even we ourselves groan within ourselves, waiting for the adoption, to wit, the redemption of our body.¹⁰

Sin may be a reasonable explanation of designs that fail in some way under current conditions, but structures in nature that appear to be very well designed for an evil purpose raise a much more profound question related to the goodness of God. The fangs in some poisonous vipers exemplify this. Each fang acts like a long hollow hypodermic needle attached to poison glands that contract to force the poison through the fangs and into their victims. When not being used to slaughter other creatures, the fangs fold inside the upper jaw so that the snake doesn't bite itself or have long fangs hanging out of its mouth where they could be damaged or in the way. It is a stretch to try to explain something like that as anything other than an engineered system to inject poison into other creatures.

The Bible seems to be very clear that God is the designer of all things. The Apostle John said that "All things were made by him; and without him was not any thing made that was made."¹¹ Scripture provides two possible explanations of evil in nature that still allow God to be good and evil to exist. One explanation for the apparently evil design we see in everything from snakes to parasites is not just that they are a natural consequence of the degradation that comes with sin, but that they are the active result of God's cursing the earth after Adam and Eve's decision to sin.¹² The Bible generally reveals God as loving and kind, but not as a jolly old grandfather who is going to reward both the good and wicked. He is merciful, but also executes justice.¹³

There is another character in Scripture who may also explain at least some evil design:

¹⁰ Roman 8:22,23 KJV

¹¹ John 1:3 KJV

¹² Genesis 3:14-19

¹³ See for example Hebrews 12:6

The great dragon was hurled down—that ancient serpent called the devil, or Satan, who leads the whole world astray. He was hurled to the earth, and his angels with him.¹⁴

The Bible tells us Satan is active on the earth. Some people believe that he is capable of twisting God's original good creation to create the evil we now see in nature, but much depends on how creative one is willing to let the Devil be. Certainly Ellen White was willing to attribute any amount of evil to him: "Every noxious herb is of his sowing, and by his ingenious methods of amalgamation he has corrupted the earth with tares."¹⁵

While the natural consequences of sin, the curse and the devil are all short-term explanations of evil design in nature, evil truly remains a deep mystery that is not easily explained away. God's goodness is evident in the elegant design in nature and the beauty of His character was shown in the life of Jesus Christ. It is on the basis of this evidence that Christians believe in the goodness of God, not because a ready answer to every question is available. It is worth noting that even judging whether or not something in nature is evil depends very much on one's ideas about God. Without God, good and evil are not objective realities; things just are the way they are. Ultimately, a good God like the Christian Creator God makes the existence of evil an objective reality while not by Himself explaining the presence of evil design in nature.

3) Exactly how God did the creation if He did do it?

Science can be thought of as a two-part process. On the one hand, observation provides data about the physical world, but data are not necessarily useful. Perhaps the more interesting part of the scientific endeavor is the quest for an explanation of the data. Rubber balls bounce; balls made out of bread dough do not, but why or how? Data are generally not controversial unless they conflict with a well-accepted understanding of how nature works. If the accepted explanation for why rubber balls bounce was that they are brightly colored and the bright colors give them extra energy as they approach hard surfaces, then adding bright food coloring to bread dough should make it bounce as well. If the experiment was done and the dough still lacked bounce, the bright-colors explanation should be discarded.

A major objection to belief that God created nature is that it really is not a detailed explanation. Revelation gives very few details; man was formed from the ground, God breathed into him and he became a living soul.¹⁶ How did God's breath turn dust into a human? The whole of creation is a miracle and science does not do well with miracles. It is not that miracles have to violate the laws of physics, it is that how God does them cannot be observed.

¹⁴ Revelation 12:9

¹⁵ MS 65, 1899, 1BC 1086.2 – 1953, 2SM 288.2 – 1958, 16MR 247.2 – Undated Published in F. D. Nichol, *Ellen G. White and Her Critics*.

