

# Critical Analysis of Video: “Evolution’s Achilles’ Heels”

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## **Introduction**

Robert Carter has created a video titled: **Evolution’s Achilles’ Heels** that is produced by Gary Bates and Robert Carter for the **Creation Ministries International**. Its title refers to a warrior named Achilles in Greek Mythology who had a flaw in his heel protection that resulted in his ultimate demise. Using that analogy, the presenters of this video suggest that views of conventional geologists who believe in an old Earth interpretation have many such “heels” in their interpretation that are totally flawed, and they explain why in the video.

The video is 1 hour and 37 minutes long and can be viewed at the following link:

<https://youtu.be/orG69AKkVzc>

In this video, 15 scientists with doctorate degrees in paleontology, genetics, geology, chemistry, and astronomy discuss seven different topics: natural selection in evolution, genetics, the origin of life, the fossil record, the geologic record, radioactive isotopes and dating, cosmology, and ethical implications. Their discussions of these topics

would be consistent with those who give interpretations by young-Earth creationists (YECs) although they never identify themselves as young-Earth creationists, but they do call themselves creationists.

Because I, as a conventional geologist have an old-Earth interpretation of what these scientists present in the video, I am providing alternative viewpoints on each of the seven topics and on other related side topics mentioned in the video for the reader to consider. If these 15 scientists are doing proper scientific analyses, then they cannot just choose data that fit their models and beliefs and ignore data that do not fit. On that basis, if there is just one fact (a datum point) in their presentation that shows their science is flawed, then their whole model for a young-Earth creation origin must be tossed out.

I point out many facts that these scientists overlook and which refute a young-Earth model.

In this video, it is not specifically said that these 15 scientists (hereafter called presenters of the video; PotV) believe that the universe, Earth, and its life (plants and animals) were created by God 6,000 to 10,000 years ago, but they clearly do not believe that millions and billions of years of time are involved. I will assume that the PotV use 6,000 to 10,000 years as being the time range that is in their young-Earth model.

## **Natural Selection in Evolution Theories**

### **(a) Darwin's model and criticisms by PotV**

Darwin (1859) makes a point that natural selection is a main factor that results in the evolution of creatures. The PotV belittle this factor and suggest that natural selection is not equivalent to evolution. That is, it does not result in forming a new kind of creature. Even if natural selection were considered to be the survival of the fittest, the result of

that process still does not make a new kind of creature. The PotV say that natural selection is merely differential reproduction in that some animals reproduce faster than others, and even then, that still is not evolution. PotV assert that animals tend to be broken by mutations – not improved. That is, mutations destroy a gene. PotV claim that mutations work in the opposite directions to evolution and that randomness does not compete with intelligence. PotV would claim that intelligence is attributed to the Creator/God in his design of the language of the genes that produces the DNA and RNA chains that make life possible.

Modern biologists would agree that Darwin did not have the evolution model entirely right, but he did have the right concept to begin with. Now modern geneticists have improved on Darwin's model with as many as 15 ways in which evolutionary processes can occur (Miller, 2003; Collins, F., 2006, Petto and Godfrey, 2008). See also:

<https://evolution.berkeley.edu/evolibrary/home.php>

**(b) Evolutionary tree with branches versus separate trees in an orchard**

One main point made by the PotV is that the conventional model of a tree of evolution with branches, starting at the bottom with a single cell organism and then moving upward in various branches to organisms with more complexity into many-celled organisms, marine life, fish, amphibians, reptiles, and finally mammals (with many sub-branches in each life type), is flawed. Instead, the PotV choose an evolutionary model that looks like an orchard in which each organism has its own separate origin from which various species evolve.

The PotV say that there are “kinds” of animals, where kinds are approximately equivalent to the taxonomic category of families of animals. For example, the cat family would include lions, tigers, cheetahs, leopards, pumas, caracals, jaguarondis, servals, ocelots, and

other species of cats that make the 30 to 40 known cat species in the world today, including domesticated cats. In the same way, canines (dogs), horses, and of other kinds of animals would be considered to be families that God created nearly instantly in the PotV family/kind model. In this model, each family is the base of an orchard tree in a single line of evolutionary change and not in a branching tree of evolution. But evolutionary science has no evidence that indicates that development of so much diversity can occur in a short a time period of 6,000 to 10,000 years. These changes take much more time.

For example, there are 30 to 40 living cat species, including domesticated cats, but there are 150 species of extinct cats, including the saber-toothed tiger. There are five species of rhinos living today and more than 100 extinct species. There are five to 40 species of canines and more than 200 extinct species. There are seven species of living horses and 150 extinct species. There are eight species of living bears and 63 extinct species. There are 17 species of living penguins and more than 50 extinct species. Whatever family of animals is selected, there are many, many more extinct species than living species. Of course, one could say God could produce his creation nearly instantaneously, but if God used his natural laws, then it seems illogical that he would be producing instant creations over and over again throughout the geologic column of sedimentary rocks or during biblical times. On that basis, one is forced to come to the conclusion that if God created billions of creatures, He needed much more time than 4,350 years since Noah's flood when Noah loaded pairs of animals on the ark so that these creatures could evolve into the different kinds of animals that exist now. He could not have crammed all these creatures into such a short period of evolutionary time, obey his natural laws, and leave enough time for them to reproduce and evolve to form different species. This realization of a time limitation along with the fact that no cetacean

fossils have been found with sea reptile fossils (discussed in the next section) indicates that a worldwide Flood never happened and that the Earth must be more than 6,000 to 10,000 years old. Moreover, Fischer (2008) provides much evidence from biblical and archaeological sources that Noah's flood must have been local instead of worldwide. Fischer also provides information from historical records that are found in nearby countries and cultures that do not report any evidence for flooding when Noah's flood occurred and that the Genesis flood strongly parallels the flood stories of older reports in the epics of Gilgamesh and Atrahasis, indicating that all three refer to the same very large flood. The animals that were drowned in Noah's flood would not be all the animals of the whole world but those named by Adam who lived in that part of Mesopotamia where a local large flood occurred. Apparently, the PotV have missed seeing Fischer's book.

Furthermore, although PotV base their model for evolution in an orchard arrangement of what creatures were on Noah's ark, their model is not the full range of evolution. It leaves out the evolution of marsupials (such as kangaroos and wombats) in Australia, of the dodo bird on an island in the Indian Ocean near India, of lemurs in Madagascar, and of the armadillos in North and South America. Noah likely never brought these creatures across oceans to the ark and returned them after the ark landed. Nor does the PotV model account for the evolution of the marine reptiles and cetaceans (discussed in the next section).

