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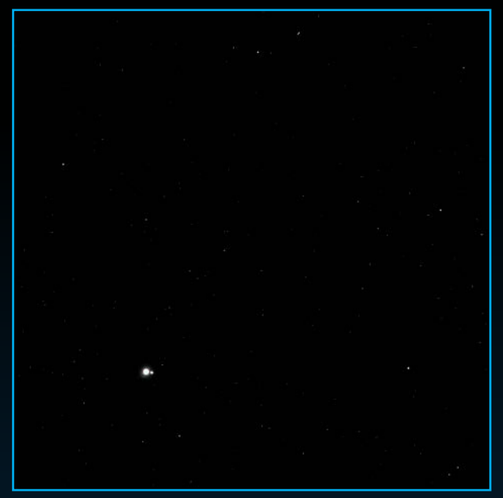
A blinding light descends on Eden in the creation of man and the animals. Etching by J.E. Ridinger, c. 1750



Earth & Moon: From NASA's Messenger Spacecraft - May 6, 2010

LM Approaches CSM For Docking: July 21, 1969

On The Cover: GOES 16 Weather Satellite, August 6, 2017

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Haec Credimus

For in six days the Lord made heaven and earth, the sea, and all that in them is, and rested on the seventh.—Exodus 20:11

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Earth as viewed from NOAA satellite GOES-16.
Courtesy NOAA/NASA.

Back cover:
View of the earth and the moon from the MESSENGER spacecraft orbiting Mercury. Courtesy NASA.
LM approaches CSM for docking on July 21, 1969. Earthrise in the background. Courtesy NASA.
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Send papers on all subjects to the Editor:
CRSQeditor@creationresearch.org or to
Danny R. Faulkner, 1414 Bur Oak Ct,
Hebron, KY 41048.

Send book reviews to the Book Review Editor:
Don B. DeYoung, 200 Seminary Dr.,
Winona Lake, IN 46590, dbdeyoung@grace.edu.

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Getting Worldview Wrong: Philosophical Mistakes in Understanding Worldview

Steven Chisham*

Abstract

Using a novel definition for "knowledge," this article lists several philosophical mistakes resulting from underestimating, overestimating, or misunderstanding the nature and/or limits of worldview. These mistakes serve as tutorials for understanding worldview as a truth-predictive component of man's finite epistemological framework, approximating and/or simulating perfect knowledge of reality for purposes of decision making.

Introduction

Many works related to "worldview" have been written over the last 250 years; however, seemingly obvious philosophical mistakes were being made, primarily because the term lacked clear, systematic definition. Consequently, Chisham (2012, 2014, 2015) set out to assemble a working set of mechanics to explain worldview's existence and functionality. What emerged was a decision-based epistemology (whereas contemporary and traditional epistemologies focus on perception). Chisham (2018) then surveyed traditional and contemporary approaches to worldview, observing that worldview may be evaluated from the perspective of time, by discussing categories it affects, or observing effects from natural (e.g., mortality and language) or conventional (e.g., religion and nationality) boundaries.

Having understood these things, it now seems instructive to discuss some common philosophical errors to demonstrate why correctly understanding worldview's structure and nature is critical. In order to do so, however, first "knowledge" appears to be another key term requiring clarification, for it provides the fundamental components worldview uses.

The Nature and Definition of Knowledge

One reason this decision-driven worldview epistemology will look different from virtually every philosophic tradition lies in its understanding of "knowledge." Platonist Alvin Plantinga (1993, p. v) traces the history of this age-old question:

> In *Theaetetus*, Plato sets the agenda for Western epistemology: What is knowledge? More exactly, what is it that distinguishes knowledge from mere true belief? What is this elusive quality or quantity enough of which, together with truth and belief, is sufficient for knowledge?

Cartesian Lawrence Bonjour (2010, p. 30) posits an answer to Plato's question:

> A useful way in which this point is sometimes put is to say … knowledge is a "success" concept.… The aim of the cognitive enterprise is truth: we want our beliefs to correctly describe the world.… according to the traditional account of knowledge, we attempt to accomplish this by seeking beliefs for which we have good reasons or strong justification. When this endeavor is successful … we have knowledge; when it fails, when … strongly justified beliefs are

* Steven Chisham, Wichita, KS, S.Chisham@SBCGlobal.net
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> not in fact true, we have only what might be described as "attempted knowledge."

Anthony Liska (2016, p. 34), a Thomist, comments:

> The principle statement of [Aquinas's] theory [on mind and knowledge] asserts that knowledge is the 'having of a form of another without its matter.'

The unexamined Thomistic presumption is this "having" is binary. You either possess all its essence or none; there is no middle ground. Chisholm (1982, p. 177) complains:

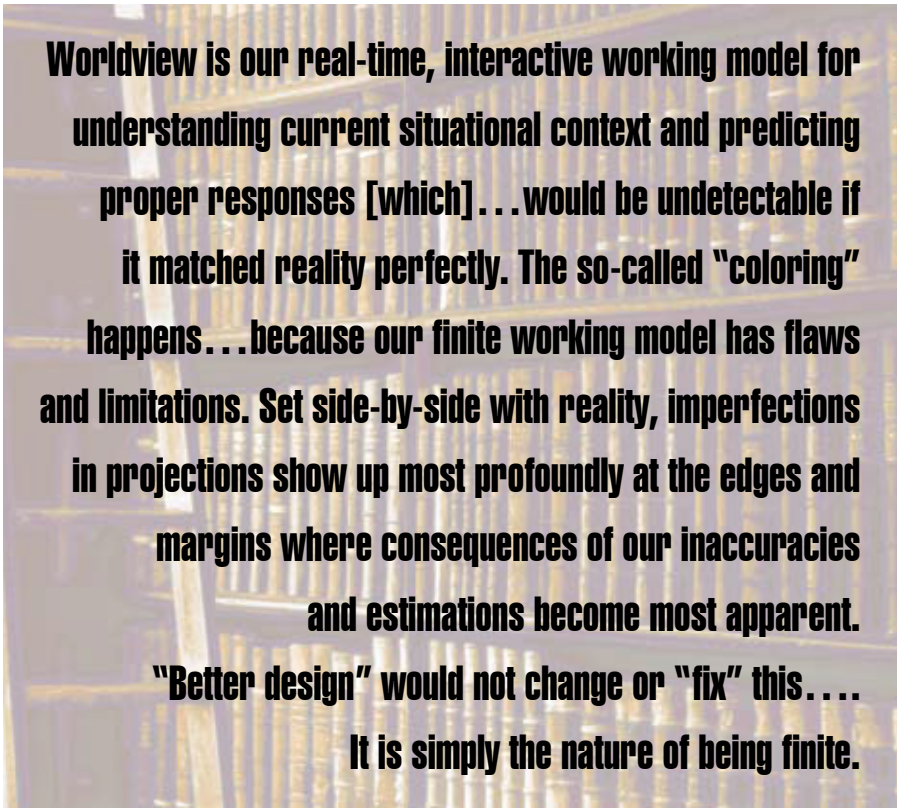
> Aristotle taught that, in knowing, the soul "receives the form of the object" and that "actual knowledge is identical with its object." … This doctrine, which was developed by Thomas Aquinas and his commentators … could be taken to say that, when [a] man perceives a dog, then the *man*, or his soul, takes on *all* the characteristics of the dog, though without becoming "identical with the matter" of the dog, and that when the man perceives a dog and a bird together, then the *man* becomes "formally identical" with the *dog*, and *also* with the *bird*. There have been many attempts to make this doctrine intelligible, but I cannot feel that they have been successful.

Initially, I used the term "data" rather than "knowledge" (Chisham, 2012) because it better described informational macro-trends and avoided pitfalls and philosophical trappings in the term "knowledge." That also turned out an unfortunate word choice because "sense data" can imply a Humean concept called "bundle theory." "Sense data" and "virtual data" as I use them are virtually identical to Aquinas's "sense knowledge" and "intellectual knowledge" (Liska, 2016, p. 66), except Chisham (2015) also demonstrated virtual data is often convolutionally generated by "rethinking" previously acquired sense and virtual data to create further conclusions.

That said, what *can* be said about knowledge? First, like fingerprints, each person's total knowledge is both unique and dynamic, as people learn and sometimes forget. Certainly, individuals can share aspects of knowledge because that is the basis for communication. Moreover, people pursue and acquire knowledge like property, sometimes paying great sums of money for tutorial assistance. Thus, the owner of knowledge must be the person holding it. Moreover, if knowledge is uniquely owned, logically it must reflect its owner's nature, which for humans means being both *finite* and *fallible*. Truth, on the other hand, per correspondence theory, is that which (immutably) conforms to reality (otherwise it would not necessarily be true) and thus is unconstrained by human limitations. As such, one might say truth is "owned" by reality (or is the property of being actual).

While human knowledge must have the latitude to be limited and wrong (without losing its status as "knowledge"), we still depend on its accuracy, for one cannot successfully pursue his objectives (Aristotle's "good") with bad information. Faulty knowledge typically causes worldview simulation failure, predicting the wrong outcome and suggesting inappropriate responses. So, while individuals intend their knowledge to represent truth (philosophically speaking, "knowledge intends truth"), the degree to which it does represents its measure of excellence.

Pragmatically, knowledge only need be functionally right, not perfect. Moreover, knowledge comes in types, some requiring greater certainty than others (e.g., brain surgery vs. philosophy). Per Thomism, direct perception (e.g., a car stopping in front of you) generally requires no "justification" whatsoever. Again, the purpose for retaining knowledge is to make right decisions, not to be academically right. To use a bookkeeping term, knowledge only need be "materially correct," sufficient for the decision at hand.



Thus, it seems more reasonable to define knowledge generally as simply (sense or virtual) information an individual has judged sufficiently true—whether it is or not—to base a decision on it. If we accept this, human knowledge may describe truth with some efficiency approaching 100%—or may have a negative value. Hence, important decisions may require reflective validation (e.g., Descartes' doubt) to reprocess supportive knowledge and recalculate truth projections. Contrary to Descartes, however, no one questions everything, for that would cause mental immobilization.

Asserting any knowledge-must-equal-truth definition would mean humans make decisions constantly based on something other than knowledge—and what should that be called? Should another word be invented? A pilot takes off believing weather conditions are favorable, which may cost his and others' lives (e.g., wind shear). And what do people say? They say he did not "know" any better. People categorically never make decisions based on actual truth, they decide based on information they possess or *know* (synonymous with *believe*). Some philosophers would assert the phrase "to the best of my knowledge" is not technically accurate. Quite the contrary, if philosophy has so defined "knowledge" that it fails to conform to the human feature it is intended to describe, it is the philosophy that errs! Hence, the Bible speaks of "knowledge of the truth," clearly implying knowledge may consist of something else. Its typical meaning is "knowledge of the truth," but exceptions are common.

Epistemologically, failing to distinguish between knowledge and truth makes philosophical nonsense of one or both because each takes on its respective owners' nature. Just as a clutch mediates energy between the engine and the road, averting various mechanical failures, knowledge catches the slip between reality and our imperfect worldview. Saying otherwise confuses reality with our finite construct of it, resulting in a host of philosophical "adjustments" (revealing a fundamentally mistaken view).

In so-called "Gettier" examples, a person makes a correct judgement based on at least partially incorrect information. Plantinga (1993, p. 33) provides an example:

> Consider a person who at noon happens to look at the clock that stopped at midnight last night, thus acquiring the belief that it is noon; this belief is true and (we may stipulate) justified, but clearly not knowledge. But why not, precisely? What is going on in these cases? One salient point: in each of these cases it is merely *by accident* that the justified true belief in question is true.

So, for Plantinga "knowledge" has to be "justified," "true," a "belief," and … something mysterious he cannot quite pinpoint. This is because conventional, binary, all-or-nothing definitions of "knowledge" force Plantinga to search for a "one size fits all" scenario, where knowledge necessarily equals truth, confusing his worldview with reality itself. Rejecting rigid "knowledge = truth" equations solves Gettier's (false) dilemma, where definitions of knowledge fail when they cannot potentially accommodate mistakes. If we do not force men to know as God does, human knowledge can be valid, false, or potentially both! Otherwise, we must say men like Newton "knew" nothing because their understanding was brilliant but imperfect.

Note this view of knowledge does not disparage Thomistic forms. Rationality uses the senses to construct a "digitized reduction" (philosophically, an "intention") to classify a thing's nature, sufficiently detailed for the decision or judgment at hand. Normally, language is required for rational reflection (which creates virtual data) and communication. In some cases, technical expertise (specialized virtual data) is required.

On the other hand, Aristotle's view of objects as aggressors acting on the senses seems incomplete. It seems obvious objects do not seek to impress their images on an individual's mind; rather, the individual's agent intellect (*intellectus agens*) uses every available direct or indirect sense mechanism to identify and classify objects (not absorb their form) so the individual can successfully navigate his environment. If he were asleep, anesthetized, or dead, the object would be impotent to impress his senses. The agent intellect is the active party attempting to *extract* information from its environment and only passively the rock being sensed. Contrary to Descartes or Hume, however, a properly functioning agent intellect will not invent fictional reality because its function is to learn what is there, not what is not.

So, the intellect's goal in sensation is to sufficiently sample reality so an animal can successfully navigate his world via Aristotle's estimative power (*vis aestimativa*). In humans, a layer riding on top of sense knowledge via Aristotle's cogitative power (*vis cogitativa*) allows us to define sense information linguistically (porting it into the virtual realm). Thus, language facilitates information manipulation by logic, as well as social information sharing, which results in the formation of one's worldview. In short, depriving a human of language would reduce him to animal instincts and prevent formation of his worldview. Moreover, omniscience is not required, only sufficient apprehension, which varies depending on the purpose for perceiving. This is not a nominalist abandonment of universals; if a category were not real (e.g., mankind, dog kind, etc.) there could be no transcendent quality capable of recognition (classification), linguistic definition, transmission, or translation. Linguistic translation serves as prima facie evidence that universals do exist, even if we know them imperfectly.

In applying these principles pragmatically, recall a recent argument. Now imagine the argument without words for expression or even contemplation! Finite rationality cannot function without language to provide surrogate tokens for virtualizing meaning. Given vocabulary is so critical to rationality, while some view it as quaint folklore, God's first assignment to Adam makes perfect sense. Adam would have started the day with minimal or no vocabulary, so naming the animals (Genesis 2:19–20) and dialoging about his choices (as with their evening walks [Genesis 3:8]) systematically populated his vocabulary, teaching Adam to exercise his rationality using language and logic, thus building Adam's socialization skills. God did not need to know the lion's name; He defined its DNA! Adam, however, did need a mental icon to rationalize about the lion's characteristics (cf. 1 Peter 5:8). Rational skills develop in children this same way—by interacting with them in wordplay. Adam then cemented what he had learned by interacting with his mate in this high-speed language emersion lab.

Furthermore, understanding this need to virtualize information, the whole "evolution of language" motif becomes a wishful tautology because if one can virtualize a concept at all, he is capable of communicating it using any physical sense (e.g., audibly, visually [using graphics or sign], combining audible sounds with graphics [phonetics], or touch [e.g., braille]). Indeed, the rate at which new computer languages are developed should be an obvious clue that language is simply a systematic construct of agreed conventions referring to actual things or relationships (a posteriori information), or interpretive constructs and idea inventions (a priori information). In contrast, the *ability* to virtualize is nothing less than a gift by design. So, while it is conceded language involves sequential development of rational tools for dedicated purposes, the capacity to rationalize appears binary and not the result of a random evolutionary series that simply happened to congeal.

Philosophical Errors Caused by Misunderstanding the Nature and/or Limitations of Worldview

1. *Previous philosophical examples.* Space does not permit repetition of previous examples; therefore, the reader is referred to the following not given in this paper:

   A. *Confusing worldview with philosophy and/or personal opinion.* Worldview, as an epistemological function, comprehensively models and predicts reality in order to emulate objectivity in decision making (Chisham, 2015). Philosophy, in contrast, is one intellectual tool used to inform worldview perspectives. Naugle confused the two, conflating worldview as a ubiquitous feature (*worldview structure*) with the meaning people gave it (*worldview perspectives*) (Chisham, 2014, p. 143). Confusing these is probably the single most common mistake among worldview commentators.

   B. *Incorporating one's worldview into worldview's definition.* Similar to Naugle above, Colson and Pearcey inadvertently incorporated their personal Christian beliefs into the general definition of "worldview" (Chisham, 2014, p. 144; 2018, p. 182).

   C. *Thinking my ideas redefine reality.* Solipsism gets it exactly backward, believing worldview defines reality instead of vice versa (Chisham, 2015, p. 12).

2. *Confusing factual (empirical) knowledge with worldview's manufactured virtual knowledge.* Many worldview errors fall under this heading, complicated by the fact that, depending on the ratio of truth to interpolation, parsing the difference often comes in shades of gray. "My reality is not your reality" may be true in a restrictive, experiential sense, but actual reality is universal because *reality is not owned by persons*. It would be accurate to agree that individual perceptions differ but nothing more. Suggesting otherwise requires denial of the law of noncontradiction, which sacrifices rationality itself.

   "I believe in science, but you believe in religion" or speaking of "the fact of evolution" are also examples of this categorical confusion. Menton (2013) reports of Eugenie Scott encouraging just such worldview snobbery in addressing the 2006 American Association for the Advancement of Science in St. Louis. Scott queried the audience, "Do you believe in evolution?" and then insisted the question should always be phrased, "Do you accept evolution?" Menton rightly concluded:

   > So is evolution a belief system? Evolution is necessarily a belief because molecules-to-man evolution is not observable but rather must be inferred and believed. This is why evolutionists are stumped when asked to give an observable example of one kind of creature evolving into a different kind of creature. If pressed, they inevitably give an example of limited variation within a kind that is not a contested issue between evolutionists and creationists.… is evolution a worldview? Any belief system that purports to explain the origin of virtually everything that is real is a religion or worldview.

   Beliefs can be inferred, theorized, or philosophized, but empirical, scientific proof is a different level of human knowledge. As Ken Ham is fond of asking, "Were you there?" This is not to say dialog on origins has no merit but only that humans should have the intellectual honesty to accurately represent their arguments.

3. *The skepticism trap: because one cannot know all truth, truth cannot be known.* While most philosophical approaches

acknowledge epistemological finitude, some advance this non sequitur, suggesting all knowledge is self-referential. This is the postmodern error. Postmodern historian Frank Ankersmit (Ankersmit, 1997, pp. 294–295) states:

> In the postmodernist view, the focus is no longer on the past itself, but on the incongruity between present and past, between the language we presently use for speaking about the past and the past itself.

Moreover, Jenkins (1997, p. 6) dismisses history in its entirety in saying,

> In fact history now appears to be just one more foundationless, positioned expression in a world of foundationless, positioned expressions.

They are not simply recommending readers account for a writer's perspective; they are suggesting modern readers cannot possibly even know what historical authors intended, due to the inaccuracies of linguistic communications. "Foundationless" presumes words have no objective meaning and logic is a mutable human convention.

Reading is a virtual, rational experience fully contained within one's mind. It is not the author's experience (his was writing), so it is strictly the reader's. For example, if a British person reads an American author, he hears dialog with a British accent (and is generally unaware of it), unless he overtly chooses to give the speaker some other accent, which he could do at will. So, on that level one might agree with Jenkins and Ankersmit.

However, competent readers do not see the words on the page; they see through the words, sharing the writer's experience. This makes it clear language refers to things outside both minds. Though a writer's skill and his readers' perceptions be imperfect and non-identical, usually the message does convey by virtue of shared human experiences (spanning culture and time). Moreover, the fact one can learn through literature confirms language *can* be grounded in the real world, not just the mind.

Jenkins and Ankersmit, therefore, dare not apply their self-defeating standards to their own works lest they be exposed as meaningless. Furthermore, occasional translation errors fail to demonstrate their view should indiscriminately blanket known historical content, which throws the baby out with the bathwater. Worldviews must ultimately refer to reality, however imperfectly, otherwise we could neither acquire nor translate language, historical study would be meaningless, and legal systems would be reduced to ashes due to presumed limitations of time on meaning. To the contrary, we obviously are able to know but only *according to our nature*—finitely. This will bother any philosophy bent on a binary, all-or-nothing concept of knowledge. Furthermore, the fact that observers often learn additively by validating against existing knowledge—analogy-to-self (Chisham, 2012, p. 66; 2015, pp. 11, 16)—does not argue that what we have learned (i.e., worldview expansion) came from within ourselves. This confuses method with meaning.

Tensions surrounding human finitude are analogous to camera pixilation. Simply because digital cameras have limited resolution does not argue they are thereby legally inadmissible. Likewise, simply because humans know and communicate finitely does not imply the past and/or present are unknowable; we simply recognize real limitations to the evidence we have. Ultimately postmodern skepticism cannot be successful without collapsing human communication and, thus, is just another version of Humean skepticism. If valid, its skeptical "universal acid" would melt legal systems into non-connected, non-correlatable puddles of facts and human statements.

