

Creation Matters

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Excerpted from the new book *A Grand Origin for Grand Canyon*

Grand Canyon—Still a Major Geological Mystery

by Michael J. Oard

People are both humbled and exalted inside great cathedrals, both man-made and natural. Many natural “cathedrals” are awesome. One of the grandest and best-known natural monu-



FIGURE 1.1. Grand Canyon, northern Arizona (view north from Yavapai Observation Station, South Rim). The side Canyon in the lower right, where the North Kaibab trail is located, is Bright Angel Canyon, which was caused by the Bright Angel Fault.

ments is Grand Canyon (Figure 1.1). Pictures do not do Grand Canyon justice. We need to actually go there and see it for ourselves. When we do, we are easily moved, especially when staring down into its monstrous abyss.

Part of the mystique of Grand Canyon is the sense of surprise at first seeing an immense gash in the Earth, after traveling for many miles on the flat, boring surface of the southwest Colorado Plateau (Figure 1.2). In fact, the surface area around Grand Canyon is one huge planation surface, planed down by the erosive action of water during the removal of 6,000 to 10,000 feet (1,829 to 3,048 m) of sedimentary rock. The canyon’s immense size takes your breath away, and makes you doubt your own eyes. Once you begin to comprehend the true scale of the canyon, a battle begins.

Part of you wants to peer over the brink, while the other screams at the folly of getting too close to the edge.

Grand Canyon may not be the deepest canyon on Earth, but it is easily the most famous; the combination of its accessibility and awe-inspiring vistas makes it unforgettable.^{1,2} More than four million people visit Grand Canyon National Park each year. And for most of them, after the initial emotion subsides, a natural question arises: How did this immense canyon form?



FIGURE 1.2. Planation surface of the Grand Canyon area. View is north, northeast from the top of Red Butte. Notice the North Rim of the Kaibab Plateau in the background and how the Coconino Plateau (foreground) slopes up toward the east with the North Rim disappearing.

Mainstream geologists mystified

You would think that mainstream geologists would be able to tell you how Grand Canyon was carved. Despite 150 years of study and a steady stream of hypotheses that have come and gone, the short answer from mainstream geology is that *they do not know*.³

The canyon was initially explored by John Wesley Powell in his first daring

voyage down the Green and Colorado Rivers in 1869.⁴ He was told at the beginning that he was descending into the great unknown and would probably float off a huge waterfall. Well, Powell and his men did not fall over a waterfall, but they had plenty of harrowing adventures floating the huge rapids (Figure 1.3). Powell took copious notes on the geology of the canyon.

Since the days of Powell, knowledge of Grand Canyon and its geology, as well as that of the surrounding region, has mushroomed. Mainstream scientists periodically reach a “consensus” about the canyon’s formation (the last one was in 2010⁵), but then a new observation or hypothesis shatters the consensus, which leaves hanging another tantalizing, yet ultimately unsatisfactory hypothesis.

Many geologists admit to the mystery of the canyon’s origin. In a popular book



FIGURE 1.3. Floating the rapids on the Colorado River down Grand Canyon (courtesy of Tom Vail, Canyon Ministries).

on the geology of Grand Canyon, Greer Price admitted: “But while the principles of erosion, like so much of geology, are simple, the detailed history of the Colorado River and its canyons remains elusive and

... continued on p.6



Math Matters

by

Don DeYoung, PhD

Moon Math

The moon, our nearest neighbor in space, displays interesting numbers. Its distance from earth averages 239 thousand miles, or 1.28 light-seconds. In contrast, the Voyager 1 space probe, launched in 1977, is nearly 17 light-hours away, a manmade distance record.

The moon has a diameter 3.7 times smaller than earth and a mass 83 times less. As a result, lunar surface gravity is nearly six times weaker than it is here at home. A visitor to the moon weighing 200 pounds on earth would be reduced to just 34 pounds. However, overall lunar gravity remains impressive: the attractive gravity force between the earth and moon totals 2.2×10^{16} tons. This tremendous force holds the moon captive in its orbit, and also causes the ocean tides.

The moon's orbital speed averages 2288 miles/hour. Its "lazy" rotation period of 27.3 days results in a speed of just 10.3 miles/hour at its equator. This is 100 times less than the earth's equator rotation speed. Because of the combined motions of the earth and moon, the moon rises nearly an

hour later each evening. The moon shares equal time in our night and daytime sky.

As we noted in the previous issue of *Creation Matters*, the moon is receding outward from earth at about 3.8 centimeters each year (1.5 inches) due to tidal interaction. On the recent-creation timescale, the lunar distance has increased by about 230 meters, which is of little significance. On a 6,000 year time-scale, the moon has completed about 80,000 earth orbits since creation. As history unfolds across the earth, the moon continues its silent journey across our sky. Psalm 89:37 describes the moon as a faithful witness of creation (NASB):

It shall be established forever like
the moon,
And the witness in the sky is faithful.

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Weeping: A Trait Unique to Humans

by Jerry Bergman, PhD

Anatomists have found evidence of design even in the seemingly simplest body structures—such as the emotional tears called weeping or crying. Both of these terms are used in this review to describe the same behavior. In Chapter 6 of Charles Darwin's book *The Expression of the Emotions in Man and Animals*, titled "Special Expressions of Man: Suffering and Weeping," he described emotional tears as "purposeless" (1872, pp. 146–175). Partly due to the influence of Darwin, emotional tears were widely regarded as useless until recent research has documented that crying has an important role in health.