### **(c) Sea reptiles and cetaceans**

If it were true that Earth is 6,000 to 10,000 years old, as PotV claim, and if every kind of animal were created during the Genesis Week (including whales, "the great sea monsters"), as reported in Genesis 1:21, wouldn't it be remarkable that somehow all sea-living cetaceans

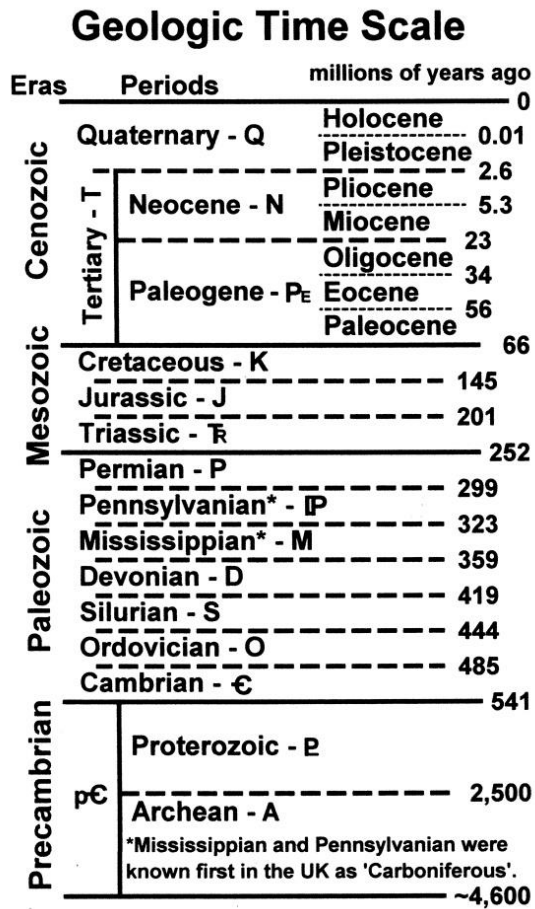
survived the flood but not a single sea reptile did? Even then, only a particular set of 88 cetaceans survived that are living today. Of the 550 extinct sea reptiles, there are 200 species of ichthyosaurs, 250 species of plesiosaurs, and 100 species of mosasaurs. One species of mosasaur was 60 feet long. The mosasaurs lived only in the Cretaceous Period, so not all extinct sea reptiles lived at the same time. Other sea reptiles appeared at different times in the Mesozoic Era and then became extinct. (Creatures in the Cretaceous Period and older creatures in the Mesozoic Era are said to have lived at the time of Noah's flood.) But not all cetaceans lived at the same time, and some became extinct at different times, according to their appearance in the fossil record. This distribution of fossils begs for an explanation. It should be apparent why PotV would be able unable to explain why no one has ever found a whale fossil bone in Noah's Flood deposits, as explained above, when whales must have been living during Noah's Flood, having been created well before Noah. How could Noah's Flood separate out free-swimming cetaceans from free-swimming sea reptiles, so that the cetaceans still remained alive after the flood, whereas the sea reptiles became extinct and were preserved only as fossils, particularly when both animal groups had to be living at the same time? Moreover, if they both were living at the same time, how would these creatures have been able to compete in the same environments for food? Both groups appear to be adapted to similar environments. Within the context of an ancient Earth these patterns are easy to explain. Sea reptiles lived and died well before mammals adapted to living in the sea and became the many species of cetaceans that are alive today. These two groups never lived together and, therefore, never competed for the same resources. Therefore, because PotV do not explain the above facts in their model of a young Earth, it is flawed.

#### **(d) Transition fossils**

The PotV claim there are no transition fossils. That is, all species just appear as an orchard of evolution, created seemingly miraculously by God. However, the supposed absence of transition fossils is simply not true. Apparently, the PotV have missed the careful studies by Miller (1999) that show how evolution can be a part of God's plan for how life is formed. Moreover, Miller shows that there is ample evidence for macroevolution (e.g., amphibian-like fish, reptile-like amphibians, mammal-like reptiles, bird-like reptiles, continental-like ancestors to marine whales). That is, these forms of macroevolution are all represented by transition fossils.

#### **(e) Ediacaran soft-body fossils**

The PotV point out that all the various animal phyla have been found that exist as soft-body fossils in the youngest Precambrian Ediacaran rocks (beginning 635 million years ago), but there is no fossil evidence of genetic evolutionary changes in older Precambrian rocks that led to the complexity of DNA or RNA that must have been in these phyla. It is also clear that these phyla evolved to become the younger creatures that occur in the Cambrian Period (beginning 541 million years ago) (**Figure 1**) in overlying rock where hard-body fossil shells are found. On the basis of the absence of evolutionary genetic changes in fossils in older rocks, the PotV say that God must have created all the different phyla nearly instantly during Ediacaran time. But this youngest Precambrian time extending to the present time represents only 7 percent of Earth's geologic history, while we have evidence that the Earth is about 4.6 billion years old (**Figure 1**).



**Figure 1.** The Geologic Time Scale.

Of course, there is not enough time in the Ediacaran Period to go through the necessary genetic evolutionary changes (described in the next section) to result in the Ediacaran phyla fauna with steps involving mutations to start with single cells and arrive at the complex genetic structures in the early hard-body creatures. However, starting about 3.5 billion years ago, when evidence of single celled fossils appeared, there likely was enough time in billions of years to do such progressive complex evolutionary processes.

The problem, of course, is finding the fossils to show that it happened. But the Earth's sedimentary crust has been involved in many cycles of plate tectonic movements of former continents that are older



than the more recent splitting of Pangaea. The sliding around of older continents in which sedimentary layers were subducted and which would have carried fossils of early soft-body creatures down into the mantle or which were eroded away would prevent them from ever being discovered. Therefore, paleontologists may never find the evidence for possible early stages of evolution. However, if the natural laws, which God also created, are dependable, then God's design for creation of life could be by progressive mutational changes. PotV should trust this God and not consider him to be a trickster, only making rocks look like they are young when they are not. Such evolution through billions of years is equally miraculous, if not more so, as doing it nearly instantaneously by miracle, particularly when the PotV model requires 5 billion miracles for each of the possible 5 billion God-created species in the fossil record. If God did his creation of all life on Earth by miracles, He did a poor job because most of them died off and became extinct when a large natural disaster occurred. Instead, God designed the DNA to allow some positive mutations that enabled new species to evolve that could adapt to the new conditions that developed on Earth.

Two examples of natural catastrophic events occur in sedimentary deposits in Africa and around the world. One major catastrophe is the burial of thousands of dog-sized, mammal-like reptiles that occur in the Permian Karoo Formation in Africa, which has an age of about 320 million years ago. The rocks in this formation were deposited in a shallow swampy basin following a Permian Ice Age in which a continental ice cap covered the South Pole area with glaciers expanding into southern Africa. This low-lying shallow basin was easily flooded, and a local 1,000-year flood drowned and buried these reptiles. What is important that the PotV need to recognize is that a continental ice cap cannot be produced in Permian times during Noah's Flood 4,350 years ago to have that amount of snowfall in the middle of the one-year flood

to produce that much ice let alone to melt away the ice before the end of the middle of the flood. This example likely did not cause an evolution of life animal forms but the next example did.

