Creation Matters

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Is the Creationist Literature Loaded with Experiential Thinking?

by Kevin Anderson, PhD

While a defense of creation is almost never allowed in "secular" scientific journals, criticism of Intelligent Design (ID) and creation (in virtually any form) is generally considered fair game. One such example is a 2015 *PLoS One* article purporting to analyze the content of creation/ID literature (Nieminen et al., 2015). From their analysis the authors conclude that creation and ID writings focus on experiential thinking rather than scientific reasoning.

Experiential thinking is the concept that personal experience and observation are the primary or even only basis of knowledge. An example would be concluding that the earth must be stationary because I do not feel it moving. Experiential thinking fails to fully account for those phenomena not easily understood simply by our limited personal perspective. Instead, this type of thinking relies heavily upon personal intuition, emotion, and imagination (Norris and Epstein, 2011).

People using experiential thinking may often form opinions based upon anecdotal rather than analytical evidence — e.g., the referees are always biased against my team, or it rains every time I wash my car. Because of this, the *PLoS* authors summarize that "opinions based on experiential thinking are resistant to change and not easily transformed by logical evidence" (p. 4).

Accurate literature sampling?

In their paper, Nieminen and his co-authors conclude that creationists rely heavily upon experiential thinking. With this conclusion they accuse creationists of ignoring the scientific validity of certain experiments, tests, and other forms of evidence because these do not fit creationists' perceptions of reality. In other words, creationists choose anecdote and imagination over science.

To demonstrate this situation, the *PLoS* authors selected several journal articles, internet essays, and books written by creationists and proponents of ID. They then evaluated each of these writings for various characteristics of experiential thinking. From this analysis they determined what percentage of creationist writings exhibited certain forms of this thought process.

Table 1 of this *PLoS* article lists the general sources of the publications they examined. Among these sources are papers published in the *Creation Research Society Quarterly* (*CRSQ*) and *Creation Matters*, as well as publications by sister organizations, such as the Institute for Creation Research and Answers in Genesis. However, other than a generic listing of periodicals (e.g., *CRSQ* or *Journal of Creation*) and websites (e.g., www.creationresearch.org or www.icr.com), only some of the sampled writings are specifically identified.

Having revealed their rooted prejudice, the authors cannot claim to hold an objective position from which to conduct their analysis.

Even less identifying information is given for the source of the pro-evolution writings used for comparison in Table 2 of the article. As such, it is not possible to completely retrace these authors' analysis or to offer many specific rebuttals.

In addition, the authors only provide a brief description of how they selected the sampling of literature for analysis. They describe that the articles and books included in their evaluation were selected based upon the writing's visibility, impact, citations in creationist and evolutionist texts, and popularity on social media. They only vaguely explain the criteria they used to ascertain this information, and do not specify what citation index or impact measurement model they employed.

Also, social media popularity is certainly not a very accurate indicator of the value of specific writings. Social media can easily become obsessed with trivial essays and bizarre conclusions. This medium is also far more likely to focus on emotional and geopolitical issues than technical scientific concepts. Often driven by those with minimal understanding of the topic being discussed, popularity on social media is not a very balanced measure of the quality or scientific merit of any book or article (creationist or evolutionist).

Additionally, there is no indication that the authors made any attempt to distinguish between theological, sociological, and scientific writings. Rather, they seem to have dumped all creation literature into one sample set. Yet the criteria for evaluating writings from each of these diverse disciplines would be dramatically different.

Content and style commonly found in sociological writings would not necessarily be appropriate for theological or scientific works. A theological writing is not likely to provide a hypothesis or experimental design, as would commonly be found in

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Math Matters
by
Don DeYoung, PhD

Do you have a second?

What is happening with leap seconds? An extra midnight second was added to clocks at the end of 2016, as has happened 26 times since 1972. The reason is that the earth's rotation is slowing due to tidal braking, similar to slight friction on a turning wheel. Of course, this rotation period increase is very small. Over a century the length of a day increases about 0.002 seconds. This figure is notoriously variable in the literature so I am using an average. The net result is that each day averages 5.5×10^{-8} seconds longer than the previous day. With this number, over a 6,000 year time scale, the average day gains only about one-tenth second, which is of little significance.

The question remains, why are there frequent leap-second additions to our clocks? The answer involves atomic clocks, which provide a universal time standard. These chemical clocks have nearly perfect, error-free "ticks" due to the precise vibrations of component molecules. Atomic clocks have been used for about one-half century. Precise time keeping is essential to digital communication, computers, GPS, optics, and other areas of technology.

The slight average increase in the length of each day leads to a cumulative difference from atomic clocks. Consider a rough estimate of the difference accumulated over fifty years: 5.5×10^{-8} sec + 11×10^{-8} sec+ 16.5×10^{-8} sec + …. These numbers represent the difference after the first day, second day, and so on, over fifty years' worth of days, with 18,250 terms total. I am leaving out leap year days since these numbers are estimates. The sum of this linear or arithmetic series is about nine seconds. More accurate measurements of the earth's rotation over the last half century have resulted in a 26-second difference with atomic clocks, necessitating this many leap second additions to earth clocks.

The conclusion is that earth's rotation is indeed slowing; however, not as rapidly as leap seconds might imply. Time is a fascinating part of our world, and the Creator controls this winding down of history. As Psalm 31:15 explains, our times are in His hands.

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scientific writings. Thus, failure to distinguish between these various disciplines further complicates any attempt at an objective and analytical evaluation of the sampled papers.