Many functions of tears

Tears are secreted by tiny, sponge-like glands located above the eye called **lacrimal glands**. Tears consist of such complexity that entire books exist on the subject. Biochemist William Frey (1985) spent fifteen years as head of a research team studying tears. His team found that, in contrast to the common belief that tear-production organs were useless, all of their secretions now are known to serve numerous critical body functions. Specifically, tears are complex mixtures of water, mucins, oils, and electrolytes that possess various bacteria-fighting substances which help to reduce the risk of eye infections (Cassel, Billig, and Randall, 1998, p. 233). Tears also produce a smoother optical surface for the cornea,

so that our vision remains clear; they also help keep the cornea properly moisturized and rich in oxygen. For the eye in general, tears also act as "wiper fluid," allowing the eyelids to wash the eye free of debris with every blink (Cassel, Billig, and Randall, 1998, p. 233).

All cells, including those of the cornea, require a watery environment, and tears prevent dehydration of the various eye mucous membranes. The average person blinks every two to ten seconds, and with every blink the eyelid spreads tear fluids over the eye's entire front surface.

The importance of tears can best be appreciated by understanding what happens when a person does *not* have them (Freese, 1977, p. 19). As people age, the tear film often becomes thinner and, as a result, can interfere with vision health. The "dry eye"

problem causes not only very painful burning sensations and redness, but, if severe, loss of its transparency often occurs, and ulcers eventually develop on the cornea (McFadden et al., 1996). The best solution is to treat the cause of the lack of tears, but artificial tears, such as methyl cellulose eye drops, are often prescribed to help patients cope (Freese, 1977, p. 19).

Unique to humans

Weeping is unique to humans—no other animal sheds emotional tears (Vingerhoets, 2013, p. 16). Weeping is a way of helping people to deal with their emotions, lending some support to the expression, crying "helps you feel better," both physically and physiologically. Persons who suffer from diseases that prevent them from crying—such as the rare inherited disease *familial dysautonomia*—tend to deal less satisfactorily with stressful events (Montagu, 1981). Consciously suppressing tears usually causes one to feel *worse* (Levoy, 1988; Frey et al., 1981).

This finding also highlights another difference between humans and animals. Emotional tears are a response that is unique to humans, because only humans are able to weep. All animals that have eyes and live in the atmosphere produce tears to lubricate their eyes, but no creatures except humans possess the system that causes weeping (Vingerhoets, 2013; Levoy, 1988; Frey et al., 1981).

One study at the St. Paul Ramsey Medical Center in Minnesota researched the differences between tears caused by irritants and those brought on by emotion. Volunteers were caused to cry, first by watching sad movies, and then by exposure to freshly cut onions. The researchers found emotional tears caused by the movie contained far more toxic biological byproducts than irritant tears. They found that *stress-induced* tears remove many toxic substances from the body, concluding that weeping is an excretory process that eliminates substances that can build up during times of emotional stress. The researchers also learned that emotional tears contain a twenty-four percent higher protein concentration than do tears caused by eye irritants (Levoy, 1988; Frey et al., 1981).

Frey and his coworkers noted that var-

ious toxic chemicals that built up in the body during stress were secreted by tears, thereby *lowering* stress. These chemicals include the endorphin leucine-enkephalin, which helps to control pain, and adrenocorticotrophic hormone (ACTH), one of the best-known indicators of stress. They concluded that suppressing tears increases stress levels, which can then contribute to diseases that are aggravated by stress, such as high blood pressure and heart disease (Wertenbaker, 1984).

Emotional tears are also stimulated by different sympathetic and parasympathetic nerves than are irritation tears. The fifth cranial nerve, for example, is involved in reflex tears, but not emotional tears. A topical anesthetic applied to the surface of the eye can inhibit both reflex and tears triggered by eye irritants, but not emotional tears (Levoy, 1988). Emotional tears are initiated in the brain's limbic system, the part of the brain responsible for emotions—both sad and happy, or painful and pleasant (Frey, 1981).

Human communication

Tears are also an extremely effective method of communication, usually eliciting sympathy faster than other means (Soltis, 2004). Weeping contributes not only to the individual's health, but also to the sense of community by deepening the observers' "involvement in the welfare of others" (Montagu, 1981, p. 32). Tears effectively convey that one is both sincere, and anxious to deal with a problem.

Although it is often observed that males are less likely to weep, and thus keep their emotions within themselves because of social conditioning, Frey's research (1985) found that adult women have serum prolactin levels almost sixty *percent* above those of the average male. This difference may help to explain why women, as a whole, cry about four times more often than males. Before puberty, the serum prolactin levels are the same in both sexes, and studies have found that the crying rate of males and females is far less similar after puberty (O'Mara, 1990).

Evolution of emotional tears

The fact that "shedding of emotional tears is restricted to humans raises a number of

questions,” such as what has caused the production of these tears to be hard-wired in humans, and why and how they evolved (Vingerhoets, 2013, p. 22). Vingerhoet reviewed eight theories purporting to explain the evolution of emotional tears, all of which he found to be problematic. He then proposed a new theory, which is also troublesome. The first problem is that most of these theories actually attempt to explain only why emotional tears exist, not how they evolved.

One example of a rejected theory includes the view that humans evolved from aquatic apes that lived in coastal areas and spent much of their time in water. This theory purports to explain “the large numbers of differences between humans and apes,” including the emotional tears (Vingerhoets, 2013, p. 23). A second rejected theory, called the Maclean theory, postulates that emotional tears evolved some 1.4 million years ago when some of our ancestors routinely burned the corpses of tribal members. The smoke from the fire caused tears in those near the fire that; in time, tears were also produced by emotions in other situations and contexts. Since this custom was local and not universal, it does not explain why tears became universal in humans.