The second example of a catastrophic event occurred at the end of the Permian Period about 250 million years ago when huge volumes of basaltic flood deposits erupted in India, the so-called Deccan Traps that are more than 6,000 feet thick and covered hundreds of square miles. The poisonous gases released into the air during their eruptions caused 70 to 80 percent of animal life to become extinct. Many thousands of feet thick of basaltic lava cannot erupt late in the Permian during Noah's flood in less than one year 4,350 years ago. Therefore, the PotV model is nonsense.

## **Genetics**

The PotV claim that all mutations are detrimental. That is not true! Most are, but it only takes one mutation that makes a positive change that allows a creature to adapt to new threatening environmental conditions and survive and increase its population. It happens in bacteria and in viruses (e.g., Covid-19) all the time. Why couldn't it happen in other God-created life?

The PotV claim that mutations occur even as the fetus grows in the womb and changes from the one fertilized cell into the multicellular human being. But most geneticists would not say that these changes are mutations but are merely the way God has designed the developmental processes.

The PotV describe all the complexities of genetic processes involving DNA and RNA and other types of organic chains (such as ribosomes) which are necessary for organisms to have life and reproduce. I agree that these processes are so complex that in 6,000 to

10,000 years there is not enough time to produce the changes in the genome structures that are required in new forms of life.

## **The Origin of Life**

The PotV point out that various models for the origin of life are flawed and certainly not correct. I fully agree. We may never know how life was first formed, whether it started in outer space and was brought in by a comet or a meteorite, or whether it originated on Earth in early Precambrian history. However, once life originated, scientists can then study how evolution of life proceeded. If the PotV say that the origin of life was by miracle, then why waste time doing evolution research in a laboratory?

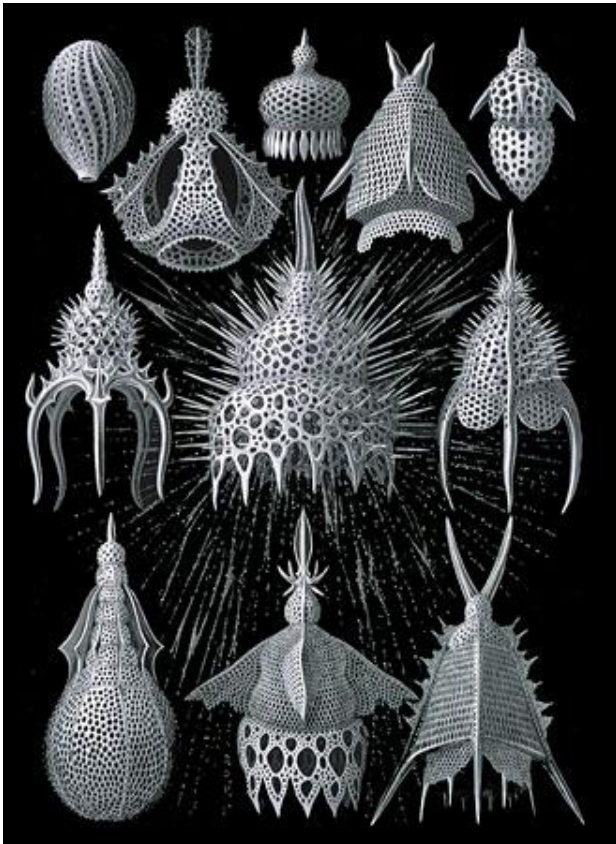
## **The Fossil Record**

### **(a) Creation of fossils**

PotV point out in this video that fossils can be formed very quickly, and shows a fossilized pillow and a fossilized teddy bear. On that basis, PotV believe that sedimentary layers in the Grand Canyon and around the world were deposited quickly, say, within 6,000 to 10,000 years, but not in millions of years that conventional geologists say exists in the geologic column of rocks in the Grand Canyon. It is true that fossils can form quickly, but if an animal dies and is exposed to weathering, bacteria, or foraging animals, the dead animal is consumed, and the formation of a fossil is not possible. Fossils of dead animals, however, form where the animal has been quickly buried in storm muds (shale), limy muds (limestone), and sands (sandstones) or in volcanic ash where their skeletons and shells can be preserved and cannot be affected by weathering, bacteria, or foraging animals. Nevertheless, such quick burial need not mean that the host rock must have also been quickly deposited because after the short time of a storm or a volcanic

eruption of ash the deposition of greater amounts of sediment can occur over millions of years to make a layer of sediment perhaps many hundreds of feet thick.

A related example occurs on the Pacific Ocean floor where there are layers of radiolarian fossils (**Figure 2**) which are as much 4,000 feet thick. Their silica skeletons have pointed spines and pores that cause them to sink in water exceedingly slowly.

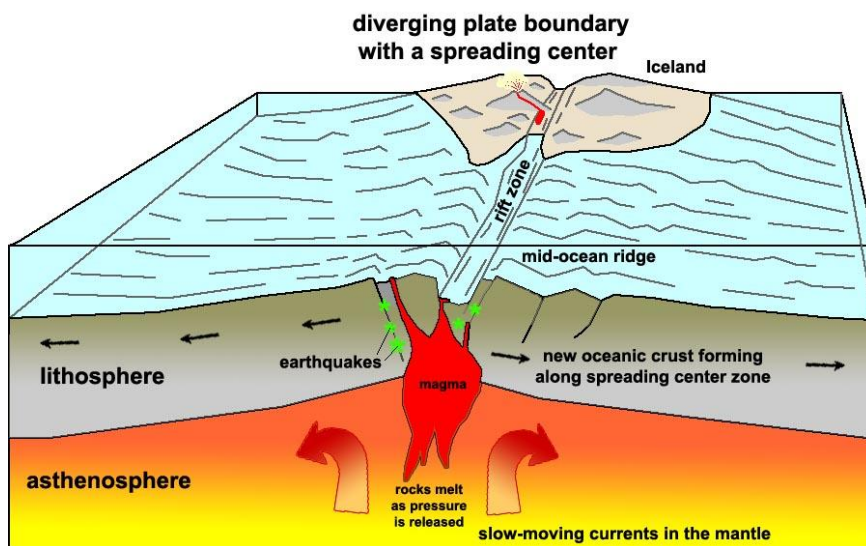


**Figure 2.** Radiolarian fossils.

Around the world thicknesses of Paleozoic and Mesozoic sedimentary rock layers commonly average 15,000 feet thick and young-Earth creationists believe that all these layers were deposited by the Flood (Hill et al., 2016), and the PotV say that these rock layers were deposited rapidly by repeated tsunamis. In several places around the

world, many radiolarian-bearing fossil beds are 164 to 328 feet thick although no such beds are found in the Grand Canyon. For 164 to 328 foot-thicknesses of radiolarians to be deposited in proportion to the 15,000-foot-total-thickness in one year of Noah's Flood (365 days), these radiolarian beds having this thickness would have to be deposited in the proportional time of 3.9 to 7.9 days. So, how fast do radiolarian skeletons accumulate on an ocean floor? Japanese scientists have made such a determination and have found that it takes 14 to 392 days for radiolarians to fall through a water column that is 5,000 meters deep, which is far longer than the theoretical 3.9 to 7.9 days that are available in the young-Earth model for radiolarian deposition. (See <http://www.csun.edu/~vcgeo005/Collins3.pdf>).

