HIGHLIGHTS OF THE LOS ALAMOS ORIGINS DEBATE

PRESENTING A SCIENTIFIC CASE FOR CREATION

John R. Baumgardner, Ph.D.

Expanded by Nicholas Petersen

Figure 1: Badlands, South Dakota – Istock image.

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Introduction

The following article has been adapted from my contributions to an ongoing debate over origins issues in the letters to the editor section of our local newspaper [1]. Our town, Los Alamos, located in the mountains of northern New Mexico, is the home of the Los Alamos National Laboratory which, with approximately 10,000 employees, is one of the larger scientific research facilities in the United States.

Expanded Edition Introduction

❮❮ Greetings, my name is Nicholas Petersen, I put together this expanded version of Dr. Baumgardner's original article, written in 1999 (www.globalflood.org/papers/insixdays.html). This was a synopsis of a number of written debates, which you can read at www.globalflood.org/letters/letterindex.html. The first time I read this article, it struck me as a superbly argued summary case for the creationist argument. Dr. Baumgardner addresses five main questions, which roughly cover some of the biggest issues that stem from the three main fields of science: biology, geology, and cosmology: **Can random molecular interactions create life?, *How do coded language structures arise?, *What about the geological/fossil record? , *How is geological time to be reckoned?, *What about light from distant stars?*

Whatever your current persuasion on these ever testy, yet ever important origins issues, I hope you will consider the evidence as it is presented below. Even if you are one who is inclined to think biblical creationism is as factual as a Looney Tune's episode, then certainly it could not hurt to hear the very best of the best that biblical creationism has to offer, could it? **My only challenge to you is that you ask this one, simple question as you read the answers to these five questions: Is it *plausible*?** (While it is not *impossible* that you will win the 12 million dollar lottery this week, it is certainly *implausible*). Too often, biblical creationism is depicted as if it advocates for things like a flat earth. But beyond that unfair caricature, mainstream science of today does indeed offer some enormous, seemingly insurmountable objections to the biblical model of creation. Maybe, just maybe you will see that this model is far more plausible than you might have expected. You might also be surprised to see how the model of evolution does when *it* is put to the *plausibility* test. After all, why should only one of these models be put to the test of what is believable or not, scientifically speaking?

In what follows, I have expanded upon many points made by Dr. Baumgardner – these are all in a different font, and included in ❮❮ brackets ❯❯. All pictures were added by myself, as was the table of contents. I also formatted the article into its present form and converted the

footnotes into hyperlinks. As far as my credentials, I am not a trained scientist, but rather a biblical scholar, though also a computer scientist. Nonetheless, I have loved the true scientific endeavor of exploration and discovery all of my life: "*The glory of God is to conceal a matter; but the glory of kings is to explore* a matter*" (Prov 25:2; *discover / examine / search out). I hope this article will prove insightful for you as you contemplate our origins.

~ NP ❯❯

About John Baumgardner

John R. Baumgardner, Ph.D. Geophysics and Space Physics

John Baumgardner has a B.S. in Electrical Engineering from Texas Tech University, a M.S. in Electrical Engineering from Princeton University and a M.S. and Ph.D. in Geophysics and Space Physics from UCLA (1983). Dr. Baumgardner served as staff scientist in the Fluid Dynamics Group of the Theoretical Division at Los Alamos National Laboratory in New Mexico from 1984 to 2004. He is famous for his development of the TERRA program, a 3-D spherical finite element model for the earth's mantle. Beginning in 1995 Dr. Baumgardner assisted the German Weather Service in adapting methods from the TERRA code as the basis for a new operational global weather forecast model known as GME that is now used in Germany and twenty other countries. Dr. Baumgardner also served four years of active duty as a project officer at the Air Force Weapons Laboratory, Kirtland AFB, NM, where he had responsibilities in the design of the resonator optics for a large, classified CO2 gas dynamics laser. For further biographic information, see (http://logosresearchassociates.org/team/john-baumgardner/).

Can Random Molecular Interactions Create Life?

Many evolutionists are persuaded that the 15 billion years they assume for the age of the cosmos is an abundance of time for random interactions of atoms and molecules to generate life. A simple arithmetic lesson reveals this to be no more than an irrational fantasy.

This arithmetic lesson is similar to calculating the odds of winning the lottery. The number of possible lottery combinations corresponds to the total number of protein structures (of an appropriate size range) that are possible to assemble from standard building blocks. The winning tickets correspond to the tiny sets of such proteins with the correct special properties from which a living organism, say a simple bacterium, can be successfully built. The maximum number of lottery tickets a person can buy corresponds to the maximum number of protein molecules that could have ever existed in the history of the cosmos.

Let us first establish a reasonable upper limit on the number of molecules that could ever have been formed anywhere in the universe during its entire history. Taking 10^{80} as a generous estimate for the total number of atoms in the cosmos [2], 10^{12} for a generous upper bound for the average number of interatomic interactions per second per atom, and 10^{18} seconds (roughly 30 billion years) as an upper bound for the age of the universe, we get 10^{110} as a very generous upper limit on the total number of interatomic interactions which could have ever occurred during the long cosmic history the evolutionist imagines. Now if we make the extremely generous assumption that each interatomic interaction always produces a unique molecule, then we conclude that no more than 10^{110} unique molecules could have ever existed in the universe during its entire history.

Now let us contemplate what is involved in demanding that a purely random process find a minimal set of about one thousand protein molecules needed for the most primitive form of life. To simplify the problem dramatically, suppose somehow we already have found 999 of the 1000 different proteins required and we need only to search for that final magic sequence of amino acids which gives us that last special protein. Let us restrict our consideration to the specific set of 20 amino acids found in living systems and ignore the hundred or so that are not. Let us also ignore the fact that only those with left-handed symmetry appear in life proteins. Let us also ignore the incredibly unfavorable chemical reaction kinetics

involved in forming long peptide chains in any sort of plausible non-living chemical environment.

Let us merely focus on the task of obtaining a suitable sequence of amino acids that yields a 3D protein structure with some minimal degree of essential functionality. Various theoretical and experimental evidence indicates that in some average sense about half of the amino acid sites must be specified exactly [3]. For a relatively short protein consisting of a chain of 200 amino acids, the number of random trials needed for a reasonable likelihood of hitting a useful sequence is then on the order of 20^{100} (100 amino acid sites with 20 possible candidates at each site), or about 10^{130} trials. *This is a hundred billion billion times the upper bound we computed for the total number of molecules ever to exist in the history of the cosmos!!* No random process could *ever* hope to find even one such protein structure, much less the full set of roughly 1000 needed in the simplest forms of life. It is therefore sheer irrationality for a person to believe random chemical interactions could ever identify a viable set of functional proteins out of the truly staggering number of candidate possibilities.

In the face of such stunningly unfavorable odds, how could any scientist with any sense of honesty appeal to chance interactions as the explanation for the complexity we observe in living systems? To do so, with conscious awareness of these numbers, in my opinion represents a serious breach of scientific integrity. This line of argument applies, of course, not only to the issue of biogenesis but also to the issue of how a new gene/protein might arise in any sort of macroevolution process.

One retired Los Alamos National Laboratory Fellow, a chemist, wanted to quibble that this argument was flawed because I did not account for details of chemical reaction kinetics. My intention was deliberately to choose a reaction rate so gigantic (one million million reactions per atom per second on average) that all such considerations would become utterly irrelevant. How could a reasonable person trained in chemistry or physics imagine there could be a way to assemble polypeptides on the order of hundreds of amino acid units in length, to allow them to fold into their three-dimensional structures, and then to express their unique properties, all within a small fraction of one picosecond!? Prior metaphysical commitments forced him to such irrationality.

Another scientist, a physicist at Sandia National Laboratories, asserted that I had misapplied the rules of probability in my analysis. If my example were

correct, he suggested, it "would turn the scientific world upside down." I responded that the science community has been confronted with this basic argument in the past but has simply engaged in mass denial. Fred Hoyle, the eminent British cosmologist, published similar calculations two decades ago [4]. Most scientists just put their hands over their ears and refused to listen.

In reality this analysis is so simple and direct it does not require any special intelligence, ingenuity, or advanced science education to understand or even originate. In my case, all I did was to estimate a generous upper bound on the maximum number of chemical reactions -- of any kind -- that could have ever occurred in the entire history of the cosmos and then compare this number with the number of trials needed to find a single life protein with a minimal level of functionality from among the possible candidates. I showed the latter number was orders and orders larger than the former. I assumed only that the candidates were equally likely. My argument was just that plain. I did not misapply the laws of probability. I applied them as physicists normally do in their every day work.