¹⁶ Genesis 2:7

Science is probably a great tool for identifying miracles if they are defined as events that could not be predicted from the prior state of matter. Science studies the behaviour of matter to elucidate the natural laws that govern its behaviour. These studies allow scientists to predict with a high level of confidence that dust will not turn into a human being without some kind of dramatic intervention that humans are currently incapable of. Further, science can give a very detailed explanation of why dust, complex combinations of chemicals or even a fresh corpse does not turn into a living human.

For anyone who believes science provides ultimate answers, the claim that dust turned into a living human is deeply disturbing. If it actually happened, if it is data, it calls into question either the fundamental understanding of reality on which science is based, or logically suggests something was done to the dust to make it into a human. The generally accepted theory of chemical evolution is not effectively different from saying that dust turned into a human all by itself. The differences between the Biblical and the Darwinist creation stories is in terms of the scale of time and agents involved. Darwinism says that dust turned into something that turned into a simple cell that ultimately turned into a human and it was just lots of time that worked the magic, there was no Creator God. The Biblical creation story provides God as an agent capable of turning dust into humans.

Whether or not one believes the Christian understanding of earth history, the Darwinian explanation of life should be no more satisfying than the Christian one. The Bible at least proposes a cause for life that is adequate to explain it, an eternal, omniscient, omnipotent Creator God. The tools unguided nature has to work with – time, chance and natural laws – do not make living things. While the Christian view does not provide all the details most scientists would enjoy understanding about how the creation was achieved, at least it does not propose a mechanism that is clearly wrong. It may not be fully satisfying to curious scientists, but the Christian view at least clearly delineates what is unknown and does not embrace an understanding of nature that is clearly wrong. It is better to know you don't know than to think you know what you really do not.

4) The six days

The creation in six days relatively recently is not the modern scientific view of how life and the universe came to be. However, whether a short recent creation is possible based on what we observe today is another matter. The answer to this question is that yes, it is possible if you are willing to accept certain explanations for data, but some of these explanations go beyond science.

Let's look at a specific example to illustrate this. According to the modern neo-Darwinian view, it took many millions, possibly billions, of years for organisms like bacteria to evolve from the first simple life forms to the relatively advanced bacteria we deal with today. The problem is that bacteria contain many miniature machines with parts made

from proteins.¹⁷ It may be possible for some of the machines to operate with some of the parts missing, but commonly these machines require a minimal set of parts to function at all. If one of these parts is missing, the machine does nothing. An analogy might be a car engine, which will not operate unless pistons are present. Just as a car engine requires a complete set of parts to operate, the tiny protein machines in bacteria require a complete set of parts, all present at the same time. It thus seems reasonable to infer that all the parts were put together at the same time, as suggested by the Biblical creation story, and were not accumulated over a long period one part at a time as Darwinism claims. Viewed without bias, living things point toward a brief creation event, but this most reasonably seems to require a miracle, and science is not helpful in explaining unique events like miracles.

It seems difficult for the miracle to have unfolded over a long period of time given the interdependence evident in nature. The six-day creation lays out a logical sequence of events in which abiotic components of the environment were first prepared with separation of the water from the land, creation of the atmosphere and so on. This was followed by creation of living things that occupy the water, land and sky. In addition, the plants were created before the animals. Yes, there are a lot of miracles in this account of the creation, but it would have been substantially more miraculous to have animals evolving millions of years, or even a few days, before plants. Interdependence appears to be a ubiquitous characteristic of the biosphere that makes evolution of various different organisms over long spans of time at least as miraculous as their creation within a literal week.