In a later section (page 24) I explain why the “fountains of the great deep” did not come from mid-ocean spreading centers to cause the accelerated plate tectonics to occur which the PotV also said split Pangaea (page 22) to form the Atlantic Ocean (**Figure 3**).



**Figure 3.** Mid-oceanic spreading in the Atlantic Ocean, but a similar mid-ocean spreading center exists in the Pacific Ocean.

But because this section is about the deposition of radiolarian fossils on the Pacific Ocean floor, it is appropriate here to point out that the thickness of radiolarian fossil deposits on the Pacific Ocean floor is zero next to the mid-ocean spreading center where fresh lava is just emerging, but then steadily increases in thickness to a 4,000-foot thickness at progressive distances away the spreading center. (1) Because providing enough silica dissolved in ocean waters to produce all these silica skeletal shells is a very slow process of weathering of rocks during millions of years to provide the silica that radiolarians need, (2) because of the low solubility of silica in ocean waters which makes little silica available at a given time which the radiolarians need, and (3) because of the very slow rates at which dead radiolarians settle to the ocean floor (described above), these observations are clear evidence that accelerated plate tectonics claimed by the PotV **never happened**. The radiolarians are not deposited rapidly by tsunamis – because tsunamis result in a catastrophic jumbled mixture of all sizes and kinds of debris.

Their model is flawed. It would take millions of years for the Pacific Ocean floor to spread apart to the distance that is observed now on the basis of the radiolarian-fossil-bed changes in thickness. Furthermore, there are more than 4,000 different species of radiolarians. How can repeated tsunamis in the one year of Noah's flood and afterwards sort out all these different species of very tiny size into an evolutionary sequence from the time in which the first radiolarian was formed in the Cambrian Period to the present time?

### **(b) Broken fossils as evidence of tsunami deposition**

The PotV would likely say that if fossils are broken and mixed together in fragments in a limestone layer, such fragments, as shown in



**Figure 4**, would be evidence of rapid burial by a tsunami and would assert that all limestone beds would have that same rapid deposition.



**Figure 4.** Broken stems of crinoids (sea lily) in limestone.

But in other places, limestone layers have colonies of marine animals (brachiopods, clams, crinoids, and sponges) that are completely unbroken and in place without scattering. In Illinois, Iowa, and Wisconsin, individual layers containing these fossils can have consistent constant thicknesses (say, thicknesses in feet of 1.4, 0.8, 1.2, 1.8, 2.2, 0.4, ...etc.) that extend for hundreds of square miles (**Figure 5**). Such consistent thickness and no fossil breakage can only mean extremely slow chemical deposition during millions of years and not rapid tsunami deposition during the supposed global Noah's flood.



**Figure 5.** Silurian limestone Hopkins Formation in Illinois.

### **(c) Changes in magnetic field N-S orientations**

The PotV claim that reversals in the magnetic field orientations, N to S, occurred in the skin of a specific lava flow in comparison to depths below the skin and this is evidence that rapid changes could have occurred in all places where changes in magnetic fields exist around the world. But the changes in the N-S fields around the world also show that changes in the orientations of the magnetic field lines depend upon the latitude. I do not have an explanation for what PotV report in the above particular lava flow, but the PotV must explain all data and not choose what seems to fit their model. How does rapid deposition during Noah's flood account for horizontal orientations of the magnetic field lines at the equator, while lines are steeper, even vertical at the poles of the Earth? Moreover, glass beads of melted incoming meteorites (shooting stars) have accumulated very slowly on oceanic floors in fine



sediment, and these grains are magnetic and show the same periodic changes in magnetic field directions as in volcanic rocks all over the world. How can such regularity be produced by sediments deposited by repeated tsunamis? And how can oceanic deposits of meteorite dust many thousands of feet thick have accumulated in only 6,000 to 10,000 years?

### **(c) DNA in dinosaur bones**

The PotV say in the video that DNA remains of nerve cells are found in dinosaur bones, and such reports are true. But the fossil preservation of nerve cells occurs where dinosaurs were buried quickly in mud deposited by floods or perhaps under thick volcanic ash deposits. In these places the bones were cut off from ground water, oxygen, or bacteria, which burial in mud or ash would accomplish, and such enclosure is the reason why the DNA does not decay over millions of years of burial. The absence of decay depends on the absence of bacteria, oxygen, and water and not that the DNA is unstable. We find genomes of DNA in Neanderthal bones that are many thousands of years older than 6,000 to 10,000 years, the Earth age claimed by the PotV, with Noah's Flood being about 4,350 years old.

## **The Geologic Record**

### **(a) Uniformitarianism**

Much misinformation about uniformitarianism is included by the PotV in the video. In early studies the rate at which sediments were deposited and rippled marks were formed, geologists saw that many processes are very slow processes. These geologists reasoned that where such features are in rock layers around the world, these features must have been formed over millions of years. From later studies, geologists have since realized that catastrophes can produce some layered rocks

quickly; thus, geologists now only apply the theory of uniformitarianism where the evidence supports its use. However, the PotV assume that conventional geologists apply uniformitarianism everywhere today. Thus, when the PotV pointed out that the explosion of Mt. St. Helens produced 100 feet of thin-bedded sediment in a short time, they claimed that catastrophes could also have produced the thin-bedding in the sedimentary rocks in the Grand Canyon during Noah's flood. However, while geologists recognize that rapid deposition can create such sediments, the thin-bedded sediments adjacent to Mt. St. Helens were clearly deposited by a catastrophic explosion, not by a global Flood. The PotV expect you to overlook this fact. The PotV want you to believe that most sedimentary rocks are created by the catastrophes of Noah's flood waters. Moreover, these thin-bedded sediments deposited near Mt. St Helens contain ash particles from the explosion making it clear that a catastrophic event produced the sediment.

If a catastrophic flood theory to produce the thin-bedded layered sedimentary rocks in the Grand Canyon is applied, this theory overlooks the fact that associated with these rocks is the Redwall Limestone which has more than 1,300 sink holes of a former karst topography landscape, and these sink holes give evidence that this limestone was once lifted out of an ancient sea and exposed to surface erosion and falling rain that dissolved the calcium carbonate in the limestone to form tunnels and collapsed tunnels (sink holes). That karst topography cannot happen if this limestone formation was deposited in one year of Noah's flood by repeated tsunamis. Moreover, it takes more than one year to make such tunnels and sink holes.

