

Bill Nye/Ken Ham Debate Review: Tying Up Really Loose Ends

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[EDITOR'S NOTE: Many have inquired about our thoughts on the Bill Nye/Ken Ham debate that took place on February 4 in Petersburg, Kentucky. Of course, we strongly disagree with Bill Nye's contention that evolution is a viable model of origin, and wholeheartedly agree with Ken Ham's proposition that Creation is a viable model of origins in today's modern scientific era. However, we were disappointed in creationist Ken Ham's decision to allow so many of Bill Nye's questions and comments to go unanswered, thus leaving the impression that Nye's points have merit or are unanswerable. In light of so many evidences, undeniable truths, and critical responses that were not brought to light that evening, I asked A.P. staff scientist, Dr. Jeff Miller, to prepare a response to Bill Nye's assertions. These three men of science are certainly qualified to discuss these matters: Ham received a bachelor's degree in applied science from the Queensland Institute of Technology in Australia and a diploma of education from the University of Queensland. Nye received a B.S. in Mechanical Engineering from Cornell University. Dr. Miller holds a Ph.D. in Mechanical Engineering from Auburn University.]



In his debate with Answers in Genesis creationist Ken Ham—which is said to have been viewed by over three million people Tuesday night, February 4, 2014, and another two million plus on Wednesday (“Over Three Million Tuned In...,” 2014)—Bill Nye (known to many of us as “The Science Guy”) challenged Ham with several questions, which he believed to be pertinent to the Creation/evolution controversy (Nye and Ham, 2014). The debate topic centered on whether or not Creation is a viable model of origins in today's modern scientific era. Without dragging the reader through a play-by-play analysis of the entire debate, we believe several of Nye's questions and comments are worthy of attention that were not addressed in the debate. [NOTE: Ironically, although Ken Ham did not respond to several of Nye's points, the Answers in Genesis web site is replete with solid responses to the bulk of Nye's arguments, as the references in this article will attest.]

NYE'S DEFENSE OF NATURALISTIC EVOLUTION

First, we wish to highlight the fact that Nye inadvertently revealed some of the weaknesses and even impenetrable barriers that prohibit the naturalistic evolutionary model from being true. Keep in mind that, regardless of the legitimacy of any attacks on the Creation model, if naturalism contradicts the evidence, then the evidence remains in support of some form of supernaturalism. In truth, however, the evidence supports the Creation model.

Evolution is a Historical Science

While Ham did not adequately address many of Nye's points, Nye was eloquently treated to a lesson on the difference between observational and historical science, proving that naturalistic evolution and origin studies fall under the historical science category. Nye was unable to refute this claim. Nobody has ever observed macroevolution, abiogenesis, the spontaneous generation of natural laws, a cause-less effect, or the spontaneous generation or eternity of matter—all of which are necessary under the evolutionary model. This proves that evolution does not fall under the definition of science, as stated by the National Academy of Sciences: “The statements of science must invoke only natural things and processes. The statements of science are those that emerge from the application of human intelligence to data obtained from observation and experiment” (*Teaching About Evolution...*, 1998, p. 42, emp. added). Evolutionists are notorious for reasoning that the Creation model should not be taught in schools since it cannot be observed and therefore, is not “science,” based on the naturalistic definition of the term. The fact that naturalistic evolution is also unobservable highlights that evolutionary theory is “faith-based” in the sense that direct evidence is lacking for several of its fundamental tenets. Instead of refuting that argument, Nye's response was, “Mr. Ham, I learned something. Thank you.” Our response: if you do not have an adequate response to that argument, and if Creation does not belong in the science classroom because many of its fundamental tenets were not observed, then evolution does not belong in the classroom either.

In truth, whichever model is the best inference from the evidence should be used in the classroom, even if all of its tenets were not necessarily “observed”: Creation or evolution (or some other model). There is, however, a fundamental difference between Creation and evolution.

The evidence actually stands against naturalism, since we know from science, for example, that abiogenesis and the origin of matter/energy from nothing (or the eternity of matter) cannot happen naturally. Those phenomena are required by naturalism. One cannot be a naturalist and believe in unnatural things like such phenomena without contradicting himself. On the other hand, though the creation of the Universe and the Flood cannot be observed today, the evidence points to their historical reality indirectly. In the same way forensic scientists can enter a scene, gather evidence, and determine what happened, when it happened, how it happened, who did it, and many times, why he did it—all without actually witnessing the event—humans can examine the evidence and conclude that the Universe was created.

Flawed Evolutionary Dating Techniques

Conflicting Dates from a Fossilized Forest

When the research of geologist Andrew Snelling was discussed as proof that uniformitarian dating techniques are fundamentally flawed, Nye was not able to offer an adequate response. In the research, wood was carbon dated to be about 37,500 years old, while the basalt rock encompassing the wood was dated using the K-Ar method to be some 47.5 million years old (2000), though both the rock and the wood should have been the same age. Nye's attempt to explain the problem using plate tectonics was quickly refuted by Ham when he pointed out that the basalt was not above the forest, but was encompassing the forest. Nye did not respond. Snelling's research stands as evidence against the validity of evolutionary dating techniques which Nye could not refute. The Creation model has no problem with this research, since it does not rely on uniformitarian dating techniques. [NOTE: Uniformitarianism is the evolutionary assumption that "events of the geologic past can be explained by phenomena observable today" (*McGraw-Hill Dictionary of Scientific and Technical Terms*, 2003, p. 2224). Creationists believe that catastrophism is a better model for interpreting the geologic column. Catastrophism is the idea that most "features in the Earth were produced by occurrence of sudden, short-lived, worldwide events" (*McGraw-Hill Dictionary of Scientific and Technical Terms*, p. 342).]

Assumptions and Evolution

Nye claimed that we can know with certainty the age of the Universe based on the present. The problem with that argument for the naturalist is that since no one was there at the beginning to observe what happened or when it happened. No naturalist can actually know, as Nye claimed. Instead, assumptions have to be made by the naturalist in order to try to surmise what may have happened—namely that conditions today were also present in the past (i.e., uniformitarianism). That is quite a presumptuous assumption to be sure. Creationists argue that assumptions such as uniformitarianism and those of radiometric dating techniques are faulty and disprove the validity of those techniques (e.g., Miller, 2013a; Morris, 2011, pp. 48-71). In response, Nye said:

When people make assumptions based on radiometric dating; when they make assumptions about the expanding Universe; when they make assumptions about the rate at which genes change in populations of bacteria in laboratory growth media; they're making assumptions based on previous experience. They're not coming out of whole cloth.

First, we find it ironic that Nye so strongly supports evolutionary assumptions, arguing that they are valid because they are based on "previous experience." Nobody has ever observed macroevolution, abiogenesis, the spontaneous generation of natural laws, a cause-less effect, or the spontaneous generation or eternity of matter, and yet these absurd notions are assumed under the evolutionary model. In the debate, Nye even verbally admitted that the evolutionary model has no explanation for how consciousness could come from matter. He said, "Don't know. This is a great mystery." In truth, of course he cannot know, because the evidence from nature says that it cannot happen naturally. His evolutionary model prohibits it (Miller, 2012b), and yet he ignores that evidence. Concerning the origin of matter, he also admitted, "This is the great mystery. You've hit the nail on the head... What was before the Big Bang? This is what drives us. This is what we wanna know!" Again, the naturalistic model prohibits the eternity or spontaneous generation of matter (Miller, 2013b), though one of them had to happen under the naturalistic model. So of course it's "a great mystery" how it could happen. In truth, it cannot happen naturally. Nature has spoken, and yet Nye and his colleagues reject the evidence in favor of their closed-minded bias towards naturalism.