Another theory is offered by Frey (1985), who proposed that emotional tears evolved to detoxify the blood, a conclusion based on the belief that the lacrimal system itself first evolved in order to excrete toxins. This theory only details their function, and does not explain how or why they have evolved only in humans. So far, no one has been able to explain how emotional tears evolved, and why they exist only in humans and in no other animal. Vingerhoets (2013, p. 24) adds that the problem is the question of why this system exists in no other animals that also experience much stress. Montagu (1959) proposed that tears evolved as a protective mechanism to prevent the rapid drying out of the eyes. Again, this only explains the function of tears, not the evolution or origin of emotional crying. Some of the other problems with this theory include:

1. Newborns do not produce emotional tears during the first few weeks of life, when they are both the weakest and most vulnerable.
2. Tears only wet a portion of the structures that are prone to drying.
3. Other mammals, when stressed, make noises (e.g., bleating, bel-

lowing, roaring) which are not accompanied by tear production.

4. During other human activities that are accompanied by extreme levels of inhalation and exhalation (e.g., intense physical exercise, shouting, singing), no increased moistening by lacrimation occurs (Vingerhoets, 2013, p. 24).

Tears and creation

Atheists commonly argue against creation by concluding that “design arguments from nature are untenable, by the simple fact that nature is not as beautifully designed nor as ‘perfect’ as believers would have us think” (Shermer, 2000, p. 94). The most common example of “bad design,” the human eye and its support system, is an example that has been conclusively refuted by numerous studies (Bergman, 2000; Ayoub, 1996; Marshall, 1996). Production of emotional tears is only one example of good design that is a small part of the complex visual system.

Conclusions

Among the creatures with eyes capable of producing tears, only humans have the ability to shed emotional tears. Weeping is one of many body processes that usually functions so well that we often take it for granted. Research has shown that this seemingly simple process of emotional release is both a complex and a necessary part of a healthy life.

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Pain

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Editor's note: You may submit your question to Dr. Jean Lightner at jean@creationresearch.org. It will not be possible to provide an answer for each question, but she will choose those which have a broad appeal and lend themselves to relatively short answers.

Q Were there pain receptors prior to the Fall?

A The receptors the body uses to detect pain, termed “nociceptors,” would have been present and useful, even before the Fall. So the basic system would need to have been present, but that does not mean there was pain, as we perceive it, before the Fall.

Sensory receptors

The human body is designed with numerous receptors that can detect important stimuli in and around us, so that we can respond appropriately (Wikipedia, 2016a; 2016b). For example, chemoreceptors enable us to detect odors in the air (olfactory receptors), tastes in our food (gustatory receptors), oxygen levels in our blood, and a variety of other important chemicals to which our body may need to respond. We also have baroreceptors, which monitor blood pressure in the blood vessels, and proprioceptors that enable us to sense our position and keep our balance. We have receptors that detect light (photoreceptors), temperature (thermoreceptors), and a variety of other stimuli. The receptors that respond specifically to damage or potentially harmful stimuli are known as nociceptors.

It is well known that stimulation of nociceptors does not automatically result in pain; processing of the information by the central nervous system is also involved. Pain perception is highly individual, subjective, and can vary depending on circumstances. This multi-dimensional, complex ability to detect pain has been divided into at least three components. The first (**sensory-discriminative**) involves identifying characteristics of the stimulus such as intensity, location, quality (e.g., heat, cold, pressure), and duration. The second dimension (**affective-motivational**) involves the motivation to remove oneself from the stimulus. This motivation can be associated with pain, but does not have to be. Finally, the third component (**cognitive-evaluative**) involves other factors which affect the perception of pain, including cultural values, context, and cognitive state (Moayed and Davis, 2013).

Pain Receptors Prior to Curse?

Nociception, or the ability to detect damage or potentially harmful stimuli, is essential to life. In rare cases where this ability is missing, the result includes adverse outcomes such as unnoticed infections, self-mutilation, and shortened lifespans. However, it is important to recognize that the response to such stimuli is not rigid. Various factors in the central nervous system can modulate the response to the stimuli and the perception of pain. This can include adaptive or maladaptive shifts in the pain threshold. Further, it appears that there is integration between nociception and non-nociceptive pathways, which allows for crosstalk at multiple levels (Dubin and Patapoutian, 2010). All this highlights the complex, well-integrated design of the system.

Given our current understanding of nociception, then, it should be apparent that such a system would be valuable from the beginning of creation. Just as Adam needed proprioception, enabling him to detect his position so he could make adjustments to avoid losing his balance, he would also need nociception, to be able to remove himself from circumstances that would otherwise be potentially harmful. He need not have sensed pain, as such. Simply the ability to sense a need to remove himself from something potentially damaging would be sufficient in a “very good” creation.

The effect of the curse

The world changed dramatically after the Fall and subsequent Curse (Genesis 3). The Bible speaks of brokenness in relationships (including fear and blame), an increased perception of pain (v. 16), and the appearance of thorns and thistles (v. 18). All of this suggests that there were multiple changes in the world that now allowed for pain and suffering.

First, there seems to have been a dramatic increase in the exposure to noxious stimuli. Thorns and thistles were likely not encountered previously, and the same is likely true of the jabbing pain they can cause. Violence soon became part of the world (Genesis 4:8, 23; 6:11–13), where there was the intention of inflicting harm. So the appearance of natural and moral evil would greatly affect the probability of encountering painful stimuli.