Also, the Cretaceous Mancos Shale in Colorado is clearly composed of thin-beds of sediment (clay particles) in a formation that is more than 3,000 feet thick (**Figure 6**), and on top of the shale is a 200-

foot thick sandstone layer. In many places the bottom of this sandstone layer has river channels filled with gravel that cut the underlying shale, and in these channels are large petrified tree logs. River channels would not have been produced by repeated rushing waters in tsunamis, and tsunamis would have scattered the tree logs rather than concentrating them in river channels.



**Figure 6.** Cretaceous Mancos Shale with sandstone cap.

For the Mancos Shale uniformitarianism applies because it allows both slow and fast processes: clay particles that become consolidated and form shale settle out of water extremely slowly, and modern-day rivers during flood times erode trees out of their banks and transport them to be deposited and buried in river channels.

If all sedimentary rocks around the world were deposited by Noah's Flood by one tsunami after another, then in **no** place should clay (mud) that is consolidated via slow settling be found as shale interlayered with volcanic ash beds. But such coexistence of mud

layers next to overlying ash layers in several sequences close to each other occurs. (See the following link; <http://www.csun.edu/~vcgeo005/Collins4.pdf>) If repeated tsunamis had produced such sequences, the rapid flow of water in repeated tsunamis that carries both mud and ash should thoroughly mix these different kinds of sedimentary particles that settle out of water. Here again, uniformitarianism applies and what is observed is predicted.

Also, alternating thin beds of sandstone and shale with burrows can be found in sequences of thousands of pairs of shale and sandstone layers whose combined thickness is 1,500 feet thick. The burrows represent creatures that got their food from the mud that they swallowed, leaving fecal material behind in the burrows as they munched their way through the mud. In each pair, a storm came and buried these creatures in sand, killing them, but after each storm more mud settled on top of the sand and new colonies of burrowers formed in the next overlying mud layer. Then, this pair production occurred over and over again. See the following link: <http://www.csun.edu/~vcgeo005/Collins4.pdf> Because 1,500 feet of thousands of pairs of deposits cannot be done quickly by repeated tsunamis, the PotV model is refuted.

Sand particles quickly settle out of moving storm water while clay particles, also transported by storm waters, settle out slowly on top of the sand particles. Thus, the 1,500 feet of pairs of sandstone and shale layers represent likely many thousands of storms and not many thousands of tsunamis.

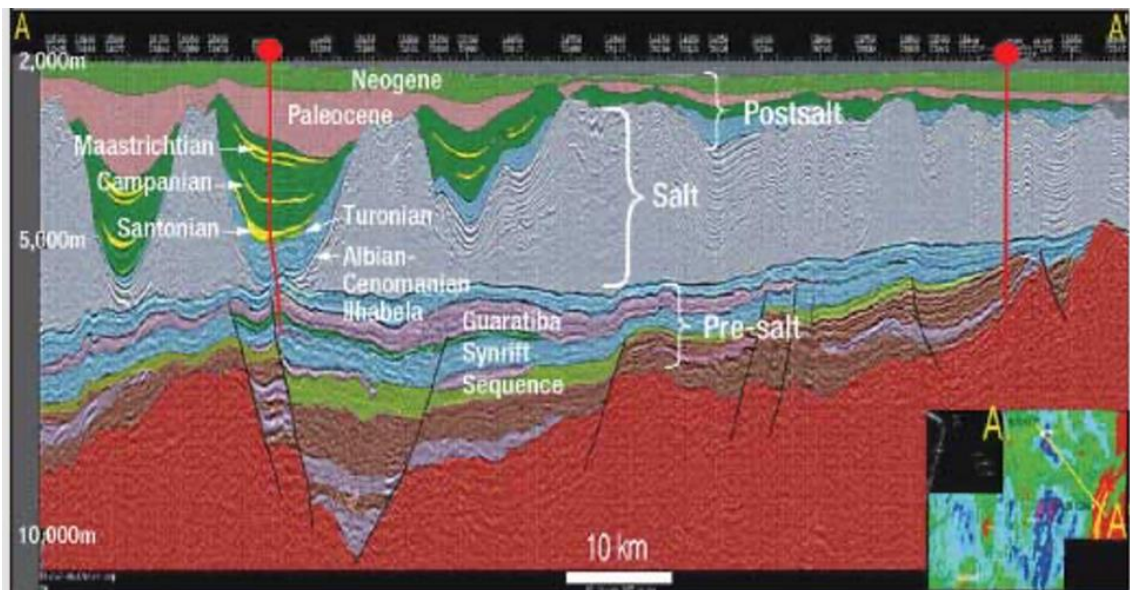
## **Folded Rock Layers and Plate Tectonics**

### **(a) Brittle rocks versus soft rocks**

Another point that is made by PotV is that folded rocks are the result of rapid plate tectonics. The PotV suggest that solid rocks are brittle and would break and not fold without fracturing. On that basis, because of instances of folded rocks occur in the Grand Canyon area, Canadian Rockies, and elsewhere that do not show breakages, the PotV say that the folded rocks must have been soft and folded during rapid plate tectonics. It is true that cold rocks at the Earth's surface are brittle and break easily, but the folded rocks that are seen at the Earth's surface are now exposed because of uplift and much erosion, bringing them into view. However, because the folded rocks were once at great depth they must have been at temperatures as much as 100-300 degrees C or more. Under these conditions, the grains in the sediments slowly rearrange themselves without breakage during folding to adjust for pressures during slow plate tectonics movements. The calcite or silica cements that held the grains in place to make the rock solid also recrystallize during the slow folding. A modern day example of slow bending involves bundles of straight glass tubing that chemists put in the attic on floor rafters of a chemistry building for storage and which were put there to be retrieved at some future time. They had been forgotten for 40 years when a chemist went to get them. To his surprise, the glass tubing was not straight but bent and draped over the rafters. The warmth in summer time in the attic slowly allowed the glass tubing to flow without breakage. Of course, glass is mostly uncrystallized; there are differences for sandstones that have quartz crystal grains that are cemented by calcite or silica, but nevertheless, the calcite and silica slowly recrystallize to adjust for the slow folding, and the rock layers were not brittle-broken

### (b) Plate tectonic splitting of Pangaea

The PotV claim that the folding of rocks in the Himalayas that carried fossils to the top of Mt. Everest must have occurred quickly during rapid plate tectonics; the PotV show a movie of simulating how a huge continent, called Pangaea, split apart in its middle to become South America on one side and Africa on the other side – thereby opening up the Atlantic Ocean (**Figure 3**). This movie also shows a part of Pangaea near the southern tip of Africa that splits away to produce India that later moves toward China, piling up rock layers to form Mt. Everest in the Himalayas. But contrary to the PotV model of rapid plate tectonics is the occurrence of thick layers of salt found off the coast of Brazil; salt deposits there have thicknesses of more than 3,000 meters (9,892 feet) (**Figure 7**). Such salt deposits require long times of formation as in the Salt Range of Pakistan (Carter, R., (editor), 2014, page 121),