These are significant questions that evolution cannot answer and that cannot be brushed aside as he attempted to do. They must be answered by the naturalist before naturalistic evolution can even be a possibility—before it should even be allowed to be taught. Without a legitimate explanation, evolution is no different from a fictional story. Life had to come from non-life naturally in the evolutionary model, and matter had to come from somewhere, and yet the evolutionist ignores those problems as though they are irrelevant and assumes there's a naturalistic explanation for them without any evidence substantiating that assumption.

In truth, all “previous experience” in science says that none of those things (i.e., macroevolution, abiogenesis, the spontaneous generation of natural laws, a cause-less effect, or the spontaneous generation or eternity of matter) can happen. The questions that Nye and his colleagues consider “a mystery” are not really mysteries. Science has spoken on those matters and concluded that they are impossible under the naturalistic model. There are scientific laws which prove that truth (see Miller, 2013c). Accepting those things as possible flies in the face of the scientific evidence and is tantamount to a blind faith in evolution. Evolution is a fideistic religion that ignores the evidence. It has no foundation, since the evidence contradicts its foundational premises. The Creation model on the other hand, has no problem with the evidence. The Creation model harmonizes with the evidence on all counts and only disagrees with the evolutionary interpretation of the evidence.

That said, we have no problem with the idea that present observations can be useful today and even useful in some ways for the past—but within careful limits. If it is true that, for example, the nuclear decay rates are not a simple constant, but instead are variable, depending upon environmental conditions which could have been significantly different in the past due to catastrophic events like the Flood, then it would be naïve and erroneous to make age estimates of any rock without considering the possibility of such fluctuations. “[M]aking assumptions based on previous experience” would be incorrect since that “previous experience” did not include the Flood.

In his book, *The Young Earth*, creationist geologist John Morris documents modern research which casts serious doubt on several of the assumptions of evolutionary dating techniques, especially the assumption of constant nuclear decay rates (2011; see also DeYoung, 2005). For example, research by a team of scientists (known as RATE) that was presented at the International Conference on Creationism in 2003, indicates that the nuclear decay rates have not always been constant (Humphreys, et al., 2003). The RATE team had several zircon crystals dated by expert evolutionists using the uranium-lead evolutionary dating technique and found them to be 1.5 billion years old, assuming a constant decay rate. A by-product of the breakdown of uranium into lead is helium. Content analysis of the crystals revealed that large amounts of helium were found to be present. However, if the crystals were as old as the dating techniques suggested, there should have been no trace of helium left, since helium atoms are known to be tiny, light, unreactive, and able to easily escape from the spaces within the crystal structure. The presence of helium and carbon-14 showed that the rocks were actually much younger (4,000 to 14,000 years old) than the dating techniques alleged. Since these zircons were taken from the Precambrian basement granite in the Earth, an implication of the find is that the whole Earth could be no older than 4,000 to 14,000 years old. The results of the crystal dating indicate that 1.5 billion years’ worth of radioactive decay, based on the uniformitarian constant decay rate assumption, occurred in only a few thousand years. How could such a thing be possible? How can the two dating techniques be reconciled? By understanding that the rate of decay of uranium into lead must have been different—much higher—in the past. This research simply cannot be ignored by any serious, honest scientist. If the Creation model is true, then modern, historical science should be reconsidered and completely revised.

Concerning the creationist assertion that nuclear decay rates were different in the past, Nye further said:

So this idea, that you can separate the natural laws of the past from the natural laws that we have now, I think, is at the heart of our disagreement. I don’t, I don’t see how we’re ever going to agree with that if you insist that natural laws have changed. It’s, for lack of a better word, it’s magical. And I have appreciated magic since I was a kid, but it’s not really what we want in conventional, mainstream science.... I encourage you to explain to us why, why we should accept your word for it that natural law changed just 4,000 years ago. Completely. And there’s no record of it.

First keep in mind that three significant assumptions that underlie dating techniques were mentioned by Ham to Nye, and Nye completely ignored two of them (i.e., that radiometric dating techniques assume a specimen was originally completely composed of a parent element, which would yield incorrect dates if daughter elements were present in a specimen from its creation. Such initial conditions would be predicted in the Creation model. The other assumption he ignored was that the specimen was completely isolated throughout its lifetime, and therefore unaffected by outside phenomena—a closed system. See Miller, 2013a for a discussion on these dating technique assumptions.). We believe they were left completely unanswered because they would be impossible for him to refute.

Second, it should be firmly understood that we would not argue that the natural laws of the past have changed. That, in fact, is a requirement of the evolutionary model, not the Creation model. The Law of Biogenesis, for example, would have to be “changed” in the past in order for naturalistic evolution to get started since all evidence indicates that life comes only from life in nature (Miller, 2012b). The Laws of Thermodynamics would have to be “changed” in the past in order to account for the origin of matter and energy, since all of the scientific evidence indicates that energy cannot be eternal and/or cannot spontaneously generate (Miller, 2013b). The Law of

Causality would have to be “changed” in the past in order to account for the Universe not having a cause (Miller, 2011b). It seems that we should be challenging Mr. Nye instead: “I encourage you to explain to us why, why we should accept your word for it that natural law changed billions of years ago. Completely. And there’s no record of it. It’s, for lack of a better word, magical.”

The creationist does not argue that the laws of nature changed in the past regarding decay rates, but rather, that decay is subject to a more complex law or equation than the one being assumed today. If nuclear decay rates fluctuate based on conditions resulting from certain catastrophic events, then if all of those conditions were met today, we would argue that the same results would still occur today. In other words, the “law” for decay rates is still the same today, but is merely misunderstood and needs to be modified to be more robust. It should be able to account for the unusual effects of catastrophic activity before applying it to the past. [NOTE: While the creationist does not argue that scientific laws have ever “changed,” he would argue that laws have been suspended in the past during God’s supernatural activities (Miller, 2003). The evolutionists, however, are in the unenviable position of having to explain, not only how a law could come into existence, but how it could be re-written without a Writer.]

Energy from the Sun for Evolution

The audience asked Nye the question, “How do you balance the Theory of Evolution with the Second Law of Thermodynamics?” Nye answered that question by stating, “The Earth is getting energy from the Sun all the time, and that energy is used to make life forms somewhat more complex.... The fundamental thing...is the Earth is not a closed system. So there’s energy pouring in here from the Sun.... And so that energy is what drives living things on Earth, especially in our case, plants.” The Second Law of Thermodynamics does, indeed, present a problem for the Theory of Evolution, and Nye’s response does not adequately address the problem.