How difficult this could be is illustrated in the ecochemical cycle called the Nitrogen Cycle.¹⁸ In this cycle, some steps can be carried out in the absence of living things. For example, atmospheric nitrogen can be converted into nitrate by lightning. The problem is that, without organisms to convert the nitrate either back into atmospheric nitrogen or incorporate it into proteins via the process of assimilation, nitrate will accumulate indefinitely. Even with assimilation, in the absence of some mechanism to return nitrogen to the atmosphere, it would accumulate indefinitely in organisms and their waste products. In fact, the lack of a biological nitrogen cycle on Mars has been invoked to explain why the Martian atmosphere is unexpectedly deficient in nitrogen.¹⁹ Other parts of the nitrogen cycle present similar conundrums. It is not that a huge cycle like the nitrogen cycle would necessarily have to be completed in a day or even a week to prevent major problems, but there is a definite time limit on how long an incomplete cycle could operate without destroying the possibility of life on earth. If the time is going to be short, from a scientific perspective a week is as good as any other relatively short period of time to complete creation of ecological cycles like the nitrogen cycle so that life can survive.

¹⁷ For an excellent discussion of some of these protein machines and assembly lines, see: Behe, MJ. *Darwin's Black Box: The biochemical challenge to evolution*. Free Press, New York.

¹⁸ For a more detailed discussion of this, see: Zuill HA, Standish TG. 2007. Irreducible Interdependence: An IC-like ecological property potentially illustrated by the nitrogen cycle. *Origins* 60:6-40.

¹⁹ Mancinelli RL, Banin A. 2003. Where is the nitrogen on Mars? *International Journal of Astrobiology* 2(3):217-225.

5) The six thousand years

During the late 1950s scientific challenges to the truth of the Bible became particularly clear. Among these challenges, the claim that radioactive isotopes could be used to date rocks and that these showed that life on earth is hundreds of millions to billions of years old attracted the attention of our church. It seemed that only two options were available; on the one hand, the Bible could be made subject to science and thus claim that what the Bible says about the history of life is an allegory or metaphor for evolution. On the other hand, the church could simply ignore the science.

The Seventh-day Adventist church chose a third option; to take the claims of science seriously while not subjecting the clear statements in God's Word to the tentative claims of science. In 1958 the General Conference created the Geoscience Research Institute (GRI) to bring together a body of scholars with expertise in science and a serious commitment to God's Word. The Adventist church took the science seriously while not subjecting the Bible to it. This was an act of faith by the church leadership expressing their belief that "rightly understood," "the book of nature and the written word do not disagree."²⁰ Over the years it has been gratifying to see how God has rewarded this faith.

The central issue of the great controversy between Christ and Satan involves the nature of God. Is God a cosmic bully who arbitrarily demands that we do his will or burn in Hell? If He is a being more powerful than us who just wants us to jump at his command, then it is hard to imagine how He could be good. The God of the Bible is not like this, His "good" creation included making humans in His image:

"So God created man in his own image, in the image of God created he him; male and female created he them." Genesis 1:27 KJV

When God asks humans to reflect His character, He is asking humans to do what they were designed to do and what He promises to restore in those who accept His gift of redemption. It is the fact that God is the Creator that makes Him righteous and not simply a cosmic bully who wishes to impose his will on mortals. Thus the goodness of God is to a large degree dependent upon His creatorship. Within the Great Controversy view of history, it should not be surprising that Satan is making a special effort in these end times to call into question God's creatorship. Ultimately this is the issue on which everything else depends. This issue is so important that God calls on us to spend one seventh of our time remembering that He is the Creator.

Because of its importance, the creation is a central theme of the Bible. From the creation account in Genesis 1 and 2 to the recreation in Revelation, creation permeates Scripture from beginning to end. Without creation as described in the Bible, other Bible themes make little sense. For example, if living things resulted from an evolutionary process, then the mechanism of creation involved death, and lots of it. Thus there must have been death before sin. This makes the substitutionary death of Christ an incoherent concept

²⁰ White EG. 1884. *Signs of the Times*. No. 12.

and salvation a mirage. If sin did not cause death, how would salvation from our sins achieve victory over death?