**Figure 7.** Geologic cross-section of layers of salt deposits off the coast of Brazil. Source of image: Ken Wolgemuth.



There are similar thick salt deposits offshore Angola on the African side. This salt, now in marine basins, would have been deposited after Pangaea broke apart by processes of plate tectonics. As South America split apart from Africa, sea water came into the narrow space of the early stages of the Atlantic Ocean. High evaporation of sea water because of hot desert conditions in the former interior of Pangaea caused salt to slowly be deposited in the basin until the continents were far enough apart that seawater circulated with open ocean water. Such salt deposits cannot have been formed by rapid plate tectonics as claimed by the YECs and must have occurred during millions of years. Plate tectonic movements today that are measured by GPS methods are mostly 2-5 cm per year and such slow movement is confirmed by the slow deposition of radiolarians of much less than a centimeter per year. See previous section on pages 12-13.

### **(c) Glacial water erosion**

The PotV claim that glaciers in some places have allowed rapid flow of water during melting and that such a massive flow of water cut a gap in the Upsalla Mountains in Sweden. Such rapid flowage of water from glaciers is known and is called a jökulhlaup (an Icelandic term), and such occurrences happen in Iceland. For example, as many as ten million mammoth fossils are believed to be preserved in the permafrost in the tundra in Siberia, including a complete frozen carcass of a young mammoth with buttercups still found in its stomach. Why are so many mammoth fossils found? These animals must have been living, perhaps near the end of the Ice Age, when a tongue of ice from a glacier flowed across a valley to block the flow of water in the valley. The ice dam created by this blockage then caused a large lake to back up in the valley behind the dam, and the water in the lake must have increased in depth as water continued to flow down the valley from higher elevations.

Eventually, the level of the water rose behind the ice dam sufficiently to cause the ice to float. When that happened, suddenly the water, with great depth and under high pressure, rushed out underneath the ice to cause a huge flood, a jökulhlaup down the valley. If a large herd of mammoths were grazing in a floodplain down-valley, they could suddenly be overwhelmed by this flood and become buried and eventually frozen in the flood debris. Many such jökulhlaups could have happened through hundreds of years, so that many herds of mammoths could have been buried to produce the millions of mammoth fossils. The abundant fossils indicate that such large floods have occurred.

Nevertheless, the claim that the rush of a large volume of water cut a gap in the Upsalla Mountains is not geologically sound. A large rush of a large volume of water can erode soft sediment but not hard igneous and metamorphic rocks that occur in these mountains, or a hard sedimentary sandstone layer standing up above the surrounding landscape as a ridge. From the image that is shown, where the gap is cut through such a hard resistant ridge, a single rush of water would not have been able to erode through it to form such a deep gap.

#### **(d) Fountains of the Great Deep and Plate Tectonics**

The PotV claims that the “fountains of the great deep” that are said to emerge from mid-ocean centers (as in the mid-Atlantic Ocean, **Figure 3**) are what drove the rapid plate tectonics. But they offer no experimental laboratory or geological evidence that shows that large volumes of water can ever be stored in the lithosphere or mantle which could possibly burst forth to cause continents to slide rapidly around. The very high pressures at depths found in the lithosphere and mantle below these mid-ocean centers force the water molecules to be interstitial between crystals, and there never can be a separate huge



volume of water that could possibly burst through the Earth's crust. Likely, the fountains of the great deep have a logical natural origin as seen at the following

link: <http://www.csun.edu/~vcgeo005/Nr64Fountains.pdf>

Fischer (2008) also suggests that the fountains of the deep could be related to canals and irrigation systems that were dry and suddenly overwhelmed by flooding.

#### **(e) Helium diffusion in zircon crystals**

The He diffusion problem in zircons described by the PotV has been refuted in articles at this link:

<http://www.csun.edu/~vcgeo005/henke.pdf>

#### **(f) Carbon-14 in coal, diamonds, and dinosaur bones**

The PotV claim that C-14 dating cannot be trusted because coal layers of different, nearby, overlying stratification have the same amounts of traces of C-14 in rocks that are claimed by old-Earth geologists to be millions of years old and, therefore, the PotV say this existence of same C-14 content shows that the coal layers must have been deposited quickly during Noah's flood. The reasoning here requires that the short explanation that C-14 decays quickly, and, thus, its presence indicates recent production. Also, traces of C-14 can be found in diamonds and dinosaur bones that are claimed to be millions of years old. But these PotV do not seem to realize that all laboratories doing C-14 dating cannot prevent contamination by C-14 that occurs in the air in their laboratories. Therefore, the traces of C-14 in coal, diamonds, and dinosaur bones are not evidence of recent formation of source material linked to Noah's flood. Moreover, an article by Davidson and Wolgemuth (2018) shows that C-14 dating can be trusted;

see the following: <http://www.csun.edu/~vcgeo005/Nr53Carbon.pdf> that also includes tree ring dating.

Because of the radioisotope controversy, the young-Earth creationists initiated the RATE project (Radioisotopes and the Age of The Earth) to support their view that the Earth is 10,000 years old. Randy Isaac has a review of the RATE project at the following link <https://www.asa3.org/ASA/education/origins/rate-ri.htm> The RATE scientists concluded that the radiometric clock shows 500 million years of radiometric decay and because this is contrary to their young-Earth view, they were forced to unwarranted speculations, such as “accelerated decay.” This link provides many arguments to refute their view.

Furthermore, other places in Illinois, as many as 12 different coal beds occur in stratified sequences with interlayers of shale and sandstone beds (Dimichele and Phillips, 1985). In some of the coal layers, stumps of trunks of trees with roots extend into underlying soil indicate that the carbon in the coal was derived from leaves and branches from trees growing in place. Therefore, the coal was not transported there by rapid moving water in tsunamis. Moreover, some of these trees had fallen where the coal was formed and their lengths show that these trees were as much as 100 feet tall. These relationships are also found for two coal beds interlayered with volcanic ash of Permian age (Wang et al., 2012). These observations clearly indicate that a one-year global Noah’s flood did not produce these coal beds because trees that grew 100-feet tall in subsequent overlying layers cannot have grown that fast in the one year of Noah’s flood. Thus, it is clear that the PotV model is flawed and that the traces of C-14 in coal, diamonds, and dinosaur bones are the result of laboratory contamination and not an indication of rapid formation during Noah’s flood.