Why could this physicist not grasp such trivial logic? I strongly believe it was because of his tenacious commitment to atheism that he was willing to be dishonest in his science. At the time of this editorial exchange, he was also leading a campaign before the state legislature to attempt to force this fraud on every public school student in our state.

« In the discussion above, Dr. Baumgardner made the following statement with regard proteins and the odds of their (hypothetical) chance formation:

"Let us merely focus on the task of obtaining a suitable sequence of amino acids that yields a 3D protein structure with some minimal degree of essential functionality. Various theoretical and experimental evidence indicates that in some average sense about half of the amino acid sites must be specified exactly."

One does not need to be a microbiologist to see that allowing *half* of the building blocks of the protein to be something else, while allowing that protein to still function, is being generous. It is hard to imagine the pictured proteins functioning as they do if much at all of their protein sequences were to be altered (think of the specificity exhibited in the ATP Sythase's crankshaft / motor complex). Furthermore, the following considerations show that even very minor changes in protein structures, even changes of *just one amino acid* (analogous to changing just one letter within a paragraph), can be utterly devastating to the protein's function:

< **Small Errors in Proteins Can Cause Disease**: Sometimes, an error in just one amino acid can cause disease. Sickle cell disease … is caused by a single error in the gene for hemoglobin, the oxygen-carrying protein in red blood cells. This error, or mutation, results in **an incorrect amino acid at one position in the molecule**. Hemoglobin molecules with this incorrect amino acid stick together and distort the normally smooth, lozenge-shaped red blood cells into jagged sickle shapes. … Another disease caused by a defect **in *one* amino acid** is cystic fibrosis. … The disease is caused **when a protein called CFTR is incorrectly folded. This misfolding is usually caused by the deletion of *a single* amino acid** in CFTR. -- http://publications.nigms.nih.gov/structlife/chapter1.html >

Since they keep getting mentioned, what are 'proteins' really about anways? This much is for sure, they are a lot more than simply a nutritional substance obtained from eating lots of meat! Simply put, proteins *perform functions in the cell*, as "they participate in virtually every process within cells" ("Protein," Wikipedia). Furthermore, proteins can become complex enough to actually constitute legitimate micro-*machines* (i.e. not just a catalyst, as important as that is), and even micro-*motors*! Let us consider just two examples of such molecular / protein machines, particularly so as to appreciate the above discussion, as we ask this question: *Can random, accidental, unguided happenstances evolve such things*?

– Chaperonin Protein Complex –

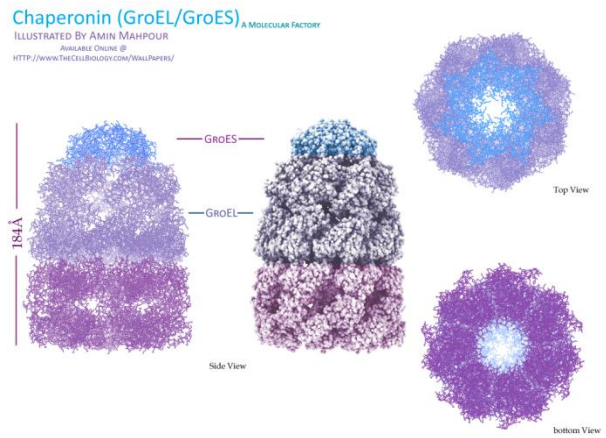

Figure 2: The Chaperonin Protein Complex, image and caption from: http://thecellbiology.com/molpaper/default.aspx?id=1. – "Chaperonins are proteins whose work is to maintain or prevent protein misfolding and aggregation."

< … A molecular example is found in chaperonins. In cells, these barrel-shaped protein complexes shelter certain other proteins from watery environments, giving them extra time to fold into their necessary shapes. Chaperonins have a precisely-placed enzymatic active site, detachable caps, flexible gated entryways, a timed sequence of chemical events, and precise expansion and flexion capacities. Each of the parameters – size, shape, strength,

hydrophobicity distribution, timing, and sequence—represents a specification. ***With each additional specification, the likelihood of a chance-based assembly of these parts diminishes…to miracle status***. – *Brian Thomas, M.S., "More Than Just 'Complex'," Acts & Facts 12(2008), p. 15.* >

– ATP Synthase –

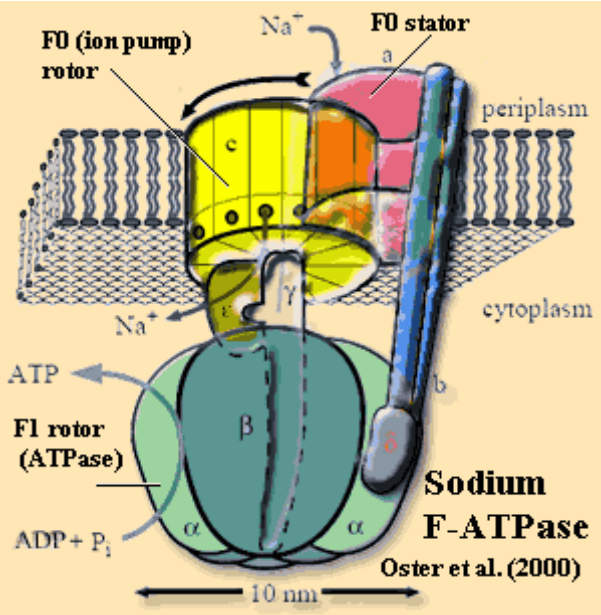

Figure 3: ATP Synthase – 'Your own personal power plant.' Image from: www.palaeos.com/Bacteria/Lists/Glossary/Gloss.html

"You can take a spoonful of that protein … and it generates as much torque as a Mercedes engine."

A fascinating discussion of this remarkable molecular motor can be found at www.psc.edu/science/2004/schulten/, from which the following citation comes:

< Energy in the body comes from millions and millions of tiny power generators, each equipped with a crankshaft that spins round and round 24/7, producing the fuel that makes us go. … Right. And the moon is made of Gouda cheese. – Suspend your disbelief. The protein adenosine triphosphate synthase, better known as ATPase, is nature's smallest rotary motor. "You can take a spoonful of that protein," says biophysicist Klaus Schulten of the University of Illinois Urbana-Champaign, "and it generates as much torque as a Mercedes engine." … Probably the most abundant protein in all living organisms, ATPase is the power plant of metabolism. – **The Wheel Spins Round and Round** – Like most motors, ATPase has moving and non-moving parts. There's a wheel that spins, similar to a millwheel, to turn an axle that revolves inside a hexagonal cluster, in which there are three combustion chambers (active sites), each of which, in sequence, charges up with chemical

raw materials — adenosine diphosphate (ADP) and phosphate — and "fires" to produce ATP. >

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Just How Do Coded Language Structures Arise?

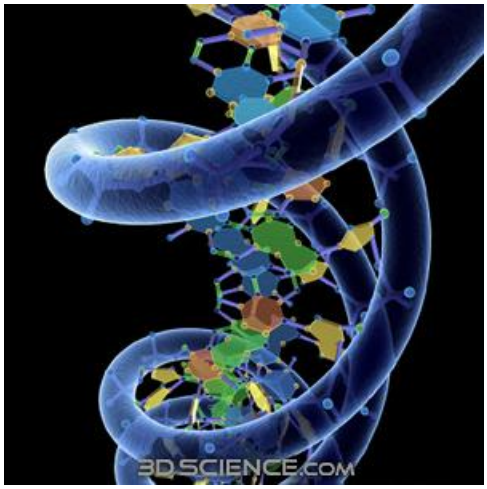

Figure 4: The DNA Double Helix Molecule – Picture from: Darwin's Theory of Evolution: DNA Causes Geneticists, Other Scientists, Join Ranks of Dissenters, April 6, 2009, retrieved from: http://www.bloggernews.net/120376.

One of the most dramatic discoveries in biology in the 20th century is that living organisms are realizations of coded language structures. All the detailed chemical and structural complexity associated with the metabolism, repair, specialized function, and reproduction of each living cell is a realization of the coded algorithms stored in its DNA. A paramount issue, therefore, is how do such extremely large language structures arise?

The origin of such structures is, of course, the central issue of the origin of life question. The simplest bacteria have genomes consisting of roughly a million codons. (Each codon, or genetic word, consists of three letters from the four-letter genetic alphabet.) Do coded algorithms a million words in length arise spontaneously by any known naturalistic process? Is there anything in the laws of physics that suggests how such structures might arise in a spontaneous fashion? The honest answer is simple. What we presently understand from thermodynamics and information theory argues persuasively they do not and cannot!