4. *Forgetting we are finite.* Opposite the spectrum from the previous skeptical error, this one overestimates certainty, resulting in positional blindness and relational dysfunction relative to one's skeptics. Some might accuse Christians of this in claiming to "know" of coming judgment, but this is clearly a faith statement, though its foundations are in historical fact. Moreover, passages like John 20:31 and 1 John 5:13 offering evidence "that you may know" were intended in the normal historiographical sense as competent legal evidence, which must be examined and scrutinized. Greg Bahnsen overstepped this line, however, in a well-known academic debate with R. C. Sproul regarding apologetic methods:

> I maintain it is wrong to think that certainty in epistemological matters is limited to formal logic and mathematics. Certainty, full certainty, full confidence without doubt, without yielding, without qualification, pertains to the matters of the Christian faith. (Bahnsen and Spoul, 1977)

Dr. Bahnsen was correct regarding "matters of … faith"; however, the faith certainty Hebrews 11:1 describes applies to every faith, including atheism (because it is an accurate definition *per se*). Where Bahnsen was incorrect was in asserting epistemological certainty. Sproul complains,

> This whole question of certainty is one that I keep getting all the time. One of the cheap criticisms we [classical apologists] get is that all we leave people with are probabilities.… The only way [any and all humans] can have absolute philosophical certainty about anything is in the pure formal realm.

[This is because mental constructs are human inventions (i.e., *a priori*) and only by creating them are we able to have perfect knowledge of them.]

> Now, unfortunately that doesn't get us into the real world. And as soon as we [humans] get into induction, we [humans] get into the level of uncertainty. Ok? … The problem we're dealing with here is the problem of creatureliness. The only way I can think of to have absolute certainty about anything is to have omniscience. And that we don't have.

> That belongs only to God. (Bahnsen and Sproul, 1977)

Sproul added later:

> [God has] given us finite capacity for learning. I'm not a skeptic with respect to meaningful knowledge and meaningful discourse. I am a skeptic with respect to the technical concept of absolute philosophical certainty. But I'm not a [skeptic of] common sense … I think that God has given us creaturely ability to learn things. (Bahnsen and Sproul, 1977)

Overconfidence in human certainty forms a common thread between most of the mistakes mentioned here. The skeptic confidently proclaiming superiority because "you believe in religion, but I believe in science" commits the same error as Bahnsen, essentially claiming, "If you would simply adopt my worldview, you would come to my conclusion," which of course is right but proves nothing. It involves the epistemological overstep of not appreciating that finitude dictates that human knowledge is necessarily incomplete to some degree. Objectivity is not generated by cloning worldview constructs but comes out of actual shared reality.

Demanding epistemological certainty in matters of faith requires knowledge beyond the natural human senses, which is a prelude to epistemological failure, demanding more of rationality than it can deliver. Admitting something is a belief does not dismiss or diminish it but acknowledges the limits of objective, empirical (or scientific) certainty. Moreover, for evangelistic atheists and religious zealots alike, the truth of any faith position is only as valid as its object. Hence Paul (1 Corinthians 15:12–19) warned that, as Christians, we are wasting our time unless our claims are based in truth.

The point of balance is that each individual should be free to hold beliefs with conviction, while perspectival discourse proceeds openly and unimpeded. Failing to recognize one's natural limits to "prove" elevates his ability to know to super-human status, thereby disrespecting another's right to freedom of thought. For a Christian or Jew, this denies a natural, created right. For everyone inclusive, it is simply intellectual dishonesty.

5. *Cartesian Skepticism. The Matrix* portrays a futuristic revisitation to an epistemological thought experiment (e.g., Brain-in-Vat [BIV]), skeptically asking how to be certain sensations are not an illusion, and ultimately questioning our certainty regarding reality. Shocked, the main character discovers his entire world was a computer-simulated forgery. Likewise, Descartes' famous "way of doubt" proposed,

> In order to seek truth, it is necessary once in the course of our life, to doubt, as far as possible, of all things. (Descartes, 1901)

His skeptical search for truth reasoned that if he were nonexistent no one would bother to fool him, concluding: "I think, therefore I am." Confident he validated his most basic truth with mathematical certainty, he proposed that knowledge must begin within the mind to rationally demonstrate what is true in the world. This perceptual skepticism permeates most contemporary philosophy.

Unfortunately, Descartes' crucial miscalculation was forgetting his own ability to rationalize was predicated on language that he innocently received in childhood through life experience. His compulsory skepticism of reality was ultimately self-defeating, for simply articulating his question would be impossible without language and concepts gifted to him from reality. Thus, the Cartesian epistemology is simply wrong: you cannot doubt *anything* unless you first consider whether it might exist. Etienne Gilson (2012, location 2036) complains:

> There is an Aristotelianism, in addition to [immediate experience] which regulates all judgments, a first source of knowledge, and that is sensation. That is the true meaning of the formula which is so often cited but … rarely accepted in its full vigor … that nothing is in the understanding unless it has first been in the senses. "Nothing" applies to everything, even the content of the first principles of simple apprehensions and of judgements: being and the principle of contradiction.

In reality, Descartes' "way of doubt" was merely a standard error-checking method but not the only, best, or even most common one. The Thomistic epistemology he rejected was more correct, for from childhood we naturally learn most things from a position of trust, not doubt, via interaction with reality. With time we learn to double-check presuppositions but, hopefully, in healthy ways. Even adults naturally trust the vast majority of acquired information because we implicitly trust our senses and rationality. Furthermore, a lifetime is not long enough to negatively recheck every piece of information. Knowledge validation is the exception, not the rule. On the other hand, worldview projections estimating reality for larger decisions do require reflection to certify key truths (cf. Premises VII, VIII, and IX in Chisham, 2012, pp. 68–71).

Though a devout Christian, Descartes' "way (or method) of doubt" became pivotal in modern and postmodern skepticism due to its broad adoption by Hume, Kant, and others. It mistakenly used one's worldview (a rational simulation) to validate reality, rather than acknowledging rationality's primary need to use reality to both inform and validate one's worldview.

Conclusion

"What does being finite mean?" becomes *the* critical question in understanding worldview. All agree others are finite, however, applying finitude to personal epistemologies may risk crises, exposing treasured personal certainties to potential loss. Opposite the spectrum from

certitude, however, simple observation demonstrates Hume's skepticism of induction as unwarranted and simply wrongheaded. In fact, worldview's interpolative intuition is precisely what his skepticism missed. So, where exactly is the middle ground between perfect knowledge and Cartesian skepticism? It must lie in this idea that humans never hold a perfect grasp of reality but manufacture a finite working copy we call perception. Though "only" a copy, its representations must factually exist, otherwise we would have nothing! Moreover, humans rely on its accuracy—imperfections and all (hence Gettier's false dilemma). Knowledge cannot be truth but functions as its finite surrogate. Consequently, requiring knowledge to directly equate to truth before acknowledging its existence seems an arbitrary, tragic philosophical mistake, unnecessarily requiring perfect coherence between a human feature and the reality it describes. Hence, this new decision-based approach hopes to have retraced epistemology without bowing prematurely to any particular philosophical tradition, saying only what observation has warranted.

Worldview is not subjective opinion but a factual, necessary component of finite human rationality, though its breadth makes it difficult to visualize and evaluate. Only its conclusions are subjective. Standard epistemologies focus on perception, viewing life like a collection of photographic "stills"—a backyard tree or squirrel outside the window. However, singularities do not create context. Instead, this decision-based epistemology asks how worldview information aggregates, forming more than a "picture of reality" or "glasses" coloring and distorting perception. Rather, worldview is our real-time, interactive working model for understanding current situational context and predicting proper responses, characterized by the presence of language. Worldview is not separate from knowledge but generates our perspective of reality based on the sum of our knowledge, which would be undetectable if it matched reality perfectly. The so-called "coloring" happens, not because something distorts otherwise perfect vision but because our finite working model has flaws and limitations. Set side-by-side with reality, imperfections in projections show up most profoundly at the edges and margins where consequences of our inaccuracies and estimations become most apparent. "Better design" would not change or "fix" this, considering the research dollars and man-centuries spent trying to re-create "artificial intelligence." It is simply the nature of being finite.

Having described the nature and structure of worldview (Chisham, 2012, 2014, 2015) and compared that understanding to other approaches (Chisham, 2018), this article has suggested ways to constrain those who might overextend their ability to know and demonstrated the paradox of human knowledge—knowing truth, yet not perfectly. Some might object this description of worldview's nature reduces man to a robot, consisting of algorithms and data. "Robot," however, is merely allegorical language conveying man's finitude. The imaginative children's classic Pinocchio tells of a wooden marionette becoming a real boy, which Christianity would argue analogically mirrors finite, fallen man gaining eternal fellowship with his perfect Creator. But had Carlo Collodi, Pinocchio's creator, been a twenty-first century contemporary, surely he would have envisioned a robot instead!

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Genesis Flood Drainage through Southwest Montana:

Part I: Mountain and Valley Erosion and Deposition

Michael J. Oard*

Abstract

During the recessive stage of the Genesis Flood, differential vertical tectonics exposed the mountains and continents. Initially, Floodwaters flowed off the continents in sheets, but the sheets narrowed to channels, and more land was exposed. The rushing waters strongly eroded the continents and left their signature on the surface. These processes can be seen in southwest Montana, an area composed of mountain ranges and adjacent "flat-bottomed" valleys. As the western Rockies first rose, sheets of water flowing over them deposited large breccia fans in southwest Montana, east of the Beartooth Mountains, and east of the Bighorn Mountains in north-central Wyoming. Continuing uplift and erosion destroyed most of these fans. Mountaintops were exposed to varying levels of erosion during uplift. Up to several thousand meters of sediment was washed down into adjacent valleys and basins or transported out of the area. The energy of these events is seen in the erosion and transport of coarse quartzite gravel across the region. When the Floodwater became more channelized, strong down-valley currents eroded approximately 1,000 meters of the recently deposited valley fill, moving it toward the oceans.

Introduction

Creation scientists have proposed several scientific models of the Genesis Flood (Bardwell, 2011), such as Baumgardner's catastrophic plate-tectonics model, Brown's hydroplate model, and Oard's impact/vertical-tectonics model. But regardless of the proposed mechanism of the Flood, these models generally agree that developing deep ocean basins caused the Floodwater to drain off the continents, corresponding to Walker's (1994) recessive stage. Walker's model is similar to other types of floods, such as flash floods (Oard, 2008, 2013), in which there are two main stages: (1) the flooding stage, when the water rises to a

* Michael J. Oard, M.S. Atmospheric Science, Bozeman, MT
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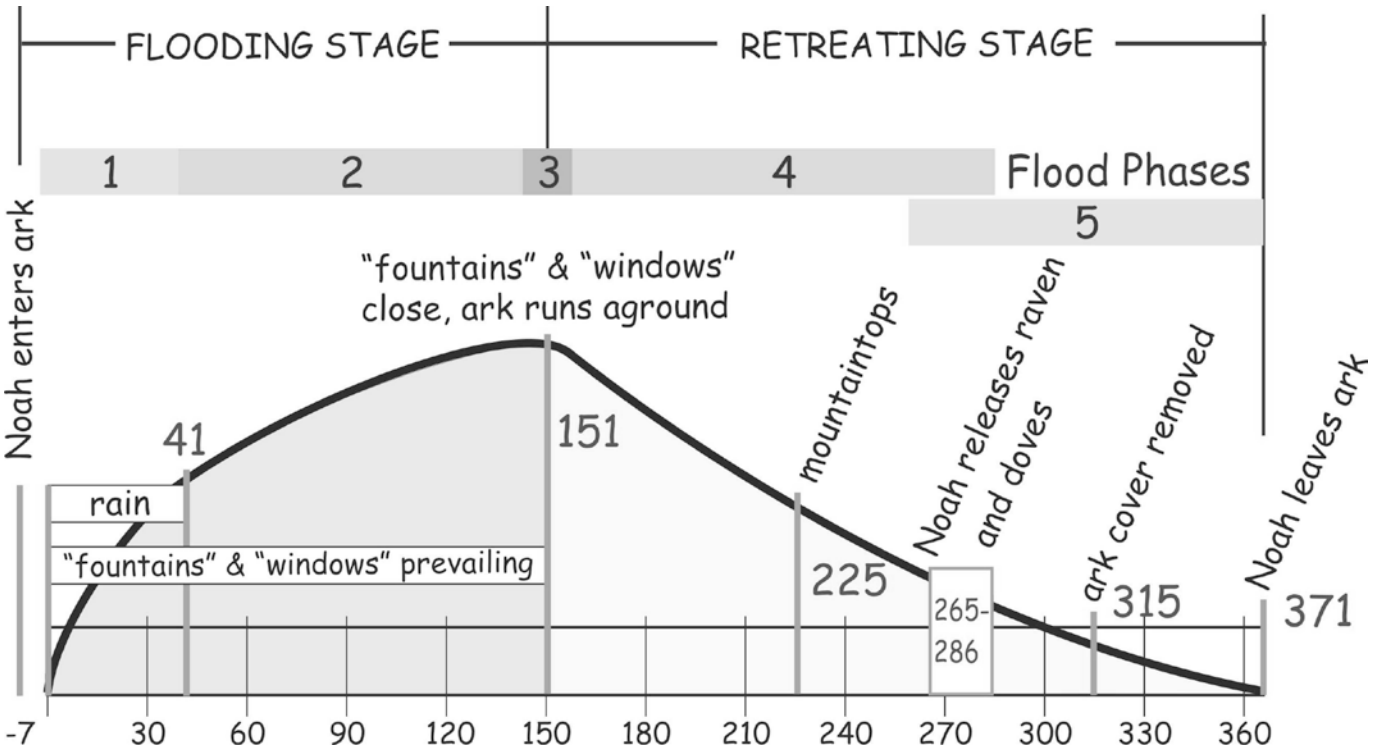

Figure 1. Graph of relative sea level for the two stages and five phases in Walker's model (drawn by John Reed).

peak, and (2) the recessive stage, when the water drains (Figure 1).

Walker's recessive stage began after the Flood peaked, and is divided into two phases, the abative or sheet-flow phase and the dispersive or channelized-flow phase. Early in the sheet-flow phase, the Floodwater flowed in broad sheets, perhaps 1,000 km wide and 3 km deep (Figure 2). As the Floodwater drained, more mountains and plateaus were exposed, forcing a narrowing of the sheets into channels (Figure 3), and eventually into post-Flood rivers and streams. The channelized-flow phase was the final event of the Flood, and saw the Floodwaters completely drained from the continents.

This series will focus on evidence for this two-stage drainage in southwest Montana. This region is uniquely suited for this investigation; its topography is composed of numerous high mountain ranges and generally narrow, "flat-bottomed" valleys. These mountain ranges would have forced the receding waters through these valleys, and both should exhibit features of Flood flow. Part I will describe Floodwater erosion and deposition during the transition from sheet to channelized flow. Part II will focus on pediments and planation surfaces formed in the valleys during erosion, and Part III will explore water and wind gaps carved during this time. In all of this, the superior explanatory power of the Flood model will be shown.

Significant relative uplift between the continents and oceans and mountains and valleys (Psalm 104:8) occurred during the recessive stage. It is not known whether the actual motion was that of the continents rising or the ocean basins sinking, or a combination, but rising still-submarine mountains on the continents were the initial targets of erosion, and many are worn down to granite and gneiss of the upper continental crust. The Rocky Mountains experienced this early massive erosional event. Much of the eroded sediment was deposited in adjacent valleys or transported to the Gulf Coastal Plain. Most of the uplift in southwest Montana seems to have occurred during the sheet-flow phase, as shown by the lack of differential vertical tectonics between the mountains and the valleys during the massive erosion and formation of pediments (see Part II).

The Geomorphology of Southwest Montana

Southwest Montana is composed of uplifted mountains with valleys par-

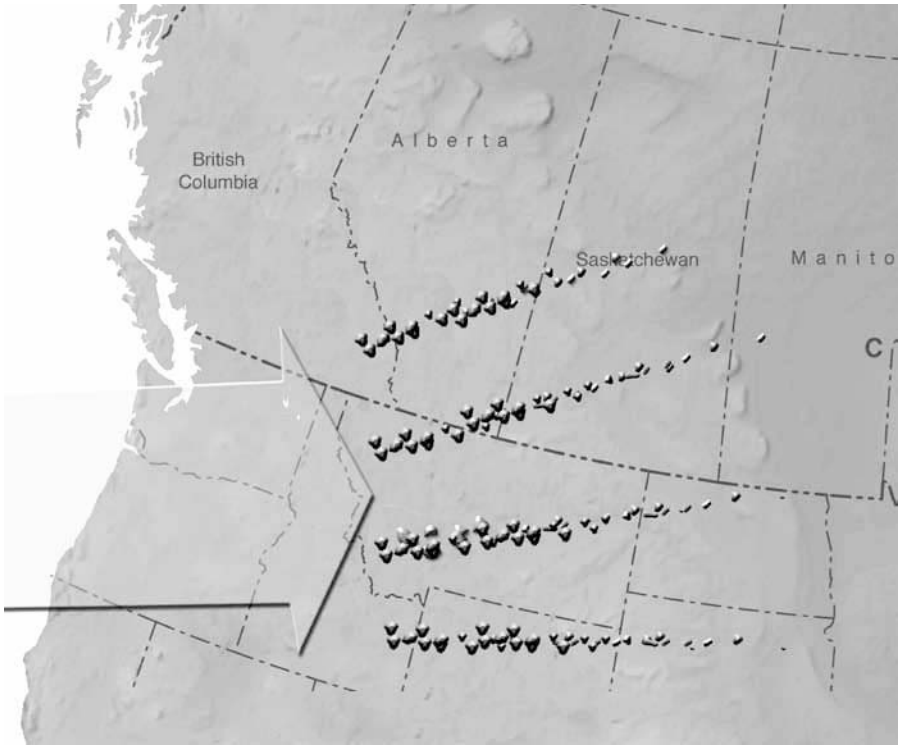

Figure 2. Sheet flow eroded layers of quartzite from the western Rocky Mountains, rounded them, and spread them far to the east (drawn by Bryan Miller and modified by Mrs. Melanie Richard).

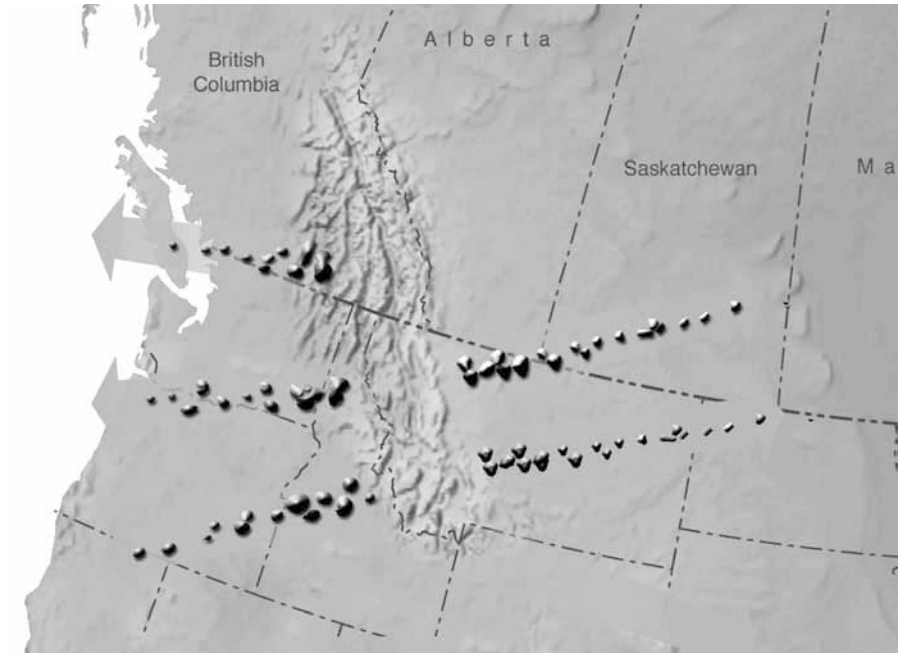

Figure 3. As the Rocky Mountains are exposed, the Floodwater flow is split into east flowing and west flowing branches that become more channelized with time (drawn by Bryan Miller).

tially filled with sediments and volcanic debris, *valley fill* (Figure 4). The large (50 km across) Gallatin Valley is more like a basin. The geomorphology of southwest Montana is similar to that in Wyoming (Oard, 2017). Early geologists thought the flat valleys and basins of southwest Montana represented the bottoms of ancient lakes; so, the sedimentary rocks were first called the Bozeman Lake Beds (Perry, 1962). Then they discovered that much of the valley fill is conglomerate, so the fill is now considered mostly "fluvial" with only minor "lake" sediments. Pediments and water and wind gaps are common in southwest Montana.