What is more, there are thousands of creation/ID writings available in print and on the internet. Some are decidedly of higher quality than others, and some authors are far more technically trained than are others. In all of these stacks of literature, it would not be hard to find writings that even I would admit are far less than stellar. In the absence of a clearly objective and concise method for choosing publications, on what basis do we accept that Nieminen and his co-authors selected a truly representative sample of the creation and pro-ID literature for their evaluation?

Subjective analysis?

The *PLoS* authors evaluated their sample of writings for several factors that they suggest reveal the use of experiential thinking (p. 4). These factors include: 1) the use of "testimonies" as a replacement for data and evidence; 2) "confirmation bias," described as ignoring or dismissing contradictory data and seeking only data that are consistent with the desired conclusion; 3) "pseudodiagnosticity," the use of flawed or irrelevant information and failure to include relevant information; 4) downplaying complex or contradicting information with simplistic or emotional responses that often involve "over-generalization" and "stereotyping"; and 5) assigning moral significance to morally neutral issues.

Note that each of these factors is highly subjective. Detecting them is certainly influenced by the authors' personal opinions and prejudices. For example, how are testimonies, confirmation bias, and pseudodiagnosticity objectively identified and measured? What the authors may consider as flawed data (i.e., pseudodiagnosticity), might be considered proper data by someone else.

In fact, the extreme subjectivity of the actual analytical process clearly creates a condition for possible bias within the study. Coupled with the potential for bias in the sampling of writings chosen for evaluation, by their own definition this study is highly prone toward "confirmation bias" — finding what the authors want to find. Thus, it is ironic that the authors employ a potentially biased methodology to identify potential bias in creationist writings.

Authors' prejudice?

As a description of their evaluation process, the authors state that they "analyzed the overall context of the texts, i.e., if they ... discussed the 'scientific' claims for creationism" (p. 4). That the authors choose to place "scientific" in quotation marks reveals a clear prejudice that they view creation as void of scientific argument or basis. They also describe "creationism" as "religiously motivated" (p. 1), not allowing for anyone to conclude that creation is correct because of the scientific evidence.

Having revealed their rooted prejudice, the authors cannot claim to hold an objective position from which to conduct their analysis. This is certainly significant since, as mentioned, their study is extremely prone to subjective interpretation. So, authors with a clear bias against creation/ID employ a decidedly subjective system for evaluating papers that were selected based upon some vague and nebulous criteria. No possibility of "confirmation bias" there.

Supposed examples of experiential thinking

1. Testimonies

The *PLoS* paper lists descriptions of what the authors consider "testimonies." These include out-of-context quotations, appeals to authority, and demonizing of evolution. They conclude that creationists use these types of testimonies as a means of justifying their flawed arguments — i.e., they resort to testimony in the absence of scientific evidence. The authors further claim to have found such "testimonies" in 100% of the creationists' literature analyzed.

In their analysis, the authors identify the use of quotations as a "major form of proof" for detecting these "testimonies" (p. 1). Yet, they later admit that "quoted testimonials and personal observations or experience can belong to the scientific method" (p. 12). In fact, academic scholarship often involves quoting relevant writings and building upon an existing foundation of knowledge. So when are quotations an indication of experiential thinking and when are they an appropriate means of building upon known information? Because the authors clearly view creation/ID as void of any merit, they apparently assume any quotations in creationist writings are "testimonies" (p. 5).

Granted, some out-of-context quotations can be found in both creationist and evolutionist literature. The *PLoS* paper provides a few possible examples (all from creationist writings, of course), but some of these examples are not so evident when placed within the context of how the quotation was used. Nieminen and his co-authors further state that in *most* instances where creation/ID literature contains a quotation from an evolutionist, the quotation is intended to give "testimony about alleged fatal problems in evolutionary theory" or is "presented as 'involuntary admissions' of evolution being based on dishonest or biased research" (p. 6). Most? By their own definition this is both an "over-generalization" and "stereotyping."

An examination of the science articles within the two recent "Special Issues" of *CRSQ* (Vol. 51, no.4; Vol. 52, no. 4) reveals little use of quotations in most of these papers. Any quotations that do appear are offered strictly to verify that certain data or interpretations are recognized by at least some in the evolutionist community. Quotations are never used to replace scientific discovery or evidence. Rather, they are used to augment the evidence. Add to this list several other key science papers from *CRSQ* (Davies, 2007; Herbert and Lisle, 2016a,b; Humphreys, 2011; Humphreys et al., 2004; Oliver and Chaffin, 2012; ReMine, 2006; Rotta, 2006; Tomkins, 2014; Wood, 2006; Whitmore, 2005), and the same conclusions can still be drawn.

No examples of out-of-context quotations or "testimonies to replace data" appear, and I would challenge that the *PLoS* authors could not legitimately find such errors either. Hence, their claim that all sampled creation writings contain "testimonies" indicates either flawed data analysis or faulty literature selection.

In addition, many of the creationist writings analyzed by this *PLoS* paper apparently focused upon historical, philosophical, or theological topics where use of a broad range of quotations and appeals to authority are often appropriate. The *PLoS* paper appears to make no distinction of the type or usage of the quotation or the focus of the writing being analyzed. Thus, using the mere presence of quotations as a means of detecting experiential thinking is itself highly misleading and a clear case of "confirmation bias."

2. Confirmation bias

The *PLoS* authors report finding "confirmation bias" in 100% of the sampled creation/ID writings. They suggest creationists consistently ignore conflicting data and promote flawed arguments. In compar-

ison, they report such bias in only 27% of pro-evolution papers evaluated (p. 1). Such a discrepancy is not surprising. Considering the flawed and subjective methodology employed by Nieminen and his co-authors, their article becomes virtually the epitome of experiential thinking.