Language involves a symbolic code, a vocabulary, and a set of grammatical rules to relay or record thought. Many of us spend most of our waking hours generating, processing, or disseminating linguistic data. Seldom do we reflect on the fact that language structures are clear manifestations of non-material reality.

This conclusion may be reached by observing the linguistic information itself is independent of its material carrier. The meaning or message does not depend on whether it is represented as sound waves in the air or as ink patterns on paper or as alignment of magnetic domains on a floppy disk or as voltage patterns in a transistor network. The message that a person has won the $100,000,000 lottery is the same whether that person receives the information by someone speaking at his door or by telephone or by mail or on television or over the Internet.

Indeed Einstein pointed to the nature and origin of symbolic information as one of the profound questions about the world as we know it [5]. He could identify no means by which matter could bestow meaning to symbols. The clear implication is that symbolic information, or language, represents a category of reality *distinct* from matter and energy. Linguists therefore today speak of this gap between matter and meaning-bearing symbols sets as the 'Einstein gulf' [6]. Today in this information age there is no debate that linguistic information is objectively real. With only a moment's reflection we can conclude its reality is qualitatively different from the matter/energy substrate on which the linguistic information rides.

From whence then does linguistic information originate? In our human experience we immediately connect the language we create and process with our minds. But what is the ultimate nature of the human mind? If something as real as linguistic information has existence independent of matter and energy, from causal considerations it is not unreasonable to suspect an entity capable of originating linguistic information also is ultimately non-material in its essential nature.

An immediate conclusion of these observations concerning linguistic information is that materialism, which has long been the dominant philosophical perspective in scientific circles, with its foundational presupposition that there is no non-material reality, is simply and plainly false. It is amazing that its falsification is so trivial.

The implications are immediate for the issue of evolution. The evolutionary assumption that the exceedingly complex linguistic structures which comprise the construction blueprints and operating manuals for all the complicated chemical nanomachinery and sophisticated feedback control mechanisms in even the simplest living organism simply must have a materialistic explanation is *fundamentally wrong*. But how then does one account for symbolic language as the crucial ingredient from which all living organisms develop and function and manifest such amazing capabilities? The answer should be obvious -- an intelligent Creator is unmistakably required.

But what about macroevolution? Could physical processes in the realm of matter and energy at least modify an existing genetic language structure to yield another with some truly decel capability as the evolutionists so desperately want to believe?

On this question Prof. Murray Eden, a specialist in information theory and formal languages at the Massachusetts Institute of Technology, pointed out several years ago that random perturbations of formal language structures simply do not accomplish such magical feats [7]. He said, "No currently existing formal language can tolerate random changes in the symbol sequence which expresses its sentences. Meaning is almost invariably destroyed. Any changes must be syntactically lawful ones. I would conjecture that what one might call 'genetic grammaticality' has a deterministic explanation and does not owe its stability to selection pressure acting on random variation."

In a word, then, the answer is no. Random changes in the letters of the genetic alphabet have no more ability to produce useful new protein structures than could the generation of random strings of amino acids discussed in the earlier section. This is the glaring and fatal deficiency in any materialist mechanism for macroevolution. Life depends on complex non-material language structures for its detailed specification. Material processes are utterly impotent to create such structures or to modify them to specify some decel function. If the task of creating the roughly 1000 genes needed to specify the cellular machinery in a bacterium is unthinkable within a materialist framework, consider how much more unthinkable for the materialist is the task of obtaining the roughly 100,000 genes required to specify a mammal!

Despite all the millions of pages of evolutionist publications -- from journal articles to textbooks to popular magazine stories -- which assume and imply material processes are entirely adequate to accomplish macroevolutionary miracles, there is in reality no rational basis for such belief. It is utter fantasy. Coded language structures are non-material in nature and absolutely require a non-material explanation.

But What About the Geological/Fossil Record?

Just as there has been glaring scientific fraud in things biological for the past century, there has been a similar fraud in things geological. The error, in a word, is uniformitarianism. This outlook assumes and asserts the earth's past can be correctly understood purely in terms of present day processes acting at more or less present day rates. Just as materialist biologists have erroneously assumed material processes can give rise to life in all its diversity, materialist geologists have assumed the present can fully account for the earth's past. In so doing, they have been forced to ignore and suppress abundant contrary evidence that the planet has suffered major catastrophe on a global scale.

Only in the past two decades has the silence concerning global catastrophism in the geological record begun to be broken. Only in the last 10-15 years has the reality of global mass extinction events in the record become widely known outside the paleontology community. Only in about the last 10 years have there been efforts to account for such global extinction in terms of high energy phenomena such as asteroid impacts. But the huge horizontal extent of Paleozoic and Mesozoic sedimentary formations and their internal evidence of high energy transport represents stunning testimony for global catastrophic processes far beyond anything yet considered in the geological literature. Field evidence indicates catastrophic processes were responsible for most if not all of this portion of the geological record. The proposition that present day geological processes are representative of those which produced the Paleozoic and Mesozoic formations is utter folly.

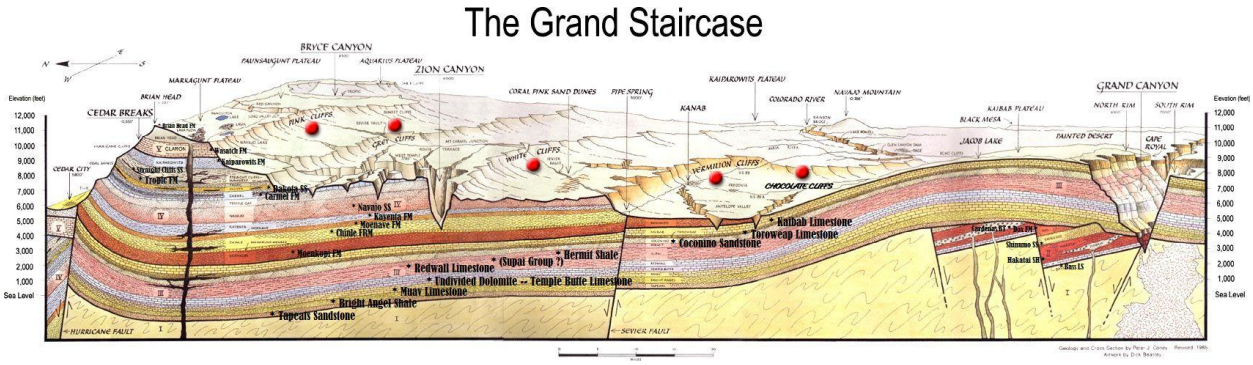

Figure 5: The Grand Staircase. Image from: http://creationwiki.org/pool/images/3/36/Grand_Staircase.jpg (also available from Wikipedia). New labels added by Nicholas Petersen.

« This cross-section magnificently reveals the (usually hidden) "ground under our feet". Notice the Grand Canyon on the far right of this picture which, despite its grand size, occupies only a fraction of "The Grand Staircase". How did so many layers get laid down in such a flat and extensive manner? To begin answering that question, it is important to interpret these strata according to the *Principle of Original Horizontality* (first proposed by biblical creationist Nicholas Steno (1638-1686), the "Father of Geology and Stratigraphy"). With this and some other similar principals in mind, a very interesting point becomes evident. For the period of time starting from the Tapeats Sandstone (the bottom most layer pictured in most of the picture above), all the way up to the Kaibab Limestone at the top of the Grand Canyon – all of these layers remained virtually flat and continuous, with hardly a sign of channeling or erosion (for simplicity's sake, we will focus more on the 'Paleozoic' strata below, which begins with the Tapeats Sandstone). And yet when we look at the surface today, we witness tremendous erosional features, such as the Grand Canyon itself, the Sevier and Hurricane faults (middle and far left of picture), and the many other canyon and cliff formations such as Zion Canyon and Bryce Canyon. We can only be astonished that all of the strata just spoken of lacked any such pronounced disturbances and erosional features during the time that they were formed.