The Second Law of Thermodynamics tells us that in a closed system (like a box completely sealed), the energy and matter within that system will break down and deteriorate over time (i.e., the “entropy” of the system will increase), becoming less usable and moving from order to chaos. Evolution requires that the opposite happen—that chaos, disorder, and simplicity move towards order and complexity. Nye argued that such is possible, because the system (i.e., the box) is not closed—i.e., the Earth (our system) is receiving energy from the Sun, allowing evolution to happen. It is true that entropy can be countered and decreased in localized areas of the Universe (while the entropy of the total Universe increases) as long as energy can be injected into those areas that moves those systems back towards order.

As an illustration, consider a bedroom. Left to itself, a bedroom will move towards a state of disorder. Only the addition of useful energy (i.e., work) can counter the entropy increase in that room. Notice, however, that not just any energy will work. If I dump energy in the form of matter into the room (i.e., if I bring in clothes or trash and dump them in the room), it will not counter entropy, but can actually increase it. Not just any “work” will counter entropy, either. If I step into the room and start jumping up and down (adding energy to the room), it will not counter entropy, but rather, will increase entropy by wearing out the carpet and expending my own energy. Only the addition of the right kind of useful energy will counter entropy in that room.

The Sun can certainly be a useful form of energy. However, it also kills things, melts things, mutates things (causing cancer), and creates deserts—generating significant entropy on the planet. Before evolution can be considered viable, evolutionists are in the unenviable position of having to explain specifically how the great Second Law can be countered and summarily brushed aside by energy from the Sun (or other outside energy source). Passing allusions to the Sun and the Earth being an open system do not answer the challenge made to evolution by creationists.

The problem is further compounded when one considers that, regardless of the energy reaching Earth from the Sun, evolution is not occurring at the genetic level—where evolution must ultimately occur. Genetic entropy is increasing at alarming rates, moving humanity towards mutational meltdown: deterioration and decay, not order and progression, are what we find at the genetic level (cf. Sanford, 2008; Miller, 2014a; Miller, 2014c). [NOTE: Evolution on a cosmic scale (i.e., Universal evolution, rather than localized Darwinian evolution on Earth) requires that an explosion billions of years ago produced the ordered Universe we have today. Since the Universe is, by definition, closed from a naturalistic perspective (i.e., there is nothing outside of the Universe that can add useful energy to it to counter entropy; cf. Miller, 2010), the Second Law of Thermodynamics prohibits cosmic evolution.]

NYE’S ATTACKS AGAINST THE CREATION MODEL

In his attack on the viability of the Creation model, Nye made several claims that were curiously left unanswered. We believe they deserve attention.

No Higher and Lower Animals Mixing in the Geologic Column?

At one point in the debate, Nye showed various pictures of fossils and the fossil record, including a trilobite picture towards the bottom of the geologic column. He claimed, “You never, ever find a higher animal mixed in with a lower one.” “When there was a big flood on the Earth, you would expect drowning animals to swim up to a higher level. Not any one of them did. Not a single one. If you could find evidence of that, my friends, you could change the world.” This, he argued, was proof in favor of evolution and against the Creation/Flood model, implying that if Creation is true, there should be evidence of “higher” and “lower” creatures (e.g., the trilobite) together in the fossil record, while if evolution is true, they should be separate.

Ironically, in 1968, William Meister discovered a human footprint with fossilized trilobites in the print (Lammerts, 1976, pp. 186-187). Of course evolutionists would not wish to concede that the print was from a human, but it is hard to brush aside the sandal stitching that is visible in the print. That alone is enough evidence to refute Nye’s claim. But what about the story *Nature* published in 2005 that upset standard evolutionary suppositions about the history of evolution? A small dinosaur was discovered fossilized in the stomach of a mammal (Weil, 2005). Did that pivotal discovery make an impact? What about the discovery of “human-like” footprints in coal veins that were supposed to have been laid down during the Carboniferous period of evolutionary geology, 248 million years before humans were supposed to be on the scene (Ingalls, 1940; Wilder-Smith, 1970)? What about the existence of “living fossils,” like the coelacanth—creatures found today that, according to the evolutionary interpretation of the geologic column, were supposed to be long extinct? Though they were nowhere to be seen in the column over the last 70 million years (according to the evolutionary timescale), evolutionists were wrong to assume that that meant they were not alive through the millennia (“Coelacanth,” n.d.; “Diver Finds...,” n.d.). This, of course, illustrates that just because a creature, including a human, did not leave a fossil in a particular geologic layer or layers (even those representing an alleged 70 million years of evolutionary time), it does not mean it did not then exist. Clearly, using Nye’s terminology, the coelacanth must have “swam up” the geologic column, surviving until the present day. And what about the recent discoveries of soft dinosaur tissue—proving that dinosaurs could not have gone extinct 65 million years ago as evolutionists argue, but instead lived contemporaneously with the rest of us (Boyle, 2007; Perkins, 2005; Schweitzer, et al., 2005; Schweitzer, et al., 2007)? “You never, ever find a higher animal mixed in with a lower one,” Mr. Nye? I think not.

Nye claims that if the Flood is true, there should be a mixing of “lower” fossils (i.e., simpler creatures) and “higher” fossils in the geologic column, because the “lower” creatures would have been trying to “swim” upward in the Flood. We are amazed that Nye would even make such a statement, as it seems to betray the fact that he does not understand the fossilization process. Only those creatures caught by, for example, mud slides in the Flood would have been fossilized. Those creatures that could “swim up” would not even have been fossilized at all, as they would have died on the surface of the waters and decayed without fossilization, as do most aquatic creatures when they die. The real question, then, becomes which creatures could get to higher ground (not higher water) easier, thus avoiding mud slides? Clearly, smaller creatures with less maneuverability (i.e., not necessarily less complexity) would be covered in the earliest mud slides, not able to move quickly enough, and therefore, be found lower in the ground. Larger, faster, and more intelligent species would tend to be able to avoid fossilization-causing phenomena longer and get to higher ground. There would tend to be, however, exceptions in the Flood model, as some creatures would run into “dead ends” and be caught in mudslides in their flight, which explains the many anomalies and mass fossil grave yards that evolutionists seem to brush under the carpet without much comment. [NOTE: It is also true that creationists do not argue that all fossils were formed in the Flood. Some may, in fact, have been formed during other localized catastrophes, although it is likely that most were formed during the Flood.] While the evolutionary scenario has no room for such exceptions, they would be predicted in the Creation/Flood model.

Nye also argued: “There’s not a single place in the Grand Canyon where the fossils of one type of animal cross over into the fossils of another.” While Nye carefully qualified his assertion by focusing solely on the Grand Canyon (which may or may not have such fossils), when the discussion is opened up to allow us to consider other places where “fossils of one type of animal cross over into the fossils of another,” the Creation model is quickly vindicated, and the evolutionary model is found to be inadequate. We have documented several cases of polystrate fossils (i.e., fossils that cut through at least two sedimentary-rock layers) elsewhere (e.g., [Thompson, 2002, pp. 224-230](#)). Only one such example is needed to refute the entire evolutionary uniformitarian interpretation of the geologic column and vindicates the creationists’ catastrophism approach to interpreting the column. Polystrate fossils prove that the geologic layers were laid down rapidly, not gradually over eons of time.

Attacking the Biblical Age of the Earth

Hundreds of Thousands of Years Documented in Ice Cores?