Case in point, the *PLoS* authors offer Carter (2010) as an example of confirmation bias. In his essay, Dr. Carter observed that sequence analysis of the Y chromosome challenges the arguments for a common ancestry of human and chimpanzee. He reasons that their respective Y chromosomes are so distinctly different that a close evolutionary lineage is not supported. In response, the *PLoS* paper alleges that Dr. Carter is guilty of ignoring contradictory data (namely the close similarity of other portions of the human and chimpanzee genome).

Yet, at the time of Dr. Carter's essay, several studies reported genetic contradictions to a straightforward human/chimpanzee lineage (e.g., Ebersberger et al., 2007; Hughes et al., 2010). Genomic differences encompass far more than just the respective Y chromosomes; e.g., the UCSC Genome Browser has consistently shown a significant area of "non-alignment" in the comparison of chimpanzee to human chromosome 1. What is more, Ebersberger et al. (2007) even noted that different regions of the genomes appear to follow different genealogies (including both the X and Y chromosomes).

Nieminen and co-authors completely ignore these studies. Instead, they offer an over-simplification, generically commenting that "other parts of the genome show 98–99% similarity" (p.8). Apparently they assume that if some portions of the respective genomes are similar, then the entire genome must be similar (even if other portions of the genome are dramatically different). By ignoring all the data that do not fit their premise of a close similarity of humans and chimps (some even cited by Carter, 2010), they are the ones actually guilty of "confirmation bias."

Another example is how the *PLoS* paper depicts the dinosaur soft tissue discovery. By the 2015 publication date of this *PLoS* article, there was a substantial body of evidence for the existence and authenticity of pliable tissue and proteins still retained in several dinosaur bones (Anderson, 2016). Yet, the *PLoS* authors chastise creationists for discussing the tissue, and instead insist that these claims of tissue discovery have been fully refuted (p. 7). The authors continue this erroneous claim in Table S1 of their supplemental material, where they state that creationists' claims about the existence of such tissue have been consistently rebutted.

Not only are the authors poorly informed about the evidence for the dinosaur tissue, but they are guilty of ignoring all the dinosaur tissue literature. They cite outdated sources of information, with no apparent attempt to include updated literature that effectively refutes their position. Thus, by their own standard, this is a clear demonstration of "confirmation bias" (and likely "pseudodiagnosticity" as well).

The *PLoS* paper also cites Luskin and Gage (2008) for claiming that a large number of evolutionists have subsequently become creationists, thereby demonstrating the weakness of evolutionary teachings (p. 5). However, Luskin and Gage (2008) make no such comment, nor do they imply any such idea. Hence, Nieminen and his co-authors did not even carefully examine this writing. Rather, their intense search for experiential thinking made them vulnerable to finding what was not even there. In how many of the other creation/ID papers did they also find what was not there? By their own definition, they constantly engage in "confirmation bias" throughout the paper, and repeatedly fail to meet their own standard.

No science allowed

The *PLoS* authors report that 90% of the sampled creation writings contained "pseudodiagnosticity," but they only found it in 7% of the pro-evolution papers. Why such a disparity? This huge difference probably results from how the authors identified the use of irrelevant or flawed information.

Clearly, they accept evolution as absolute fact, and deem any challenges or contradictory evidence as inherently flawed. Thus, they likely interpret any presentation of data or evidence in support of creation as pseudodiagnosticity. They apparently even consider a discussion of "the 'scientific' claims for creationism" as automatic proof of pseudodiagnosticity (p. 7).

With this mindset, Nieminen and his co-authors view any challenge to evolution as some form of experientialism, refusing to even allow that some scientific data could actually be contradictory to evolution or consistent with creation. This led them to automatically assume that any quotation, experimental data, observation, or conclusion offered by creationists must be flawed or anecdotal. It is little wonder, then, that they found experiential thinking in all the creation/ID writings they examined.

Forum control

In a subtle way, the authors of this *PLoS* article are guilty of the type of ridiculing rhetoric described by Sullivan (2000). Such rhetoric seeks to silence those with an opposing view by engaging in "forum control" (Sullivan, 2000, p. 125). Sullivan (2000, p. 128) describes this type of control as "the process of authorizing or de-authorizing speakers, writers, texts, and speeches." By attempting to show that all creation and pro-ID writings involve experiential thinking rather than scientific thinking, Nieminen and his co-authors seek to "de-authorize" creationists. In other words, creationists should not be taken seriously because they offer emotional, flawed, and over-generalized arguments, instead of solid scientific content.

Interestingly, this *PLoS* paper appears to be a shortened and refined version of Dr. Nieminen's doctoral dissertation (Nieminen, 2015). Yet, even in a refined state, the *PLoS* paper is still highly flawed. It is disappointing that the University of Eastern Finland would not have higher standards for a dissertation, or that *PLoS One* would not have higher standards for publication. Does this lack of scholarship illustrate that anti-creation writings tend to be given a less rigorous path to publication?

While the *PLoS* paper does address some frequent misrepresentations found in writings of both sides of the issue (and is able to make some valid points), the authors also promote many of their own misrepresentations. They fail to acknowledge a single example of legitimate scientific evidence in any of the sampled creationist papers.

Instead, they "stereotypically" presume that all creationists' arguments are flawed and lack any scientific substance. In their zeal to criticize creation/ID writings, Nieminen and his co-authors repeatedly invoke numerous examples of their own experiential thinking. Thus, this *PLoS* paper contains many of the same errors it claims are so prevalent in creation literature.