The Great Unconformity

Very early in the Flood, the uppermost crust of granite and gneiss was eroded, forming a large planation surface called the Great Unconformity (Oard, 2014, 2017), best known from its exposure near the bottom of Grand Canyon. It is seen at many locations over much of the western United States and is often visible at the tops of many of the northern Rocky Mountains, such as the Wind River Range of northwest Wyoming (Figure 5). It is uncertain whether the Great Unconformity represents a single extensive planation surface over the western United States or a series of smaller surfaces. The Great Unconformity divides the Precambrian upper crustal rocks from Paleozoic sedimentary rocks (Marshak et al., 2017).

The Great Unconformity on the Precambrian Belt Supergroup

In the northern Rocky Mountains, the Great Unconformity also eroded the Precambrian sedimentary rocks of the Belt Supergroup (Figure 6), as it did the sedimentary rocks of the Precambrian Grand Canyon Supergroup. The Belt Supergroup was deposited in a large, deep basin that once extended from east

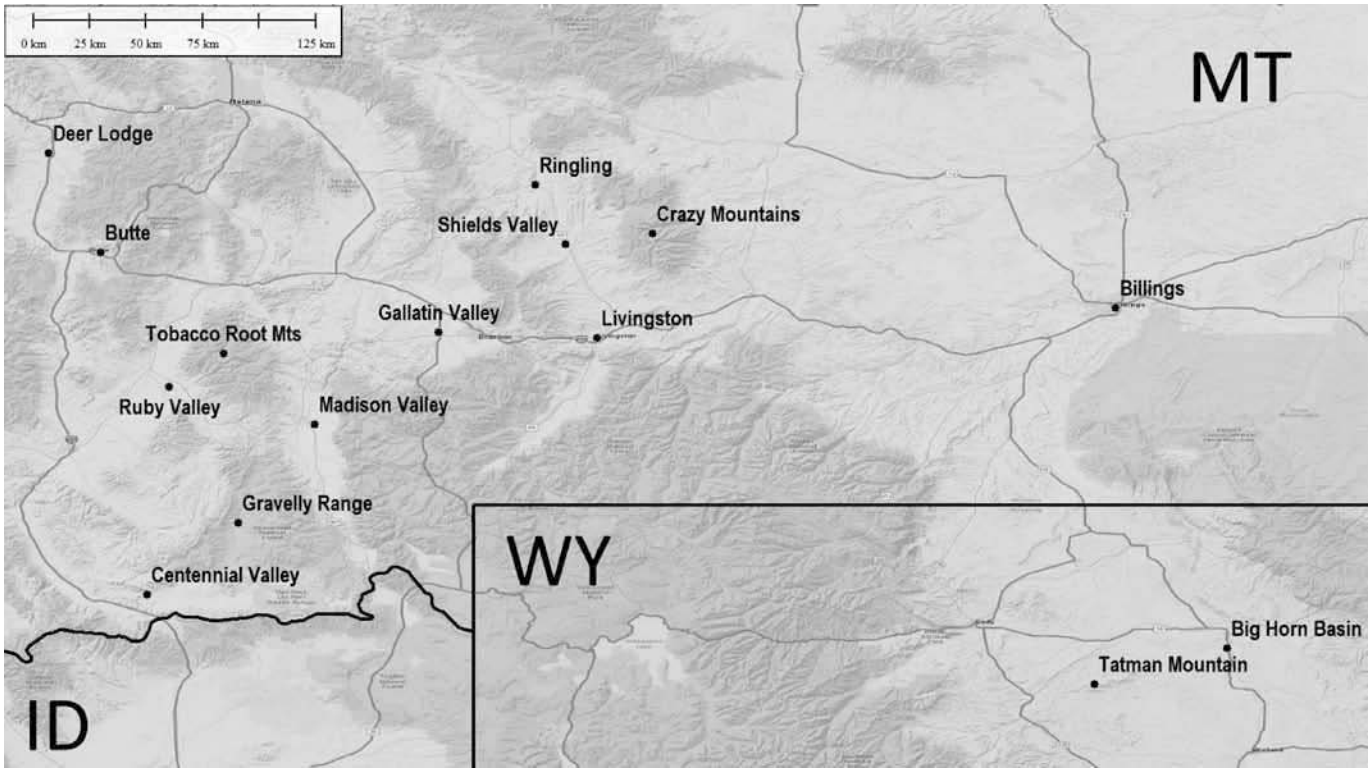

Figure 4. Location map of southwest Montana and vicinity showing mountains (dark) and low areas (light) (imagery courtesy of ESRI).

Figure 5. The flat-topped granitic mountains of the Wind River Mountains, central Wyoming (view east from northern Green River Basin), show the Great Unconformity (arrows).

of Helena, Montana, to Spokane, Washington. The supergroup rock sequence consists of over 20 km of predominantly fine-grained sand or coarse silt. Because of the numerous ripple marks and other features found in the supergroup, geologists believe that the sediments were deposited in shallow water over tens of millions of years. Their model would require slow subsidence to match the sedimentation rate for the entire 20 km basin fill, which has since been uplifted into mountains.

Some believe that the Belt Supergroup formed before the Flood, but I believe it formed very early in the Flood, as sedimentation occurred in deep basins or rifts. This is suggested by the absence of physical erosion between the Belt Supergroup and the Cambrian Flathead Sandstone in many locations, indicating continuous sedimentation (Figure 7). Such contacts between strata have been called *flat gaps*, which are observed in all "ages" of strata all over the world (Roth, 2009). Despite the physical evidence, geologists believe that one billion years of uniformitarian time is missing between the Belt Supergroup and the Flathead Sandstone. The lack of erosion between strata and the huge areal extent of some strata defies the uniformitarian age and paleoenvironmental interpretations of the rocks. This is powerful evidence of the reality of Noah's Flood (Oard and Reed, 2017). The flat gap between the Precambrian and Cambrian sedimentary rocks suggests that all or most Precambrian sedimentary rocks are very early Flood rocks deposited mostly in basins and rifts.

Deposition onto the Great Unconformity

The Great Unconformity formed early in the Flood, likely by extreme turbulence and fast currents associated with the initial marine incursion. As the water rose during the flooding stage, about 2,000 m of Paleozoic, Mesozoic, and

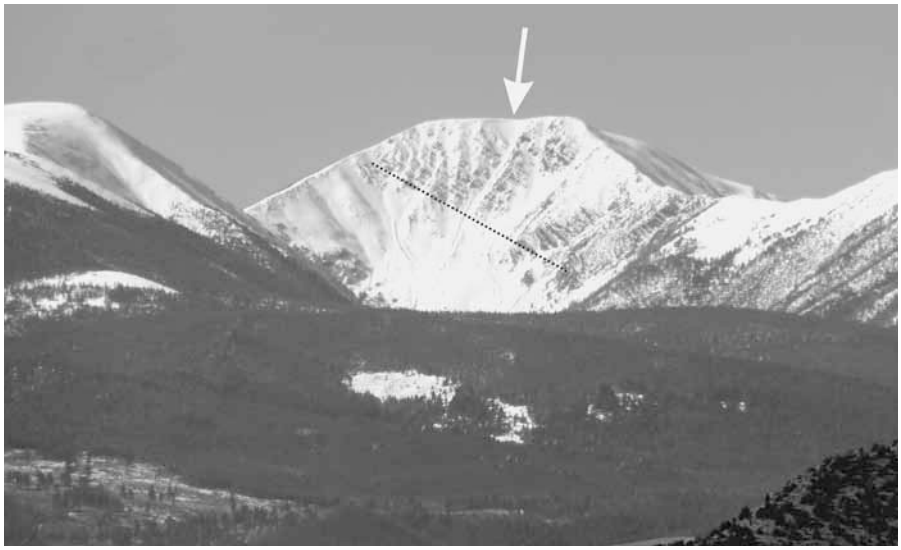

Figure 6. The Great Unconformity (arrow) atop of the Belt Supergroup rocks at the top of the Highland Mountains south of Butte (view southwest). The snow pattern (and dashed line) shows the strata at the top of the mountain dipping about 30° down to the right (northwest).

Figure 7. Peter Klevberg's hand (lower left) shows conformal contact between Middle Cambrian Flathead Sandstone and the Lahood Formation of the Belt Supergroup in the Bridger Mountains, northeast of Bozeman, Montana. Contact represents about one billion years of missing uniformitarian time, yet shows no evidence of erosion.

Figure 8. Lahood Formation breccia with one rock 2 meters in long dimension (circle and arrow) from near Cardwell, Montana, within the Jefferson Canyon water gap.

Figure 9. Beartooth Butte containing marine fossils is located 490 m above Beartooth Lake (foreground), south-central Montana and north-central Wyoming.

early Cenozoic sedimentary rocks were deposited atop the Great Unconformity in Montana and Wyoming. This thickness is estimated from locations showing little erosion. In the Bridger Mountains, northeast of Bozeman, more than 2,000 m of Paleozoic, Mesozoic, and early Cenozoic rocks overlie the Lahood Formation of the Belt Supergroup (Figure 7), which is well over 3,000 m thick at this location. The Lahood Formation is usually recognized by its breccia, the rocks of which can be up to 2 m in diameter at other locations (Figure 8). The Lahood Formation near the top of the Bridger Mountains appears conformable with the overlying Flathead Sandstone (Figure 7); both are tilted down to the east at about 70° and consist of sandstone with

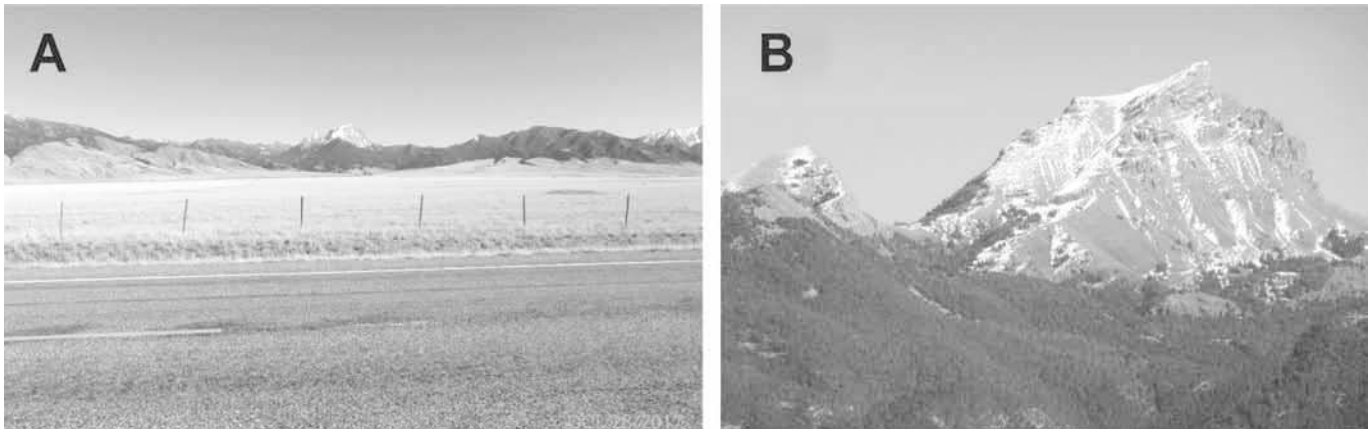

Figure 10. A: Sphinx Mountain in the central Madison Range, southwest Montana, is an isolated erosional remnant composed of about 1,000 m of limestone breccia (view east). B: Close-up of the Sphinx showing layered and slightly deformed breccia.

quartz pebbles. The absence of erosion at the contact suggests that the billion years never existed.

Erosional remnants of the Paleozoic and Mesozoic sedimentary rocks are found atop the Great Unconformity at the tops of some mountain ranges, such as the 425-m Beartooth Butte located on top of the Beartooth Mountains of south-central Montana and north-central Wyoming (Figure 9). These sedimentary rocks, like those of the Belt Supergroup, formed over large areas with little or no erosion between layers. Based on the lack of deformation and the fine-grained sediments, the great depth of these Paleozoic and Mesozoic strata indicates deposition in a generally calm period early in the Flood, which Oard and Reed (2017) have named the Great Deposition. This likely occurred *after* the unleashing of the highly catastrophic Flood mechanism (perhaps after Day 40).

Evidence of Significant Erosion from the Mountains

Sedimentary rocks originally deposited on the granitic upper crust or Belt Supergroup not only rose with the mountains, but also sank with the valleys. The massive erosion of the mountains during the sheet-flow phase (and possibly even before in the late flooding stage) deposited 5,000 m or more of additional, generally flat-lying, Cenozoic sedimentary and volcanic rocks in the valleys and basins in both Wyoming and southwest Montana. This Cenozoic valley fill is up to 4,880 m deep in the Big Hole Valley of extreme southwest Montana (Fields et al., 1985).

A breccia fan over parts of southwest Montana

The sheet currents over the incipient, rising western Rocky Mountains flowed from west to east, as evidenced by an inferred large limestone breccia fan, likely formed from eroded Paleozoic and Mesozoic rocks. Fragments of this fan are found today as tall erosional remnants (Oard, 2008, 2013) making up some of the high mountains in the region. One

Figure 11. The Red Conglomerate Peaks on the southwest Montana/Idaho border, also composed of thick limestone breccia.

Figure 12. Another erosional remnant of limestone breccia, 400-m high, about 5 km from the southeast flank of the Beartooth Mountains (view south from the road to Clarks Fork Canyon). The breccia fan is tilted east about 25°. Large white rocks (foreground and below hill) are glacial granite boulders from the Ice Age.

Figure 13. Three-meter long, sub-rounded granitic boulder from outcrop of large granitic boulders spread just east of the Bighorn Mountains and eroded into erosional remnants (the late Dr. Harold Coffin for scale).

of these peaks is *The Sphinx*, composed of 1,000 m of breccia and standing well above the surrounding mountains on top of the Madison Range (Coffin, 2009) (Figure 10). Similar erosional remnants form isolated high mountains, such as the Red Conglomerate Peaks along the Montana-Idaho border (Figure 11). Other remnants of this fan are exposed at the edge of the valleys and probably exist beneath younger valley fill. Breccia probably once covered the area between these isolated peaks. The areal extent of this breccia fan is unknown but must have covered much of the southern portion of southwest Montana, given the thickness of its remains. The fan would have soon been broken up by ongoing differential vertical tectonics and eroded by powerful currents. The author estimates that approximately 95% of this immense breccia fan was eroded.

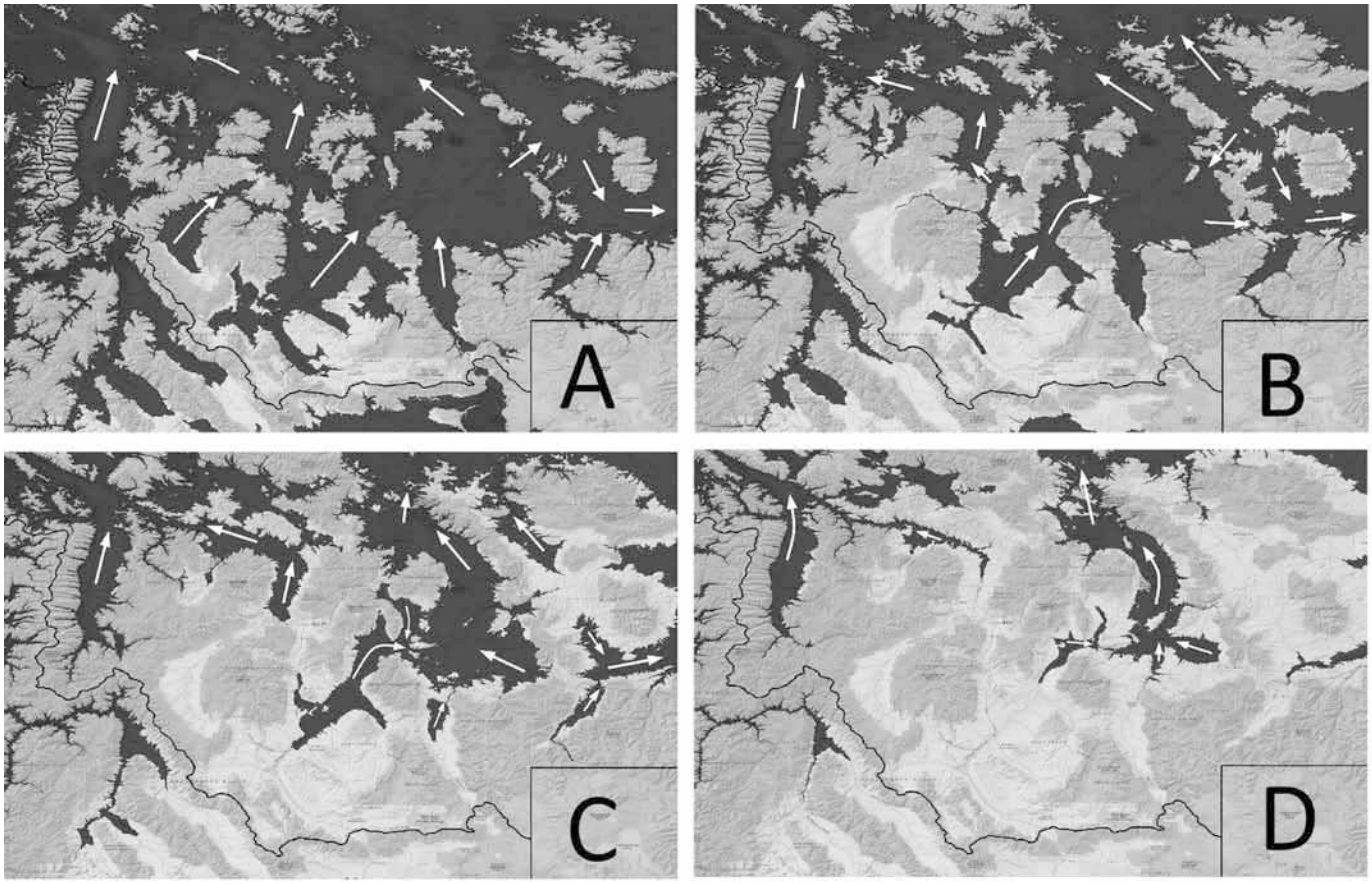

Figure 14. Floodwater drainage in southwest Montana with approximate water levels: A = 2,000 m above sea level (asl); B = 1,800 m asl; C = 1,600 m asl; and D = 1,400 m asl (courtesy of ESRI).

A breccia fan east of the Beartooth Mountains

Another breccia fan, consisting mostly of limestone cobbles and boulders, reached over 1,000 m in thickness and extended about 5 km east from the Beartooth Mountains. This breccia was eroded from the top of the Beartooth Mountains during uplift, which is probably why the fan remnants tilt about 25° down to the east. This fan was almost totally eroded later in the Flood by north-flowing, down-valley currents in the Bighorn Basin. Today, we find only a few erosional remnants (Figure 12).

Thick accumulation of granitic boulders east of the Bighorn Mountains

A third fan is located east of the Bighorn Mountains in Wyoming, but this fan consists mainly of very large, partially rounded granite and gneiss boulders (Figure 13). These boulders are generally sub-rounded and can be over 6 m long.

The Mountains Become Exposed

As the mountains became exposed, runoff transformed to mainly down-valley flow (Figure 14). It is likely the western Rockies were the first land in this region to be exposed and represented a temporary "continental divide" early in Flood runoff. This is based on geological and geomorphological evidence, including the transport of billions of rounded quartzite rocks, ranging in size from gravel to boulders, across the area now occupied by the eastern Rockies and the plains (Oard et al., 2005).

This uplift would have eventually split the sheet flow into currents flowing both east and west, the western current flowing into the deepening Pacific

Figure 15. Thick outcrop of bedded, in situ quartzite along Morgan Creek Road, about 7 km from Highway 93, about 60 km southwest of Salmon, Idaho and 15 km north of Challis, Idaho.

Ocean basin (Figure 3) (Oard, 2013). Sheet flow from west to east transformed into channelized flow through the valleys.