When the miracle of creation occurred is a separate question from whether it occurred. Formation of the huge quantities of fossil-bearing sedimentary rock that we see today reasonably seems to require, given current rates, either vast periods of time or some unprecedented catastrophic event. The Biblical record of a global flood provides just such a catastrophic explanation. The flood is necessary to account for formation of the sedimentary rocks within the few thousand years the Bible seems to allow. It may be that some of these rocks were laid down before the flood and some after, but the volume is so large that a major catastrophe or series of catastrophes is required to explain the sheer volume of sedimentary rock within the c 6,000 year time allowed by Biblical chronology. Thus, by telling us about a catastrophic global flood, the Bible presents an account that in general terms is logically coherent with what is observed, although the details -- for example the radiometric dating that prompted creation of GRI -- may require some degree of effort to understand and all the answers may never be in. Perhaps this difficulty results in part from the inability of science to accommodate miracles and the fact that the flood was a unique event involving Divine intervention.

The geological column is a brute fact that is not entirely explained by existing models involving long accumulation, a massive flood or some combination of time and episodic catastrophes. The gold standard for putting time into the column is probably radiometric dating which works wonderfully in theory, but is problematic in practice. It is not that radiometric dating does not work, it is that it works sometimes and not at others and deciding when it works and when it doesn't can be driven as much by presuppositions as data. It is dangerous for a biologist like myself to take on a whole different discipline in science, and I will thus limit my brief comments to what appears to be the empirical failure of radiometric dating.

An obvious example of the empirical failure of radiometric dating is found in New Zealand where Mt. Ngauruhoe produced lava flows in 1949 and 1954, and avalanche deposits in 1975. Potassium-argon "dating" of five of these flows and deposits yielded K-Ar model "ages" from <0.27 Ma to 3.5 ± 0.2 Ma.²¹ When incorrect dates are given by standard radiometric techniques, *post hoc* explanations can always be used to explain away the anomalous results. The ready availability of such *post hoc* explanations reasonably raises questions about the validity of the technique. Why would factors taken into consideration in the *post hoc* explanation not have been taken into consideration *a priori*? The Mt. Ngauruhoe example is by no means unique:

The determination of accurate and precise isochron ages for igneous rocks requires that the initial isotope ratios of the analyzed minerals are identical at the time of eruption or emplacement. Studies of young volcanic rocks at the mineral scale have shown this assumption to be invalid in many

²¹ Snelling AS. 1998. Andesite Flows at Mt Ngauruhoe, New Zealand, and the Implications For Potassium-Argon "Dating." Fourth International Conference on Creationism. Creation Science Fellowship, Pittsburgh. Available online at: <http://www.icr.org/research/as/as-r01.htm>

instances. Variations in initial isotope ratios can result in erroneous or imprecise ages.²²

Experts on radiometric dating also point toward consistency between radiometric dates obtained using different isotopes and between radiometric dates obtained using other methods. It is unsurprising that there are examples of different radiometric methods giving approximately the same date. Obviously this is necessarily true if the general method is to work at all.²³ However, abundant examples where different methods give different dates cannot be ignored.²⁴ In addition, non-radiometric dating methods such as stratigraphic evidence, amino acid racemization and particularly molecular clocks routinely disagree with dates obtained using radiometric methods. When all is said and done, the brute volume of sedimentary rock coupled with apparent *in situ* growth of organisms are the most clear arguments for long periods of time in the geological record.

Ironically, there are actually radiometric data suggesting life is much younger than the millions of years commonly accepted. For example, when coal thought to be many millions of years old was dated using carbon-14, it produced dates less than 100,000 years and within the range of modern testing methods.²⁵ Alternative explanations are possible, but not compelling.