Second, there seems to have been a change in the perception of pain, at least under some circumstances. There is really no fundamental reason why pregnancy and childbirth need to be painful. Certainly the perception of mild discomfort or the feeling one needs to change her position would be expected. Yet, despite the rapid changes during labor and delivery, these processes need not be painful to accomplish the necessary task. The Bible makes it clear that this pain was part of the Curse (Genesis 3:16). In other contexts, maladaptive changes in the nociceptive system can result in chronic pain.

Finally, there seems to have been a cultural/cognitive shift that could add to the perception of pain. Once mankind sinned, they hid from God, indicating brokenness in their relationship with their Maker. They responded to being confronted with their sin by blaming others. The Curse makes it evident that this conflict between themselves (Genesis 3:16) and the world around them (Genesis 3:15, 17–19) would continue. Thus, a third dimension (cognitive-evaluative) of pain perception would have been impacted by the Curse.

Summary

The system that allows us to perceive pain, nociception, was likely present from the beginning of creation. It allows us to remove ourselves from potentially harmful circumstances. Nociceptor activity does not always result in the perception of pain. A lot has to do with how the signals are processed, and different people may perceive pain differently. Absence of the unpleasant sensation we call pain before the Curse was likely due to multiple factors, including the lack of exposure to painful stimuli, and differences in how the signals were processed. Clearly, the maladaptive changes in the normal physiological mechanisms that underlie a variety of pathologies involving chronic pain, appeared post Curse.

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Grand Canyon Mystery

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difficult to grasp.”⁶ In another popular book, mainstream geologist Wayne Ranney repeatedly noted how little is actually known about the origin of Grand Canyon:

The canyon’s birth is shrouded in hazy mystery, cloaked in intrigue, and filled with enigmatic puzzles. And although the Grand Canyon is one of the world’s most recognizable landscapes, it is remarkable how little is known about the details of its origin.⁷

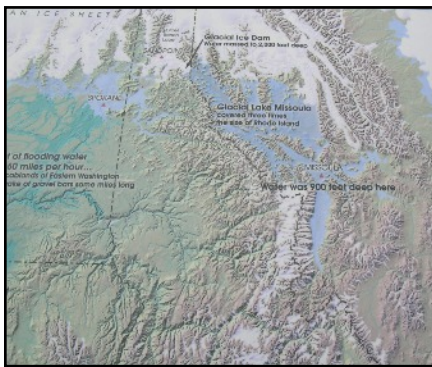


FIGURE 1.4. Map of glacial Lake Missoula at a geological stop on the northern end of Lake Pend Oreille.

The lack of a viable hypothesis for the origin of Grand Canyon is an embarrassment to uniformitarian geologists⁸ because they have always considered the easily accessible canyon to be a *showcase* for uniformitarian geology, in contrast to explanations having to do with the Flood.⁹ It is only a showcase for those who do not know much about the controversies over the canyon’s origin. Mainstream geologists also realize that there are competing ideas between mainstream geologists and creationists:

The famous landscape of the Grand Canyon lies along the front lines of competing scientific and nonscientific [i.e., creationist’s] views of Earth’s antiquity and evolution.¹⁰

So, it is a tremendous embarrassment to still have no explanation for the origin of Grand Canyon after all these years. That is why mainstream scientists write a lot of research papers and gather together for major meetings on the subject every few years.

What is holding up a real explanation for the canyon? In short, it is because of mainstream geology’s assumptions that undergird all of the hypotheses. It is the paradigm of uniformitarianism and its

intellectual offspring, millions of years, that ties their minds.¹¹ Grand Canyon’s origin requires a catastrophic explanation—a great inundation by water—as will be shown. Their stubborn refusal to recognize the history found in Genesis has resulted in a framework that will always end in confusion. This book will demonstrate that a shift in historical perspective to the Genesis Flood allows the development of a hypothesis that provides a reasonable solution to the mystery of the origin of Grand Canyon.

Two creationist hypotheses

Creationists are like most other scientists; they develop multiple competing hypotheses to explain natural phenomena. Therefore, it is not surprising that they have two well-established hypotheses on the origin of Grand Canyon. One of these ideas is that Grand Canyon was formed after the Flood by the breaching of rock-dammed lakes east and northeast of the canyon. The second hypothesis postulates that the canyon was carved by late-Flood channelized erosion. We will examine both of these explanations, but we must keep in mind that when it comes to ideas of the past, combined with the many unknowns in geology, “we see in a mirror dimly” (1 Corinthians 13:12).

1) The dam-breach hypothesis

The “dam-breach” hypothesis is so named because it envisions the creation of Grand Canyon by the catastrophic breaching of rock dams of either two or three lakes, believed to have existed east and northeast of Grand Canyon.^{12,13,14} The dam-breach hypothesis was developed in the mid 1980s, and although there are presently three variations on the theme, all agree that the canyon was carved *after* the Genesis Flood.

The dam-breach hypothesis has received the most attention and is the best developed of the creationist hypotheses. In fact, I once favored this idea until I was asked whether Ice Age precipitation would have been sufficient to maintain the water levels of the post-Flood lakes, for a period of time long enough for the lakes to fill and then overflow, breaching the dams. Having studied the Ice Age for over 35 years,^{15,16,17} I was able to estimate that the early Ice Age precipitation in the southwest United States would have been about four times the present rate, with less evaporation.¹⁸ At this rate, the lakes would not only have been maintained, but their water levels would have risen rapidly. At some point, they should have overflowed their basins.