The Spread of Rounded Quartzite Rocks

Following deposition of the limestone breccia fans during the early sheet-flow phase, quartzite rocks were then eroded from the uplifting western Belt Supergroup in Idaho and extreme western Montana and were spread far to the east. In the Centennial Valley, the limestone breccia of the valley walls is overlain by the quartzite rocks, showing that the quartzite was transported *later* than the breccia. It is interesting that there does not appear to be mixtures of limestone and quartzite cobbles and boulders. The quartzite rocks commonly have percussion marks on them (see Figure 18), which are semicircular cracks caused by impacts during transport (Klevberg and Oard, 1998; Oard, 2013). Could it be that the limestone totally pulverized during quartzite rock transport? The billions, if not trillions, of these well-rounded quartzite rocks spread east, well out onto the plains (Oard et al., 2005), which indicates the rapid uplift of thousands of meters of the western Rocky Mountains. Quartzite cobble and boulders were also carried west, to the Pacific Ocean, nearly 600 km away. These rounded quartzite rocks are widespread on the high terrain of eastern Washington and Oregon and through the Columbia River Valley (Oard et al., 2006).

The original *in-situ* layered quartzite (Figure 15) source was broken up, rounded, and transported eastward and northeastward as far as central Saskatchewan and southwest Manitoba—up to 1,200 km (Oard et al., 2005)! These gravels cover much of the High Plains, though many were reworked by the Laurentide Ice Sheet. Quartzite clasts were transported southeast into Wyoming (Oard et al, 2005) and occasionally accumulated in paleovalleys. In two locations they reach thousands of meters in thickness. One lies west of Spencer, Idaho, along Interstate 15 near the Montana-Idaho border. The other is east and northeast of Jackson Hole, Wyoming, with quartzite conglomerate forming some of the mountains northeast of Jackson and in southeast Yellowstone Park.

Quartzite rocks reworked

An indication of the original scale of these transportation processes is seen in the presence of pressure-solution marks on many clasts (Figure 16). These formed when the rocks were deeply buried in rifts thousands of meters deep, and the rock-on-rock pressure contacts generated local recrystallization marks. Subsequent uplift of these areas resulted in erosion or reworking of the quartzite rocks, spreading them east, where they are commonly found, even at the top of the Teton Mountains (Figure 16), indicating that the sharp Teton Mountains rose late in the Flood.

Quartzite rocks on top of mountain ranges

Well-rounded quartzite rocks are found atop at least four mountain ranges: (1) the northern Tetons of northwest Wyoming (Figure 17), (2), the Gravelly Mountains of southwest Montana (Figure 18), (3) the Wallowa Mountains of northeast Oregon (Figure 19), and (4) the Blue Mountains of central Oregon (Figure 20). This widespread distribution suggests the quartzite cobbles and boulders were first carried and deposited by sheet currents. As the mountains uplifted, they carried some of the quartzite detritus up to higher elevations.

Valley Fill Erosion

As the sheet flow decreased (Figure 14), channelized flow developed in the valleys. The top of the valley fill was much thicker than today and probably mostly unconsolidated at the beginning of the channelized-flow phase. Strong down-valley currents would have easily eroded through the soft valley fill and into the hard rock below. This erosion produced nearly flat surfaces at the bottoms of these valleys, with numerous pediments formed at the edge of the mountains and one planation surface in the southwestern portion of the broad Gallatin Valley.

Figure 16. Pressure-solution marks on a quartzite from the top of Red Mountain, Teton Mountains, Wyoming.

Figure 17. Quartzite cobbles and boulders from the top of the generally flat-topped Red Mountain, over 3,000 m above sea level in the northern Teton Mountains of northwest Wyoming. Split cobbles are probably due to freeze-thaw weathering along preexisting fractures. The cobbles were among angular rocks from the local limestone. (Brent Carter for scale.)

Figure 18. Well-rounded quartzite boulder about 0.6 m in diameter in long dimension with numerous percussion marks from on top of the Gravelly Mountains, southwest Montana.

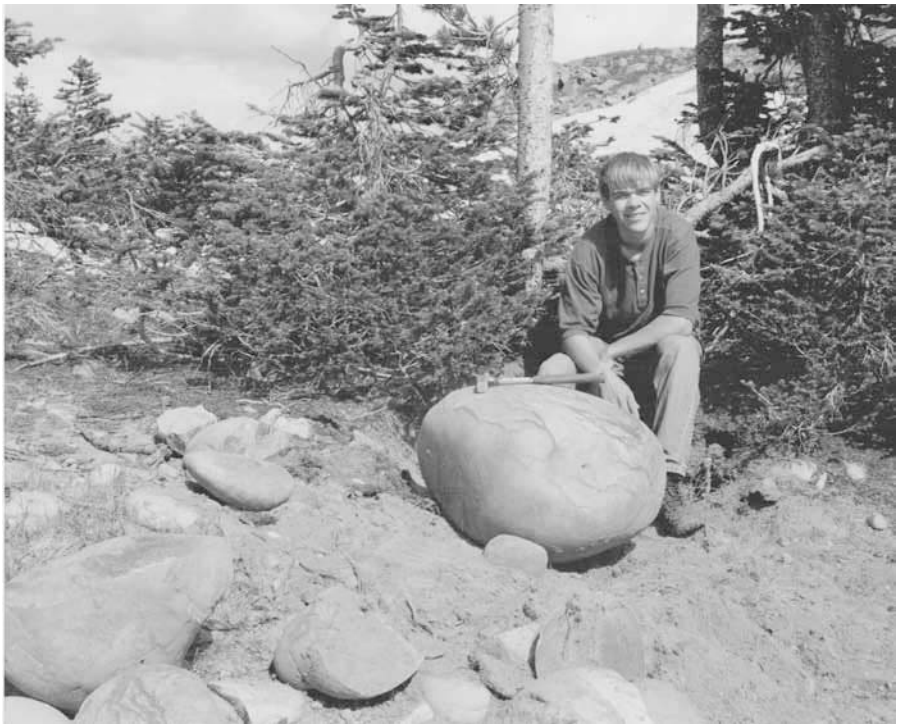

Figure 19. Polished quartzite boulder weighing about 200 kg from just southeast of Lookout Mountain, 2,500 meters above sea level, Wallowa Mountains of northeast Oregon (photograph by Paul Kollas with my youngest son, Nathan, as scale).

Uniformitarians recognize the extensive erosion but cannot explain the numerous *mysterious* pediments:

> Parts of the Sixmile Creek Formation [Late Cenozoic] as well as older lithologic units, exposed along the flanks of the basins, have been efficiently removed by a period of erosion, that spans most, if not all, of Blancan (Pliocene) time. It produced extensive pediments surfaces that can be observed throughout the region. … the pediments are remarkable by their size, indiscriminate cutting of Tertiary and older rock units (including granite), degree of preservation, and geographic extent. (Fields et al., 1985, p. 19)

It is difficult to estimate the total amount of erosion that took place in these valleys, but a minimum can be estimated from the height of erosional remnants and the elevations of pediment surfaces near the mountains. Since the tops of erosional remnants are consolidated or partially consolidated, there were probably hundreds of meters of sediment once above these rocks since cementation occurs below a fair depth of overburden.

In the Bighorn Basin of north-central Wyoming, about 1,000 m of valley-fill sediments were eroded by fast, north-flowing, down-basin currents. This is estimated from the Tatman Mountain planation surface (Figure 21), which lies about 700 m above the eastern Bighorn Basin. The presence of lignite (low rank) coal near the top of Tatman Mountain suggests that hundreds of meters of additional sediment and sedimentary rocks were eroded from Tatman Mountain, an erosional remnant of a once-larger planation surface (Oard, 2018). Later erosion created the topography we observe today. Therefore, it appears that around 1,000 m of sediment was eroded from the valleys of southwest Montana.

Valley-fill erosion likely was rapid. The velocity of channelized currents would have been controlled by the

increasing gradient caused by uplift. Potential energy near the continental divide would have resulted in high flow velocities down the valleys of southwest Montana.

Erosional Features of Southwest Montana

During the channelized-flow phase, these strong down-valley currents pulverized and eroded the top of the valley fill. An indication of the power and scale of these currents is seen by the absence of eroded debris in the valleys of southwest Montana, excepting "slackwater areas" (Part III). This debris was instead deposited in the Texas Gulf Coast and the Gulf of Mexico. Erosional debris west of the continental divide was likely deposited on the continental margin off Washington and Oregon or as part of the coastal mountains. During this strong erosion, numerous pediments and water and wind gaps were cut in southwest Montana (see Parts II and III).

At the onset of the Ice Age (Oard, 2004), many local mountain ranges became glaciated. Yellowstone Park was covered by an ice cap up to 900 m deep in the valleys (Licciardi and Pierce, 2008). Outwash from glaciation carpeted the Madison and Paradise valleys. Extensive outwash terraces in the Madison Valley (Figure 22) look like pediments, but the top of the outwash is generally horizontal, while pediments slope gently toward the valley center.

Conclusion

At the peak of the Flood, the area that is now southwest Montana was covered by nearly 2,000 m of flat-lying Paleozoic, Mesozoic, and early Cenozoic strata, resting on the Great Unconformity cut into granite and gneiss crust, or the Belt Supergroup. At the beginning of the recessive stage, land was uplifted and ocean basins and valleys sank. As mountains were exposed, sheet flow transitioned into channelized flow, and a transient continental divide in the western Rocky Mountains split the currents flowing both east and west. As the western Rocky Mountains began to rise, sheet flow eroded the area and deposited large breccia fans in southwest Montana, east of the Beartooth Mountains and east of the Bighorn Mountains. The continued uplift of the Belt Supergroup was so great that deeply buried metamorphic rocks were uplifted, eroded, and transported far to the east as coarse quartzite gravels. The power and velocity of these late Flood currents are seen in the rounding of those resistant quartzite rocks, ubiquitous percussion marks, and their transport into central Saskatchewan, southwest Manitoba, and north-central North Dakota. Quartzite rocks deposited on still-rising mountains were carried to higher elevations. During channelized flow, current energy remained high, and although erosion became increasingly confined to the valleys of southwest Montana, it was powerful enough to remove up to 1,000 m of the previously deposited valley fill and produce pediments and water and wind gaps. All of these features make sense in this Flood framework but are extremely difficult for uniformitarian scientists to explain. We will explore the landforms created by the late-Flood dynamics in Parts II and III.

Figure 20. Quartzite gravel, several meters thick, from on top of Gold Hill, Blue Mountains of central Oregon (John Hergenrather for scale).

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I thank the Creation Research Society for a grant to do this research. I also

Figure 21a. Tatman Mountain, western Bighorn Basin, an isolated erosional remnant about 300 m above the surrounding land, capped by mostly rounded volcanic and quartzite rocks (photo courtesy of Tim Thorton, Jackson Hole Bible College).

Figure 21b. Well-rounded quartzite rock from the top of Tatman Mountain showing abundant percussion marks (photo courtesy of Tim Thorton, Jackson Hole Bible College).

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Figure 22. Multiple outwash terraces in Madison Valley from deglaciation in Yellowstone Park (view south).

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Classic Reprints

Editor's Introduction:

In the previous issue, we began a series of classic articles reprinted from the early years of the Creation Research Society Quarterly. *In this issue, we present the second article in this series. Like the first classic article, this one is by John C. Whitcomb, a long-time member of the Creation Research Society. "The Creation of the Heavens and the Earth" first appeared in the Autumn 1967 issue of the* Quarterly. *In this article, Professor Whitcomb criticizes the gap theory, shows from Scripture that the earth came before the sun, and briefly describes nine physical reasons why the naturalistic origin of the solar system is problematic.*

We will continue to republish classic articles in the Quarterly *to remind our readers of some of the foundational work in the modern creation science movement. Some early papers have not survived the test to time, but others, such as this one, have. Opinions and attitudes within the creation science movement have changed, so some classic articles will contain some ideas that are a bit outdated. But those articles provide an important historical perspective on the thinking of creationists in the past.*

The Creation of the Heavens and the Earth

John C. Whitcomb, Jr.*

Abstract

Sound biblical basis is provided for belief in *ex nihilo* creation, and statements are made as to why evangelical Christians need not consider that this view is philosophically "unhealthy" or that it makes God a deceiver.

Following discussion of creation of the heavens and creation of the earth in separate sections, the author states his position regarding an extensive time interval between the first two verses of Genesis.

The author holds that the Genesis view that the earth was created before the sun, moon, and stars is in serious conflict with total evolutionary theory. He presents nine explicit reasons why the current astronomical idea that the earth came from the sun or from a proto-sun is not true. He closes with a section on the importance of stellar creation in God's eternal purposes.

* John C. Whitcomb, Jr., Th.D., Grace Theological Seminary, Winona Lake, Indiana

Ex Nihilo Creation

The Word of God teaches that all nonliving things were created supernaturally, instantaneously, and without the use of preexistent materials. In the strictest sense, this is the meaning of Hebrews 11:3: "By faith we understand that the worlds (*aionas*, the time-space universe) have been framed by the word of God, so that what is seen hath not been made out of things which appear" (ASV; cf. Romans 4:17).[1] This certainly cannot mean that visible material substances are composed of "invisible" atomic particles! Spiritual faith is certainly not required to accept the atomic theory in its current form! The point of the verse is that the physical substances that compose our visible universe did not exist in any form whatsoever, other than in the mind of an omniscient God, until He spoke the creative Word.

Not only was creation *ex nihilo*, but it also involved the instantaneous appearance of complex physical entities. The evolutionary concept of a gradual development of heavier and heavier elements throughout cosmic history, for example, is excluded by Scripture. Note the emphasis on the immediate effect of God's creative word in Psalm 33:6, 9: "By the word of the Lord were the heavens made; and all the host of them by the breath of his mouth.... For he spake, and it was done; he commanded, and it stood fast." There is certainly no thought here of delay, or resistance, or a gradual, step-by-step buildup to fulfillment.

Some scholars, in the name of evangelical Christianity, have denounced this view as philosophically "unhealthy" because it does not line up satisfactorily with empirical evidence (e.g., Leith, 1965, pp. 121, 122). Not only so, but it is claimed that this position makes God a deceiver (Kulp, 1952, p. 23; Leith, 1965, p. 122). An appropriate answer to such assertions has been expressed by Lloyd G. Multhauf, Department of Physics, Pennsylvania State University:

> If the Bible tells us of a non-uniformity in our fundamental laws and/or that it does not allow for millions or billions of years as the age of the earth, then God is not fooling man, rather man is going on a vain search in spite of what God has said. Biblical revelation, as well as science, is a means of gaining knowledge for the Christian. (Multhauf, 1966, p. 63).

Christians who truly desire to honor God's Word should not come to it with preconceived ideas of what could or could not have happened, or what can or cannot be true. To be sure, many of the great doctrines and events set forth in Scripture are foolish to the natural mind, because they are spiritually discerned (I Corinthians 2:14). And supernatural creation is one of those doctrines.

No amount of philosophical reasoning or scientific empiricism can modify the pure supernaturalism of such passages as Genesis 1:3—"And God said, Let there be light: and there was light." Analogous to this is the absolute supernaturalism, perfection, and suddenness of God's work of regeneration in the sinful heart of man: "For God, who commanded the light to shine out of darkness, hath shined in our hearts, to give the light of the knowledge of the glory of God in the face of Jesus Christ" (2 Corinthians 4:6).

The Creation of the Heavens

For convenience of human thought and expression, the Bible refers to three different heavens. The third heaven is that glorious place surrounding the immediate presence of God, to which Paul was carried in a transcendent vision early in his Christian experience (2 Corinthians 12:1–4). The second heaven seems to be equivalent to what we call "outer space"; while the first heaven consists of the atmospheric blanket surrounding the earth, in which clouds move and birds fly.

In the first chapter of Genesis, a distinction may be seen between the first heaven, above which the waters were lifted (vss. 8, 20) and the second heaven in which the luminaries were placed (vss. 14–17). There is certainly nothing crude or "prescientific," in the bad sense of that expression, about the cosmology of Genesis, as many able expositors have successfully and repeatedly demonstrated (cf. Harris, 1962).

What were the "heavens" like at the moment they came from the Creator's hand "in the beginning"? The third heaven was populated with hundreds of millions of angelic beings (Daniel 7:10), each one a "son of God" in the sense of a direct creation by God (cf. Job 1:6) and therefore perfect in all their ways (Ezekiel 28:15). They must have been created at the very beginning of the first day of Creation, for Job 38:6–7 tells of their singing and of their shout of joy at the creation of the earth.

That they did not exist before the first day is indicated by Colossians 1:16 (which tells us that Christ created all invisible as well as visible thrones, dominions, principalities and powers in the heavens as well as upon the earth) in the light of Exodus 20:11 ("in six days Jehovah made heaven and earth, the sea, and all that in them is" [ASV]. Compare also Psalm 33:6 and Ezekiel 28:13, 15.)

The second heaven, the realm of "outer space," was presumably empty and dark, for the sun, moon, and stars were not created until the fourth day, and the special light source that divided the light from the darkness had not yet been spoken into existence.

The first heaven, or atmospheric blanket, had neither vapor canopy nor clouds, for the waters were not yet lifted above the expanse ("firmament") in the form of a vast, invisible thermal vapor

[1] All Scripture quotations are from the King James Bible, except where marked ASV for the American Standard Version, 1901.

blanket, as must have existed until the Flood, and there were no clouds or rain as in our present post-Flood world. Neither Genesis nor geology gives any support to the idea that earth's primitive atmosphere consisted of ammonia, methane, hydrogen, and water, as the evolutionary theory of spontaneous generation of life requires. Philip Abelson, director of the Geophysical Laboratory, Carnegie Institution of Washington, has shown that such an atmosphere could not have existed (cited in Gish, 1964, p. 10).

Some Bible students believe that the heavenly bodies were created in the beginning but could not be seen from the earth because of a cloud blanket so dense that darkness covered the face of the deep. However, the waters were not lifted up until the second day, and the light that was created on the first day was clearly visible from the earth. Also, if God's work on the fourth day involved merely the unveiling of previously created heavenly bodies, this idea could have been more clearly expressed by the use of the verb "appeared" as in verse 9—"and let the dry land appear." Instead of this, we are told that God "made" two great lights on the fourth day, and that He "made" the stars also.

Although in its general biblical usage, this verb (*asah*, "made") is not as strong as *bara* ("created") for conveying the idea of *ex nihilo* creation, it is used as a synonym for *bara* in the creation narrative of Genesis. This can be demonstrated by comparing 1:21, where God is said to have "created" (*bara*) great whales, with 1:25, where He "made" (*asah*) the beasts of the earth. Surely we are not to understand any significant difference between the creation of sea monsters and land animals! Compare also 1:26 ("And God said, Let us make man in our image") with 1:27 ("So God created man in his own image"). Thus, the two verbs are used synonymously in this chapter, and the statement that the sun, moon, and stars were "made" on the fourth day means that they were "created" on the fourth day.

The Creation of the Earth

The earth, like the heavens, was created without the use of preexistent materials (Hebrews 11:3), which clearly implies that it was created instantaneously as a dynamic, highly complex entity. It was spinning on its axis, for in reference to the light source created on the first day, it passed through a night-day cycle. It had a cool crust, for it was covered with water.

The crust, however, had no significant features, such as continents, mountains, and ocean basins, for these were formed on the third day.

Nor did it have sedimentary and fossil strata, for these were basically the effects of the great Deluge. But it did contain all the basic elements and the foundational rocks of our present earth. As a planet, it was perfect in every way, but at this stage of creation week, it was not yet an appropriate home for man. It was "without form, and void" (*tohu wabohu*).

The Gap Theory

Many Christians find an extensive time gap between the first two verses of Genesis, the first verse being understood to refer to an originally perfect creation and the second verse to a great subsequent judgment because of Satan's rebellion against God. Before this judgment, which plunged the earth into darkness and chaos, all geologic ages could have transpired, the fossils being relics of that period. In the light of this, we are told that the first phrase of verse 2 should be translated, "and the earth became waste and void."

I believe, however, that the various English versions are correct in translating the verb (*hayetha*) "was" instead of "became," for out of 264 appearances in the Pentateuch, it may be translated "became" only six times (Genesis 3:22; 19:26; 21:20; Exodus 7:19; 8:17; 9:10). In each case, the context must determine the correct translation. However, the clearest way to express the idea of "became" would be to follow the verb with the preposition *lamedth* (as is done in Genesis 2:7 and 25 other places in the Pentateuch). This preposition is not used in Genesis 1:2.

The sentence structure suggests that the earth's condition in verse 2 is just as God created it in verse 1, for we have an exact grammatical parallel in Jonah 3:3 ("Jonah arose, and went to Nineveh according to the word of the Lord. Now Nineveh was an exceeding great city"). Obviously, Nineveh did not become a great city after Jonah entered it. F. F. Bruce points out that if verse 2 indicated an event subsequent to the creation of verse 1, we might have expected in verse 2 a "*waw* consecutive" with the imperfect tense instead of "*waw* copulative" with the perfect (i.e., *wattehi ha-arets* instead of *we-ha-arets hayethah*) (Bruce, 1946, p. 21).