Nye argued that the Creation model claims that the Flood was some 4,000 years ago (and that Creation was only a few thousand years before that), but that there are ice cores in Greenland and Antarctica showing hundreds of thousands of years' worth of annual ice layers. As with other evolutionary dating techniques, however, evolutionists are basing their dating (i.e., layer counting) on erroneous assumptions about those layers—namely uniformity: the idea that seasonal conditions were the same in the distant past as they are now. There is evidence that indicates that multiple, assumed annual, uniformitarian “layers” can form in one year (Alley, et al., 1997). These sub-annual layers could be the result of individual storms or cyclical weather patterns that resemble annual layers (Oard, 2003).

Creation scientists argue that in the Flood model, a great ice age with turbulent weather ensued after the Flood until around 2000 B.C. (Oard, 2004c). During that ice age, multiple “layers” would have been laid down each year (as many as 1,000 uniformitarian “annual cycles” in one year). The actual annual layers over the next few centuries after the Flood, therefore, would have been much thicker and contain several of the layers evolutionists would count as separate years (cf. Vardiman, 1992; Oard, 2001; Oard, 2003; Oard, 2004a; Oard, 2004b; Oard, 2006).

As further confirmation of this possibility, there is evidence today that ice layers can form quickly and be much thicker than evolutionists' uniformitarian estimates. World War II planes from 1942 were discovered in 1988 in Greenland, under 260 feet of ice (“World War II Planes Found...,” 1988). This illustrates that even in modern times, although the annual layer of ice in Greenland is less than one foot today (De Angelis, et al., 1997, p. 26683), an average of over five feet of ice formed over the planes every year for 46 years where they were found (“World War II Planes Found...”). Ice cores are simply not a problem for the Creation model.

Evidence against Creation from Tree Dating?

Nye argued that there are bristlecone pine trees alive today that are as much as 6,800 years old, and even a Norway Spruce tree (Tjikko) that is 9,550 years old. If so, these trees would have had to survive the Flood and possibly even precede the Creation Week—a major problem for the Creation model. It is uncertain to which bristlecone pine tree Nye is referring, since the oldest living bristlecone pine to date was announced in 2013 as being 5,062 years old (Castro, 2013). Dendrochronology is the science of dating trees by counting their rings, and it is considered a very reliable science for dating wood, since one ring is generally known to form in a tree for every year that the tree has lived. However, if we consider the possibility of sub-annual tree ring growth (i.e., more than one ring forming each year; as well as the issues inherent in cross dating, which was used in dating the tree—“OldList,” 2013), like those that can occur in unusual seasons (Aardsma, 1993; Lammerts, 1983), such a tree could line up with the Flood model nicely. In the words of creation scientist John Morris:

As it pertains to Flood model considerations, remember that the centuries immediately following the Flood witnessed the coming of the Ice Age. All trees growing on the continents were recently sprouted, actively growing trees. The still-warm oceans rapidly evaporated seawater, thus providing the raw material for major monsoonal-type storms. Earth was ravaged by frequent and wide-ranging atmospheric disturbances, dumping excessive snowfall in northern regions and rainfall to the south. If ever there was a time when multiple rings could develop in trees, this was it. Those centuries probably produced tree ring growth that was anything but annual. Thus, far from disproving biblical history, tree ring studies provide supportive and instructive information about true history (2012).

While the work of LaMarch and Harlan (1973) prompts many to reject sub-annual tree ring growth for bristlecone pines, not all scientists accept their conclusion. Gladwin believes that bristlecone pine tree growth patterns are too erratic for dating at all (1978), and based on finding extra rings when studying bristlecone tree saplings, Lammerts argued that the bristlecone chronology could be lowered by at least 1,500 years (1983). Furthermore, the renowned expert in dendrochronology, M.G.L. Baillie, warned:

As with conventional jig-saws, some people are better at pattern recognition than others and, if the analogy is not too brutal, there are those who recognise the problems, and those who might try to force the pieces together. It has to be remembered that there is only one correct pattern: each tree has grown only once and ultimately its ring pattern can only fit at one place in time. Simply because two pieces look alike does not necessarily mean that they fit together (1982, p. 23).

If we assume that Nye was referring to cross dated trees in his tree age claims, his argument against the Creation model still fails. Cross dating is the process of successively overlapping the tree ring patterns from living and dead trees (including fossilized trees) further back in history. It is an imprecise and often subjective method to be sure, yet it is incorrectly argued that this process can create a chronology reaching back over 8,000 years (Ferguson and Graybill, 1985).

In response, first we must understand that only living trees would potentially create a problem for the Creation/Flood model, and then, only if one assumes that all trees died, which may not be the case (Wright, 2012). The text only says that “all flesh died that moved on the Earth” (Genesis 7:21), which would not include plants. Some pre-Flood era tree species may have been robust enough to survive the turbulent waters of the Flood, and some areas of the Earth—though covered with water—may not have had as much turbulence as others. Bert Cregg of the Department of Horticulture and Forestry at Michigan State University, notes that “[m]any tree species can survive months under water” in floods (Cregg, 2011). Whitlow and Harris’ monumental work on the effect of flooding on trees revealed dozens of species that are tolerant (i.e., able to survive deep flooding for one growing season) and/or very tolerant (i.e., able to survive deep, prolonged flooding for more than one year) to flooding (1979, pp. 68-129). If some trees survived the Flood, then living trees with 6,000 or more rings would not be a problem for the Flood model. [NOTE: It is also possible that Noah brought trees on the Ark (especially those that would provide food for the passengers).]

That said, there are no living trees that can be known to be older than when the Flood occurred. The 2013 bristlecone discovery could very well be that of a tree that began to grow immediately after the Flood. Beyond that point, even if cross dating reliably revealed thousands upon thousands of tree rings—enough to cause one to question a recent Creation (i.e., six to ten thousand years ago)—we must recognize the fact that the biblical model calls for fully functional, mature trees from the first day of their existence (so that Adam and Eve, also fully grown, would have food)—which would have included tree rings, since rings provide strength for large trees (Miller, 2011a). [NOTE: The same may be said about light that is viewable on Earth from stars that are billions of light years away. Such light would have been immediately viewable on Earth by Day Six in order to fulfill God’s purpose for it, stated in Genesis 1:14. See Lyons, 2011 for a discussion on the apparent age of the Universe.] But regardless, such old dates cannot be taken as conclusive due to the potential for sub-annual tree ring growth in unusual weather like that of the world immediately post-Flood, as well as the effects of time-staggered, repeated disturbances on tree ring growth (Woodmorappe, 2009).

The tree that Nye mentioned by name, Tjikko, was dated using carbon dating (Owen, 2008), not dendrochronology, and therefore tends not even to be listed among the verified oldest trees. Carbon dating is a notoriously imprecise and suspect method due to its frequent anomalies, largely caused by its long-believed, foundational assumption that the ratio of ^{14}C to ^{12}C in the atmosphere has remained constant throughout history, as well as the effect of the Earth’s magnetic field on the production rate of ^{14}C (Batten, 2002). Scientists now know that the ratio is not constant (Michaels and Fagan, 2013). So they attempt to calibrate the ^{14}C “clock” using other techniques that are largely ineffective beyond recorded history. Archaeologists today, therefore, cannot use ^{14}C dating as conclusive evidence in dating ancient objects because of such anomalies. So much so, that evolutionists admit concerning carbon dating, “[I]t is not infallible. In general, single dates should not be trusted” (Michaels and Fagan). [NOTE: See Major, 1993 for further discussion of carbon and tree ring dating.]