Generally recognized patterns in the arrangement of fossils in the geological record seem to make time, or at least Darwinian evolution over long periods of time, an unconvincing explanation for the patterns. Sudden appearance of major groups of organisms without clear ancestors is problematic if organisms' sequence of appearance as fossils is attributed to long periods of time. Among the most dramatic example is the Cambrian explosion, in which the majority of fossil animal phyla appear in Cambrian strata without clear ancestors in lower strata. There are many other examples of sudden appearance, birds – including modern birds – appear in Upper Jurassic, and Lower Cretaceous strata, mammals and flowering plants both appear suddenly. Recently appearance of the Precambrian Ediacaran fauna has been dubbed the “Avalon Explosion.”²⁶ In each of these “explosions” of diversity, there is greater diversity at a profound level²⁷ than is

²² Davidson J, Charlier B, Hora JM, Perloth R. 2005. Mineral isochrons and isotopic fingerprinting: Pitfalls and promise. *Geology*, 33(1):29–32. doi: 10.1130/G21063.1.

²³ See for example: Baadsgaard H. 1993. Multimethod radiometric age for a bentonite near the top of the *Baculites reesidei* zone of southwestern Saskatchewan (Campanian-Maastrichtian stage boundary?). *Canadian Journal of Earth Science* 30:769-775.

²⁴ Such discordant dates are not uncommon and are discussed with enthusiasm in: Woodmorappe J. 1999. “Malfunctioning Watches:” False claims about the rarity of discrepant dates. Chapter 4 in Woodmorappe J. 1999. *The Mythology of Modern Dating Methods: Why million/billion-year results are not credible*. Institute for Creation Research, El Cajon, California

²⁵ Giem, P. 2001. Carbon-14 content of fossil carbon, *Origins*, 51:6-30. This is also discussed in the following ICR publication, but note that I do not subscribe to the explanation proposed. However, the data appears reliable: Vardiman L, Snelling AA, Chaffin EF. Eds. 2005. *Radioisotopes and the Age of the Earth, Vol. 2: Results of a Young-Earth Creationist Research Initiative*. Institute for Creation Research.

²⁶ Shen B, Dong L, Xiao S, Kowalewski M. 2008. The Avalon Explosion: Evolution of Ediacara Morphospace. *Science* 319:81 – 84.

²⁷ By “profound” diversity, I mean that the differences are more fundamental than the slight differences commonly used to differentiate various species. For example, the different kinds of birds that appear in the

found later in the fossil record or today. It may be possible to explain away this pattern, as Darwin did, with appeals to imperfection in the geological record,²⁸ but there is enough repetition of the pattern that the “imperfection” appears quite systematic and does not correlate well with long periods of time.

Another important fossil pattern is the appearance in lower geological strata of organisms less like those living today than those in higher strata. This would appear to be the best evidence of evolution in the geological column, but it is not perfect. For example, there are some organisms that appear in low strata, continue throughout the rest of the column and even up to the present apparently unchanged. A dramatic example of this is the brachiopod *Lingula*, which appears in Cambrian strata and is still found living today.²⁹ Other strange anomalies exist as well. Coelacanth fish that were thought to be missing links between fish and tetrapods dwelling on land have been found living off the coast of Africa and Indonesia, but disappear from the fossil record at the same time as the dinosaurs in Upper Cretaceous strata thought to be 65 million years old.³⁰ Considering that coelacanths were a successful group of fish that first appear in Devonian strata thought to be about 400 million years old and are not uncommon as fossils, their absence in upper parts of the fossil record, in which other fish fossils are plentiful, is enigmatic if the sediment they were buried in accrued over vast periods of time. Why believe coelacanths only evolved during Devonian time and not several hundred million years before and were just not fossilized until Devonian rocks were formed? Why believe that the fossil record is a record of time at all? Other “Lazarus species” like the Wollemi pine of New South Wales, Australia, present similar enigmas. As a group Lazarus species of fossils raise significant questions about whether the fossil record is actually a record of time at all.