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The CRS Mission Is Model Building

by Robert Hill, PhD

It is common today to come across an organization that started with one purpose or mission but has departed from the original intent of the founders. The change in mission probably occurred over a lengthy period of time. Eventually the direction of the organization changed so much that the founders would not recognize the very institution they started.

Harvard College, now Harvard University, is one such example. Harvard was founded with the purpose of promoting Christianity through its education of the clergy. That is clearly not the case now. Some denominations started with a strong conviction that the Bible is inerrant, but have since departed from that position. Similar stories can be told of various churches and missions organizations.

What about the Creation Research Society (CRS)? How well does the mission of the CRS today compare with the vision of the CRS founders in 1964? These questions are easily answered by comparing the writings of the founders to the stated objectives of the Society today. A few quotes from the first issue of the *Creation Research Society Quarterly* (*CRSQ*) by the first president of the Society, Walter Lammerts, make the original goals of the CRS obvious.

> We propose to re-evaluate science from this viewpoint. Beginning in 1964, we are publishing an annual yearbook of articles by various members of the Society and thereafter a quarterly review of scientific literature. Our eventual goal is the realignment of science based on theistic creation concepts and the publication of textbooks for high school and college use. (Lammerts, 1964, p. 1)

First, the CRS no longer focuses on publishing textbooks, as other organizations now do that from a creation perspective. Let's instead concentrate on the main thrust of Lammerts' statement. The purpose of the CRS is to re-evaluate science from a biblical worldview. After this evaluation, the goal of the Society is the realignment of science towards a biblical worldview.

Lammerts explained further when he wrote:

> The tasks involved in reorganizing the many fields of science in line with this concept are many. Creationists have too long been merely negative in their thrust, indicating the weaknesses of the evolution concepts, but offering little in its place. (Lammerts, 1964, p. 2)

The mission of the CRS is not just to show problems with evolution. This critical approach is not enough. The goal of the Society is to offer a biblically-based science model to replace evolution. This is what we term "model building." It will not be possible to displace evolution in the minds of people unless we have a viable model to replace it.

The history of science has many examples of the reluctance to dispense with a theory until a replacement has been advanced. For instance, people did not abandon the Ptolemaic geocentric theory until the heliocentric theory had developed enough to replace it. Geosyncline theory was the preferred geological model until plate tectonics had matured enough to replace it. Other examples could be presented, but the point will be the same. Even unpopular scientific ideas will often continue to be taught until they are replaced by new ideas. It is clear that old models are typically not abandoned until new models are available.

The mission of the CRS from its beginning has been the development of a creation model. Yes, the CRS has and will continue to publish research showing the inconsistencies of the evolution model. However,

that is not enough — to achieve the overall mission we must develop a viable creation model.

The advancement of a theoretical creation model which is consistent with the Bible involves several factors, such as:

1. A good model will also make quantitative "predictions" of observations that have already been made. These are sometimes called retrodictions or post-dictions. This will allow creationists to reinterpret scientific discoveries within a creation model.
2. A good model will also make testable predictions of observations that have not yet been made. This is one of the most powerful tests of validity for any scientific model.

Preliminary creation models of geology, biology, and astronomy have been published in the *CRSQ*, but more work needs to be done.

The development of a viable creation model will involve the interchange of ideas among creation scientists. The Society promotes interaction among scientists at the annual CRS Research Conference. These interactions, which promote both the development of new ideas and new ways to understand old ideas, provide encouragement for creation scientists to continue their research.

And finally, Lammerts summarized the task before us in this way:

> To paraphrase the words of our great President, the late and beloved John F. Kennedy, we cannot hope in one lifetime to complete the structure of a truly theistic science, but let us begin. (Lammerts, 1964, p. 2)

Let us endeavor to continue the vision set forth by the first president of the CRS, and work to complete the task of building the creation model. Completing this mission will then impact how everyone views the world and see all of creation as God's handiwork.

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Speaking of Science

from the Creation-Evolution Headlines

by David F. Coppedge

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

Animals Can Be Smarter Than You Think

Here are four organisms with surprising mental powers.

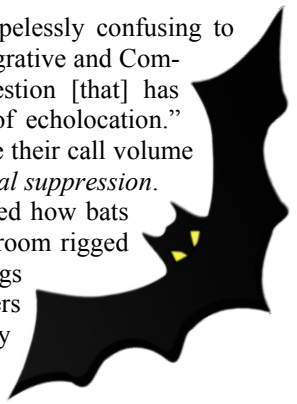
Bumblebees: A video clip at the start of a *Washington Post*[1] article shows bumblebees that have been trained to pull on a string to get a treat. Other bees, watching one do it, appear to be able to learn the secret. The one-minute video, often shared on Facebook, is well worth watching. Ben Guarino writes with astonishment:

> **The bumblebee brain is puny**, at least compared with the massive and fatty organ locked in your skull. At about 0.0002 percent the volume of yours, bee brains are close in size to the seeds stuck on a hamburger bun. Thinking about insect brains in terms of size alone, however, is a trap. The intelligence of sesame-brained bugs should not be underestimated.