## **Transportation of Sediment Particles by Noah’s Flood**

The greatest amount of sediment and distance that a largest hurricane (category 5) can move sand in an offshore sand bar (25 feet thick) by wave action and current flow toward the continent is about 50 to 100 feet during the week of erosion caused by such a powerful hurricane. The imaginations of the PotV that Noah's flood had (a) waves big enough to erode and move huge volumes of sand grains to form thick sandstone layers several hundreds of feet thick, (b) transport these sand grains across distances of thousands of miles from eastern United States to the Grand Canyon, and (c) keep the sand grains suspended in water for that distance would mean that the waves in Noah's flood waters would have been so powerful that Noah's ark could not have survived. Nor could (a) these flood waters sort out clay particles in shale, calcite crystals in limestone, quartz grains in sandstone from each other to form different separate kinds of layers or (b) separate fresh water deposits from marine deposits. All these conditional relationships are just ignored by the PotV in this video and give further reasons why the PotV model is flawed.

## **Radioactive Isotopes and Age Dating**

It is known that some radioactive isotopes ( Cs-137, Co-60, Si-32, and Ra-226) do not have constant half-lives, and it is suggested that this variability may be a function of their relative distance from the sun, but no one knows for sure why this happens. At any rate, none of these isotopes is used in age dating methods and those that are, have constant half-lives. The PotV cannot logically toss out all radiometric methods for doing age dating just because some radioactive elements do not have constant half-lives. Moreover, the Rb/Sr radioactive age dating method does not require any assumption as to how much original Sr-87 might have been in a rock that was not produced during the decay process of Rb-87 to Sr-87. This dating method gives dates that are approximately

the same dates as done by several other dating methods, but the Rb/Sr method generally gives younger ages because the dates indicate a time during which older rocks are subjected to an open system where changes in pressure and temperature in the rocks occur (Dalrymple, 1984ab). Furthermore, the PotV do not take into account that many different radioactive elements with entirely different chemistries and half-lives produce the dates that agree with experimental error. This clearly indicates that the Creator produced dependable processes that can be trusted. Why should a loving Creator want to make fools of us? On that basis, the great ages of rocks measured in millions and billions of years, which are determined in rocks around the world and which are consistent with the relative ages of sedimentary rocks in the geologic column (**Figure 1**) with older rocks being at the bottom and younger rocks at the top, are true age measurements within laboratory error.

Also, there are appropriate methods to estimate how much original isotopes are in a rock that are not related to decay processes, and no assumptions are required (Dalrymple, 1984ab). Conventional geochronologists take all of this into account, but YECs and PotV do not acknowledge it.

## **Radiometric Potassium–Argon (K/Ar) Dating**

Not said in the video is that a YEC with a PhD in geology sampled the dacite dome that was built up with very thick, viscous lava a few years after the catastrophic eruption of Mt. St. Helens. Geochronologists know that K/Ar dating cannot be done on very young rocks by using this method, because not enough radioactive decay has occurred in the production of daughter Ar-40 atoms in that short time, and the source lava is not free of daughter products to begin with. In spite of this, the geologist sent samples to a laboratory for analysis of potassium and

argon, and made false claims that the results were radiometric dating ages of 0.35 to 2.8 million years old. A proper way to evaluate the credibility of K/Ar dating is the movement of the Pacific tectonic plate over the "hotspot" in the mantle that has formed the Emperor Seamounts and the Hawaiian Islands, plus other islands in between. K/Ar radiometric dating ages were determined from 400,000 years on the Big Island of Hawaii northwest and north to near the Aleutian Islands with an age of 80 million years. Here is a 5 minute video which explains how K/Ar dating is confirmed with satellite measurements of the Big Island movement:

<https://www.youtube.com/watch?v=oRKEvB00cYI&feature=youtu.be>

## **Cosmology**

### **(a) The biblical age of the Earth and universe**

The PotV make many points that the red shift and blue shift of light need not indicate true distance to stellar objects (stars and galaxies). They point out that astronomers do not know what dark energy and dark matter are which consist of 95 percent of the universe mass, and that astronomers only know something about 5 percent of the universe that we can see with telescopes. On that basis, the PotV claim that models about the origin of the universe cannot be trusted and that the universe is young and fits the biblical age as being nearly instant creation (Genesis 1:1) with a young age of the Earth and universe being 6,000 to 10,000 years old. To point out uncertainties in existing old-cosmic models does not constitute evidence for a young-Earth model.

### **(b) The speed of light and Cepheid variable stars**

Astronomers have measured the speed of light, have found that it is constant, and have used trigonometric parallax to find the distance to nearby stars as the Earth changes its orbital position every six months.

Thus, distances to our nearest stars beyond our sun have been measured by this triangulation method. On that basis, the three closest stars are a little more than 4 light years away in the Alpha Centaur – system of stars, and 4 years falls within a young age of 10,000 years.

But then, the Danish astronomer, Ejnar Hertzsprung (1873-1967) discovered that by using the triangulation method to find the distance to nearby Cepheid variable stars and then measuring the periods (up to 90 days) of fluctuations in their light intensities, the distance to any Cepheid star could be determined. He used his data on nearby Cepheids to calculate the distance to the Cepheids in the SMC (Small Magellanic Cloud) and found them to be 37,000 light years away. On that basis, the universe must be more than 10,000 years in age and the PotV young Earth model is flawed.

One reason for constructing the Hubble Space Telescope (HST) was to measure light curves of Cepheid variables in our Milky Way galaxy and in other nearby galaxies, such as the Andromeda galaxy. On that basis, astronomers know that our Milky Way galaxy is 100,000 light years in diameter and that our sun is about 2/3 the way out from the center of this galaxy on one of its spiral arms. Andromeda's distance measured using Cepheid variables is 2.5 million light years away.

If the observable stars in the universe are more than ten thousand light-years away, the PotV model would require that our ability to observe them is only possible if God had positioned them so light photons coming from them are already in transport and represent wholly fictitious objects. That is illogical and not scientific. As Francis Collins says:

“The image of God as a cosmic trickster seems to be the ultimate admission of defeat for the Creationist perspective. Would God as the

great deceiver be an entity one would want to worship? Is this consistent with everything that we know about God from the Bible, from the Moral Law, and from every other source – namely that He is loving, logical, and consistent?” (F. Collins, 2016)

### (c) **Our sun as a second generation star**

From discoveries related to Albert Einstein’s famous equation  $E = mc^2$  (energy bound up in mass equals the mass times the speed of light squared), astronomers know that a star is turned on when pressure and heat created by gravitational attraction of hydrogen atoms (protons) causes them to fuse. Star formation began sometime after the **Big Bang**. Each fusion event consumes 4 hydrogen atoms with a mass of 4 to make helium with a mass of 4. A small amount of mass is lost in the fusion reaction and is converted into a huge amount of energy which is radiated into space.