On the other hand, explaining such things as order in the fossil record and sudden appearance of fossil groups within some alternative framework is equally problematic. Whether or not theories about how the geological column formed are informed by the Biblical record of history, the fossil record is enigmatic and a rational evaluation of the current state of understanding is that there is little real understanding at all. This is not necessarily discouraging; it just means there is still a lot to be discovered and all the answers are not in yet. In other words, there is still science to be done.

top of the Jurassic and bottom of the Cretaceous have profoundly different arrangements of bones in their wings; some have long tails others have short tails; some have beaks and others have teeth.

²⁸ Darwin C. R. 1859. On the Imperfection of the Geological Record Chapter IX in *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*. Project Gutenberg, <http://www.gutenberg.org/dirs/etext98/otoos11.txt>.

²⁹ Note that the status of *Lingula* as a living fossil has not gone unchallenged, whether living *Lingula* are exactly the same species or a member of the same group as fossil *Lingula* is immaterial to the argument: Emig C. 2002. Proof that *Lingula* (Brachiopoda) is not a living-fossil, and emended diagnoses of the Family Lingulidae.- Carnets de Géologie / Notebooks on Geology Maintenance, Letter 2003/01 (CG2003_L01_CCE)

³⁰ Note that fossil coelacanths are not identical to those living today. In fact the fossil record of coelacanths is like many other groups with greater diversity in the past than at present.

No matter how science proceeds in the future, it is unlikely to get a date for the origin of everything that is consistent with the traditional approximately 6,000 years since the creation. This is because science may not be a good tool for determining the age of the universe, Earth or life. Science is a useful tool for studying regularities in nature, not miracles. On the first Sabbath, how old did the earth look? Did the trees have rings in them? If they did, they had an implied history of years, not just days. Even without tree rings, Adam only had to look at the fact that the trees were fully grown, the stars were shining, and he was an adult to make the scientific conclusion that life was older than a week. In other words, when God told Adam it took a week to create the earth, Adam had to take it just as much on faith as we do today.

Summary and Conclusions

The interconnected way in which life works is compelling evidence for creation. From the information in DNA to the machinery of the cell that translates it into proteins all the way up to the way in which organisms interact with other organisms and are dependent on one another, all these things show that life is part of one massive integrated interdependent system. The integrated systems we see in life call for a plan before they were put in place. Yes, it is possible to come up with improbable and complex hypothetical alternative scenarios, but the most reasonable explanation is that life is part of an incredibly brilliant plan.

The Adventist church has clearly stated its position on the doctrine of creation. Adventist faith is based on a specific view of the Bible and its interpretation. In response to challenges posed by alternative views of Scripture and the nature of reality, the 2004 Fall Annual Council publicly affirmed the doctrine of creation.³¹ This public statement clarifies that Adventists believe the days of Genesis 1 and 2 to be literal days, not long ages, and also that these days were contiguous, not separated by thousands of years. The Bible-based Adventist view of creation is consistent with the observed design in nature, but stands in tension with prevailing scientific understanding of how the geologic column was formed.

To those who deny the existence of the Creator God, it may appear ironic that when Christians make the Bible their standard, their view of reality achieves a previously unresolved clarity. Our understanding of nature through empirical observation becomes more consistent with reason and logic when viewed in light of Biblical revelation than when human reason is relied on alone. No, all the answers are not in yet; that is why scientists (and theologians) still have jobs. Perhaps we will have to wait to ask the Creator himself why He allowed so much evil in nature, why tigers are such beautifully perfect instruments of death to other equally beautiful creatures, or why certain snakes have fangs that fold away when their mouths are closed and then swing out and forward when they open to strike. The nature of the flood, particularly the role of miracles, also remains an open question. Theologians have abundant questions about nature to struggle

³¹ This "Response to an Affirmation of Creation" can be found at: http://www.adventist.org/beliefs/statements/main_stat55.html

with, but none of these invalidate the obvious design in nature or the logical coherence of the Biblical understanding of the creation and the history of life on our planet.