Commenting on the study reported in the journal *PLoS Biology*[2] they continue:

> Scientists from the Queen Mary University of London suggest that the "**insects possess the essential cognitive elements for cultural transmission**," as they wrote in their new paper. **It is possible to teach a single bee a new trick, in other words, and a different bee can learn that behavior from her peer.**

Bats: You've probably seen a swarm of bats blackening the sky at dusk as they emerge from a cave. Flying so close to one another, how do they avoid utter confusion as they utter clicks for echolocation? The interference would seem hopelessly confusing to them. An article from the Society for Integrative and Comparative Biology[3] looked into this "question [that] has mystified scientists since the discovery of echolocation." One thing the bats know to do is to reduce their call volume in such conditions, a behavior called *mutual suppression*. Clever experiments at Texas A&M showed how bats demonstrated their smarts in an acoustic room rigged with "robobats" and a clutter of strings equipped with sensors. The researchers found that the collision-avoidance strategy is apparently hard-wired into the bats' brains, since each individual behaved the same way.



The press release concludes on a biomimetics note, with gratitude:

> Interestingly, Adams's findings **could be useful for improving wireless telecommunication networks.** In a wireless network, information is sent from multiple computers simultaneously without much interference. Adams says, "You stop and listen for a second and go again. **It's the same thing we're seeing with the bats.**" The team's future research will determine how bats handle interference from multiple individuals, which may shed light on how to develop better wireless networks.
>
> We have a lot of reasons to be thankful for bats. Who knows? We may soon be thanking bats for more efficient wireless communication.

Chickens: Because the face of a clucking hen does not exactly induce thoughts of genius, this headline from science publisher Springer[4] is bound to turn heads: "Think chicken — think intelligent, caring and complex." Maybe you are assuming that if you eat the chicken, it will help you in those ways. Thou assumest wrongly. According to an expert in "chicken psychology," chickens have a lot in common with us.

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eKINDS

Examination of Kinds In Natural Diversification and Speciation

The Creation Research Society is pleased to announce a new research initiative—eKINDS.

How did we get the wide variety of today's species from a small number of animals preserved on the Ark? How do new species form, and how does this fit within biblical creation? Can we trace the spread of the created kinds from the Ark to where they live today? These and similar questions will be addressed by the *eKINDS* initiative.

The Society is seeking donors willing to help fund this initiative. For more information on how you can help, please contact the Creation Research Society at (928) 636-1153 or crsvarc@crsvarc.com.

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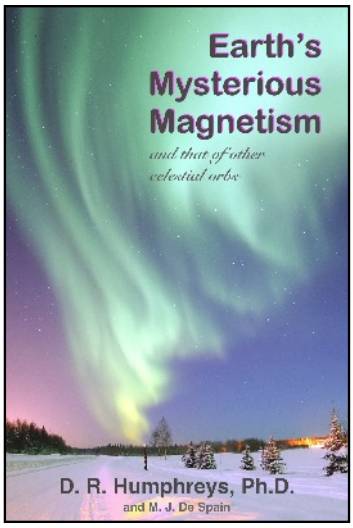

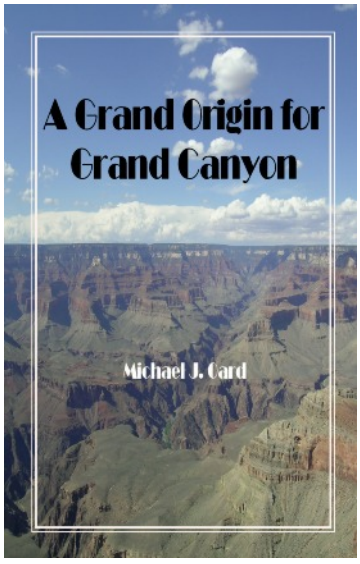

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> **Chickens are not as clueless or "bird-brained" as people believe** them to be. They have **distinct personalities** and can **outmaneuver** one another. **They know their place in the pecking order, and can reason by deduction**, which is an ability that humans develop by the age of seven. **Chicken intelligence is therefore unnecessarily underestimated** and overshadowed by other avian groups. So says Lori Marino, senior scientist for The Someone Project, a joint venture of Farm Sanctuary and the Kimmela Center in the USA, who reviewed the latest research about the psychology, behavior and emotions of **the world's most abundant domestic animal.** Her review is published in Springer's journal *Animal Cognition*.[5]
>
> "They are perceived as lacking most of the psychological characteristics we recognize in other intelligent animals and are typically thought of as possessing a low level of intelligence compared with other animals," Marino says. "**The very idea of chicken psychology is strange to most people.**"

OK, Dr. Marino, prove it. She shows how chickens have a sense of numbers, even as newly hatched chicks. They can perform simple arithmetic, experiments have shown. They can remember the trajectory of a ball for up to three minutes. They "possess **self-control** when it comes to holding out for a better food reward," the list continues. The article rubs it in:

> **Chicken communication is also quite complex**, and consists of a **large repertoire of different visual displays and at least 24 distinct vocalizations.** The birds possess the complex ability of r**eferential communication**, which involves signals such as calls, displays and whistles to **convey information.** They may use this to sound the alarm when there is danger, for instance. This ability **requires some level of self-awareness** and being **able to take the perspective of another animal, and is also possessed by highly intelligent and social species, including primates.**
>
> Chickens **perceive time intervals** and can **anticipate future events.** Like many other animals, they demonstrate their cognitive complexity when placed in social situations **requiring them to solve problems.**

In addition, they display complex emotions. If you've ever watched a mother hen protecting her chicks, you know how aggressive she can be. "They make decisions based on what is best for them," the article says, even stooping to deception or learning one another's secrets (just like the bumblebees described above). Convinced? Reflecting on all this makes it hard to want to eat them. At least pay that bird a little more respect when you chew the chicken fat.