To put this in perspective, the top layer of the Grand Canyon (that's where you peer over the edge!) – the Kaibab Limestone – is according to evolutionary scenarios over 230 million years old, and yet the carving of the Grand Canyon is supposed (again, by evolutionary scenarios) to have occurred only some 40 million years ago (although of late some evolutionists have demoted this to as little as 6 million years ago). So what was 'Mother Nature' waiting for?! Why wait for something like a quarter of a billion years of strata to be laid, and *only then* carve out a canyon? Just as amazing is that the major tectonic activity that caused horizontally expansive uplifting in this region – such as the activity that caused the huge uplift of what is now the Kaibab Plateau (just to the left of the Grand Canyon in the picture above), or the tremendous upwarp on the northern end of the Grand Staircase (at

the far left of the picture) – occurred only *after* all of these strata were laid (the Principle of Original Horizontality and other basic principles makes this sequence of events easily discernable). This state of affairs is by no means confined to the region of the Grand Canyon, but is in fact what we see all across the globe. Consider the Badlands of South Dakota which is pictured above. It is instantly visible that the strata that make up those lands are all flat as a pancake, from the lowest layers up to the highest. Indeed, those vividly colored bands of strata, which extend like a flat sheet of paper from one hill to the next, are largely what forms the beauty of this landscape. And yet today, far from being flat(!), we see some of the most rugged and jagged terrain on earth.

With all of this in mind, we are forced to ask ourselves: What made 'Mother Nature' act so hesitantly during all that time of strata laying? If another layer of strata was laid down *today* over these landscapes, it would immediately be evident that it was laid down *upon* all of the erosionally and techtonically reshaped features that now dominate the surface, and thus, this new layer *would not be flat like the layers we see*. To the contrary, this new layer would be almost as rugged as the surface which it overlaid. Even if this layer were tremendously thick, e.g. so as to fill many of the valleys of the Badlands, we would still be able to see that this is precisely what had happened, and that the former surface (our terrain today) had been anything but flat. So the question is, how can evolutionary geologists get away with suggesting that an astounding quarter of a billion years (250,000,000) of history occurred during the time that these ('Paleozoic') strata were laid, when no comparable erosion occurred during that deep time, when no canyons formed during that time, and when no comparable uplifts occurred during that time? Flood geologists have the wind at their backs, it would appear, when they argue that all of these layers were laid down in quick succession during a period of less than a year. ››

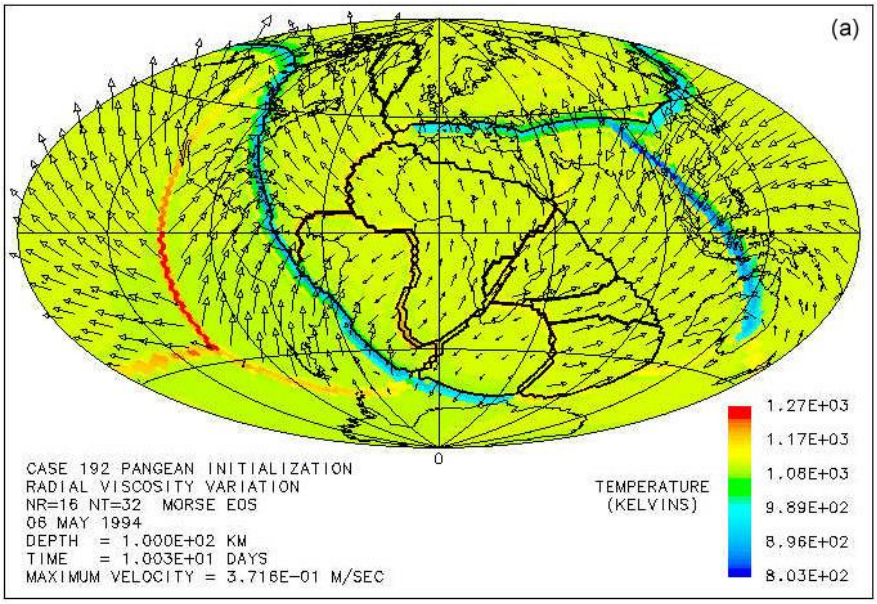

Figure 6: Pictured here is one of many of Dr. Baumgardner's computer simulations; we see illustrated here the catastrophic breakup of the original super continent. John Baumgardner, *Computer Modeling Of The Large-Scale Tectonics Associated With The Genesis Flood*, 1994.

What is the alternative to this uniformitarian perspective? It is that a catastrophe, driven by processes in the earth's interior, progressively but quickly resurfaced the planet. An event of this type has recently been documented to have occurred on the earth's sister planet Venus [8]. This startling conclusion is based on high resolution mapping performed by the Magellan spacecraft in the early 1990's which revealed the vast majority of craters on Venus today to be in pristine condition and only 2.5% embayed by lava, while an episode of intense volcanism prior to the formation of the present craters has erased all earlier ones from the face of the planet. Since this resurfacing volcanic and tectonic activity has been minimal.

There is pervasive evidence for a similar catastrophe on our planet, driven by runaway subduction of the pre-catastrophe ocean floor into the earth's interior [9]. That such a process is theoretically possible has been at least acknowledged in the geophysics literature for almost 30 years [10]. A major consequence of this sort of event is progressive flooding of the continents and rapid mass extinction of all but a few percent of the species of life. The destruction of ecological habitats began with marine environments and progressively enveloped the terrestrial environments as well.

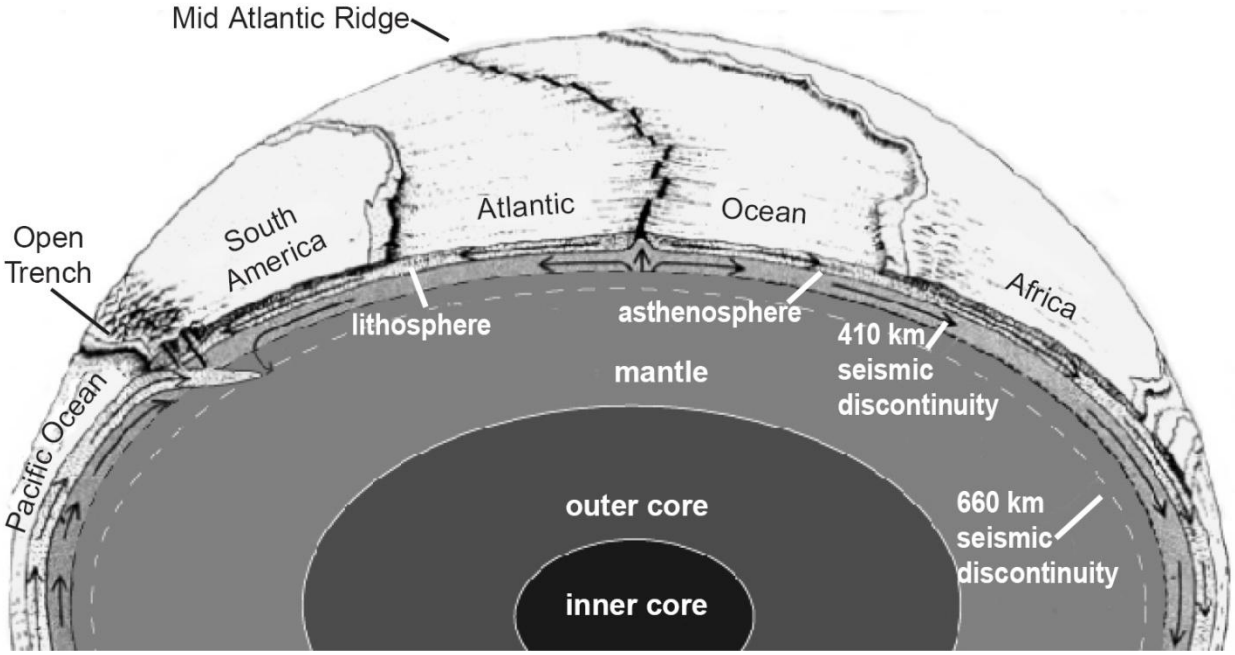

Figure 7: A superb illustration of plate tectonics and of the global mechanics which drive it. Let us imagine that this picture illustrates the occurrence of a runaway subduction event. If the heavy oceanic plate of the Pacific Ocean began a runaway subduction under Peru (see left of picture), the

subducting plate would drag the rest of the oceanic plate to a common demise (that is, into the inferno of the earth's interior). Meanwhile, new (and initially hot) oceanic crust is formed as can be seen at the Mid-Atlantic Ridge in the center of the picture. A major piece of evidence that points to something like this having occurred in Earth's past is a fact that is agreed upon by creationists and evolutionists alike: the oceanic plates are younger than the continental plates, and appear to have been quite recently (re-) generated. Image from John Baumgardner, "Distribution of Radioactive Isotopes in the Earth," p. 52, in *Radioisotopes and the Age of the Earth*, eds. Vardiman, Snelling and Chaffin.