Civilizations Older than the Flood

Concerning the Bible’s relatively small, thousands of years timeframe, Nye argued, “Ya know, there are, there are human populations that are far older than that, with traditions that go back farther than that.” It is unclear to which civilizations Nye is referring, as he did not specifically state them. The earliest date for the Flood, based on biblical chronologies, would be about 2300 B.C. [NOTE: Some scholars believe that date can be pushed back as far as 3000 B.C. and possibly further and still be in keeping with the biblical chronologies.] Chinese records date to around 1600 B.C. Only legend exists from before that time (Bender, 2014). Chinese history, therefore, cannot be said to contradict the biblical model.

While some scholars have dated the commencement of the first Egyptian dynasty at 5700 B.C. (long before the typical date given by creationists for the Creation week), archaeologists admit that no written record actually exists from before about 3000 B.C. (and even that date cannot be known conclusively). While the chronology of later events than that date can often be somewhat speculative and subjective in many cases, anything dated prior to 3000 B.C. relies almost exclusively on tree-ring dating (which, again, could be completely erroneous due to the Flood), pottery comparison (which is laden with speculative assumptions; cf. Brantley, 1993), or radiocarbon dating—all methods influenced by evolutionary presuppositions and given to subjectivity (cf. Major, 1993). Egyptian chronology is far from being conclusively known, even though many modern Egyptologists have come to an agreement of 3100 B.C. being the date of the beginning of Egyptian history. However, the general agreement was 5000 B.C. before the 20th century, and it may change again. Other scholars have shown that the Egyptian chronology can be collapsed another 600 years, bringing the Egyptian civilization commencement down to around 2500 B.C.—still a couple of centuries before the typical young Earth Flood model (Bass, 2003). Taking into account the potential small gaps in the biblical chronologies (Lyons, 2002), however, easily vindicates the Flood model.

Notable is the fact that archaeology testifies through many lines of evidence that humanity appeared suddenly in history some time around 3000 B.C. (i.e., around the time of the Flood). The civilizations were fully developed and modernized when they first appeared in history. It's as though, like the Cambrian Explosion in the geologic column (discussed below), the civilizations were not the result of a slow, gradual evolution from ape-like humans dragging their knuckles on the ground, grunting, and carrying clubs; rather, they were comprised of individuals that were already intelligent from the onset, though who had not yet banded together to form civilizations capable of recording history for the future. The Flood had only just occurred. As with the Cambrian Explosion, this explosion of ancient history is difficult for evolutionists to explain.

Not so for the Creation model, however, which predicts just such a thing occurring. Relatively soon after the Flood, the incident at the Tower of Babel occurred (Genesis 11; Miller, 2002). Humans were already intelligent and technologically capable at this time—able to construct massive boats and towers. Apparently, humanity wanted to cluster into a single, super-civilization instead of spreading out and filling the Earth as God had commanded (Genesis 9:1). So God created the different languages of the Earth, forcing humanity to divide into similar language groups and disperse throughout the Earth. Once the various groups spread out, it was only a matter of time before those groups began laying down roots, forming the ancient civilizations, and recording history. [NOTE: See Bass, 2003 for an in depth discussion of Egyptian chronology and the biblical model.]

Attacking the Flood

Animals to Australia?

Nye spent an extensive amount of time attacking the biblical Flood account. For example, he argued that kangaroos and other Australian animals could not have traveled from the Ark on Ararat to Australia, since no land bridge exists and no evidence of a past land bridge exists. Ironically, this is as much a problem for the evolutionary model as it is for the Creation model. The Creation model, however, has no problem with the concept of Pangaea—the idea that all of today's continents were once together in one massive continent. Such a concept harmonizes well with the description of God's activities given in Genesis 1:9. As is often the case, the problem to creationists comes from the evolutionary assumption of uniformitarianism. While the continents are spreading on the order of centimeters per year today, if the Flood occurred, and "all the fountains of the great deep were opened" (Genesis 7:11), surely including volcanic and significant tectonic activity, the separation rate could certainly have been much quicker for many years. Immediately after the Flood, Australia, Antarctica, and India could have been much closer together, in keeping with Pangaea models, allowing migration to Australia before the continents were too far apart.

Other possibilities are also available which vindicate the biblical model. For example, according to the Flood model, as mentioned earlier, a great ice age commenced after the Flood, possibly allowing migration across frozen channels. It is also likely that for some time, remnants of the great forests of the pre-Flood era would have been floating on the receding waters of the Earth until their decay was completed. As is the case from localized floods today, small "land masses" composed of trees and debris can be found floating on the water (e.g., traveling down rivers). Who's to say that such mini-, mobile "continents," with various animals along for the ride, would not have been common immediately following the Flood? A radically different terrestrial environment, with species clamoring to find food on the newly disheveled Earth, could have caused accelerated dispersal of the Ark's population from Ararat to Australia before Australia had moved too far from the mainland. It is also possible, based on the biblical model, that divine guidance was involved in the dispersal, similar to the divine guidance alluded to in Genesis 6:20, when God gathered the animals to Noah before the Flood.

11 New Species Each Day?

Nye argued that there are some 16,000,000 species on the planet today, and that if there was a Flood only 4,000 years ago, and only 7,000 representative species on the Ark to start with, there would have to have been 11 new species evolving every day over the last 4,000 years since the Flood. [NOTE: The Creation/Flood model proposes that not all modern species were on the Ark, since the word "kind" in the Bible (e.g., Genesis 6:20) is not equivalent to "species," but might be closer to the modern taxonomic group, "family." On the Ark, therefore, there would have been representative species (the biblical word, "kind") equipped with the genetic capability to produce all other species through inter-breeding and microevolution (i.e., evolution involving only minor changes within kinds, such as beak size and color changes, staying within narrow boundaries; as opposed to macroevolution/Darwinian evolution, an unobserved phenomenon which involves change across phylogenetic boundaries between kinds). Though the original number of "kinds" was much smaller than the modern taxonomic term "species," it is true that whatever the number of kinds were on the Ark, they were also the only species of those kinds in existence at the time. All other species today had to descend from those original species. It is unclear if 7,000

is a good estimate of the number of those proto-species, but creationists are currently studying the matter (e.g., Ham, 2012).]. Nye said:

So you'd go out into your yard. You wouldn't just find a different bird: a new bird. You'd find a different kind of bird. A whole new species of bird, every day.... This would be enormous news. I mean, the last 4,000 years? People would have seen these changes among us.... We see no evidence of that. There's no evidence of these species.

First, again, we have to question where he is getting his information concerning 16,000,000 species. Some studies have species counts as low as 3,000,000 (Zimmer, 2011). A 2011 projected estimate of species on the planet published by *Public Library of Science Biology*, including the Plantae, Fungi, Protozoa, Chromista, Animalia, Archaea, and Bacteria Kingdoms (i.e., including beetles and bacteria, which Nye implied were not in his estimate), is 10,960,000 (Mora, et al., 2011), not 16,000,000 [NOTE: This is an estimate, which fluctuates based on those variables being considered by the researchers. The scientific community does not agree on how many species may exist and many competing methods of calculating those estimates are available. The actual catalogued number of living species on the Earth was only 1,438,769, as of 2011 (Mora, et al.)].