Slime Molds: We end with one of the most surprising examples of braininess: intelligence *without* a brain. Stephanie Pappas writes about slime mold intelligence for *LiveScience*, claiming, "This Brainless Blob Learns — and Teaches, Too."[6] It may be difficult doing a mind meld with a slime mold without getting sticky, but scientists are impressed with what these colonial fungi can do.

> You don't need a brain to learn and teach. New research finds that slime molds, goopy and rather uncharismatic organisms that lack a nervous system, **can adapt to a repulsive stimulus and then pass on that adaptation by fusing with one another.**

Whether this shows that "learning may predate the **evolution** of the nervous system" seems debatable, but everyone can agree that "slime molds are truly bizarre," almost alien.

> Previous studies of slime mold have found that they **have a primitive form of memory** based on information stored in their trails of goo. **Despite being entirely brainless, slime molds can find the fastest route through a maze or between points.**

Related to amoebas, slime molds can become habituated to a favorable route, and can even cross unfavorable regions to reach their food. They can distinguish harmful substances from harmless ones, then pass on that information by fusing with other individuals. Fusing together, some slime molds can form a super-organism which is hundreds of square centimeters in area, sharing thousands of nuclei, only to later disperse and go their separate ways, all the better for the information they shared.

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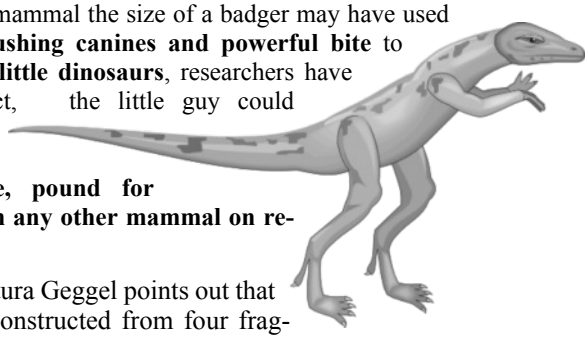
Mammals Ate Dinosaurs

A newly discovered fossil suggests that a mammal with a big bite could have munched on small dinosaurs for lunch.

Marsupials were supposed to have originated in South America, *LiveScience* says.[1] But *Didelphodon vorax* was found in Montana's Hell Creek formation, a hotbed of dinosaurs. And it was well-equipped for attack as well as defense:

> An ancient mammal the size of a badger may have used its **bone-crushing canines and powerful bite** to **take down little dinosaurs**, researchers have found. In fact, the little guy could chomp down with **more force, pound for pound, than any other mammal on record.**



Reporter Laura Geggel points out that this species, reconstructed from four fragmentary fossils, is a game-changer:

> "What I love about *Didelphodon vorax* is that **it crushes the classic mold of Mesozoic mammals**," the study's lead researcher Gregory Wilson, an adjunct curator of vertebrate paleontology at the Burke Museum in Seattle, and an associate professor of biology at the University of Washington, said in a statement. "**Instead of a shrew-like mammal meekly scurrying into the shadows of dinosaurs, this badger-sized mammal would've been a fearsome predator on the Late Cretaceous landscape — even for some dinosaurs.**"

The animal, estimated to weigh between 5 and 12 pounds, said to be "the largest metatherian to live during the Cretaceous," was not some primitive mammal prototype, scurrying under dinosaurs' feet trying to come up with an evolutionary strategy to survive. It was a "seriously tough mammal" that had powerful teeth and "the strongest bite of any mammal, alive or extinct," more even than hyenas.

> Moreover, *D. vorax*'s canines are similar to those of living felines and hyenas, indicating that these ancient creatures **could probably bite into bone** while hunting prey, the researchers found. Its **extraordinary bite force**, when combined with its canines, shearing molars and big, rounded premolars, suggest that it **could have crunched on shells and even small dinosaurs**, they added.

Geggel assumes the asteroid-impact theory for the demise of the dinosaurs, but has to admit that all the dinosaurs perished in the event while mammals survived. Somehow, "**marsupials managed to live on**, diversifying and evolving in their new South American home." In another *LiveScience* post[2], Geggel uncritically spells out the latest speculation about dinosaur extinction: their eggs took too long to hatch (see open-access paper in *PNAS*[3]).

The paper about *D. vorax* in *Nature Communications*[4] claims that "stem metatherians" (marsupial relatives) appeared and evolved between 252 and 66 million (Darwin) years ago. That's an awful long time that mammals and dinosaurs roamed the earth together. Creation investigator Dr. Carl Werner, an expert on "living fossils," has traveled the world checking museum displays. He finds it very misleading that museums, in their "world of the dinosaurs" exhibits, often do not include mammals. In a *Creation*[5] magazine article from 2011, he relates the findings from his travels:

> At the dinosaur dig sites, scientists have found many unusual extinct mammal forms such as the multituberculates but they have also found fossilized **mammals that look like squirrels, possums, Tasmanian devils, hedgehogs, shrews, beavers, primates, and duck-billed platypus.** I don't know how close these mammals are to the modern forms because I was not able to see most of these, even after going to so many museums.
>
> Few are aware of the great number of mammal species found with dinosaurs. **Paleontologists have found 432 mammal species in the dinosaur layers; almost as many as the number of dinosaur species. These include nearly 100 *complete* mammal skeletons.** But where are these fossils? We visited 60 museums but did not see a *single* ***complete*** *mammal skeleton from the dinosaur layers displayed* at any of these museums. This is amazing. Also, we saw only a few dozen incomplete skeletons/single bones of the 432 mammal species found so far. Why don't the museums display these mammal fossils and also the bird fossils?