The phrase "waste and void" (*tohu wa-bohu*) appears elsewhere only in Isaiah 34:11 and Jeremiah 4:23. In these cases, the context speaks of judgment by God upon the Gentile nations and upon Israel. However, in Genesis 1:2, the idea of judgment is not clearly in evidence. The verse simply means that at the moment of creation, the earth was uninhabitable; it was not yet a proper home for man. It was void of all life and interesting topographical features, being covered with darkness and with a shoreless ocean. But it was not necessarily evil, chaotic, or ruined.

The word *tohu* basically means "empty," for in Job 26:7 we read that God "stretcheth out the north over empty space (*tohu*)" (ASV) Also, Isaiah 45:18 speaks of the God that established the earth "and created it not a waste (*tohu*), that formed it to be inhabited (ASV)." Thus, God's purpose was not that it should be permanently empty, but that it should be inhabited. By the end of

the sixth day of creation, this wonderful purpose was fulfilled.

God, of course, could have filled the earth with living creatures on the first day; but Exodus 20:11 suggests that He did it in six days in order to provide a glorious pattern for man's work week. Therefore, we must not judge the quality of God's creative work by the appearance of the earth at the end of the first day. It was merely the first of six twenty-four-hour stages of creation.

Did the Earth Come from a Proto-Sun?

If Genesis teaches that the earth was created before the sun, moon, and stars, then Christians who believe the book of Genesis are obviously in serious conflict with evolutionary theory at this point. For this reason, many Christians feel that Genesis must be interpreted in such a way as to avoid this conflict. After all, is it not perfectly clear from astronomical studies that the earth and the other planets came from the sun or from a proto-sun? It shall be our purpose in the following paragraphs to show that this is not true.

By 1940, all the various encounter or planetesimal theories, which postulated the near approach of another star to our sun, resulting in the drawing off of embryonic planets, had been discarded as hopelessly inadequate explanations of the origin of the solar system (cf. Smart, 1959, pp. 179–207). In more recent years, Von Weizsacker, Whipple, Spitzer, Urey, Gamow, Hoyle, Kuiper, and others have attempted to avoid the difficulties of the planetesimal theories by returning to a form of nebular hypothesis, whereby the sun and its planets supposedly condensed out of swirling eddies of cold, dark, interstellar clouds of gas and dust. How well this currently popular theory succeeds in explaining the solar system in terms of physical, chemical, and mathematical principles alone may be judged by the Christian for himself after considering some of the basic problems that remain to be solved by evolutionary cosmogonists.

First, before any condensation of gas and dust could occur, the nebula would have diffused into outer space. Dr. Gerald P. Kuiper, a leading proponent of the evolutionary concept, admits that before gravitational attraction would become significant, the particles would have to be as big as the moon (See Zimmerman, 1953, p. 499).

Second, the theory demands a complex system of roller-bearing eddies of gas and dust, but this is impossible because such vortices must remain perfectly intact during essentially the entire period of planetary accretion. But Dr. Kuiper confesses that "it is difficult to conceive that the beautiful system of vortices would actually have been in existence long enough—even for 10 or 100 years—to get the condensation of the building material for the planets under way" (Zimmerman, 1953, p. 499). Yet the theory demands many millions of years.

Third, what stopped the process from continuing so that the entire mass of material did not form one large body? The sun makes up 99 and 6/7% of the mass of the solar system, so what would have kept the remaining 1/7 of 1% from falling into the main body?

Fourth, other suns do not seem to be condensing or developing planetary systems. There is much interstellar material in the vicinity of our sun, but it is not condensing. Greenstein of the Mount Wilson Observatory is of the opinion that the known stars rotate so fast that one must conclude that they could never have been formed by a condensation process. David Layzer, professor of astronomy at Harvard University, says that there is no known solution to the problem of the small angular momentum (the property that keeps the sun rotating and keeps the planets revolving around it) of the sun. If it had been part of a gaseous protogalaxy, its angular momentum would have to have been a billion times as much as it now possesses. How it could have lost all but 1/10,000,000 of 1% of its original angular momentum has never been explained (Layzer, 1960, p. 506).

Fifth, the planets contain less than 1% of the mass of the solar system but a staggering 98% of its angular momentum. David Bergarnini, in the Life Nature Library volume on the universe, observes: "A theory of evolution that fails to account for this peculiar fact is ruled out before it starts" (Bergarnini, 1962, p. 93),

Sixth, evolutionary theory cannot explain why 7 of the 9 planets have direct rotation in reference to their revolution around the sun, but Venus rotates slowly backwards, and Uranus rotates at a 98-degree angle from its orbital plane, even though its orbit inclines less than that of any other planet. Professor Layzer states: "It is an open question whether this state of affairs is consistent with current theories of the origin of the solar system" (Layzer, 1960, p. 506).

Seventh, evolution has no answer to the problem of retrograde satellites. Of the 32 moons in our solar system, 11 orbit in directions opposite that of the rotational direction of their mother planets. Of special interest is Triton, the inner of Neptune's two satellites, which has nearly twice the mass of our moon (its diameter being 3,000 miles) and revolves every 6 days in a nearly circular orbit only 220,000 miles from Neptune (closer than our moon to the earth).

Isaac Asimov, as well as most evolutionary cosmogonists, believes that Triton "was thrown away from that planet by some cosmic collision or other accident," and that later on Neptune recaptured its lost moon into a retrograde orbit by "a similar accident" (Asimov, 1960, p. 78). But how many such "accidents" may one be permitted to invoke to prop up a theory already tottering under the weight of its own unproved assumptions? Asimov further states that retrograde

satellites are "minor exceptions" to the general rule of satellite orbits. However, 11 out of 32 moons having retrograde orbits can hardly be brushed aside as "minor exceptions."

Eighth, what can evolution really offer as an explanation of the angular momentum in these satellite systems? We will permit Professor Layzer of Harvard to state the problem:

> Except in the Earth-Moon system (which is exceptional in other respects as well), the primary carries the bulk of the angular momentum, instead of the satellites.... This circumstance aggravates the theoretical difficulty presented by the slow rotation of the Sun, for if the Sun has somehow managed to get rid of the angular momentum it would be expected to have, according to the nebular hypothesis, why have the planets not done likewise? (Layzer, 1960, p. 506).

Ninth, in spite of some ingenious and very complicated theories, it has never satisfactorily been shown why the earth is composed of such heavy elements. In the words of Professor Fred Hoyle of Cambridge University:

> Apart from hydrogen and helium, all other elements are extremely rare, all over the universe. In the sun they amount to only about 1% of the total mass.... The contrast [with the heavy elements which predominate in the earth] brings out two important points. First, we see that material torn from the sun would not be at all suitable for the formation of the planets as we know them. Its composition would be hopelessly wrong. And our second point in this contrast is that it is the sun that is normal and the earth that is the freak. The interstellar gas and most of the stars are composed of material like the sun, not like the earth. You must understand that, cosmically speaking, the room you are now sitting in is made of the wrong stuff. You yourself are a rarity. You are a cosmic collector's piece. (Quoted in Zimmerman, p. 506).

In the light of all these facts of astronomy, it seems to me that evangelical scientists have no right to lend their support to evolutionary cosmogonies. It brought me a sense of keen disappointment, therefore, when I read an article in the evangelical periodical, the *Journal of the American Scientific Affiliation*, which praises Kuiper's gas-dust nebular theory as "truly simple." The author concludes his article with these words: "It is also most gratifying that this process of planetary formation is but a special case of the universal process of binary-star formation, which seems to be one of God's universal Laws.... Truly God is in his Universe, and all will be right with the world" (Kent, 1965, p. 117).

In contrast to this attitude, which presumably is quite widespread among evangelical scientists, I have become convinced that the most rational way to explain the origin of our vastly complex solar system is in terms of a direct creation by God. And if this be a reasonable position within the revealed frame of reference of biblical theism and in view of the conspicuous failures of evolutionary alternatives, may not the supernatural origin of the astronomic system we know the best serve as a model for the supernatural origin of the stellar systems that lie beyond our own?

In other words, if God created *ex nihilo* the two great lights that rule the day and night, He could also have created *ex nihilo* "the stars also." In the words of Dr. Paul A. Zimmerman, "The Biblical account of creation by Almighty God has not been disproved by science. It remains today, even from the viewpoint of reason, I believe, the most logical, believable account of the beginning of the earth and the rest of the universe" (Zimmerman, 1953, p. 513).

The Purpose of the Stellar Creation

Why did God create the sun, moon, and stars on the fourth day rather than the first day? One possible explanation is that in this way God has emphasized the supreme importance of the earth among all astronomical bodies in the universe. In spite of its comparative smallness of size, even among the 9 planets, to say nothing of the stars themselves, it is nonetheless absolutely unique in God's eternal purposes.

It was on this planet that God placed man, created in His image, to exercise dominion and to worship Him. It was to this planet that Cod came in the person of His Son 1900 years ago to become a permanent member of the human race and to die for human sins upon a rugged cross. And it will be to this same planet that this great God and Savior will return again to establish His kingdom. Because of its positional superiority in the spiritual order of things, therefore, the earth was formed first, and then the stellar systems; just as Adam was first formed, then Eve (I Timothy 2:13).

Another possible reason for this order of events is that God, by this means, made it clear that the earth and life upon it do not owe their existence to the greater light that rules the day, but rather to God Himself. In other words, God was perfectly able to create and take care of the earth and even living things upon it without the help of the sun. Apart from the Scriptures, of course, this would hardly be an obvious fact to mankind.

In ancient times (and even in some parts of the world today) great nations actually worshipped the sun as a god. In

Egypt he was called *Re*, and in Babylon he was known as *Shatnash*. After all, such worship seemed quite reasonable in view of the fact that the sun provides light, warmth, and, apparently, life itself.

Even the Jews were greatly tempted to enter into such worship, as may be judged by such passages as Deuteronomy 4:19 and 17:3. Job himself confessed: "If I beheld the sun when it shined, or the moon walking in brightness; and my heart hath been secretly enticed, or my mouth hath kissed my hand: this also were an iniquity to be punished by the judge: for I should have denied the God that is above" (Job 31:26–28).

Perhaps it is not inappropriate to suggest that the evolutionary theory provides a modern and subtle counterpart to the ancient sun-worship cult, for if we must trace our origin to the sun or to a proto-sun, and if we live, move, and have our being exclusively through its boundless blessings and provisions, then it is our God!

The creation account in Genesis completely undermines all such blasphemies by putting the sun in a secondary position in reference to the earth. It is not only a mere creature of God, but also a servant to man, the crown of God's creation.

But if the sun, moon, and stars are not ultimately essential to the earth's existence, then why did God create them? Three basic reasons are listed in Genesis 1:14. They are for lights, for seasons (a calendar), and for signs.

As lights, they replaced the special and temporary light of the early days.

As a calendar, dividing seasons, days, and years, they enable men to plan their work accurately into the distant future, thus reflecting the purposive mind of God.

As signs, they teach and ever remind men of vastly important spiritual truths concerning the Creator.

David learned from them the transcendence of God and his own comparative nothingness: "When I consider thy heavens, the work of thy fingers, the moon and the stars, which thou hast ordained, what is man that thou art mindful of him?" (Psalm 8:3). The apostle Paul insisted that men are utterly without excuse for their idolatries, for "the things that are made" give clear testimony to the "everlasting power and divinity" of the Creator (Romans 1:20 ASV).

Apparently, the sun, moon, and stars more effectively accomplish these purposes than one great light source could have. There need be no other reason for their existence than this threefold ministry to man.

But would not this have been an unnecessary waste of God's creative energies? Isaiah gives the effective answer: "Hast thou not known? hast thou not heard? The everlasting God, Jehovah, the Creator of the ends of the earth, fainteth not, neither is weary; there is no searching of his understanding" (Isaiah 40:28 ASV).

The heavens are the work of God's "fingers" (Psalm 8:3), and when they have fulfilled their God-intended purpose, they will flee away from His face, and no place will be found for them (Revelation 20:11). The eternal city will have "no need of the sun, neither of the moon, to shine in it: for the glory of God [will] lighten it, and the Lamb [will be] the light thereof" (Revelation 21:23; cf. 22:5).

Christ and His Word, therefore, must be our final guide as we seek to understand the origin, meaning, and destiny of the heavens and the earth.

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Letters to the Editor

The policy of the editorial staff of CRSQ *is to allow letters to the editor to express a variety of views. As such, the content of all letters is solely the opinion of the author, and does not necessarily reflect the opinion of the* CRSQ *editorial staff or the Creation Research Society.*

Concerning Hebert and Humphreys' Eschatological Presuppositions and "Literal Interpretation"

Over the years, I have benefited from the work of both Jake Hebert and Russ Humphreys appearing in various creationist publications. Nothing herein is meant to be condescending toward them or anyone agreeing with their assumptions. It is my intention to offer some thoughts for consideration which might ultimately help sharpen our approach to the Scriptures.

CRSQ contributors like Hebert and Humphreys are working to develop cosmological models starting with the Bible. This is a good thing. The Christian's thinking in every area ought to begin with Scripture, and I commend their devotion to the infallible Word in their recent papers (*CRSQ* 53:286–305). It is no secret, however, that many of the modern creationist movement's early proponents were devoted in large part to a theological school of thought prominent in the mid twentieth-century, a persisting hermeneutical system undergirding both Dr. Hebert's and Dr. Humphreys' papers (one to which I was also once devoted). This "unified interpretive scheme" (Erickson, 1998, p. 1168)—while it continues to hold hostage the word "literal"—actually has a history of arbitrariness and inconsistency in its alleged commitment to literal interpretation, as documented by Allis (2001) and evidenced by Scofield's promotion of the gap theory (Sabato, 2014, pp. 120–21).

Dr. Humphreys' informs us at the onset of his paper that he will "take all scriptural passages (most of them being prophetic) at face value, or straightforwardly, a method many people call 'literal interpretation'" (p. 297). Yet, in *Starlight and Time*, Humphreys acknowledged the danger of "try[ing] to squeeze a metaphor into a concrete straitjacket [since] 'straightforward' does not necessarily always mean 'literal'" (1994, pp. 56–57). I hope to add a bit of clarity with regard to the word "literal," and offer some long overdue challenges to what I believe to be an erroneous method in biblical interpretation.

Dispensationalism at work

Space does not permit an expanded discussion here, but considering dispensationalism's hijacking of the phrase "literal interpretation," it is noteworthy that dispensationalists historically have tended to "mix the literal and symbolic in a rather arbitrary manner" (Downing, 2002, p. 210).

> While Dispensationalists are extreme literalists, they are very inconsistent ones. They are literalists in interpreting prophecy. But in the interpretation of history, they carry the principle of typical interpretation to an extreme which has rarely been exceeded even by the most ardent of allegorizers. (Allis, 2001, p. 21)

In other words, dispensationalists have a history of imposing typology upon passages where simple literal historical narrative was intended. Oddly enough, their insistence upon literal interpretation is most unyielding in the interpretation of prophecy.

I suspect that if a paper dedicated to eschatology were submitted for publication in *CRSQ* it would be swiftly rejected on the grounds that such does not fit within the parameters of the journal nor comply with the mission of the Society. However, it is clear that an *a priori* subscription to dispensationalism/futurism plays an important role in the cosmological ideas put forth by these two authors. Hebert admits that he is "writing from a 'premillennial' viewpoint that assumes a literal 1,000-year reign of Christ on Earth" (p. 294), and Humphreys references J. Dwight Pentecost in support of his literal interpretation of prophetic events (p. 305).

To be clear, Hebert's particular placement of the "thousand years" of Revelation 20 is not in and of itself problematic here. Premillennialism has existed for centuries *without* the wooden-literal characteristics of dispensationalism's brand of futurism. The problem I am referring to is a dependence upon an interpretive method which displaces typological shadows and symbolic language, forcibly imposing literalism onto practically every prophetic passage. This coupled with a diminished regard for authorial intent necessarily results in poor exegesis.

As biblical creationists, we firmly assert that the authorial intent of the plain, historical record of creation in six days was not to communicate evolution over billions of years. Unlike earlier dispensationalists as documented by Allis (2001), we reject all attempts to reduce Hebrew historical narratives to mere typology. Can we not afford the Author of poetic and apocalyptic revelation the same

courtesy? J. Dwight Pentecost's defense of this nineteenth-century theological system does not justify the literalizing of apocalyptic symbolism, even for the sake of astronomical models.

Since readers of the Spring 2017 *CRSQ* have been subject to these quite popular views of prophecy as perpetuated by Drs. Hebert and Humphreys, it is only reasonable to consider that the implications of the historic Protestant interpretive method would be devastating to their papers. If our exegesis is faulty, there is no point in proceeding any further. To ignore the importance of careful exegesis is to potentially misread or distort Scripture for the sake of scientific modeling and conjecturing about the future of astronomy. Our commitment to biblical inerrancy doesn't amount to much if we are blind to our own presuppositions in how we read Scripture.

Both Hebert and Humphreys provide a number of biblical passages to support their hypotheses, none of which can be examined in-depth here. With regard to these passages' role in the development of such models, it is my contention that such an overly literal approach to Scripture which rejects prophetic type and antitype, ignores figure and fulfillment, and manifests a general disregard for literary genre is, as Allis and Downing assert, both inconsistent and arbitrary. Why, for example, is not this same hermeneutical method applied to the chain which the angel uses to bind Satan in Revelation 20:1–2? Why don't we find articles in creationist technical literature conjecturing about the most suitable element or alloy likely to be used in the composition of such a chain? Or, why not contemplate the anatomical ramifications of having a sword protruding from Jesus Christ's mouth (Rev. 1:16)? Presumably the answer is because dispensationalists recognize a distinction between the literal and the figurative in at least *some* prophetic passages. Their doing so is in no sense spiritualizing or allegorizing a text intended to be taken at face value but is the recognition that God is permitted to use figurative language in communicating truth, the truth communicated being much greater than the designated symbol.

> The figure 'metaphor' is a comparison by substitution. The Lord is my Shepherd. That is a metaphor. Shepherd is substituted for Lord. It does not mean that the Lord has now become non-existent. It merely emphasizes the shepherd-like qualities of care and compassion which our Lord exemplifies. … Christ is called the Lion of the Tribe of Judah; a symbol of a lion being used to describe Christ. But is not Christ infinitely superior to any lion of the forest? Is not Christ far more real than the symbol used to describe Him? Is unquenchable fire symbolic of overwhelming and eternal destruction? If it is merely a symbol, the reality it represents must be even more terrible. In literary symbolism the reality is always greater than the symbol representing it. The substance is always superior to the symbol used to illustrate it. (Cooke, 1989, pp. 50–51)

And if it is admitted that "'straightforward' does not necessarily always mean 'literal'" (Humphreys, 1994, p. 56), then it is at least possible that some of the verses referenced by Humphreys and Hebert comprise symbolic language and are therefore unsuitable for use in constructing astronomical models.

There is an immense difference between saying that a word used in Scripture is a symbol or metaphor for something else and saying that the words in Scripture have no meaning (which may be the fear of some). The substance, fulfillment, or antitype *is much bigger than the metaphor or shadow used to signify it*. Such is the nature of typology (Renihan, 2018).

I am not a scientist, and I have great respect for the members of CRS who are able to work through complicated formulas in proposing their ideas. I am confident that contributors to the *Quarterly* believe that the text of Scripture must be paramount in any endeavor to examine the universe God created. It necessarily follows, then, that the *meaning* of the text is of equal importance to its *authority*. If a passage is not properly exegeted, we do ourselves a great disservice to employ it as a proof-text in support of a futuristic cosmological scenario.

Augustine is blamed by Dr. Humphreys for introducing the allegorical method of interpretation with which Christianity continues to be plagued. Yet it has been shown that such a view is both an oversimplification of hermeneutics and misappropriation of Augustine (Cosner and Sarfati, 2013). It is not sufficient to say that "the Roman Catholic Church of today largely continues to use the [allegorical] method" while "many conservative Protestant churches began returning to the original method of … literal interpretation" (p. 305). It is true that Romanism errs in allegorizing Scripture texts which are meant to be understood literally, but Romanism likewise errs in *literalizing* texts meant to be understood *figuratively*. Recall that Protestants do not regard Christ's words, "Whoever eats My flesh and drinks My blood has eternal life" (John 6:54), as an invitation to cannibalism. Nor do we depend upon scientific enquiry to determine the proper exegesis of such a passage. Thus, "[we do not] reject Christ's 'real presence' in the eucharist because biochemical analysis fails to reveal hypostatic DNA. One should reject any such teaching on hermeneutical grounds recognizing Christ's use of figurative language" (Sabato, 2017, p. 32 en).

Permit me to emphasize this important fact: The exegetical error foundational to Rome's very existence as a religious institution is its stubborn insistence that Christ's words "this is My body" (Matt. 26:26), and "this is My blood" (v. 28) *be taken literally*.