Evidence for such intense global catastrophism is apparent throughout the Paleozoic, Mesozoic, and much of the Cenozoic portions of the geological record. Most biologists are aware of the abrupt appearance of most of the animal phyla in the lower Cambrian rocks. But most are unaware that the Precambrian-Cambrian boundary also represents a nearly global stratigraphic unconformity marked by intense catastrophism. In the Grand Canyon, as one example, the Tapeats Sandstone immediately above this boundary contains hydraulically transported boulders tens of feet in diameter [11].

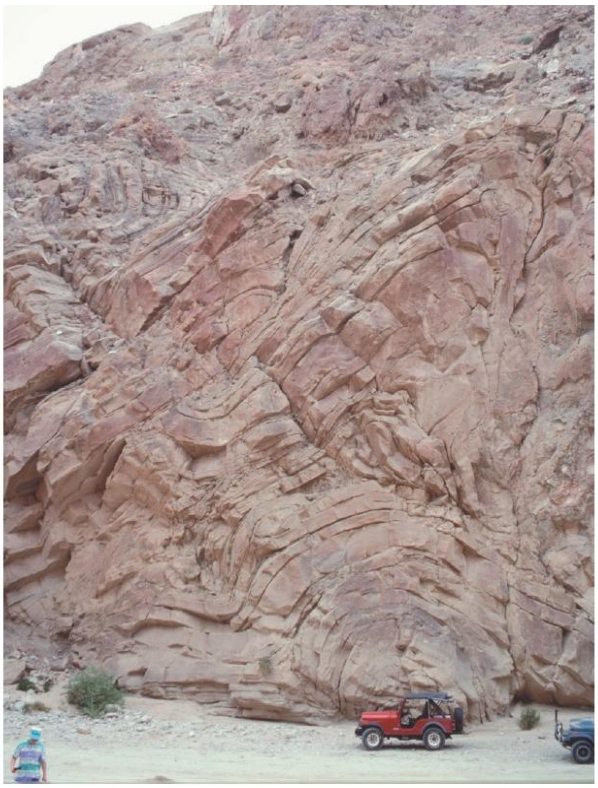

Figure 3. Detailed view of spectacular underturned fold in hanging wall of the Split Mount Fault. Zone B comprises most of the photo with zone C at the top and zones D and E at the right.

Figure 8: Image from: Steven Austin, John Morris, "Tight Fold and Clastic Dikes as Evidence for Rapid Deposition and Deformation of Two Very Thick Stratigraphic Sequences," ICC 1986.

« – Radically Folded Rocks (Stratigraphic Sequences) –

How can solid rock bend and twist like this? At the very least, one would expect copious amounts of cracks and fracturing; more realistically, the temperature and pressure that would be generated in twisting solid rock layers like this would be expected to cause metamorphic transformation, at least at the folds. And yet none of this is observed. It is clear then that these layers were freshly laid and still wet when such unimaginably large tectonic forces contorted them to what we see. We can easily picture the Catastrophic Plate Tectonics model generating the force needed to cause such upheaval (although such formations are no less spectacular!). Only after this tectonic upheaval subsided did these contorted layers petrify.

– Polystrate Fossils: Evidence of Rapid Strata Laying –

Figure 9: Image by Ian Juby, attained from: http://creation.com/polystrate-fossils-evidence-for-a-young-earth.

Fossilized trees that extend through many strata, such as seen here, give evidence that these layers were all wet and recently deposited when the tree became embedded in them. The tree then became petrified along with the strata, all in one event. Polystrate fossils such as this are a grand testimony to the supposition that most of the strata we see were formed quickly – indeed, in a moments time when compared to uniformitarian scenarios.

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That the catastrophe was global in extent is clear from the extreme horizontal extent and continuity of the continental sedimentary deposits. That there was a single large catastrophe and not many smaller ones with long gaps in between is implied by the lack of erosional channels, soil horizons, and dissolution structures at the interfaces between successive strata. The excellent exposures of the Paleozoic record in the Grand Canyon provide superb examples of this vertical continuity with little or no physical evidence of time gaps between strata. Especially significant in this regard are the contacts between the Kaibab and Toroweap Formations, the Coconino and Hermit Formations, the Hermit and Esplanade Formations, and the Supai and Redwall Formations [12].

« Dr. Baumgardner spoke of:

"…the lack of erosional channels [and] soil horizons … at the interfaces between successive strata…. The Grand Canyon [strata] provide superb examples of this vertical continuity with little or no physical evidence of time gaps between strata…"

Figure 10: The Coconino Sandstone overlying the Hermit Shale Formation in the Grand Canyon. Photo courtesy of Ian Juby.

Indeed, notice the knife-edge surface where the Coconino Sandstone meets the Hermit Shale. Steven Austin writes: "With considerable interest, we note that almost 2,000 feet of sandstone, shale, and limestone (the Schnebly Hill Formation) occur *between* the Hermit Formation and the Coconino Sandstone, *near Holbrook, in eastern Arizona* [while these

intermediate layers are *absent* at the Grand Canyon]" (Austin, *Grand Canyon: Monument To Catastrophe*, p. xxx). Since uniformitarian standards necessitate a large amount of time (some 10 million years [ibid.]) to deposit the additional layers of the Schnebly Hill Formation, it puts uniformitarian geologists into the bind of having to posit that an unbelievable **10,000,000 years** passed at this knife-edge surface. But where is the evidence of 10,000,000 years of erosion here? Uniformitarian models do not even get off the ground in explaining this formation, because they can provide no adequate source for thousands of miles of sands (see Austin pp. 35-36). Then, they have no adequate explanation for how such sands were deposited as extensive plains across vast distances. Only catastrophic events of worldwide proportions can begin to accomplish such continental and even inter-continental formations. But even disregarding these objections to the uniformitarian proposed *formation* of these layers, their explanations utterly fail to account for there being virtually no evidence of erosion at these surfaces. How could this feature have sat there for 10,000,000 years without water channels forming (hills and valleys), without soil buildup, without chemical transformation of the surface, and without biological erosion taking place (burrowing bugs, worms, and plants)?

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The ubiquitous presence of crossbeds in sandstones, and even limestones, in Paleozoic, Mesozoic, and even Cenozoic rocks is strong testimony for high energy water transport of these sediments. Studies of sandstones exposed in the Grand Canyon reveal crossbeds produced by high velocity water currents that generated sand waves tens of meters in height [13]. The crossbedded Coconino sandstone exposed in the Grand Canyon continues across Arizona and New Mexico into Texas, Oklahoma, Colorado and Kansas.

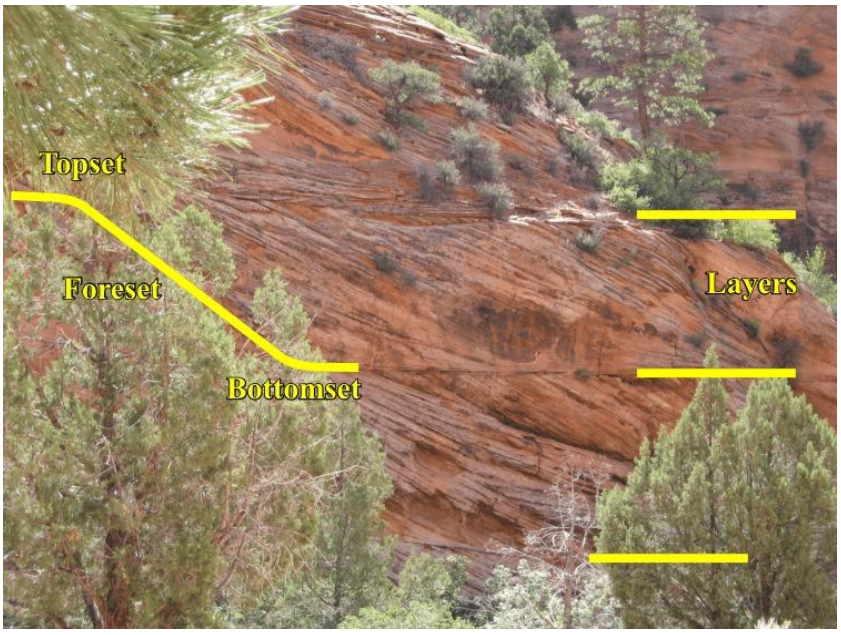

Figure 11: Crossbedding – This photo is from the Navajo sandstone. The crossbedding in the Coconino Sandstone is very similar. Photo courtesy of Ian Juby.

It covers more than 200,000 square miles and has an estimated volume of 10,000 cubic miles. The crossbeds dip to the south and indicate that the sand came from the north. When one looks for a possible source for this sand to the north, none is readily apparent. A very distant source seems to be required.