All marine creatures, of course, though they are included in the 10,960,000 estimate, were not on the Ark, and their microevolution would have continued without being filtered by the animal kinds brought on the Ark. That brings the estimate down to 8,750,000 species in existence today that came from the creatures on the Ark, based on Mora and his colleagues' study. More could most certainly be removed, considering that the estimated number of those creatures designated as "ocean dwelling" species in the study did not include other creatures that can survive in water (e.g., amphibians), but are not defined as "ocean dwelling" in the study ("WoRMS Taxon Tree," 2014). Such creatures would not have necessarily been on the Ark.

The biblical text also does not mention Noah carrying plants onto the Ark to save them from destruction (except those that the animals and Noah and his family ate, Genesis 6:21), since they are not "flesh" (Genesis 6:19). Removing plants from the list of species brings our count down to 8,435,400, based on the study of Mora and his colleagues.

Incidentally, while Nye insinuated that the plants of the Earth would have died in the Flood, and it is certainly true that many would have, it is also true that (1) Noah could have brought seeds on the Ark; and (2) most of the world's vegetation is underwater, and survives well in that environment. Scientists estimate that 50% to 85% of Earth's oxygen comes from ocean plants ("How Much Do Oceans Add...?," 2013). Further, many dead plants (with their seeds intact) would have been floating in piles on the surface of the Flood waters. It is also true that studies show that seeds can survive submersion in salt water for extended periods of time (Howe, 1968). Ironically, Darwin, himself, verified several ways in which seeds can survive and be viable after extended travel in and on salt water (Darwin, 1979, pp. 352-359). [See Wright, 2012 for an in depth discussion of plant survival in the Flood, including the effect of salinity on seeds, as well as the discussion above about the survival of trees during flooding.]

It is also certain that the number of current species on the planet could be significantly reduced due to the inevitability of synonymous species (e.g., two names given to the same species—creatures originally thought to be two distinct species that are now considered one and the same, or one creature whose name has changed over time and yet both names have been counted). Mora and his colleagues noted this weakness in species estimates, explaining that "[a] survey of 2,938 taxonomists with expertise across all major domains of life...revealed that synonyms are a major problem at the species level" (2011). They believe that 17.9% of species could be synonyms, and possibly much more (as much as 46.6%). The World Register of Marine Species documents that 44.5% of all accepted marine species are synonyms ("World Register of Marine Species," 2014). If we help Nye by accepting the smaller average amount given by Mora, et al., that only 17.9% of the remaining species are indeed synonyms, that would take 8,435,400 species down to 6,869,150 species on the Earth today and 6,862,000 new species since the Flood, based on the supposition that there were 7,000 kinds on the Ark. Such an estimate is a far cry from Nye's estimated 16,000,000. Further, if the Flood was 4,500 years ago (which is closer to our estimate), that would bring Nye's total from 11 new species per day down to 4 (and some estimates push the Flood back further than 5,000 years ago). If there are indeed fewer species than the researchers' projections, more synonyms, more years since the Flood, more species that could survive outside of the Ark, and more representative kinds on the Ark, this number decreases even more. [NOTE: The Creation model must also account for species that have descended from the original proto-species, but that are now extinct. It is estimated from the fossil record that "one species per million species per year" goes extinct ("The Current Mass Extinction," 2001). If all 7,000,000 current "land" species had been in existence since the Flood (which would not have been the case), that would only add 31,500 species to the count, which is negligible in our estimates. Keep in mind also that much of the fossil record represents species that were in existence at the time of the Flood and before (i.e., that were killed in the Flood), but that would not have necessarily developed since the Flood. So the actual number of species that have evolved since the Flood but have gone extinct is likely much smaller than 31,500.]

Further consider the fact that about half of the remaining species are insects (Hamilton, et al., 2010), including the many beetles Nye mentioned, many of which are known to reproduce quickly. Flies (*Drosophila melanogaster*), for example, can lay as many as 100 eggs each day, and up to 2,000 eggs in their lifetimes (Reeve and Black, 2001, p. 157). Bacteria, also included in the list of species, can reproduce even quicker. According to the American Society for Microbiology, in only 10 hours, one bacterium can propagate through binary fusion and produce ten billion bacteria (“Microbial Reproduction,” 2012). Rapid reproductive rates make the potential for rapid microevolutionary speciation (i.e., the appearance of new species) more plausible, especially in the centuries immediately following the Flood. The proto-species on the Ark would have likely been chosen due to their immense genetic variability, which would have lent itself to rapid speciation. The speciation rate would have gradually been hampered through the localization of species communities, creating what evolutionists call niche conservatism (cf. Holt and Gomulkiewicz, 1997; Wiens, et al., 2010).

Also according to the Creation model, human lifespans were higher for several centuries following the Flood, and as with the pre-Flood era, the childbearing age ranges appear to have been longer (e.g., Genesis 11:10). The genealogies of Genesis 11 show an exponential decay rate in life spans in the centuries immediately following the Flood, while the genealogies of Genesis 5 show consistently high life spans before the Flood. This seems to indicate that the Flood dramatically changed the Earth in a way that affected its population’s health (2 Peter 3:6 describes the pre-Flood world, “the world that then existed,” as having “perished”). If the health, reproductive capacity, and lifespans of animals on Earth paralleled those of humans—and it is reasonable to assume that they did for the same reasons—then animal productivity would have also been higher before the Flood and immediately after the Flood, allowing for quicker microevolution (i.e., quicker speciation). Many new species were likely coming about throughout the world every day for centuries after the Flood, though that rate could have slowed significantly today. [NOTE: See (Woodmorappe, 1996, pp. 180-213) for a thorough discussion of the plausibility of rapid, post-Flood speciation.]

Bottom line: it is not far-fetched to argue that there could have been (and could be) multiple new species appearing around the world every day after the Flood, especially among the smaller creatures on the planet that reproduce quicker. In fact, *Science* magazine ran an article in 1988 highlighting the correlation between smaller sized creatures being represented by more species on Earth (May), which supports this hypothesis. As opposed to Nye’s claim, we simply would not tend to notice the introduction of many of these new species, since they would be smaller life forms. The Earth is a big place, with many things proceeding unnoticed by mankind. If, for example, four new species appear every day somewhere on (or in) this enormous planet, with a volume of 1,083,210,000,000 cubic kilometers (“Earth Fact Sheet,” 2013), at least three of the four would likely be tiny: not birds or fish as Nye suggested. The odds that any of them would happen to be in my yard, much less that I would notice them, are basically zero. And yet in spite of that, scientists are still consistently documenting 15,000 new species each year—that’s an average of 41 new species found every day (Zimmer, 2011). While many of those are certainly already existing species that scientists are simply discovering and documenting, but that are not actual newly evolved species, who’s to say how many of them are not also simply newly evolved species? Either way, those species are new to us, they are being noticed, and many are making the news somewhere in the world, Mr. Nye, apparently 41 of them every day—not 11.