But while working on the meteorology

of the Ice Age, I began to investigate several geological issues regarding this hypothesis. Several glaring issues became apparent that were not particularly supportive of the hypothesis. While still holding to the hypothesis, albeit loosely, I pointed out the geological problems in the hope that one of the dam-breach advocates would provide answers:

I am not against the dam-breach theory and will await further evidence before making up my mind. However, the geological evidence does not seem favorable to the dam-breach theory.¹⁹

Having spent little time since 1993 thinking about these issues, I had moved on to other research projects, but in about 2005 I revisited the hypothesis. I have spent much time studying the geomorphology of the Lake Missoula flood at the peak of the Ice Age.²⁰ The evidence for glacial Lake Missoula (Figure 1.4), and for the breaching of its ice dam in northern Idaho, is clear and convincing. The erosional and depositional trail of the flood water from that large local catastrophe have left their signatures on the land from western Montana to the Pacific

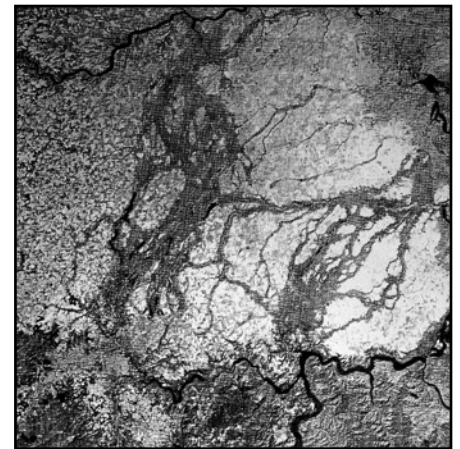


FIGURE 1.5. Satellite picture of eastern Washington showing the path of the Lake Missoula flood. (Landsat image courtesy of NASA) The flood eroded the light colored silt and exposed the black basalt, which shows up like a braided stream bed, but about 100 miles (160 km) wide.

Ocean, especially in the Channeled Scablands of eastern Washington, as seen by satellite (Figure 1.5).

As I studied that event, it struck me that the flood that would have carved Grand Canyon according to the dam-breach hypothesis should have had at least some geomorphological similarities to the Lake Missoula flood. During my re-study of Grand Canyon, I also realized that there

were even more geological problems with the dam-breach hypothesis than I had previously thought back in 1993, and that the hypothesis itself was the cause of these conundrums.

2) Late-Flood channelized erosion hypothesis

The second creationist hypothesis posits the formation of the canyon during the retreat of floodwater from North America at the end of the Genesis Flood. This idea depends on the canyon's forming rapidly as the ebbing floodwater became restricted to channels, as higher elevations were uncovered, and as water began to be diverted toward lower elevations. This idea was introduced by Whitcomb and Morris²¹ and has continued to be supported by others.^{22,23} However, these authors have only addressed the problem in a cursory manner; none of them fully developed the idea. During my continuing studies, I have found this idea to be the most satisfying with regard to the data, and it is my purpose in this book to develop and defend this hypothesis.

Notes and references

Editor's note: This excerpt is from M. Oard, 2016, A Grand Origin for Grand Canyon, Creation Research Society Books, Chino Valley, AZ, pages 2–8.

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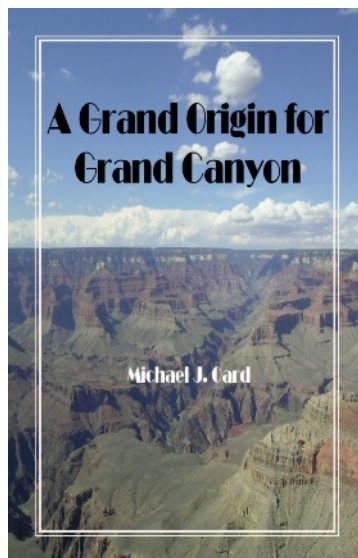
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by John K. Reed, PhD

“Fundamental Principle” of Geology is Wrong, Part I

Secular natural history has altered the intellectual landscape of the West. Geologic history has been a driving force. How then should creationists address geology? As a hybrid of science, history, and philosophy, it is held together by the fundamental principle of uniformitarianism. Despite challenges by neocatastrophism, the necessity of uniformitarianism as a philosophical (or psycho-social) touchstone has resulted in a recent retrenchment by geologists (e.g., Miall, 2015). Its flaws are an acceptable risk because its fall would unravel naturalism (Reed, 2013).

If geologists are determined to play out this hand, then creationists must respond. At a severe disadvantage in money, infrastructure, and man-hours, we can employ strategies of asymmetrical warfare. For example, conflicts over empirical data play to secular strengths where thousands of geologists stand ready to answer, confuse, or overwhelm with irrelevancies. Thus, creationists should leverage their strength — truth — in attacking a target that is both vulnerable and crucial. That target is uniformitarianism.

First weakness: semantics

If purposeful equivocation is a hallmark of deceit, then uniformitarianism is a deceitful concept. Unfortunately, it took over 150 years for Gould (1987) to unmask Lyell’s fundamental dishonesty of camouflaging his view of history using Newtonian uniformity. Gould compared it to Odysseus clinging to the bottom of the cyclop’s sheep. Like “evolution” (“change” vs. molecules to man narrative), equivocation is a neon sign pointing to deception.

This equivocation is a weakness. Any word that cannot be precisely defined is being used in a rhetorical, not a rational, fashion. In fact, given that secular geologists did not even address the problem until the 1960s, it can be argued that it was *only* equivocation that allowed Lyell’s natural history to seize geology from catastrophism (Reed, 2010; 2011).

Hooykaas (1963) discussed the multiple meanings of the word, and the 1960s marked a decade in which the uniformitarian dike began to crack. Ironically, Gould (1965; 1975; 1984) was one of its saviors;

instead of backpedaling, he simply proposed making the equivocation explicit by “discovering” four definitions of uniformitarianism, which allowed geologists to discard the inconvenient parts. His suggestion (Figure 1) was echoed by Rudwick (1971) and Austin (1979). This solved the immediate problem, but the new flexibility opened the door to neocatastrophism.