Astronomers also know that when a star consumes almost all of its hydrogen to make helium that gravity causes the helium to fuse with left over hydrogen to continue making elements of greater mass (Li, Be, B, C, etc., up the periodic Table of Elements) and which also radiates energy from some mass that is destroyed in the fusion process. In all these fusion processes, protons and neutrons (a proton plus an electron) are packed into the nucleus of the newly-formed, fused, heavier atoms, and the packing continues in each newly formed element until iron atoms are produced with 26 protons and 29 neutrons in each nucleus for a total mass of 55. At this point, the nucleus of the iron atom is so tightly packed that no more protons can fit into the nucleus and the fusion process ceases, making iron the most stable element in the evolution of stars. (The core of the Earth is mostly iron.) However, a star that has extra amounts of hydrogen (protons) becomes unstable and explodes as a supernova explosion that creates so much energy that extra

protons and neutrons are forced into the tightly packed nuclei of atoms to make elements with larger masses than iron, such as gold with a mass of 108 and uranium with a mass of 238. The later subsequent collection of the exploding “dust” of a supernova by gravitational attraction can then form a new star with orbiting planets that contain hydrogen as well as gold and uranium.

Our sun and Earth contain all three of these elements as well as other heavy elements, heavier than iron. Therefore, our sun is a second generation star. The point of all the above discussion is that we know that our sun is a second generation star and that accomplishing that takes millions of years. Therefore, in spite of the claim by the PotV that the universe is very young, their model is flawed, unless they presume that God made all stars instantaneously. Scripture, however, uses the Hebrew word “bara” (create) in various ways most of which point to temporal processes instead of instant creation.

Thus, even though astronomers do not yet know how dark matter and dark energy (95 percent of the universe) are formed, we know enough about the visible 5 percent of the universe, as described in (a), (b), and (c) above, that it is clear that the universe and the Earth are older than 10,000 years.

## **More Facts Ignored by Presenters in the Video**

By choosing only data that fit a young-Earth model in which the sedimentary rocks around the world were supposedly deposited by repeated tsunamis in the one-year Noah’s Flood not more than 6,000 to 10,000 years ago (the age of the Earth and the universe), the supposed flaws in conventional geologic thinking claimed by the PotV seem to be justified. But the above sections delineate many fatal flaws in the YEC model. There are many other examples beyond those I have listed above



that show flaws in thinking by the PotV. Below is one example of additional flaws arising from selective use of data.

### **Erosion rates of granite and accelerated plate tectonics**

If Noah's flood waters were transported by many giant tsunamis, PotV need to show how much granite can be eroded in a 1-year Flood. Studies of the rate of erosion of granite on bedrock surfaces at the bottom of the narrow V-shaped canyon in the 100-foot-depth that is cut into the granite by the Colorado River show that this rate is in thousandths of an inch per year. The rate is slow because the granite contains mostly quartz and feldspars with hardnesses of 7 and 6 on the Mohs hardness scale. A similar slow rate of erosion of granite tombstones is observed under weathering where erosion rates can be obtained based on posted dates of burials. Also, the amount erosion of granite by hurricane waves on outcrops along the coast of Maine has been almost zero in the time that Maine has been occupied by people living in houses adjacent to the Atlantic Ocean.

With the realization in mind of how slowly granite can be eroded, some real science can now be done that gives more evidence that accelerated plate tectonics never happened. For example, in a previous section (pages 19-20, **Folded Rock Layers and Plate Tectonics**), it was explained how PotV supposed accelerated plate tectonics created Mt. Everest in the Himalaya Mountains. In that section, the PotV also claimed that folded rocks must have been soft in order not to be broken and showed a movie in which accelerated plate tectonics caused rock layers to be folded in the western United States and in other places around the world. This acceleration, in the PotV model, would have been soon after Noah's flood, 4,350 years ago, that supposedly opened up the Pacific and Atlantic Ocean areas so that the flood waters could drain off the deposited rock layers and move into newly created oceanic

basins. Supposedly, in the draining process, the flood waters carved the Grand Canyon.

This acceleration would also have pushed up the Sierra Nevada mountain range, but this range is mostly composed of granodiorite. Granodiorite's composition is similar to granite's composition except that it contains on average 10 percent quartz and more plagioclase feldspar than potassium feldspar while granite contains as much as 25 percent quartz and more potassium feldspar than plagioclase feldspar. This 10 percent quartz in granodiorite is important because to make a sandstone layer 100 feet thick from eroded quartz grains derived from granodiorite requires that erosion of a 1,000-foot thickness of granodiorite occurs. North and west of Los Angeles is the folded, graywacke Topanga Canyon formation of Miocene epoch age. Graywacke is a kind of sandstone that also contains feldspar grains. In this formation the chemical compositions of the feldspars are the same as the compositions of the feldspars that occur in the Sierra Nevada. Moreover, this formation also contains zircons with same compositions as occur in the Sierra Nevada. This indicates that the Topanga Canyon formation was formed by the erosion of the granodiorite in the Sierra Nevada 400 to 800 miles north of Los Angeles, and the quartz and feldspar grains were transported by streams to this site north of Los Angeles. On the basis of the extremely slow rate at which both granite and granodiorite can be eroded, it is physically impossible for 1,000 feet of granodiorite to have been eroded either by Noah's flood itself or in the 4,350 years since Noah's flood.

Thus, with this additional example of data that the PotV have overlooked, the model that PotV provide for a young Earth being 6,000 to 10,000 years old is flawed.

## **Ethical Implications**

The PotV suggested that the way in which the Nazi Germans applied Darwin's "survival of the fittest" model for evolutionary processes to justify the extermination of 5 million Jews and for possibly eliminating aged people who are ill or people who had handicaps are not Christian ways of treating people. Obviously, Darwin's model of survival of the fittest was improperly applied. I fully agree with the PotV regarding their views concerning ethical behavior. At the end of the video I also agree with the use of many Bible verses to urge people to become Christians.

## Conclusions

Many more kinds of evidence that illustrate why the PotV are in error can be found in a book **"A Christian Geologist Explains Why the Earth Cannot Be 6,000 Years Old."** A few of these additional evidences include these five: (a) Cosmic Radionuclide Dating (CRN) that show ages of river terraces in the Grand Canyon side walls to range from 38,000 to 124,000 years old, (b) deposition of coccolith fossils in the White Cliffs of Dover to be measured in millions of years, (c) the ages of Mauna Loa and other basaltic volcanoes in the Hawaiian Islands being measured in millions of years, (d) the Mesozoic Navajo Sandstone being desert-formed with sand dunes having giant cross-bedding with dip angles more than 30 degrees, and (e) the origin of the chlorine in the world's oceans to make the water salty with NaCl content being measured in millions of years. See this link for where to order the book: <http://bookstore.dorrancepublishing.com/a-christian-geologist-explains-why-the-earth-cannot-be-6-000-years-old-lets-heal-the-divide-in-the-church/> From the title of the book, it should be clear that I have written this critical analysis of the PotV video not as a secular atheistic conventional geologist but as a committed Christian.

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