The grammatical-historical hermeneutic

We do, indeed, believe that Scripture should be taken literally in the sense of ascertaining its actual or straightforward meaning, with consideration given to the authorial intent, literary genre, the analogy of Scripture, and the analogy of faith. But this is a very different use of the word "literal" than that to which we are often acquainted. Cosner and Sarfati address this (2013, p. 10):

> Modern informed creationists tend to disclaim that their hermeneutical method with the Bible is 'literal'. That's because they recognize that there are many different types of literature in the Bible—historical, poetic, prophetic, apocalyptic; and there are also plenty of figurative sections. So we tend to advocate a 'plain' interpretation, or, in technical terms, the grammatical-historical hermeneutic. The aim of this method is to read Scripture as its human authors and original audience would have understood it (so it could be termed an originalist approach). Nowadays, 'literal' often has the connotation of woodenly literalistic, and detractors of biblical creationists dishonestly knock down this straw man. However, no leading creationist is a 'literalist' in this sense, e.g. reading Jesus saying, 'I am the door', and thinking He had a knob and hinges.

Cooke also notes (1982, p. 143):

> Although we take the Bible literally, this does not mean that we ignore figures of speech. … To take the Bible literally means that we recognize figurative language. Some people apparently confuse literalism with letterism. Letterism is a wooden type of interpretation in which figures are ignored.

Even Dispensationalist Kenneth Cooper notes this distinction when he writes that "literal interpretation is not a crude letterism. … Literal interpretation allows room for figurative language and poetic expressions" (Cooper, 2006, p. 20).

The over-literalized approach is in part to blame on the fundamentalist movement of the early twentieth-century as it reacted to the liberals of the day. In the battle against modernism, which allegorized practically everything in Scripture, "many fundamentalists went to the opposite extreme and advocated a literalism so strict that they would brook no figurative language whatever" (Mayer, 1961, p. 428).

Hopefully this should clear up some of the misunderstandings surrounding the word "literal." A proper exegesis takes these principles into account, which is why none of us insist that Jesus is an actual, physical door (John 10:9) but rather seek to ascertain the theological import of His obviously *figurative* statement. So while it may appear piously "fundamentalist" in tradition and "conservative" in method, it is misguided to think we must force letterism upon symbolic language and typology in order to keep with "taking the Bible literally."

To cite just one example of many that could be pulled from the two papers under consideration, note that Hebert's speculations about the physical locations of "the heavenly Mount Zion" and the New Jerusalem (pp. 292–95) are not worth exploring if his exegetical groundwork is faulty. Consider briefly one of Berkhof's observations with regard to the use of these terms in Scripture (1958, p. 713):

> The contention that the names 'Zion' and 'Jerusalem' are never used by the prophets in any other than a literal sense, that the former always denotes a mountain, and the latter, a city, is clearly contrary to fact. There are passages in which both names are employed to designate Israel, the Old Testament Church of God, Isa. 49:14; 51:3; 52:1, 2. And this use of the terms passes right over into the New Testament, Gal. 4:26; Heb. 12:22; Rev. 3:12; 21:9.

A. W. Pink provides additional examples where the word "Jerusalem" is clearly not referring to a physical city in the Middle East (2016, pp. 344–47). Perhaps, then, it is at least possible that the word "Jerusalem" as it is found in certain passages is being employed as a symbol and has more to do with theological content communicated typologically and less to do with a 1380-mile high cube protruding from the face of the earth.

Space does not permit a detailed analysis of such over-literalized interpretations as found in Hebert's and Humphreys' recent papers. The primary issue is that of interpretive method, my concern being that careful exegesis has been sidelined in the zeal to explore the science behind presumed and unqualified futuristic scenarios. It is my opinion that such interpretations are not the result of sound exegesis but of twentieth-century American evangelicalism's general acceptance of a particular eschatological system.

For too long dispensational futurism has been regarded as merely the fruit of "taking the Bible literally," and the knee-jerk reaction toward those who object is that such persons are mere liberals and allegorizers. The history of interpretation says otherwise. Such overly literalized interpretations of prophecy had no precedent amongst Protestants until the rise of dispensationalism (Cooke, 2013; Fairbairn, 1976; Guinness, 2009; Waldron, 2003).

My point is this: It is the grammatical-historical hermeneutic that ought to govern our exegesis, not a prior commitment to dispensationalism's inconsistent literalism and futurist eschatology. As a former dispensationalist, I caution that taking our theological traditions for granted is not something those committed to biblical *sola scriptura* can afford to do. Coming to grips with our presuppositions and focusing greater attention on interpretive principles takes a great deal of effort and humility. But doing so would inevitably improve the work

of biblical creationists, and save us all a lot of time.

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Nick Sabato
nick@nopeacewithrome.com

Hebert Response to Sabato Letter

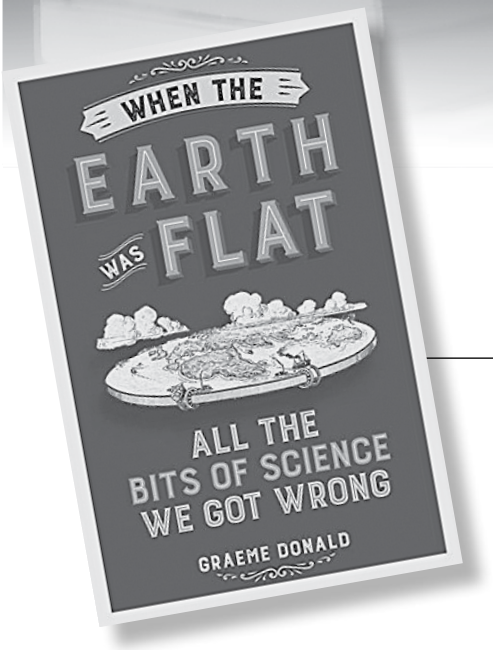
I wish to thank Nick Sabato for taking the time to read my article and for sharing his concern that Russ Humphreys and I have been overly influenced by dispensationalist thinking while attempting to construct a biblical cosmology.

Although I am basically dispensationalist in my view of prophecy and eschatology, I don't think that I was unduly influenced by it in the conclusions that I drew. Actually, I used to be a member of a church that was definitely *non*-dispensationalist, so I have been exposed to the pros and cons of both viewpoints. In fact, the only area where my eschatological views may have come into play was my belief that either the earthly Jerusalem or the heavenly New Jerusalem (or both) would one day be located at the North Pole. However, the passage I cited (Psalm 48:1-2) *explicitly* refers to Zion as "the city of the great King," so I am on very solid ground in assuming that this is indeed a literal city that will be on "the sides of the north." I don't see why this should be controversial. Even amillenialists believe that Jesus is coming back. And when He does, His headquarters will be located *somewhere* on either the Earth or the New Earth (or both). So why can't His capital be located at the North Pole? Even so, my thinking that God's throne is somehow associated with the direction north is coming primarily from the other passages of Scripture that I cited, most of which are not eschatological in nature.

Likewise, if there were only one (or even two) passages of Scripture that linked the direction north with the Lord's throne, I would agree that it would be potentially risky to attempt to draw cosmological conclusions from that. However, I cited *five* passages that seemed to be pointing in this direction (pun intended!): Isaiah 14:12-13, Psalm 75:6-7, Ezekiel 1:4, Job 37:22, and Psalm 48:1-2. Likewise, I have since found a *sixth* verse that seems to suggest this, as well as another verse of Scripture that seems to say that the abode of God is indeed above the "waters above." I have coauthored a second paper on this topic that has been submitted to the CRSQ.

Jake Hebert

Media Reviews



When the Earth Was Flat: All the Bits of Science We Got Wrong

by Graeme Donald

Michael O'Mara Books, London, 2012, 192 pages, $18.00

The title tells all, the book covering many ideas that science got wrong including the idea that base metals can be turned into gold, tobacco can cure health problems, injecting monkeys' glands into humans encourages sexual rejuvenation, and the selective breeding of humans can weed out the inferior from society.

The chapter on Darwinism begins by noting that "Charles Darwin (1809–1882) could never have foreseen the long-term ramifications of his published works" (p. 57). Author Donald adds that, in the long term, the effects of Darwinism were devastating: "'Survival of the fittest', a phrase attributed to Darwin, was later used by tyrannical elements in justification of, among other oppressive policies, the new 'science' of eugenics" (p. 57). This eugenics idea was based on Darwin's work, and his cousin Francis Galton (1822–1911) directly used Darwin's work as the basis for eugenics which

> advocated controlled breeding in an attempt to increase the chances of desirable characteristics in offspring. Like many intellectuals, Darwin spoke before considering the repercussions. In his *The Descent of Man, and Selection in Relation to Sex* (1882) he mused on how medical and scientific advances had meant that the weaker and less productive of our species were artificially propped up to allow them to survive and breed; a harsher environment would naturally cull such parasites (p. 38).

At his most incendiary, Darwin writes the following idea that inspired many infamous ideas. As Donald documents,

> the weaker members of civilized societies propagate their kind … No one who has attended to the breeding of domestic animals will doubt that this must be highly injurious to the race of man … but … one check in steady action, namely that the weaker and inferior members of society do not marry so freely as the sound; and this check might be indefinitely increased by the weak in body or mind refraining from marriage, though this is more to be hoped for than expected (p. 58).

Donald adds, in only a few "months of reading his cousin's book, Galton had formulated his own take on the future of humanity. British society–and indeed the entire world–would benefit enormously if all such dead wood was eliminated" (pp. 58–59). Darwin's idea of culling the dead wood, i.e. the weak or otherwise inferior

> made perfect sense: breeding kennels always match the strongest and the smartest dog with the smartest and the best bitch, and the equine bloodstock lines had been running on the same principles for centuries.… Galton's eugenics applied Mendel's findings to the human race: why not selectively breed together the very best and in the process weed out the worst of the species from the [human] gene pool (p. 60).

Galton did not suggest that individuals deemed "defective should be eliminated" but only that "they be sterilized in order to prevent them from propagating any more of their kind" (p. 60). Donald added that intelligence and artistic talent were both considered by eugenicists to be genetically inherited traits, as

> were fecklessness, imbecility, promiscuity, drunkenness and criminality; it would be no different to the selective breeding of dogs or bloodstock. Galton promised that within the span of a few generations crime and

> anti-social behavior would be a thing of the past and Britain would be left teeming with pleasant people who bore increasingly talented offspring (pp. 60–61).

Galton's supporters included many of the great and esteemed of Europe and America who eagerly flocked to follow eugenics. Notable supporters included Winston Churchill and Theodore Roosevelt, as well as birth-control activists Marie Stopes and Margaret Sanger (p. 63). Economists John Maynard Keynes and Sidney Webb, Founder of the London School of Economics, "saw the financial sense of a society unfettered by the financial burden of supporting an ever-increasing number of unproductive dependents" (p. 62).

Under the title "Left-Wing Support," Donald writes that many people "today dismiss the eugenics bandwagon as an exclusively right-wing vehicle" (p. 63). In fact, this was far from the case. It included many left-leaning intellectuals including

> Irish playwright and co-founder of the London School of Economics, George Bernard Shaw (1856–1950). Shaw was convinced that the future of Socialism lay in … Social Darwinism and the 'selective breeding of man'. The philosopher Bertrand Russell (1872–1970) … proposed that the state should issue everyone with color-coded 'procreation tickets'; anyone caught having sexual relations with a partner holding a differently colored card should be given a hefty fine or even face imprisonment for 'genetic treason' (pp. 63–64).

Donald adds that "in America eugenics had gathered significant momentum, and would go on to influence Hitler." The "concept of a blond-haired, blue-eyed Nordic super-race did not originate with the Führer, rather Hitler "derived the idea from studying the Californian eugenics program" that was the first American

> state to enshrine eugenics principles in its legislation, and the Californian eugenics program allowed for the enforced isolation and sterilization of unfit individuals (with the definition of 'unfit' left wide open to interpretation), and marriage restriction laws. Before the eugenics program was finally eradicated in America, over 60,000 'unfit individuals' would be forcibly sterilized and as many marriages ruled illegal, with California alone accounting for roughly one third of that total (p. 64).

Furthermore, critical to both the American and Nazi eugenics programs was the financial "support of the Carnegie Institution, the Rockefeller Foundation and that of countless [other] industrial magnates" (p. 60). The American program

> also received verbal backing from a majority of the Ivy League institutions, with Stanford's President David Starr Jordan's *Blood of a Nation* published in 1902 in support of the eugenics movement. In 1904, the Carnegie Institution began funding the Eugenics Records Office (ERO)…. It was there that millions of index cards catalogued the lineage and identified patterns of inherited conditions of American citizens, which the ERO used to justify its, often successful demands for the expansion of eugenics legislation and an intensification and broadening of the sterilization schemes.

The American company IBM played a part by developing "a punch-card system to help Hitler run his own eugenics program. The infamous tattoo on concentration camp inmates' inner forearms was not just a numeric ID, it was an IBM number in which was coded race, deviancy and skill" –Dutch, Jew, Doctor, for example (pp. 54–65).

The American eugenics movement took a major dark turn with the 1911 publication of the Carnegie-supported American Breeders' Association report that explored the use of both euthanasia and eugenicide "by lethal gas chamber, a term and 'solution' that would soon become all too distressingly familiar" (p. 66). Furthermore, a prominent American eugenicist, Paul Popenoe (1888–1979), co-authored *Applied Eugenics* which influenced both American and German eugenicists. The book

> argued that 'From an historical point of view, the first method which presents itself is execution and its value in keeping up the standard of the race should not be underestimated.' Popenoe was convinced that the infanticide employed in Ancient Rome and Sparta, as a birth-control method for unburdening the state of infants that showed signs of weakness or physical imperfection, was a model well worth exploring (p. 66).

In 1928, in the landmark *Buck v. Bell* case, the United States Supreme Court upheld a Virginia statute that promoted the "compulsory sterilization of the unfit." The case centered on a rape victim, a young poor woman Carrie Buck (1906–1983), who was committed after the attack partly because a nephew of the Dobbs family was the prime suspect, and it was this family who pushed

> to have Carrie committed as 'incompetent and promiscuous', with the eugenics lobby hotly demanding her sterilization.… The case sat before Justice Oliver Wendell Holmes, the acclaimed physician, … [who] sanctioned the enforced sterilization, pronouncing, 'It is better for all the world, if instead of waiting to execute degenerate offspring for crime, or to let them starve for their imbecility, society can prevent those who are manifestly unfit from continuing their kind. Three generations of imbeciles are enough' (p. 67).

The child born as a result of the rape was a perfectly normal girl who did well at school. Soon

> Carrie's sister, Doris, was admitted to hospital for an appendectomy,

> the surgeons … sterilized her while she was under anesthetic in order to 'terminate the family pollution of society.' Tragically, Doris was not even told of the procedure on waking; later, medical consultation occasioned by her not conceiving when married revealed all (pp. 67–68).

Carrie, a life-long avid reader, lived into her seventies, and those who found themselves against her at a bridge game had no reason to think of her as 'feeble-minded.' Justice Holmes' now infamous summing-up of the case was later quoted by the Nazis to defend themselves in front of the American judges presiding over the Nuremberg war trials (pp. 67–68).

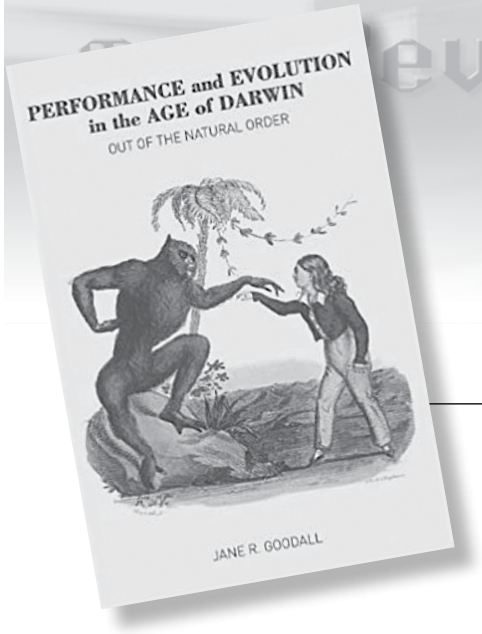
In 1934, the founder of the California State University at Sacramento and a Californian eugenics leader, Charles M. Goethe (1875–1966), accepted an invitation from Germany to observe its eugenics progress. By then, Germany's eugenic sterilization toll had already exceeded 5,000 persons monthly. Upon his return to California, Goethe gathered together his fellow American eugenics supporters to congratulate them, explaining their "work has played a powerful part in shaping the opinions of the group of intellectuals who are behind Hitler in this epoch-making program. Everywhere I sensed that their [the Nazis'] opinions have been tremendously stimulated by American thought" (p. 68).

A major link between the established American and German eugenics programs was forged when the Rockefeller Foundation gave close to four million dollars to support several German eugenic projects, including those at the Kaiser Wilhelm Institute for Anthropology. As a result, the American eugenics movement was thwarted in its desire to conduct medical experiments on twins. They were encouraged when they realized Hitler's eugenicists had the chance to do the research. In May of 1932, the Rockefeller Foundation cabled they were sending nine thousand dollars more over a three-year period "for research on twins and effects on later generations of substances toxic for germ plasm." The then German head of the Eugenics Institute was von Verschuer (1896–1969), a professor well-known in American eugenics circles, and whose assistant, Josef Mengele (1911–79) would later achieve his own notoriety for gruesome medical experiments on twins. Under Verschuer, with Rockefeller money, Mengele began on the path to his barbaric twin experiments (p. 69). Within only a few years after Germany was defeated

> like so many other American and German eugenicists, Verschuer had successfully rebranded himself as a geneticist. He assumed a comfortable professorship at the University of Münster, became a valued member of the American Society of Human Genetics (p. 71).

Donald concludes, if "there is one thing that man learns from experience, it is that man does *not* learn from experience." We claim eugenics is dead, but the "new-genetics" is now very popular in the West. New genetics are trying to achieve human perfection by "De-selection." An example is "nearly 2,300 abortions of fetuses with mental and physical disabilities were carried out in the UK alone in 2010," showing that it is all too easy to again be seduced down the Nazi route (p. 71). Donald asks, "Who will decide who lives and dies, and who will set the criteria?" Those who believe they are qualified to make such decisions should first watch the footage of the Holocaust as they disposed of the millions they considered genetic trash. Remember, Donald reminds us, their abhorrent crimes were carried out a mere sixty-five years ago on European soil in the most educated nation on earth (p. 71).

Jerry Bergman
jbergman@icr.org



Performance and Evolution in the Age of Darwin: Out of the Natural Order

by Jane R. Goodall

Routledge, New York, 2017,
279 pages, $35.00

This meticulously researched and wittily told historical study is on the use of the major performing arts, including museum and ethnological displays, to convince audiences of the truth of Darwinism, especially the theory of human evolution from apes or other primates. Actually, evolutionists do not believe humans evolved directly from apes, but rather that humans and apes evolved from a common ancestor which was some kind of ape. Some putative missing links were put on display by famous showmen (including P. T. Barnum), but many also were sponsored or supported by leading scientific institutions including major colleges and universities. Even Chicago World's Fairs and the American Museum of Natural History got into the act. In short, this important book covers the sordid history of pre-Darwinism.

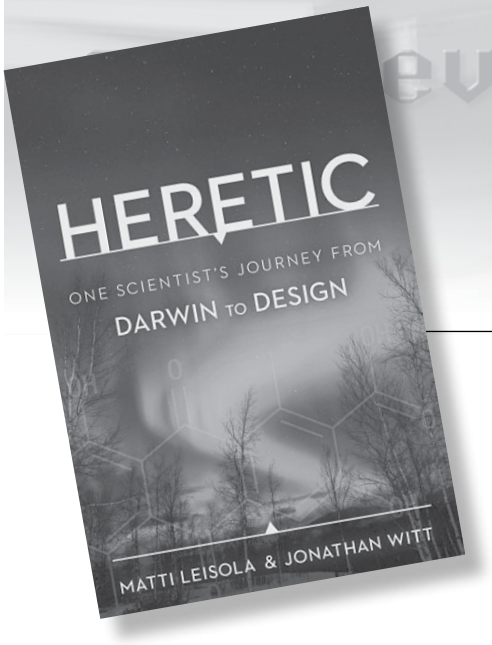
Goodall's history covers the cross-breeding between popular entertainment and science, specifically Darwinism. The history focuses on the period from about 1830, when evolution was often talked about by the forerunners of Darwin, to 1900 when Goodall claims Darwinism was firmly established. The book covers many examples where various non-Caucasians were exploited to "prove" human evolution. These include the ape man Zip, ape girl Krao, ape woman Julie Pastrana and others. Some detail is provided for each of these persons and the harm that their exploitation caused them.