Geologists are today caught on the horns of this dilemma. They cannot acknowledge that their entire historical geology was built on a lie, yet they no longer retain the true Lyellian sense of the word upon which their discipline was built. They must hope that the postmodern loss of truth will muddy the waters around their “fundamental principle.” That is the essence of Miall’s (2015) reassertion that uniformitarianism is still the fundamental principle of geology.

Conclusion

Uniformitarianism is basic to geology, but is also its greatest vulnerability. Two centuries of equivocation point to a flawed understanding of the past, and suggest that the entire history of geology falls under a cloud. In the next issue, we will explore other vulnerabilities of uniformitarianism.

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	Gould (1965; 1975, 1984)	Rudwick (1971)	Austin (1979)
methodological	<u>uniformity of law</u> a priori claim about science; laws same over time, space	<u>theological status</u> primary act of God secondary, “naturalistic” manifestation	<u>methodological uniformitarianism</u> agreed with Gould that this is an a priori claim about science
	<u>uniformity of process</u> actualism	<u>methodological status</u> past geological causes same as present; “actualistic” vs “non-actualistic”	<u>causal uniformitarianism</u> argued for both known present causes, unknown present causes, and unique past causes
substantive	<u>uniformity of rate</u> gradualism	<u>rate</u> gradualistic or saltatory	<u>actional uniformitarianism</u> uniformity of process rates
	<u>uniformity of conditions</u> non-directionalism, dynamic steady state	<u>“pattern” of past geological cause</u> steady-state or directional	<u>configurational uniformitarianism</u> steady state conditions through time

FIGURE 1. Gould (1965) suggested that uniformitarianism was both “substantive” and “methodological.” This led to his four definitions which was anticipated by Rudwick (1971) and modified by Austin (1979). Since the schemes of Hutton and Lyell are no longer accepted as such, and since uniformity in general is a presupposition of science in general, then only his second definition is operative for geology as a particular discipline (c.f., Reed, 2010).

Speaking of Science

from the Creation-Evolution Headlines

by David F. Coppedge

Editor's note: These S.O.S. (Speaking of Science) items have been selected from "Creation-Evolution Headlines" by David F. Coppedge at <http://crev.info> and are used by permission. Unless otherwise noted, emphasis is added in all quotes.

Communism Left Science in Ruins

Two articles comment on the devastation wreaked on science by atheistic, totalitarian regimes.

Russia: Avi Loeb only refers briefly to Soviet Russia in an article in *Nature*:

The consequences of a closed scientific culture are wasted resources and misguided 'progress' — **witness the dead end that was Soviet evolutionary biology**. To truly move forward, free thought must be encouraged outside the mainstream. Multiple interpretations of existing data and alternative motivations for collecting new data must be supported.¹

The Harvard astronomer writes about his experience visiting Mayan ruins in Mexico, pondering the worldview blindness that prevented them from understanding what they so carefully calculated with their astronomical observations. He wonders if modern cosmologists have a similar blindness. The only way forward, he concludes, is to think outside the box, staying open to alternative explanations for data. The Soviets provide a bad example, because all Soviet science had to support the regime. Lysenko's evolutionary biology was a dead end in more than one sense. It led to famines in Russia and China that killed millions of people.

China: It has taken 50 years to recover from the "Cultural Revolution" instigated by Chairman Mao, says *Medical Xpress*.

For scores of years after the first medical school opened in China in 1886, the country progressed in building a medical education system for its fast-growing population. Then 50 years ago, **it not only came to a screeching halt, but to a full reversal with the Cultural Revolution**.

"Indeed, throughout the decade in question (1966 to 1976), **all extant medical schools were effectively shuttered and their faculty disbanded**," write the authors of a new paper describing the history and current status of China's medical education system. "It was only in the **aftermath of the Cultural Revolution and the passing of Chairman Mao Zedong** in 1976 that the medical education enterprise embarked on a **slow recovery process** during which some of the schools affected were allowed to reopen."²

Even today, the recovery is barely underway, the article says. Today's Chinese should be alarmed that the current president has been given the same dictatorial title Mao had. In *The Briefing*³ for November 1, commentator Albert Mohler reports that "China elevates President Xi to 'core' leader, joining the ranks of Mao Zedong and Deng Xiaoping." He considers the possible implications of investing that kind of totalitarian power in one man for a country that has suffered so greatly under previous "core leaders."

One Vote, One Time: Sadly, dictatorial regimes don't always die with their dictators. "When dictators die, stability reigns," says Erica Frantz, political scientist at Michigan State on *PhysOrg*.

"We can therefore infer that **dying dictators leave behind a set of players who support the status quo** and the perks that it affords them," the study says. "Such individuals have a **strong incentive** to converge on the selection of a successor in order to **preserve their privileged access to the spoils of office**."⁴

Chairman Mao died in luxury with no regrets for the suffering he had caused. Stalin was afflicted with a stroke while he was considering world conquest. And so decades after the famous communist dictators died, we have Xi in China, and Putin in Russia. Whatever research their scientists perform must be done to advance the regime.

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Solar System Theories Challenged

"Everything we know about the formation of solar systems might be wrong," say two astronomers who discovered something "very bizarre."