Part of the reason may be that museums have a narrative of evolutionary progress they wish to promulgate to an unsuspecting public. Another reason may be that evolutionary fossil hunters have blinders on. Calvin Smith borrows a quote from Carl Werner's book about a paleontologist in another 2011 *Creation* magazine.[6] This paleontologist says that he finds mammals on almost all his dinosaur digs, but they were not noticed years ago. "We have about 20,000 pounds of bentonite clay that **has mammal fossils that we are trying to give away to some researcher**," this paleontologist said. "**It's not that they are not important**, it's just that you only live once and **I specialized in something other than mammals.** I specialize in reptiles and dinosaurs." Whether he ever found "some researcher" to take the samples and analyze them is not known. The narrative about the "age of dinosaurs" may be, therefore, an artifact of selective investigation.

On a related note, David Catchpoole wrote in 2014 at *Creation.com*[7] that evolutionists are divided about the coexistence of placental mammals with dinosaurs. Today, placentals outnumber marsupials, but that was not the case when dinosaurs roamed the earth. Catchpoole cites a 2014 *Nature*[8] article by Ewen Callaway that indicates the evidence is not decisive that placentals evolved only after the dinosaur extinction. Callaway, in turn, cites noted dinosaur hunter Phil Donoghue's opinion that "it is likely that animals existed before that, but were not preserved as fossils or their remains have yet to be discovered."

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Matters of Fact

by

Jean K. Lightner, DVM, MS

Were Mosquitoes on the Ark?

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

Q Why did Noah take two mosquitoes on the ark?

A First we might want to answer the question: ***Did*** Noah take two mosquitoes on the Ark?

Since the Bible doesn't specifically name the animals that were on the Ark, we will need to look at the information we do have and make inferences.

In Genesis 7:14 we are given the most detailed description of the animals on the Ark:

> They had with them every wild animal according to its kind, all livestock according to their kinds, every creature that moves along the ground according to its kind and every bird according to its kind, everything with wings. (NIV)

These are the same groups of animals that are mentioned in Genesis 1:21–22, 24–25 as being created by God on days 5 and 6, *except* that the aquatic creatures are not on the Ark. Certainly, adult mosquitoes fly, and the underlying Hebrew word translated "bird" here can refer to a variety of flying animals, including bats and insects (Leviticus 11:13–23; Deuteronomy 14:11–20). However, the larvae are aquatic, leaving some room to question into which category they fall.

Another issue is the focus of the text on larger animals that needed care. While God brought the animals to Noah, it was Noah's responsibility to bring them onto the Ark and provide food and housing for them (Genesis 6:19–21; 7:8–9). Scripture doesn't specifically mention insects in these passages, and many insects could have easily entered the Ark without Noah's knowledge or help. So, if mosquitoes were on the Ark, it doesn't mean that Noah consciously took them.

What "kind" of animal is a mosquito?

Mosquitoes belong to the family Culicidae. There are over 3500 species that have been identified. Many species are differentiated on subtle details of anatomy, or even specific combinations of characters due to overlapping suites of shared anatomical traits (Harbach, 2016). As a whole, they are strikingly similar to midges, which occupy several different families within the order Diptera.

Due to the similarity of the many different mosquito species, it seems reasonable to conclude that they all belong to a single "kind," in the Genesis sense of the word. What is less clear is if that kind includes other insects such as midges. There is still a need for solid creationist work that will give us a clearer idea of how many kinds of insects were created and how that corresponds to their classification today. In the absence of such studies, a look at the fossil record of mosquitoes may be helpful.

There is good fossil evidence of mosquitoes in the Tertiary, which is considered by many creationists to correspond to the post-Flood period. Two fossil species identified in the Cretaceous are placed in this family, *Burmaculex antiquus* and *Paleoculicis minutus.* The first has some midge-like features, including a short proboscis (Harbach, 2016). If the Cretaceous corresponds to late Flood deposits, as some creationists believe, then the mosquitoes of Noah's time appear a bit different. Therefore, there is serious question as to whether mosquitoes, as we know them today, were even present in Noah's day. Perhaps an ancestor of today's mosquitoes was on the Ark; we don't really know for sure.

Why are mosquitoes parasitic?

The reason for asking the initial question obviously has to do with the association of mosquitoes with blood sucking and disease transmission. While blood loss is typically minimal, the bites can be annoying. Far worse, mosquitos carry a variety of diseases caused by viruses, filarial worms, and protozoans (Harbach, 2016). An estimated 429,000 people died in 2015 from malaria alone (WHO, 2016). So why would anyone want to preserve a creature that causes so much pain and suffering?

As debilitating and deadly as mosquito-borne diseases can be, it is important to recognize that males, and even the females in many species, feed entirely on liquids from plants (Harbach, 2016). Even among those species where females normally feed on blood, eggs can sometimes be laid without a blood meal (Lehane, 2012). There is one report of a mosquito from the Middle Eocene being found with the remains of a blood meal in its abdomen (Greenwalt et al., 2013). Yet we do not know if mosquitoes, or their ancestors, fed on blood prior to this. It could be that blood-feeding is a post-Flood phenomena.

There have been documented examples of normally herbivorous animals switching their diet to include carnivory. One interesting case involves the sharp-beaked ground finch in the Galápagos that takes blood meals from nesting sea birds (Catchpoole, 2007). Lack of other food sources can motivate the dietary shift. Over time, the new food source may become the norm for the population of animals. This is apparently what happened with some mosquitoes at some time in the past.