Amateur Ship Builders?

Nye was critical of the idea that Noah and his family, without any training as ship-builders, could build such a massive, wooden ship. It is possible that no boat had ever been built before the Ark, since the land was possibly all one continent. It is also possible, however, that in approximately 2,000 years of history from Creation to the Flood, ships could have been built. Human lifespans consistently exceeded 900 years (Genesis 5) and humans likely had higher intelligence [since, unlike modern bodies, their bodies (and brains) were born closer to the perfect Creation and would have been much less decayed and corrupted genetically by disease and mutation]. For all we know, there could have been explorers building ships that could float from “West Pangaea” all the way around the globe to “East Pangaea.” There could have also been boats built to travel down rivers or across lakes, if they existed. The Creation model does not claim that humans have become progressively “higher” and more intelligent—slowly evolving from ape-like intelligence to modern human intelligence. In fact, though technology has progressed in many ways over the past few centuries, the opposite would be the case with regard to mental capability due to several millennia of genetic entropy. Humans certainly could have built ships. If anyone on the planet in Noah’s day knew how, there is absolutely no reason to assume that Noah would not have hired him to help. It is a plausible conjecture, in fact, to assume that Noah hired many individuals to help build the Ark, and used the opportunity to preach to them as they worked (2 Peter 2:5), though to no avail (1 Peter 3:20). [NOTE: Extensive evidence exists proving that ancient man was capable of engineering feats that modern man cannot even yet reproduce (Landis, 2012).]

Further, consider the fact that Noah was 600 years old when the Flood came—ample opportunity to learn carpentry (Genesis 7:6). If we assume God did not tell Noah to study ship-building before He told him to build the Ark (although in that period of Bible history, it is clear that God spoke to the patriarchs of each family, Hebrews 1:1, e.g., Adam, Job, Abraham, Isaac, Jacob, and of course, Noah, and we are not necessarily told about every instance of His communication with them), Noah still would have had 120 years to hone his ship-making abilities before the Flood (Genesis 6:3)—much more time to perfect his skills than any shipwright today, and in fact, more time than any shipwright can even be alive today.

Of course, beyond these reasonable explanations, it is probable that God gave more explicit guidance to Noah concerning the design and construction of the Ark beyond what the text says. Who would be better to serve under as an apprentice than the omniscient Master Builder and Chief Engineer of the Universe, Who commanded Noah to build the Ark in the first place?

Not Enough Space on the Ark

Nye argued that the National Zoo exhibits only 400 species, and yet those animals take up 163 acres. He believes that it is unreasonable to say that the Ark was capable of holding 14,000 animals in such a small place. The Ark, however, was not built as an attractive, spacious display of animals for the public, but was, rather, a basic shelter to protect the land creatures from the Flood. Rather than a zoo, a better modern parallel to the Ark might be the factory farm, which can house tens of thousands of animals under one roof. Many of the animals were likely juvenile (e.g., many of the larger sauropod dinosaurs), and many could have been in a hibernated state on the Ark, thus reducing the food and waste estimates. Creationists Whitcomb and Morris argue, based on the assumption of only a 17.5 inch cubit, that the Ark's carrying capacity was equivalent to eight freight trains pulling sixty five standard box cars each (1961, pp. 67-68).

Creationist geologist and biologist John Woodmorappe conducted a thorough study of the feasibility of housing 16,000 animals (representatives from each of the genus taxonomic ranks; i.e., even more than would be represented if the family rank was used instead) in the Ark, taking into account the spatial requirements for food, water, waste disposal, heating, ventilation, and lighting, and found that the Ark was more than adequate in size to house the animals (1996). [NOTE: The dimensions of the Ark are given in cubits in the Bible (Genesis 6:15). Scholars document that this measurement was the length from the tip of the middle finger to the elbow—about 18-21 inches (Elwell, 1988, p. 2136). If, however, the average human being was larger in the pre-Flood era, due to healthier bodies and a more protected, greenhouse-like environment (which could explain the larger size of ancient, fossilized humans, such as *homo heidelbergensis*), the measurement of a cubit could have been larger. For example, a 25 inch cubit versus an 18 inch cubit would more than double the volume of space within the Ark (1,518,750 cubic feet vs. 4,062,500 cubic feet).]

Was the Ark Seaworthy?

Nye gave the example of the large wooden ship, the *Wyoming*, which was built in 1909 and sank in 1924 due to the tendency of its wooden planks to “twist and buckle” in the heavy seas [“*Wyoming* (Schooner),” 2014]. He claimed that the Ark would have been subject to the same problems and therefore could not have survived the Flood, disproving the biblical account.

However, the *Wyoming* is in no way a parallel to the Ark. First consider that the *Wyoming* was equipped with six, enormous masts and several sails. The torsion that would be generated from the wind filling those sails on the open seas would certainly be significant—most definitely causing twisting, buckling, and leakage. Sails, however, are used when the objective is for a boat to go somewhere. The Ark had no destination. It merely needed to float. So it would not have been equipped with sails, and the torsion problem would be significantly reduced.

Further, in response to Nye, Ham correctly briefly and vaguely alluded to ancient boat-building practices, and the interlocking plank system of mortise-and-tenon joints. Such techniques were being used in the centuries immediately following the Flood on wooden ships 2,000 years ago in Northern Vietnam (Bellwood and Cameron, 2007), 2,800 years ago in Greece (Casson, 1991, pp. 28-29), 3,400 years ago in Turkey (Casson, pp. 28-29), ironically, the very area where the Ark is thought to have rested after the Flood, and even 4,000-5,000 years ago in Egypt on massive, 150-foot wooden ships (O'Connor and Adams, 2001, pp. 44-45). Mortise and tenon joints help prevent “the frame from twisting and makes it firmer, giving it added strength” (“Mortise and Tenon Joints,” 2009).

Further, it is notable that God was very specific in articulating to Noah the kind of wood he was to use. He did not give a generic statement like, “Build a wooden boat,” and God did not tell Noah to use terebinth, green poplar, almond, palm, willow, olive, fig, pomegranate, or chestnut wood, though all of these types of trees were clearly known, having been mentioned by Moses in his other inspired writings (cf. Genesis 13:18; 30:37; Exodus 15:27; Leviticus 23:40; Deuteronomy

6:11; 8:8; etc.). Instead, God specifically commanded “gopher wood.” No one knows what “gopher wood” was, and it is very possible that there is no modern equivalent, since many ancient species are extinct and since many species since the Flood would have gone through microevolutionary changes (especially degenerative evolution). The use of this type of wood was clearly significant to God, its characteristics being conducive to such an engineering feat.

Consider also that the *Wyoming*, in spite of its problems, stayed afloat for 15 years, while the Ark only needed to float for about one year. Even if water did by-pass the pitch that was used to seal the cracks of the ship (Genesis 6:14; which, incidentally, could have been a special sealant well-capable of preventing any leaking that might occur in such a short time), with some sort of primitive pump on board the Ark, or a system to catch any of the fresh, pre-Flood era rainwater that seeped in for drinking purposes (possibly lessening the necessary water storage space), the problem disappears.