You're not supposed to be able to find a brown dwarf (too small to ignite fusion) and a hot Jupiter close in to a young star. There's not supposed to be enough material for such things to form around a stellar dust disk. But that's just what an astronomy professor and his postdoc at the University of Florida found: a "binary-binary" that **"calls solar system formation into question."**

Everything we know about the formation of solar systems might be wrong, says University of Florida astronomy professor Jian Ge and his postdoc, Bo Ma. They've discovered the first "binary-binary" — **two massive companions around one star in a close binary system**, one so-called giant planet and one brown dwarf, or "failed star." The first, called MARVELS-7a, is **12 times the mass of Jupiter**, while the second, MARVELS-7b, has **57 times the mass of Jupiter**.

Astronomers believe that planets in our solar system formed from a collapsed disk-like gaseous cloud, with our largest planet, Jupiter, buffered from smaller planets by the asteroid belt. In the new binary system, HD 87646, the **two giant companions are close to the minimum mass for burning deuterium and hydrogen**, meaning that **they have accumulated far more dust and gas than what a typical collapsed disk-like gaseous cloud can provide**. They were **likely formed through another mechanism**. The stability of the system despite such massive bodies in close proximity **raises new questions about how protoplanetary disks form**. The findings, which are now online, will be published in the November issue of the *Astronomical Journal*.¹

The two stars are only as far apart as Uranus is from the sun. The giant planets are 0.1 and 1.5 AU from the larger star. "For

... continued on p. 10

Mutations

Evolutionists like to imagine that mutations, which are changes in the DNA sequence, provide a mechanism that can account for new genes and new genetic information which would allow one type of organism to eventually change into another. There are some known mutations that are adaptive; that is, they help the organism to better survive, grow, and reproduce in a particular environment.

Evolutionists *assume* that such examples support their view, and often parade them in front of creationists. One of their favorite examples of adaptive change involves bacteria (*E. coli*) that have acquired the ability to use citrate when oxygen is present; this is a new trait for these bacteria.

In the Special Genetics issue (Spring 2016) of the *Creation Research Society Quarterly* (CRSQ), Dr. Kevin Anderson looks at the details of the long-term experiment involving these bacteria.

It turns out that they always could use citrate when there was no oxygen, but genetic mutations have now made it possible for the bacteria to use this energy source under a broader range of conditions. Interestingly, the changes involved the rearrangement of some genes, the loss of pre-existing gene expression, or the loss of pre-existing genetic regulation. What was conspicuously missing was an example of a **new** gene or regulatory system.

The changes which have been observed are going the wrong direction for the evolutionists!

Anderson, K. 2016. Citrate utilizing mutants of *Escherichia coli*. *CRSQ* 52:309–324.

God designed humans and other creatures to be able to adapt so they could fill the earth (Genesis 1:22, 28; 8:17; 9:1; Isaiah 45:18). In certain instances, this may involve genetic changes, or mutations. Unlike the evolutionary proposal that these mutations are simply random, or undirected in any way, creationists have proposed that there must be design involved for them to appear when and where they are needed.

Is there any evidence of this? In the Special Genetics issue of the *CRSQ*, Dr. Jean Lightner discusses details about DNA editing that occurs within our immune system, enabling us to make antibodies. One of the DNA-editing enzymes involved, activation-induced cytidine deaminase (AID), is examined in depth, revealing what is currently known about how it is controlled so that it works when and where it should. Several lines of evidence suggest that this enzyme could be at work in cells that are passed on to the next generation. This article provides a foundation for future research in this area.

Lightner, J.K. 2016. Adaptive genetic changes by design: A look at the DNA editing by activation-induced cytidine deaminase (AID). *CRSQ* 52:265–274.

*Continued creation research is made possible by the generous gifts (time, money, and prayers) of our many supporters.
Thanks to all who have contributed!*

Galaxies

Creationists have long speculated that our galaxy might occupy a special place in the cosmos. Such a possibility (highly improbable in a naturalistic origins scenario) is fiercely rejected by secular cosmologists, as this would strongly suggest design. For instance, it has been suggested that galaxies might preferentially lie in spherically-concentric shells centered on our own galaxy. In order to test for such a possibility, it is necessary to know at least the approximate distribution of galaxies in our “local” cosmic neighborhood. However, many galaxies are too dim to be seen.

In the Winter 2016 issue of the *CRSQ*, Drs. Jake Hebert and Jason Lisle of the Institute for Creation Research present a two-part series that explains and demonstrates a technique that may be used to estimate the true distribution of galaxies, given the galaxies that we actually can detect. Such methods are often poorly explained in the technical literature, so it is hoped that these two papers will be helpful to future creation researchers working in this field.

Hebert, J. and J. Lisle. 2016a. A Review of the Lynden-Bell/Choloniewski Method for Obtaining Galaxy Luminosity Functions: Part I. *CRSQ* 52:177–188.

Hebert, J. and J. Lisle. 2016b. A Review of the Lynden-Bell/Choloniewski Method for Obtaining Galaxy Luminosity Functions: Part II. *CRSQ* 52:189–199.

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Speaking of Science ...continued from page 9

such large companion objects to be stable so close together **defies our current popular theories on how solar systems form**,” the press release says. It took eight years and multiple methods of observation to confirm this “very bizarre” system.

Previous coverage on the discoveries on Pluto that challenge theories of solar system formation were discussed in the *Creation Evolution Headlines*², some of which was featured in *Creation*

Matters 20(4): 10–11, 2015.

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How to Answer the Big Questions

John Reed's "Facades and Foundations" contribution to the July/August 2016 issue of *Creation Matters*, "The Fallacy of Historical Science" concluded that "history is not science," and I heartily agree. His whole article struck me as insightful and important, but there is more to the story.