Conclusion

It is unlikely that Noah knowingly took mosquitoes on the Ark, though perhaps there was an ancestor of today's mosquitoes on the Ark. It is also possible that these creatures survived the Flood in the aquatic larval form. While it is unknown when mosquitoes acquired their blood-sucking habits, it was clearly after the Fall, since all creatures were originally vegetarian (Genesis 1:29–31).

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Quarterly Research Matters

Summaries of Cutting-edge Research from the Creation Research Society Quarterly*

More on High Tech Cells:

Computer technology has continued to advance, yet there isn't really anything new under the Sun (Ecclesiastes 1:9). As human beings who were created in the image of God, our astounding technological achievements are merely reflections of the awesome design that God placed in living things. While reverse engineering may help us understand important aspects of design in living things, it doesn't reveal their origin, except to point to the intelligence of their Designer. And we are far from reverse-engineering all the remarkable design we see manifested in living things.

In *Creation Matters* 21(5), we highlighted the work of Dr. Royal Truman (2016a) in which he showed how cells employ Boolean logic using multiple independent codes, much like that which is used in modern computer languages. Now, in the Summer 2016 issue of the *Creation Research Society Quarterly* (*CRSQ*), as the second of the two-part series on *Cells as Information Processors*, Dr. Truman (2016b) explores how living cells are designed with hardware molecular machines which decode relevant signals, and respond appropriately. Comparing computer architecture with cell architecture, he examines a number of examples of cellular machines, each of which processes different coded information. In addition to the individual complexity of these machines, their responses must be coordinated to allow for proper functioning of a living organism. The details of Dr. Truman's investigations overwhelmingly indicate that life could not have had a naturalistic origin.

Truman, R. 2016a. Cells as information processors, Part 1: Formal software principles. *Creation Research Society Quarterly* 52:275–308.

Truman, R. 2016b. Cells as information processors, Part 2: Hardware Implementation. *Creation Research Society Quarterly* 53:19–41.

Heavenly Timekeepers:

Most creationists are aware of time-dilation cosmologies, such as the one presented by Dr. D. Russell Humphreys in his well-known book, *Starlight and Time* (1994). While there are several variations of this model, the basic idea is that the equations of General Relativity indicate that "clocks in space" would have run faster than did those on earth under certain conditions that may have existed during the Creation week. This model, therefore, predicts that very distant objects in space should be, at this moment, **much** older than 6000 years, as measured by **their** clocks. However, because of the time needed for light to travel to us, we don't see stars as they are now, but as they **were** in the past, when the light we now see started out from them. Different models would have different amounts of time elapsing for these stars **before** the light we now see started out from them.

So, what is still unclear is exactly how much older we should expect objects in space to appear. Dr. Ronald Samec is interested in addressing the question of how old they actually do appear to be, based on observational evidence. In a *CRS*-sponsored research project that involved direct observations of the orbits of binary stars, Dr. Samec was able to extend the findings of a preliminary study in astrochronology. Based on the observed decay of the orbits, these objects appear to be about 80 million years old. This is in contrast to the evolutionary proposed age of 13.8 billion years. The estimated age fits well within a young-earth time-dilation model, but is several orders of magnitude off from evolutionary predictions.

Humphreys, D.R. 1994. *Starlight and Time.* Master Books, Green Forest, AR.

Samec, R.G. 2016. The apparent age of the time-dilated universe II: Gyrochronology, magnetic orbital decay of close solar-type binaries and errata. *Creation Research Society Quarterly* 53:42–57.

There are actually many observations in space which are at odds with evolutionary ideas about the origin of the universe. Many of these are covered regularly in the Speaking of Science column in *Creation Matters*. Another astronomical observation suggesting that the universe is young is discussed in detail in the Summer issue of the *CRSQ*.

Neutron stars can be found in globular clusters, a special class of star clusters containing 50,000 to a million stars. Based on evolutionary ideas of how these neutron stars are believed to have formed, their production in globular clusters should have ceased billions of years ago. Because neutron stars travel at high velocities, most or all should have escaped the globular clusters within thousands of years. The fact that globular clusters still contain many neutron stars suggests that they are actually much younger than generally thought by evolutionists.

Nethercott, P. 2016. Neutron stars in globular clusters: Evidence of young age? *Creation Research Society Quarterly* 53:14–18.

*Summaries comprised by J. Lightner

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All by Design

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

Green Iguana

Throughout nature we can see everywhere that plants and animals seem to be perfectly designed for the habitats in which they live.

In May of 2011, while my wife and I were visiting the U.S. Virgin Islands, I snapped this picture of a green iguana sunning itself one morning. These large lizards climb up into the tops of the native palm trees each morning to warm themselves before climbing back down to start the day's search for food.

It was only several years later, while studying this photograph, that I realized how perfectly designed these lizards are for their habitat. Note how the pale, greenish-brown body color nearly matches the color of the trunk and branches of the tree. Notice, too, how the dorsal frills on the neck and back resemble the "spikey" appearance of the palm fronds. Finally, see how the darker bands of color on the tail match the banding patterns of darker leaves against the lighter sky.

In fact, when iguanas are at rest, they are extremely difficult to see. Now ask yourself: how could random processes, that are claimed to be responsible for evolution, have enabled the appearance of these particular physical characteristics which would assist the lizards in avoiding predators? Even if the iguanas themselves were in some way cognizant of such a need, how could chance have produced these features? Oh, okay—they couldn't. Well, there goes the theory of evolution!

CM