Goodall relates that P. T. Barnum presented a Burmese family to support the theory that the first man was hairy like a gorilla but had grown less hairy since then. Barnum predicted all human body hair would eventually disappear. The Burmese men displayed in this exhibit were, he claimed, atavisms, a throwback to the first humans that were far hairier then most persons living today (p. 77).

Some displays used humans to prove Darwinism while others used apes such as Mademoiselle Fanny, an orangutan at the American Museum of Natural History made to look as human as possible with a fancy dress and trained to sit comfortably in a chair (p. 196). She was called by P. T. Barnum the "connecting link between man and brute" and the advertising claimed she possessed "as many characteristics of one [human] as the other [ape]" (p. 195–196). The attempt was to show evidence for human evolution with ape-looking humans and human-looking apes. Aztecs also were displayed as "degenerate vestiges of an originally superior race" (p. 73).

Not all presentations were specifically designed to prove human evolution but many of them to some degree reinforced the Darwinian worldview. Darwinism is mentioned close to a hundred times by Goodall, who discusses the travesty of negroes and other races considered inferior to the highest evolved humans, the whites. Examples include African and American Indian exhibits designed to show how the other half of the world lived, which tended to hint at, or even attempted to document, human evolution. Although some evolutionists saw these displays as "vulgar proof in the form of missing links…many other Darwinians could not resist the lure" to exploit them (p. 74). In the "1880s a new missing link began to claim international attention… Krao" soon to be followed by many others (p. 74). This history is very embarrassing to Darwinists, and we can thank Goodall for this study and documentation.

Jerry Bergman
jbergman@icr.org



Heretic: One Scientist's Journey from Darwin to Design

by Matti Leisola and Jonathan Witt

Discovery Institute Press, Seattle, 2018, 258 pages, $17.00

Author Matti Leisola, a leading biotechnologist in his field, covers his struggles to survive in a dogmatic Darwinian environment that goes against the very spirit of science. His case shows that in spite of strident opposition, a few diehards can survive and actually do well in the life sciences. It also appears that the intolerance of intelligent design supporters is not as strong in Europe as in America.

There are so few creationists in Europe that perhaps they are not considered a threat. In Finland, some 30% favor creationism of some form, and in other Scandinavian countries only 10% do. In America, there are many more creationists, and thus the opposition is stronger. Only a handful of science professors are out-of-the-closet creationists in America. Thirty years ago there were many more American scientists who spoke out for creation, which shows an increase in censorship over time.

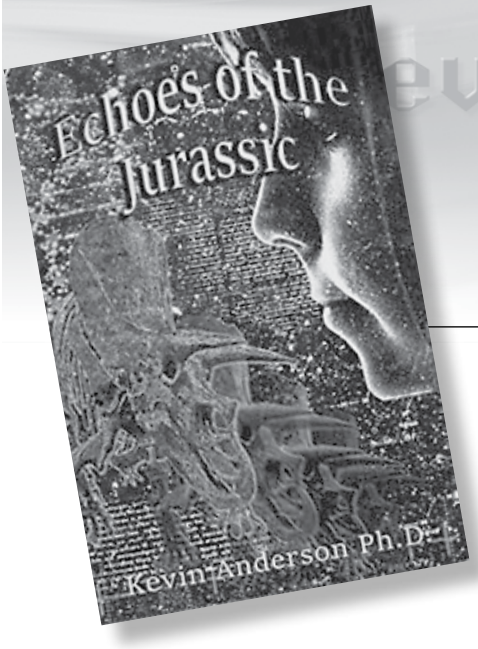
Leisola has nearly140 peer-reviewed original papers, review articles, conference proceedings, and patents, and 6,895 citations according to Google Scholar. This documents that one can be a creationist and achieve outstanding work in science.

An ironic experience occurred when Leisola published a Finnish translation of Wilder-Smith's *The Natural Sciences Know Nothing of Evolution* (Leisola, personal correspondence, March 9, 2018). It sold close to 700 copies within weeks of its release. To put this sales record in perspective, Nielsen Bookscan reported that 1.2 million English titles, both fiction and non-fiction, were released in 2004, and of these 80% percent (950,000) sold less than 99 copies, while 4% percent sold more than 1,000 copies and a mere 0.02% (25,000) sold over 5,000 copies. Thus, the Wilder-Smith translation, a nonfiction work, probably would be classified in Finland as a best-seller. Even so, the publisher told Leisola that they had destroyed the remainder of the books they had printed, and he should concentrate on raising his children (p. 98). Such is the antagonism against anyone who questions Darwinism. The reason the books were destroyed was that Darwinist scientists complained, calling the book a "Sermon against Evolution," and the publisher buckled.

One of the most valuable sections of this book is a review of the studies of mutated bacteria in an effort to see evolution in action. All the studies reviewed show that changes occur and were beneficial in certain environments, but in all cases clear limits to change were documented. Furthermore, microorganisms can be mutated to overproduce certain compounds, but in a natural environment, these mutants are seriously handicapped. To achieve the beneficial mutation goal requires an enormous number of mutations and rigid artificial selection (p. 170). In the end, the research vindicates intelligent design, not Darwinism.

Many of the changes involve enzymes, a major area of Leisola's research, an area he covers in several chapters. He shows in some detail how the rigid requirements for the design of the structure and function preclude Darwinism. This book is recommended for neophytes as well as seasoned researchers in the field of origins. It can hold the attention of the reader even when explaining complex molecular and cell biology.

Jerry Bergman
jbergman@icr.org



Echoes of the Jurassic: Discoveries of Dinosaur Soft Tissue

by Kevin Anderson

CRS Books, Chino Valley, AZ
2017, 56 pages, $6.00

After I had asked too many simple questions and was struggling to absorb all the answers, a scientist referred me to this book. I had no idea how fascinating it would be to journey through the details of the discovery and analysis of dinosaur soft tissue. I read several hours straight, never missing a reference. Then after a night's sleep dreaming of dinosaurs, I took up the book the next morning until finished. This is a book for anyone who wants to know the truth about the discovery of dinosaur soft tissues and the devastating implications for the evolutionary notion that dinosaurs have been extinct for 65 million years. Kevin Anderson is a young-earth creationist who shows how dinosaur soft tissues support the biblical record of the origins of our world.

The format of the book consists of a brief introduction, three main sections, a concluding chapter, two appendices, and an index. Much of the visual data is presented in glossy plates so the reader knows clearly what evidence is being discussed.

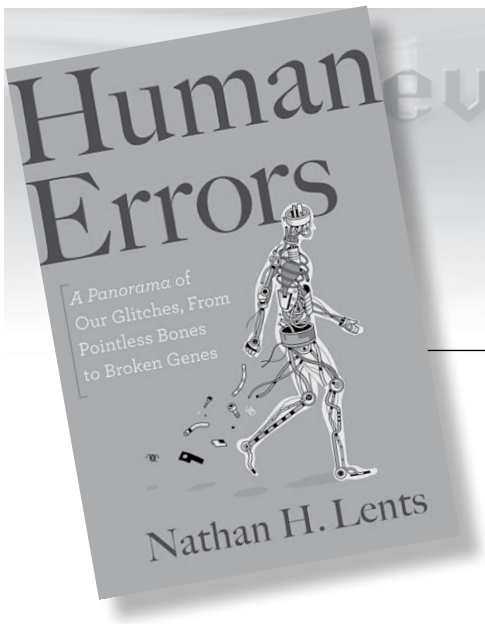
Chapter 1 deals with the discovery by Mary Schweitzer, University of North Carolina, of dinosaur soft tissue in a T. rex femur from the Hell Creek Formation. Details are given of her published findings, complete with glossy pictures of the micrographs. The subsequent firestorm of rebuke that fell upon her from evolutionary colleagues is reviewed, along with her brave defense of the authenticity of the findings. Schweitzer is seen to be an excellent scientist with fastidious attention to accurate analysis. She reasserted her findings and added that collagen and other proteins also were found. Alarmed, evolutionary scientists attempted to explain away the astonishing findings as contamination or poor technique. It was a crass attempt to preserve the alleged antiquity of dinosaurs. Next the findings of Anderson and the iDino project of the Creation Research Society are presented with analysis of the soft tissues from a triceratops horn, also from the Hell Creek Formation. This discovery complemented the findings of Schweitzer and thoroughly refuted charges of fraud and contamination from the evolutionary camp.

The second chapter explains the process of fossilization and the experiments and observations showing the rapid decay of bio-molecules following death. Schweitzer and other evolutionists attempt to explain how fossilization arrests natural decay and how soft tissues and collagen might be preserved for millions of years. Schweitzer's experiment with iron derived from blood heme, slowing the degradation of soft tissues. But this experiment does not provide an adequate explanation of soft tissue preservation on the evolutionary timescale.

The final chapter of the book deals with the failure of radiometric dating to prove the evolutionary geologic scale and dinosaur antiquity. A short summary chapter bears the name of the book, "Echoes of the Jurassic," and puts the controversy into historical context. Appendix A reviews the biblical revelation concerning origins. Appendix B gives several scanning electron micrographs of fossil bones.

The finding of dinosaur soft tissue is very significant. I highly recommend this book for any layperson wishing to learn the truth about dinosaur soft tissue and the frantic efforts of evolutionary scientists to deny and explain away this astonishing discovery.

Marshall C. Jordan, MD
marshalljordanmd@yahoo.com



Human Errors: A Panorama of Our Glitches, from Pointless Bones to Broken Genes

by Nathan H. Lents

Houghton Mifflin Harcourt, Boston, 2018, 234 pp., $27.00

Author Lents attempts to document the common "poor design of the human body" claim which is a major argument for Darwinism. Only three chapters directly attempt to achieve this goal, Chapters 1, 3 and 4. The claims have been refuted by empirical research completed by both evolutionists and creationists. Lents does explain well the Darwinist interpretation but ignores the problems with the position he articulates. He either is not aware of the problems or choses to ignore them. Consequently, the book is a good source of the poor design claims but a poor source to understand both sides of the arguments he reviews.

Due to space limitations I will cover only a few examples. One is what Lents calls *broken genes* known as *pseudogenes*. Pseudogenes are an important topic because Neo-Darwinists commonly argue an Intelligent Creator would not have created large amounts of useless, or even harmful, genes such as pseudogenes. Rather, they are the result of the blind, purposeless mechanism of evolution. Because pseudogenes have sequences that are very similar to functional genes, they are often labeled "dead" or "disabled" functional genes.

This is no minor issue from a statistical standpoint. Lents concludes that "the human genome contains the intact remnants of nearly *twenty thousand* pseudogenes" which is "almost as many broken genes as functional ones" (p. 73). If so, this would document enormous degeneration of the genome because, as Lents admits, even *if only one mutation* renders a gene broken, repair "is like a lightning strike…. The odds of lightning striking the same place twice are so infinitesimally tiny as to be nonexistent…. It's exceeding unlikely that a mutation will fix a broken gene because, following the initial damage, the gene will soon rack up additional mutations" (p. 72). He adds, if over half of our genes are broken, how can we survive as a species? His answer is "the majority of these pseudogenes are the result of accidental gene duplications [which]… explains why the disrupting mutations and subsequent death of the gene didn't have any deleterious effects on the individual." This is the common explanation for why most mutations do not appear to adversely affect the genome, a view that was falsified.

The pseudogene claim has also been slowly falsified as a result of the research showing that genes once labeled broken have been documented to be very much alive. Like the vestigial organ argument, because we do not know the function of an organ or structure does not prove it has no use. In fact, as was true with the vestigial organ claim, this belief has interfered with the motivation to find the function of organs so labeled. The vestigial organ number has shrunk from over 100 down to none. This may not occur with the pseudogene claim, but the number is clearly shrinking. Some, though, are no doubt broken genes.

The fact is, "Proving that a gene is totally nonfunctional, and is therefore definitely a pseudogene, is impossible" (Mounsey, 2002, p. 770), Balakirev and Ayala conclude "some functionality [of pseudogenes] has been discovered in all cases, or nearly all, whenever this possibility has been pursued with suitable investigations" (Balakirev and Ayala, 2003, p. 137).

The junk theory also breaks down when the earlier putatively "less evolved" organisms are evaluated. The *Escherichia coli* gene sequence evaluations reveal wall-to-wall genes (4,253 genes in its 4.5 million DNA base pairs). Humans' three billion base pairs include only about 23,000 genes (Mishra, 2010, p. 16). The ratio of genes to DNA base pairs in bacteria is 1 to 1,050; in humans it is 1 to 100,000, a 95-times greater level (Zheng, and Gerstein. 2007, p. 220). The reason is that this so-called junk DNA does not code for protein, but rather serves a regulatory function.

The reader will note the references cited above are several years old and many newer ones could be cited, which illustrates, as noted above, that Lents in his 2018 book released only months before this review was written, is either

appallingly unaware of the basic literature in this area or deliberately ignores it. Either way, he presents a very distorted view of his subject, which in the chapter reviewed here is about broken genes.

The chapter closes covering retroviruses, including HIV. Once HIV infects a cell it exists permanently in the DNA, and killing the virus means killing the DNA, thus the cell itself. All told, Lents claims, "you have more viral DNA than genes" (p. 84). A retrovirus must enter the gametes to become part of the cell line, the concern of evolution. The result, Lents claims, is this "is precisely what has taken place countless times in human history, and the resulting [virus] carcasses are still with us… now heavily mutated after all this time, to the point that almost none of them are able to create infections."

Author Lents estimates about "8 percent of the DNA inside of every single cell of your body consists of remnants of past viral infections, nearly a hundred thousand viral carcasses in all. Humans share some of these carcasses with cousins as distant as birds and reptiles, meaning that the viral infections that originally created them took place hundreds of millions of years ago and these viral genomes have been passed along, silently and pointlessly, ever since" (p. 85).

Again, no other possible explanations are provided, such as some of these carcasses are not retroviruses and are functional. One of the early examples "describes a functional regulatory protein encoded by an endogenous retrovirus and the third example of a retrovirally encoded RNA export factor" (Yang, et al, 1999). Since 1999, many newer studies have found similar results. Creationists have also covered this topic as well, as is true of all the other topics Lents covered in his book (Liu and Soper, 2009). Lents should at least have reviewed creationists' views before writing a book attempting to refute their conclusions. He obviously did not do this and relied largely, or only, on anti-creation writing.

The rest of the 5 chapters present problematic or simply wrong claims of poor design. The exception is Chapter 2 which is a well done, informative chapter on nutrition that has little to do with the theme of the book, namely, poorly designed organs in people.

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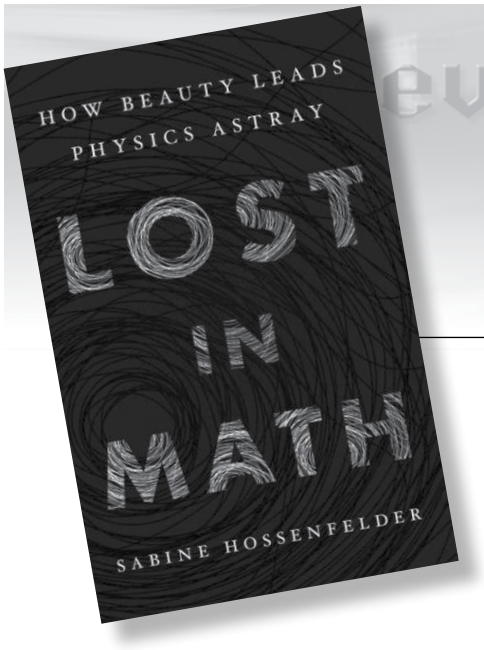
Jerry Bergman
jbergman@icr.org



Lost in Math: How Beauty Leads Physics Astray

by Sabine Hossenfelder

Basic Books, New York, 2018, 292 pp., $30.00

When returning home from mission trips to Brooklyn, I often take a break to stop at the Labyrinth Bookstore in Princeton, New Jersey, to view some of the latest titles in physics and mathematics. On one recent trip, I started skimming this book. I was stunned at the author's candor and decided that I had to purchase it.

Hossenfelder is a research fellow at the Frankfurt Institute for Advanced Studies and lives in Heidelberg, Germany. She also runs a popular physics blog called "Backreaction" (http://backreaction.blogspot.com). Hossenfelder is very skeptical of those physicists who continue to use beauty as a guide to uncover the laws of nature. She believes that the attempts to do so over the last few decades have been an abject failure. She entered and has worked in the field of theoretical physics at a time when no major new discoveries have been occurring. (Let's exclude the Higgs boson.) She writes that despite "an enormous amount of effort … for more than thirty years now, we have not been able to improve the foundations of physics" (p. 6).

Except for the Higgs, the Large Hadron Collider (LHC) has largely been a disappointment (p. 5). It has failed to confirm either supersymmetry ("*susy*" for short) or alleged "dark matter." But, as Hossenfelder points out, none of the supposedly "best people" in the field spoke up at the time and said that it was "bull hockey [I am using a euphemism] that the LHC had a good chance of seeing supersymmetry or dark matter particles." Instead of rethinking their presuppositions, though, many now simply want to build an even bigger collider. She decries both "scientists who believe in arguments from beauty" and "scientists who deliberately mislead the public about prospects of costly experiments" (pp. 81–82).

Much of the physics world remains convinced—because of an *a priori* commitment to their sense of beauty, which is what most of the book is about—that *susy* must be real, and they have spent billions of dollars and are prepared to expend billions more in that quest, even though to date there is still no evidence for it. Hossenfelder expresses her doubts but then also doubts her own doubts, writing, "Susy continues the quest for unification so naturally, works so nicely, fits so snugly—it can't possibly all be wishful thinking driven by herd-thinking physicists. It's either me who's the idiot, or a thousand people with their prizes and awards. The odds aren't on my side" (p. 84). This is typical of Hossenfelder's self-deprecation and light sarcasm throughout the book that help make her points.

Though denying the existence of God, many physicists nevertheless still cling to the elusive belief that a final theory of nature or a Theory of Everything will reflect this sense of beauty. For many, it is what drives them and much of the field today. Nobel Laureate and physicist Steven Weinberg has written, "In any case, we would not accept any theory as final unless it were beautiful." He adds, "For us, the beauty of the present theories is an anticipation, a premonition, of the beauty of the final theory" (Weinberg, 1992, p. 165). Similarly, Murray Gell-Mann, who received the Nobel Prize in 1969 for his work on elementary particles, said in a 2007 TED talk, "Beauty is a very successful criterion for choosing the right theory" (Gell-Mann, 2007). But why beauty should be an expected criterion for godless physicists who search out the mysteries of a supposedly meaningless universe is itself unexplained, a deeper question reflecting the yearning of the human soul (that is me speaking, not Hossenfelder). Hossenfelder also cites another physicist, Frank Wilczek, who shared the 2004 Nobel Prize in Physics, who wrote the following in his book, *A Beautiful Question*: "Having tasted beauty at the heart of the world, we hunger for more. In this quest, I think, there is no more promising guide than beauty itself" (p. 27). Hossenfelder adds that even Nobel Laureate Leon Max Lederman "became a beauty convert" (p. 26). From Hossenfelder's perspective, that is not meant as a compliment.

The book is in many ways a personal journey. Hossenfelder reaches out to

several famous physicists, people like Stephen Weinberg, Frank Wilczek, Nima Arkani-Hamed, and George Ellis, looking for answers: "Someone needs to talk me out of my growing suspicion that theoretical physicists are collectively delusional, unable or unwilling to recognize their unscientific procedures" (p. 95). No one apparently talked her out of it. Like many creationists (though Hossenfelder is no creationist), once she has seen the reality that the emperor (in our case, evolution; in her case, much of present-day physics research) has no clothes, she can't go back to pretending that it does.

Hossenfelder has some recommendations about bias in her field. She urges organizers of physics conferences to "encourage speakers to list not only motivations but also shortcomings." An entire appendix is devoted to "What You Can Do to Help" (pp. 245–248), including steps such as "You should ask if the scientists' chance of continuing their research depends on their work being popular among their colleagues. … [and] whether the scientists have taken steps to address their cognitive biases" (p. 248). Good luck with that! To date, the scientific establishment has been able to hide most of its biases from the general public. However, books such as this one expose the reality.

We as creationists certainly understand and sympathize with the quest for beauty. I am reminded of the famous lines by poet John Keats: "Beauty is truth, truth beauty; That is all ye know on earth, and all ye need to know." Mankind is surrounded by beauty in an extraordinary creation. We know that this beauty is a reflection of the Word who is truth, who spoke it into existence (John 1:1–3). Nevertheless, that intrinsic beauty has been marred by the Fall. Thus, we should not be surprised to find both beauty and ugliness in the physical world, as well as brokenness in need of a Redeemer.