When a scientist puts on his scientist hat, he works on observing and understanding nature and the laws of nature through the scientific method. This naturally requires the presupposition that no appeal to a miracle or supernatural intervention belongs in a scientific explanation of any observation or phenomenon of nature. Even creationists should accept this presupposition in this context. We recognize that God instituted all of the laws of nature, including those that apply to the strong nuclear force, but would we want a nuclear physicist to teach that God miraculously prevents protons in the nucleus of an atom from flying apart, and that's all there is to it?

Suppose a scientist takes off his scientist hat and puts on his historian hat to work instead on an alternative story of the origin of the universe and of life on earth. This is a different kind of work indeed, as Reed explained, but the same presupposition remains. The story must not appeal to a miracle or supernatural intervention, or else it would be classified as myth or superstition and certainly not accepted as scientific.

Why does this matter? It affects how we answer a big question. Were the universe and life on earth created by God miraculously only a few thousand years ago, or did these things evolve gradually over billions of years without any supernatural intervention? The first alternative answer would be eliminated immediately, because under the no-miracle presupposition, any miraculous story is judged unacceptable

regardless of the evidence. This point is easily missed, but Jason Lisle has spoken about it. (Sherwin, 2016)

It might be helpful to consider a thought experiment based on New Testament accounts of the miraculous feeding of a multitude with a boy's lunch (Matt. 14:13–21; Mark 6:30–44; Luke 9:10–17; John 6:1–15). Suppose a scientist studied the leftover food and developed a story to explain its origin. The story would probably include many events that never happened in real history, like fishing trips and countless cycles of planting and harvesting barley. If the true story involved a miracle, as claimed, then the scientist would be sure to get it wrong. Mysteries could come to light during the investigation, but would an agnostic scientist lacking a ready explanation ever be inclined to invoke a miracle? No way!

In the final analysis, belief that a miracle was involved is rationally based on personal experience or on testimony deemed credible. Conversely, belief that no miracle was involved is normally based on a rejection of such testimony or on a commitment to the no-miracle presupposition (or both). We walk by faith (2Cor. 5:7), regardless of which way we go.

—Thomas James Godfrey

Sherwin, F. 2016. Creation Research Society Conference 2016. *Acts & Facts* 45(10):21.

we perceive as "natural processes" (e.g., atoms holding together) and "miracles" (e.g., Exodus). Theologically, the former is called God's "mediate providence" and the latter, God's "immediate providence" (cf., Reed and Williams, 2011).

Both are still works of God, and truth demands that they play a role in how we think about science or history. Unfortunately for secularists, this theological approach punctures the illusion of human infallibility. Christians who want a "middle ground" confuse "science" with "natural revelation," which it is not. Both science and history are inherently limited, though both are amazing means by which we can understand truth about nature or the past in a fallen world. Science simply has more self-correcting mechanisms. That is why natural historians want to be "scientists." They desire the implied certainty of a method that is distinct from that of natural history.

—John Reed

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Reed, J.K. and P. Klevberg. Battlegrounds of Natural History, part III: historicism. *Creation Research Society Quarterly (CRSQ)* 51(4):177–185.

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Dr. Reed's Reply

I thank Mr. Godfrey for his kind words. The presupposition of *methodological* naturalism, pushed by secularists, should be viewed suspiciously by Christians; it is an open door to *philosophical* naturalism. "Provisional atheism," as it was called by Plantinga (1997), is contrary to the biblical view that God maintains and upholds his creation by his providence, which includes both what

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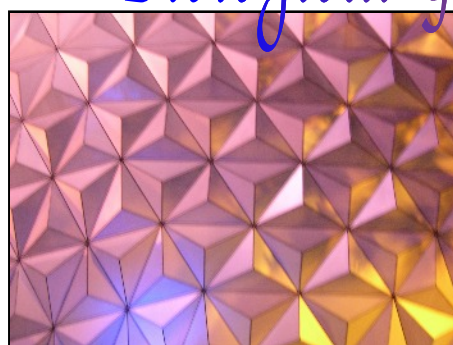


All by Design

by Jonathan C. O'Quinn, D.P.M., M.S.

The most efficient building system ever designed is called the geodesic dome, a marvel popularized by R. Buckminster Fuller in the 1950's. It carries a given load with an absolute minimum mass of building components, deriving its strength and support from a continuous and equal distribution of tension throughout the structure. The structure is usually spherical or dome-shaped, and made of rigid struts which are connected in various shapes such as triangles, pentagons, and hexagons, to name a few. Well-known examples of geodesic forms, as any vacationer can tell you, are the Houston Astrodome and the Walt Disney Epcot Center.

Surprisingly, scientists have discovered that many geodesic forms can be found throughout nature. For example, viruses have a triangular geodesic viral coat that encloses their viral genetic material. Even a component of the cell's internal skeleton, the microfilament network, forms a roughly spherical meshwork of interconnecting geometric forms.



Night-time reflections on the geodesic-dome surface of Spaceship Earth, EPCOT Center.
Photo by G. Wolfrom.

Buckyballs, a bizarre chemical structure in the exact design of a soccer ball, are comprised of 60 carbon atoms arranged in a geodesic sphere of 20 hexagons and 12 pentagons, usually with a potassium ion fixed in the center. The buckyball's 90 carbon-carbon bonds serve as the sphere's struts. The discovery of buckyballs has led to whole new fields of research in chemistry and medicine.

Biological Geometry

How, then, did buckyballs originate? Buckyballs are not living, so they cannot mutate or be subjected to natural selection! As Dr. DeYoung has noted, the chemical laws responsible for their formation have been in existence since Creation Week. Nature's highly-ordered geodesic forms offer startling evidence of purposeful design.

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