The scale of the water catastrophe implied by such formations boggles the mind. Yet numerical calculation demonstrate that when significant areas of the continental surface are flooded, strong water currents with velocities of tens of meters per second spontaneously arise [14]. Such currents are analogous to planetary waves in the atmosphere and are driven by the earth's rotation.

This sort of dramatic global scale catastrophism documented in the Paleozoic, Mesozoic, and much of the Cenozoic sediments implies a distinctively different interpretation of the associated fossil record. Instead of representing an evolutionary sequence, the record reveals a successive destruction of ecological habitat in a global tectonic and hydrologic catastrophe. This understanding readily explains why Darwinian intermediate types are systematically absent from the geological record -- the fossil record documents a brief and intense global destruction of life and not a long evolutionary history! The types of plants and animals preserved as fossils were the forms of life that existed on the earth prior to

the catastrophe. The long span of time and the intermediate forms of life that the evolutionist imagines in his mind are simply illusions. And the strong observational evidence for this catastrophe absolutely demands a radically revised time scale relative to that assumed by evolutionists.

But How Is Geological Time To Be Reckoned?

With the discovery of radioactivity about a century ago, uniformitarian scientists have assumed they have a reliable and quantitative means for measuring absolute time on scales of billions of years. This is because a number of unstable isotopes exist with half-lives in the billions of year range. Confidence in these methods has been very high for several reasons. The nuclear energy levels involved in radioactive decay are so much greater than the electronic energy levels associated with ordinary temperature, pressure, and chemistry that variations in the latter can have negligible effects on the former.

Furthermore, it has been assumed that the laws of nature are time invariant and that the decay rates we measure today have been constant since the beginning of the cosmos -- a view, of course, dictated by materialist and uniformitarian belief. The confidence in radiometric methods among materialist scientists has been so absolute that all other methods for estimating the age of geological materials and geological events have been relegated to an inferior status and deemed unreliable when they disagree with radiometric techniques.

Most people, therefore, including most scientists, are not aware of the systematic and glaring conflict between radiometric methods and non-radiometric methods for dating or constraining the age of geological events. Yet this conflict is so stark and so consistent that there is more than sufficient reason in my opinion to aggressively challenge the validity of radiometric methods.

One clear example of this conflict concerns the retention of helium produced by nuclear decay of uranium in small zircon crystals commonly found in granite. Uranium tends to selectively concentrate in zircons in a solidifying magma because the large spaces in the zircon crystal lattice more readily accommodate the large uranium ions. Uranium is unstable and eventually transforms through a chain of nuclear decay steps into lead. In the process, eight atoms of helium are produced for every initial atom of

U-238. But helium is a very small atom and is also a noble gas with little tendency to react chemically with other species. Helium therefore tends to migrate readily through a crystal lattice.

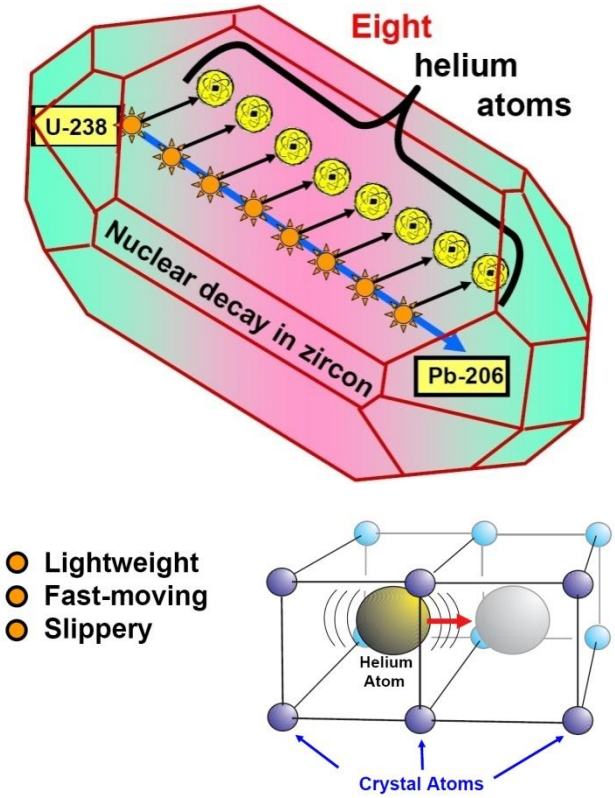

Figure 12: Images are from a Power Point presentation by Dr. Russell Humphreys, Helium Diffusion Experiments Give Nuclear Evidence for a Young World, originally obtained from the Institute for Creation Research website: www.icr.org.

« When uranium 238 decays it eventually produces lead atoms (Pb-206). By pointing to the amount of lead in the zircon, uniformitarianists have claimed that this supports the notion that this small zircon crystal (and thus ultimately, the rock from which it came) is very ancient: sometimes over 1 billion years old. This method has been called the uranium-lead dating method. The problem is, the very same nuclear decay process produces something in addition to lead: copious amounts of helium (precisely 8 helium atoms for every atom of U-238 that decays). A major creationist research initiative called Radioisotopes and the Age of The Earth, or RATE (www.icr.org/rate/), found support for the notion that a great amount of decay has indeed occurred (which, given today's decay rates, has traditionally been used to support an old earth). However, the huge retention rate of helium in these zircons points to the fact that this decay must have happened very recently – the measured diffusion rate of helium out of zircons would indicate only 5,600 years ago, +- 2000. It is simply impossible that that much helium could be retained within these crystals for hundreds of millions of years, which points to the conclusion that the rate of nuclear

decay was at some point much higher (when most of the helium and lead was produced) – the RATE team postulates that this may have occurred during the flood.

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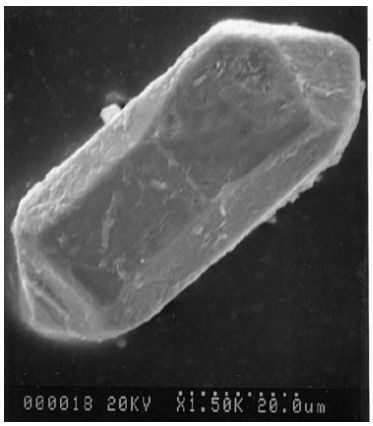
The conflict for radiometric methods is that zircons in Precambrian granite display huge helium concentrations [15]. When the amounts of uranium, lead, and helium are determined experimentally, one finds amounts of lead and uranium consistent with more than a billion years of nuclear decay at presently measured rates. Amazingly, most of the radiogenic helium from this decay process is also still present within these crystals that are typically only a few micrometers across. However, based on experimentally measured helium diffusion rates, the zircon helium content implies a time span of only a few thousand years since the majority of the nuclear decay occurred.



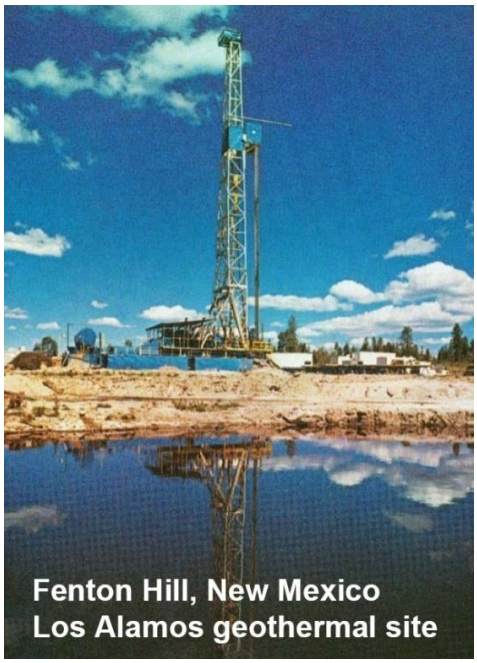


Figure 13: Pictured is the bore hole from which the granitic rocks were obtained, which contain the microscopic zircons (pictured above). These rocks are dated by their position in the rock record as Pre-Cambrian, and their uranium-lead age as interpreted by evolutionists is 1.5 billion years. This implies that when these rocks formed, no multicellular forms of life such as trilobites and fish were in existence on the planet (such life forms do not appear in the rock record until what is called the 'Cambrian Explosion'). However, by dating these rocks according to the rate at which helium produced from uranium decay escapes from zircon crystals, one gets a time span of only about 6,000 years since these rocks were formed.

So which physical process is more trustworthy -- the diffusion of a noble gas in a crystalline lattice or the radioactive decay of an unstable isotope? Both processes can be investigated today in great detail in the laboratory. Both the rate of helium diffusion in a given crystalline lattice and the rate decay of uranium to lead can be determined with high degrees of precision. But these two physical processes yield wildly disparate estimates for the age of the same granite rock. Where is the logical or procedural error? The most reasonable conclusion in my view is that it lies in the step of extrapolating as constant presently measured rates of nuclear decay into the remote past. If this is the error, then radiometric methods based on presently measured rates simply do not and cannot provide correct estimates for geologic age.