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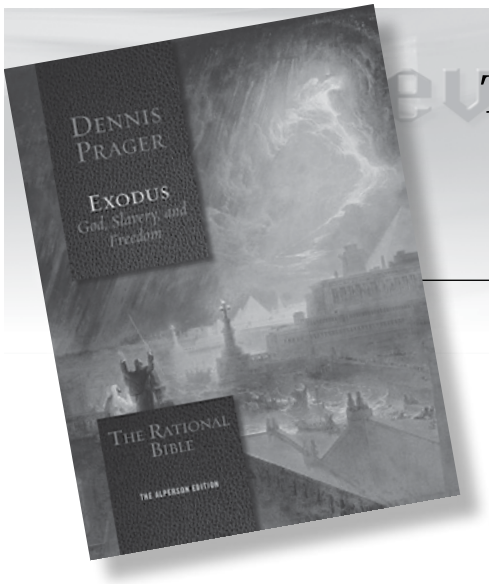
Jim Melnick
info@frji.org



The Rational Bible: Exodus: God, Slavery, and Freedom

by Dennis Prager

Regnery Faith, Washington, D.C., 2018, 520 pages, $25.00

Author Prager is a bestselling author, columnist and radio talk show host. He taught the first five books of the Hebrew Bible (the Torah) from the Hebrew language for twenty-five years at the American Jewish University in Los Angeles. With Adam Carolla, Dennis Prager produced the film *No Safe Spaces* about select problems in American society, including intolerance in American Universities against conservatives and religious persons, both students and faculty. Reviews summarize that the film confronts the "alarming trend of suppressing free speech at colleges and beyond."

Prager's detailed commentary of the book of Exodus uses creation as the foundation for his writing as a practicing Jew. For example, in explaining the reasons for the sabbath he writes that "the ultimate significance of the Shabbat… is a weekly public announcement that God created the world. *There is no other ritual or ethical law in the Bible whose purpose is to affirm God as the creator of the world*." He adds that "the most important verse in the Bible" is Genesis 1:1 (p. 251 emphasis his).

The reason for the verse significance is that, if "there is no Creator, there is no design and no [long term] purpose. All is random and ultimately meaningless, including right and wrong" (pp. 251–252). If evolution is true, "Ultimately, our lives are meaningless. Evolution is blind and serves no intrinsic purpose; in a cosmic sense, we each live for an insignificant amount of time" (p. 96).

In contrast to this view, every time one celebrates the Sabbath, "that person is affirming God created the world, and all" reality is *not* ultimately the product of random forces such as mutations that Darwinism teaches (pp. 161–162). Prager gives several examples, such as his college roommate in England, an atheist and physics major. When Prager responded to his roommate's questions about God, the roommate "was surprised that a religious person could utter an intellectual-sounding sentence, especially about God." The conversation came up because Prager "had lived out the mandate of the Sabbath commandant—publicly affirming the creator." (p. 252).

Prager gives an account of the decline of religious belief, correctly noting that Christianity declined in Europe especially because of the influence of so-called higher criticism led by the educated elite, adding, "Many of the best educated people in Germany supported Hitler and the Nazis," an observation supported by empirical research that finds the better educated "were more likely to be anti-Semitic than those with less education" (p. 229). Furthermore, "the large majority of the Western world's supporters of the genocidal regimes of Stalin in the Soviet Union and Mao in China were highly educated." And "…universities are at the center of Israel hatred in the Western world" (p. 229). As a Jew, Prager writes that one of his concerns is the moral failure of Christians in the past to aggressively oppose the persecution of ethnic Jews, including those who were practicing Christians. This "is almost universally acknowledged—even by virtually all Christians" (230).

Prager sees the same problem today in America, "every American university was founded to teach young people theology… [where] moral education was deemed the most important form of education, and knowledge of the Bible was assumed to be part of that moral curriculum." Then, in the "early-to-mid twentieth century, education, first at universities, then at high schools and elementary schools, was divorced from God and the Bible, and a disproportionately high percentage of secular intellectuals adhered to immoral ideologies and intellectually foolish beliefs" (p. 229).

The fact that this 520-page book became a best seller is encouraging and portends that the trend Prager documents will not be allowed to progress to the extent it did in Nazi Germany, Stalinist Russia or Communist China. The book reviewed here was number one in every relevant category on Amazon with many five-star ratings.

Jerry Bergman
jbergman@icr.org

Instructions to Authors

Submission

Electronic submissions of all manuscripts and graphics are preferred and should be sent to the editor of the *Creation Research Society Quarterly* in Word, WordPerfect, or Star-Office/Open Office (see the inside front cover for address). Printed copies also are accepted. If submitting a printed copy, an original plus two copies of each manuscript should be sent to the editor. The manuscript and copies will not be returned to authors unless a stamped, self-addressed envelope accompanies submission. If submitting a manuscript electronically, a printed copy is not necessary unless specifically requested by the *Quarterly* editor. Manuscripts containing more than 35 pages (double-spaced and including references, tables, and figure legends) are discouraged. An author who determines that the topic cannot be adequately covered within this number of pages is encouraged to submit separate papers that can be serialized.

All submitted manuscripts will be reviewed by two or more technical referees. However, each section editor of the *Quarterly* has final authority regarding the acceptance of a manuscript for publication. While some manuscripts may be accepted with little or no modification, typically editors will seek specific revisions of the manuscript before acceptance. Authors will then be asked to submit revisions based upon comments made by the referees. In these instances, authors are encouraged to submit a detailed letter explaining changes made in the revision, and, if necessary, give reasons for not incorporating specific changes suggested by the editor or reviewer. If an author believes the rejection of a manuscript was not justified, an appeal may be made to the *Quarterly* editor (details of appeal process at the Society's web site, www.creationresearch.org).

Authors who are unsure of proper English usage should have their manuscripts checked by someone proficient in the English language. Also, authors should endeavor to make certain the manuscript (particularly the references) conforms to the style and format of the *Quarterly*. Manuscripts may be rejected on the basis of poor English or lack of conformity to the proper format.

The *Quarterly* is a journal of original writings, and only under unusual circumstances will previously published material be reprinted. Questions regarding this should be submitted to the Editor (CRSQeditor@creationresearch.org) prior to submitting any previously published material. In addition, manuscripts submitted to the *Quarterly* should not be concurrently submitted to another journal. Violation of this will result in immediate rejection of the submitted manuscript. Also, if an author uses copyrighted photographs or other material, a release from the copyright holder should be submitted.

Appearance

Manuscripts shall be computer-printed or neatly typed. Lines should be double-spaced, including figure legends, table footnotes, and references. All pages should be sequentially numbered. Upon acceptance of the manuscript for publication, an electronic version is requested (Word, WordPerfect, or Star-Office/Open Office), with the graphics in separate electronic files. However, if submission of an electronic final version is not possible for the author, then a cleanly printed or typed copy is acceptable.

Submitted manuscripts should have the following organizational format:

1. Title page. This page should contain the title of the manuscript, the author's name, and all relevant contact information (including mailing address, telephone number, fax number, and e-mail address). If the manuscript is submitted by multiple authors, one author should serve as the corresponding author, and this should be noted on the title page.

2. Abstract page. This is page 1 of the manuscript, and should contain the article title at the top, followed by the abstract for the article. Abstracts should be between 100 and 250 words in length and present an overview of the material discussed in the article, including all major conclusions. Use of abbreviations and references in the abstract should be avoided. This page should also contain at least five key words appropriate for identifying this article via a computer search.

3. Introduction. The introduction should provide sufficient background information to allow the reader to understand the relevance and significance of the article for creation science.

4. Body of the text. Two types of headings are typically used by the *CRSQ*. A major heading consists of a large font bold print that is centered in column, and is used for each major change of focus or topic. A minor heading consists of a regular font bold print that is flush to the left margin, and is used following a major heading and helps to organize points within each major topic. Do not split words with hyphens, or use all capital letters for any words. Also, do not use bold type, except for headings (italics can be occasionally used to draw distinction to specific words). Italics should not be used for foreign words in common usage, e.g., "et al.", "ibid.", "ca." and "ad infinitum." Previously published literature should be cited using the author's last name(s) and the year of publication (ex. Smith, 2003; Smith and Jones, 2003). If the citation has more than two authors, only the first author's name should appear (ex. Smith et al., 2003). Contributing authors should examine this issue of the *CRSQ* or consult the Society's web site for specific examples as well as a more detailed explanation of manuscript preparation. Frequently-used terms can be abbrevi-

ated by placing abbreviations in parentheses following the first usage of the term in the text, for example, polyacrylamide gel electrophoresis (PAGE) or catastrophic plate tectonics (CPT). Only the abbreviation need be used afterward. If numerous abbreviations are used, authors should consider providing a list of abbreviations. Also, because of the variable usage of the terms "microevolution" and "macroevolution," authors should clearly define how they are specifically using these terms. Use of the term "creationism" should be avoided. All figures and tables should be cited in the body of the text, and be numbered in the sequential order that they appear in the text (figures and tables are numbered separately with Arabic and Roman numerals, respectively).

5. Summary. A summary paragraph(s) is often useful for readers. The summary should provide the reader an overview of the material just presented, and often helps the reader to summarize the salient points and conclusions the author has made throughout the text.

6. References. Authors should take extra measures to be certain that all references cited within the text are documented in the reference section. These references should be formatted in the current *CRSQ* style. (When the *Quarterly* appears in the references multiple times, then an abbreviation to *CRSQ* is acceptable.) The examples below cover the most common types of references:

Robinson, D.A., and D.P. Cavanaugh. 1998. A quantitative approach to baraminology with examples from the catarrhine primates. *CRSQ* 34:196–208.

Lipman, E.A., B. Schuler, O. Bakajin, and W.A. Eaton. 2003. Single-molecule measurement of protein folding kinetics. *Science* 301:1233–1235.

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Hitchcock, A.S. 1971. *Manual of Grasses of the United States*. Dover Publications, New York, NY.

Walker, T.B. 1994. A biblical geologic model. In Walsh, R.E. (editor), *Proceedings of the Third International Conference on Creationism* (technical symposium sessions), pp. 581–592. Creation Science Fellowship, Pittsburgh, PA.

7. Tables. All tables cited in the text should be individually placed in numerical order following the reference section, and not embedded in the text. Each table should have a header statement that serves as a title for that table (see a current issue of the *Quarterly* for specific examples). Use tabs, rather than multiple spaces, in aligning columns within a table. Tables should be composed with *14-point type* to insure proper appearance in the columns of the *CRSQ*.

8. Figures. All figures cited in the text should be individually placed in numerical order, and placed after the tables. Do not embed figures in the text. Each figure should contain a legend that provides sufficient description to enable the reader to understand the basic concepts of the figure without needing to refer to the text. Legends should be on a separate page from the figure. All figures and drawings should be of high quality (hand-drawn illustrations and lettering should be professionally done). Images are to be a minimum resolution of 300 dpi at 100% size. Patterns, not shading, should be used to distinguish areas within graphs or other figures. Unacceptable illustrations will result in rejection of the manuscript. Authors are also strongly encouraged to submit an electronic version (.cdr, .cpt, .gif, .jpg, and .tif formats) of all figures in individual files that are separate from the electronic file containing the text and tables.

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Submission of letters regarding topics relevant to the Society or creation science is encouraged. Submission of letters commenting upon articles published in the *Quarterly* will be published two issues after the article's original publication date. Authors will be given an opportunity for a concurrent response. No further letters referring to a specific *Quarterly* article will be published. Following this period, individuals who desire to write additional responses/comments (particularly critical comments) regarding a specific *Quarterly* article are encouraged to submit their own articles to the *Quarterly* for review and publication.

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Occasionally, the editor will invite individuals to submit differing opinions on specific topics relevant to the *Quarterly*. Each author will have opportunity to present a position paper (2000 words), and one response (1000 words) to the differing position paper. In all matters, the editor will have final and complete editorial control. Topics for these forums will be solely at the editor's discretion, but suggestions of topics are welcome.

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All book reviews should be submitted to the book review editor, who will determine the acceptability of each submitted review. Book reviews should be limited to 1000 words. Following the style of reviews printed in this issue, all book reviews should contain the following information: book title, author, publisher, publication date, number of pages, and retail cost. Reviews should endeavor to present the salient points of the book that are relevant to the issues of creation/evolution. Typically, such points are accompanied by the reviewer's analysis of the book's content, clarity, and relevance to the creation issue.

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2. **Sustaining Member** .....Those without an advanced degree in science, but who are interested in and support the work of the Society.
3. **Student Member** .....Those who are enrolled full time in high schools, undergraduate colleges, or postgraduate science programs (e.g., MS, PhD, MD, and DVM). Those holding post-doctoral positions are not eligible. A graduate student with a MS degree may request voting member status while enrolled as a student member.
4. **Senior Member** .....Voting or sustaining members who are age 65 or older.
5. **Life Member** .....A special category for voting and sustaining members, entitling them to a lifetime membership in the Society.
6. **Subscriber** .....Libraries, churches, schools, etc., and individuals who do not subscribe to the Statement of Belief.

All members (categories 1–5 above) must subscribe to the Statement of Belief as defined on the next page.

Please complete the lower portion of this form and mail it with payment to CRS Membership Secretary, 6801 N. Highway 89, Chino Valley, AZ 86323, or fax for credit card payment to (928) 636-1153. Applications may also be completed online at creationresearch.org.

✂ ----------

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* Student members are required to complete the bottom portion of this form.
NOTE: Student members may qualify for the *Future Leaders Sponsorship* program. See the CRS website at www.creationresearch.org for details.
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28	☐	☐	☐	☐
29	☐	☐	☐	☐
30	☐	☐	☐	☐
31	☐	☐	☐	☐
32	☐	☐	☐	☐
33	☐	☐	☐	☐

	Number			
Volume	1	2	3	4
34	☐	☐	☐	☐
35	☐	☐	☐	☐
36	☐	☐	☐	☐
37	☐	☐	☐	☐
38	☐	☐	☐	☐
39	☐	☐	☐	☐
40	☐	☐	☐	☐
41	☐	☐	☐	☐
42	☐	☐	☐	☐
43	☐	☐	☐	☐
44	☐	☐	☐	☐

	Number			
Volume	1	2	3	4
45	☐	☐	☐	☐
46	☐	☐	☐	☐
47	☐	☐	☐	☐
48	☐	☐	☐	☐
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Creation Research Society

History—The Creation Research Society was organized in 1963, with Dr. Walter E. Lammerts as first president and editor of a quarterly publication. Initially started as an informal committee of 10 scientists, it has grown rapidly, evidently filling a need for an association devoted to research and publication in the field of scientific creation, with a current membership of over 600 voting members (graduate degrees in science) and about 1000 non-voting members. The *Creation Research Society Quarterly* is a peer-reviewed technical journal. It has been gradually enlarged and modified, and is currently recognized as one of the outstanding publications in the field. In 1996 the *CRSQ* was joined by the newsletter *Creation Matters* as a source of information of interest to creationists.

Activities—The Society is a research and publication society, and also engages in various meetings and promotional activities. There is no affiliation with any other scientific or religious organizations. Its members conduct research on problems related to its purposes, and a research fund and research center are maintained to assist in such projects. Contributions to the research fund for these purposes are tax deductible. As part of its vigorous research and field study programs, the Society operates The Van Andel Creation Research Center in Chino Valley, Arizona.

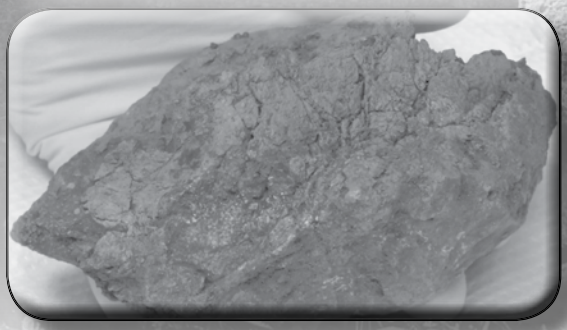
Membership—Voting membership is limited to scientists who have at least an earned graduate degree in a natural or applied science and subscribe to the Statement of Belief. Sustaining membership is available for those who do not meet the academic criterion for voting membership, but do subscribe to the Statement of Belief.

Statement of Belief—Members of the Creation Research Society, which include research scientists representing various fields of scientific inquiry, are committed to full belief in the biblical record of creation and early history, and thus to a concept of dynamic special creation (as opposed to evolution) both of the universe and the earth with its complexity of living forms. We propose to re-evaluate science from this viewpoint, and since 1964 have published a quarterly of research articles in this field. *All members of the Society subscribe to the following statement of belief:*

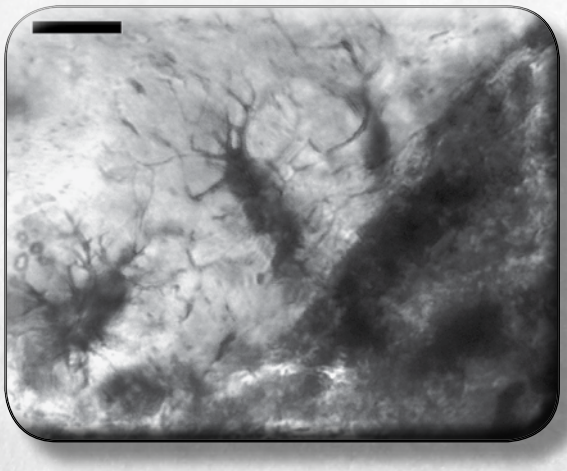
1. The Bible is the written Word of God, and because it is inspired throughout, all its assertions are historically and scientifically true in all the original autographs. To the student of nature this means that the account of origins in Genesis is a factual presentation of simple historical truths.
2. All basic types of living things, including humans, were made by direct creative acts of God during the Creation Week described in Genesis. Whatever biological changes have occurred since Creation Week have accomplished only changes within the original created kinds.
3. The Great Flood described in Genesis, commonly referred to as the Noachian Flood, was a historical event worldwide in its extent and effect.
4. We are an organization of Christian men and women of science who accept Jesus Christ as our Lord and Savior. The act of the special creation of Adam and Eve as one man and woman and their subsequent fall into sin is the basis for our belief in the necessity of a Savior for all people. Therefore, salvation can come only through accepting Jesus Christ as our Savior.

iDINO II

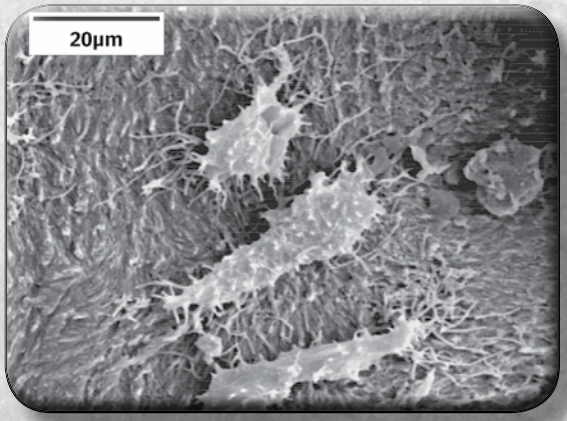
Investigation of Dinosaur Intact Natural Osteo-tissue



A fragment of the *Triceratops* brow horn. Fragments, such as this one, still contain tissue and cells.



Microscopic examination of tissue extracted from a *Triceratops* horn reveals bone cells still present.



Electron microscope picture of intact bone cells still in tissue extracted from a *Triceratops* horn.

How can pliable, stretchable tissue survive inside dinosaur fossils for over 65 million years?

How can this tissue still contain intact cells and even dinosaur proteins?

How can this fragile biological material survive for so long?

The answer to these questions directly challenges the current, evolutionary-biased, geologic timescale.

The Creation Research Society began its iDINO research initiative for the purpose of studying soft tissue in dinosaur fossils. The first phase of the project detected pliable, unfossilized tissue in a brow horn of a *Triceratops*. Within this tissue were intact osteocytes (bone cells). Some results from the iDINO project have been published in a technical microscopy journal and presented at an international microscopy conference. The Spring 2015 issue of the *Creation Research Society Quarterly* also features a special report of the iDINO project. Plus, to further spread the important information about soft tissue, the Society is developing a video (Echoes of the Jurassic).

The **second phase** of the project (iDINO II) will look more extensively at the process of tissue preservation. Evolutionists have offered various theories of how this tissue could survive for millions of years. iDINO II will methodically investigate these preservation claims, assessing their plausibility.

The iDINO results have already provided a strong challenge to the evolutionary worldview. More extensive and detailed examination may provide even stronger evidence that the age of dinosaur fossils is far less than 65 million years. To this end, the Society continues to seek those willing to fund this project with either one-time gifts or monthly donations.

For more information contact us at (928) 636-1153 or crsvarc@crsvarc.com.

Also visit http://tinyurl.com/nphm2c4 for project updates and details.