But just how strong is the case that radiometric methods are indeed so incorrect? There are dozens of physical processes which, like helium diffusion, yield age estimates orders of magnitude smaller than the radiometric techniques. Many of these are geological or geophysical in nature and are therefore subject to the question of whether presently observed rates can legitimately be extrapolated into the indefinite past.

However, even if we make that suspect assumption and consider:

- the current rate of sodium increase in the oceans versus the present ocean sodium content, or
- the current rate of sediment accumulation into the ocean basins versus the current ocean sediment volume, or
- the current net rate of loss of continental rock (primarily by erosion) versus the current volume of continental crust, or
- the present rate of uplift of the Himalayan mountains (accounting for erosion) versus their present height,

we infer time estimates drastically at odds with the radiometric time scale [16]. These time estimates are further reduced dramatically if we do not make the uniformitarian assumption but account for the global catastrophism described earlier.

There are other processes which are not as easy to express in quantitative terms, such as the degradation of protein in a geological environment, that also point to a much shorter time scale for the geological record. It is now well established that unmineralized dinosaur bone still containing recognizable bone protein exists in many locations around the world [17]. From my own first hand experience with such material, it is inconceivable that bone containing such well preserved protein could possibly have survived for more than a few thousand years in the geological settings in which they are found.

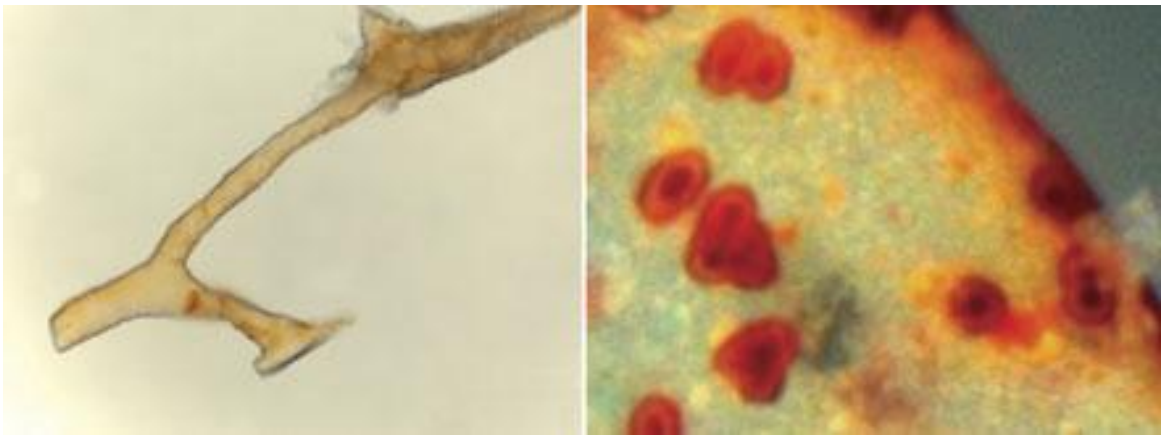


Figure 14: These photos are of a later (2005) find by Schweitzer which produced soft tissue from a T. rex, in addition to strengthening the red blood cell identification. Images originally published in Science 307 (March 25, 2005) pp. 1952-1955.

« "The story starts with a beautifully preserved T. rex skeleton unearthed in the United States in 1990. When the bones were brought to the Montana State University's lab, it was noticed that 'some parts deep inside the long bone of the leg had not completely fossilized.' … Mary Schweitzer … and [her] co-workers took turns looking through a microscope at a thin section of this T. rex bone, complete with blood vessel channels. Schweitzer: 'The lab filled with murmurs of amazement, for I had focused on something inside the vessels that none of us had ever noticed before: tiny round objects, translucent red with a dark center. Then a colleague took one look at them and shouted, 'You've got red blood cells. You've got red blood cells!'" 2 (Description from: Carl Wieland, "Sensational Dinosaur Blood Report!," Creation Magazine 19(4), 1997, retrieved from http://creation.com/sensational-dinosaur-blood-report.)

»

I therefore believe the case is strong from a scientific standpoint to reject radiometric methods as a valid means for dating geological materials. What then can be used in their place? As I Christian, of course, I am persuaded the Bible is a reliable source of information. The Bible speaks of a worldwide cataclysm in the Genesis Flood which destroyed all air breathing life on the planet apart from the animals and humans God preserved alive in the Ark. The correspondence between the global catastrophe in the geological record and the Flood described in Genesis is much too obvious for me not to conclude that these events must be one and the same.

With this crucial linkage between the biblical record and the geological record, a straightforward reading of the earlier chapters of Genesis is a next logical step. The conclusion is that the creation of the cosmos, the earth, plants, animals, as well as man and woman by God took place just as it is described only a few thousand years ago with no need for qualification or apology.

But What About Light From Distant Stars?

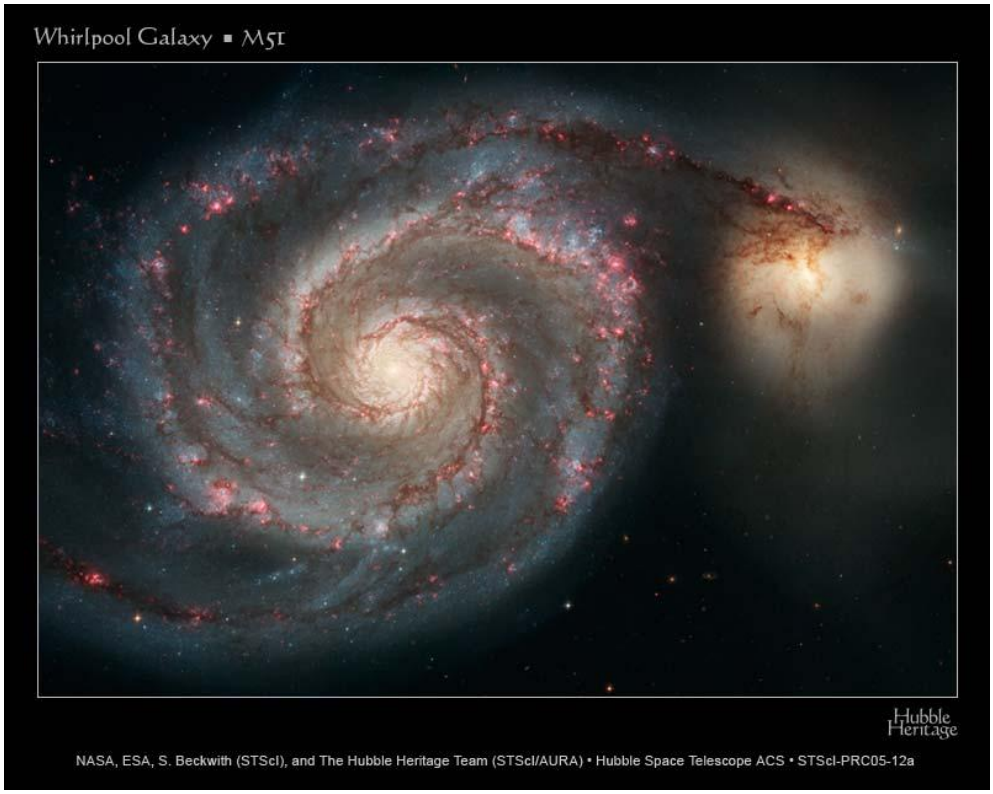


Figure 15: Whirlpool Galaxy (M51)

An entirely legitimate question then is how we could possibly see stars millions and billions of light years away if the earth is so young. Part of the reason scientists like myself can have confidence that good science will vindicate a face-value understanding of the Bible is because we believe we have at least an outline of the correct answer to this important question [18]

This answer draws upon important clues from the Bible while applying standard general relativity. The result is a cosmological model that differs from the standard Big Bang models in two essential respects. First, it does not assume the so-called cosmological principle, and, second, it invokes inflation at a different point in cosmological history.

The cosmological principle is the assumption that the cosmos has no edge or boundary or center and, in a broad-brush sense, is the same in every place and in every direction. This assumption concerning the geometry of the cosmos has allowed cosmologists to obtain relatively simple solutions of Einstein's equations of general relativity. Such solutions form the basis of all Big Bang models. But there is growing observational evidence that this

assumption is simply not true. A recent article in the journal *Nature*, for example, describes a fractal analysis of galaxy distribution to large distances in the cosmos that contradicts this crucial Big Bang assumption [19].

« One may ask why such cosmic-wide structures are a problem. The answer is that such universal structures undermine a foundational assumption of the Big Bang – the Cosmological Principal – as Dr. Baumgardner stated above:

"The cosmological principle is the assumption that the cosmos has no edge or boundary or center and, in a broad-brush sense, is the same in every place and in every direction."

As this description makes clear, the issue of whether or not the matter in the cosmos is roughly homogenous immediately relates to the question of whether or not the cosmos has a center. The Big Bang has said: 1) No, there are no wide scale distribution patterns of matter in the universe, and thus 2) No, **the cosmos *does not have a center*** or any edges. A cosmos that *does* have a center is radically different from one that does not, due to that ever so small, and yet ever so expansive force – the force of gravity. The critical point is that ***gravity slows down time*** – this is one of the central assertions of Einstein's General Theory of Relativity as presented in his 1916 paper (as opposed to his more popularly recognized 1905 paper, which laid out the Special Theory of Relativity). Given the reality (strange though it may seem!) that gravity affects time, **if the cosmos has a center**, one is forced to "scratch from their vocabulary" the question: "What is *the* age of the universe?" A cosmos that has a center *no longer has one age*, due to such general relativistic (i.e. gravity induced) effects. Anything near the center of such a cosmos *will be younger* than things at the universal edges due to gravitational time dilation. As you can see, any cosmological model that incorrectly answers the question of whether or not the cosmos has a center must of necessity meet its demise.

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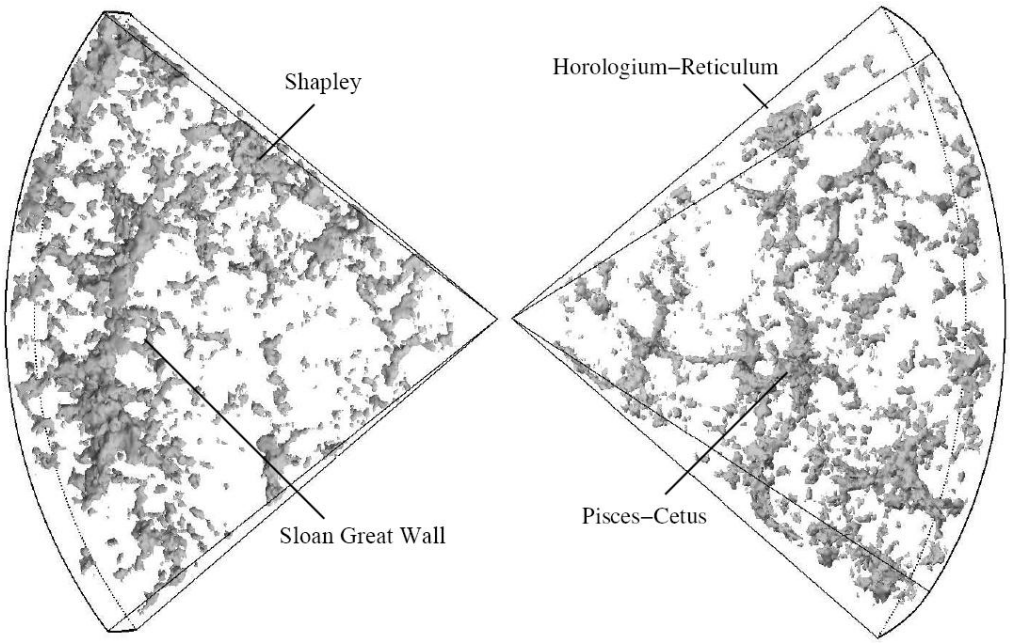

Figure 16: Data from the Sloan Digital Sky Survey revealed a massive filament-like clustering of galaxies, dubbed The Sloan Great Wall; each dot represents a galaxy, while the distance of each dot from the apex represents that galaxy's distance from us. This image (a DTFE reconstruction of the inner parts of the 2dF Galaxy Redshift Survey) from: http://en.wikipedia.org/wiki/Sloan_Great_Wall.

If instead the cosmos has a center, then its early history is *radically* different from that of all Big Bang models. Its beginning would be that of a massive black hole containing its entire mass. Such a mass distribution has a whopping gradient in gravitational potential which profoundly affects the local physics, including the speed of clocks. Clocks near the center would run much more slowly, or even be stopped, during the earliest portion of cosmic history [20]. Since the heavens on a large scale are isotropic from the vantage point of the earth, the earth must be near the center of such a cosmos. Light from the outer edge of such a cosmos reaches the center in a very brief time as measured by clocks in the vicinity of the earth.

« At this point, some may be incredulously asking: "Our galaxy is near the center of the universe?! I thought this was settled with Nicolas Copernicus?!" To answer this, we must expand upon what Dr. Baumgardner was able to say above: "Since the heavens on a large scale ***are isotropic from the vantage point of the earth***, the earth must be near the center of such a cosmos." *Isotropic* is a Greek contraction of: *iso* = equal, plus *tropos* = turn; so in every direction you *turn*, things are *equal*. Although the following point has been subsequently swept under the rug by the text books, Edwin Hubble's initial interpretation of his redshift discovery was that:

< "…**we occupy a unique position in the universe**"! (Edwin Hubble, *The Observational Approach to Cosmology*, The Clarendon Press, Oxford, pp. 50-59, 1937, as cited in John Hartnett, *Starlight, Time and the New Physics*, Creation Book Publishers, 2007, p. 74).>

As John Hartnett explains, Hubble's "observations of galaxy redshifts indicated to him that we are *at the centre of a spherically symmetric distribution of galaxies*" (ibid.). Hubble's interpretation that we are in a special location was due to the fact that he was seeing "galaxies *in all directions* speeding away from him in proportion to their distance" (Hartnett, ibid., original emphasis).

The Horror of a Unique Position – Edwin Hubble was soon to abandon this interpretation of the facts due to his own philosophical abhorrence of the notion that mankind occupies a special place in the universe (a notion which is in every way anathema to evolutionary philosophy):

< *Such a condition would imply that we occupy a unique position in the universe.… But the unwelcome supposition of a favoured location must be avoided at all costs.… Such a favoured position, of course, is intolerable.… Therefore, in order to restore homogeneity [ed.: which he was not seeing!],* ***and to escape the horror of a unique position****,"* >

something like what is now called the Cosmological Principle was assumed, introduced as it was by Edwin Hubble himself! (Hubble, ibid.). But Hubble admitted that this was nothing but a "sheer assumption" on his part, and that, in fact, "the assumption is adopted" (ibid.). He follows this statement with an apparent excuse for making such an adoption:

<*"There* ***must*** *be no favoured location in the universe,* ***no centre****,* ***no boundary****, all* ***must*** *see the universe alike" (emphasis added, ibid.).*>

It is tempting to reply to such willful admissions: 'One does not always get what they **want**!' Or that shaking one's fist at the stars does nothing to change their course! Unfortunately though, basing themselves on such philosophical baggage, the text books from grade 7 on have parroted Hubble's desired interpretation of the facts, while effectively sweeping under the rug what was the most natural interpretation of the evidence, even to Hubble himself: That the universe does indeed have a center, and that the earth was somewhere near this center. Dr. Russell Humphreys states that "the odds for the Earth having such a unique position in the cosmos by accident are less than one in a trillion," (Humphreys, "Our Galaxy", p. 98).

»

In regard to the timing of cosmic inflation, this alternative cosmology has inflation *after* stars and galaxies form. It is noteworthy that within the past year two astrophysics groups studying high-redshift type Ia superdecae both conclude cosmic expansion is greater now than when these stars exploded. The article in the June 1998 issue of Physics Today describes these "astonishing" results which "have caused quite a stir" in the astrophysics community [21]. The story amazingly ascribes the cause to "some ethereal agency."

Indeed, the Bible repeatedly speaks of God stretching out the heavens:

"...O LORD my God, You are very great, ... stretching out heaven as a curtain... (Psalm 104:1-2);

"Thus says God the LORD, who created the heavens and stretched them out..." (Isaiah 42:5);

"... I, the LORD, am the maker of all things, stretching out the heavens by Myself..." (Isaiah 44:24);

"It is I who made the earth, and created man upon it. I stretched out the heavens with My hands, and I ordained all their host." (Isaiah 45:12).

As a Christian who is also a professional scientist, I exult in the reality that "in six days the LORD made the heavens and the earth" (*Exodus 20:11*). May He forever be praised.

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