Bottom line: nothing Mr. Nye said disproves the seaworthiness of the Ark. The Ark was a large, barge-like vessel with the correct dimensions to suit its purposes, capable of carrying its crew and supplies and of staying afloat, which is all it needed to do and all it was designed to do. Interestingly, many of the latest, largest barges have begun using a dimension ratio very close to that of the Ark. Modern super jumbo barges have a length to width ratio of 290:50, while the Ark had a ratio of 300:50 (“Barges and Towboats,” 2014). [NOTE: Consider also the *S.S. Jeremiah O’Brien*, a ship constructed in the 1940’s for transportation of supplies during World War II. Its dimension ratio was 441:57, compared to the Ark’s 450:75 (if one cubit equals 18 inches) (“*SS Jeremiah O’Brien*,” 2013).] The Chief Engineer would certainly have known what design would be necessary and effective to suit His purposes.

Why Aren’t There Grand Canyons Everywhere?

Nye argued that if the Flood created the Grand Canyon, why aren’t there other Grand Canyons all over the place? In response, first, it may be the case that the Grand Canyon was not formed by the Flood at all, but some other localized catastrophic event from the past. It is very likely, however, that the Flood was the cause. Second, there are, in fact, numerous canyons and gorges spread out all over the world. Wikipedia lists 99 on land, though the list is in no way comprehensive (“Canyon,” 2014).

Keep in mind, however, that many more canyons may not be on land. According to the United States Geological Survey, 70% of the Earth is covered in water, with 96.5% of all of Earth’s water being in the oceans (“How Much Water Is There...?,” 2013). Many, perhaps most, of the Earth’s Flood canyons and gorges are in the oceans, where they were at one time above water, but have since (due to tectonic activity, glacier melting, etc.) been covered with ocean water.

That said, should there be even more? Consider: do you remember going into your backyard as a kid and playing with the water hose? After “flooding” portions of the yard with water, did you notice miniature “canyons”—small cracks in the dirt where the water carved its way through the yard? Were they “all over the place”? No. Did they not tend to be located only in those “arid” areas of the yard where there was more dirt and less grass, whose root systems would help prevent erosion and “canyon” formation? On a large scale, the southwest United States is very much such a place. Bottom line: canyons only form in those areas that are conducive to canyon creation. They will only be “everywhere” if there are conditions “everywhere” for them to form—and there are not.

Animals were Herbivores before the Flood?

According to Genesis 1:29-30, it seems that God initially created all animals to be herbivores (although other interpretations may be possible). Nye scoffed at such an idea by highlighting the teeth of lions and their apparent carnivorous design. Ham correctly responded by highlighting the similar teeth of bears—which frequently eat vegetation. Such examples could be multiplied indefinitely, highlighting the fact that appearances can be deceiving when those appearances are used to make assumptions about the behavior or fitness of a creature. One would expect a woolly mammoth with its thick fur to be well suited for cold environments, while not being suited for warm habitats. Yet lions and tigers with their thick fur are not in Greenland or Antarctica, but rather, are oftentimes thriving in the hot, humid jungles close to the equator.

According to the biblical model, God created all land creatures, including birds and creeping things (Genesis 1:29-30), to be vegetarian in the beginning. Not until Noah and his family exited the Ark are we told that God’s intention changed. In Genesis 9:3, God personally authorized a carnivorous diet for humans, and it is possible that the same change was intended for animals, whose very nature appears to have changed after the Flood (Genesis 9:2—“And the fear of you and the dread of you shall be on every beast of the Earth, on every bird of the air, on all that move on the Earth, and on all the fish of the sea.”). Before the Flood, God’s rationale for destroying the Earth is discussed. Genesis 6:3 says that “all flesh had corrupted their way on the Earth,” and the same Hebrew words for “all flesh” are used throughout the Flood context, clearly

indicating that the phrase is referring to all living creatures—man and animals (6:13,17,19; 7:15,16,21; 8:17; 9:11,15,16,17). This may indicate that animals had been corrupted from the way God had initially planned for them and had already become carnivorous by the Flood. Either way, Nye's insinuations are just that—not conclusive evidence against the Creation model. [NOTE: See **Thompson**, 2001 for further discussion.]

NYE'S CHALLENGES TO CREATIONISTS

The Creation Model Can't Predict Anything?

According to Nye, evolutionists can use their model to predict things that can be either verified or invalidated through scientific investigation. [NOTE: Nye discussed the origin of sexuality at length, claiming that evolution predicted the emergence of sexual from asexual reproduction. In actuality, the origin of sexual reproduction is one of the glaring deficiencies of evolutionary theory. See **Thompson and Harrub**, 2002b for an extensive discussion on evolution and the origin of sexuality.] As an example, he discussed *Tiktaalik*—according to evolutionists, a missing, evolutionary link between fish and land-dwellers [NOTE: See Morris and Sherwin, 2010, pp. 65-67,149 for a conclusive refutation of *Tiktaalik's* alleged transitional status.]. Such missing links should indeed exist if the evolutionary model is true, and yet Darwin, himself, admitted in *The Origin of Species* that

the number of intermediate varieties [i.e., transitional, "missing link" fossils—JM], which have formerly existed, [must] be truly enormous.... Geology assuredly does not reveal any such finely graduated organic chain; and this, perhaps, is the most obvious and serious objection which can be argued against this theory [i.e., the theory of evolution—JM]. The explanation lies, I believe, in the extreme imperfection of the geological record (1956, pp. 292-293, emp. added).

He hoped time would help reveal the fossils that would validate his theory. But even after 100 years of further search for transitional fossils, famous Harvard paleontologist Stephen J. Gould admitted, "The history of most fossil species includes...features particularly inconsistent with gradualism...[like] sudden appearance—in any local area, a species does not arise gradually by the steady transformation of its ancestors; it appears all at once and 'fully formed'" (1977, 86 [5]:14). According to Gould, there is no evidence of gradual evolution, since there are no transitional creatures. Species are fully formed when they first appear in the record.

The evidence for evolution in the fossil record that evolutionists can even attempt to argue is in favor of evolution is slim. So much so that evolutionary Earth scientist Phillip Donoghue from the University of Bristol said, "The origin of animals is almost as much a mystery as the origin of life itself" (2007, 445[7124]:155). The evidence in the fossil record for evolution is so sparse that evolutionist Mark Ridley admitted, "[N]o real evolutionist, whether gradualist or punctuationalist, uses the fossil record as evidence in favor of the theory of evolution as opposed to special creation" (1981, 90:832, emp. added).

The Cambrian Explosion, for example, continues to plague evolutionists, since it simply does not fit the evolutionary model. In the Cambrian strata of the geologic column several life forms suddenly appear without any evolutionary history, as though they were created rather than evolved. No transitional fossils exist connecting single-celled organisms with the explosion of fully-formed creatures in the Cambrian strata. In the words of famous evolutionary biologist of Oxford University, Richard Dawkins:

The Cambrian strata of rocks, vintage about 600 million years [evolutionists are now dating the beginning of the Cambrian at about 530 million years], are the oldest in which we find most of the major invertebrate groups. And we find many of them already in an advanced state of evolution, the very first time they appear. It is as though they were just planted there, without any evolutionary history. Needless to say, this appearance of sudden planting has delighted creationists (1986, p. 229, bracketed comment in orig., emp. added).

Atheistic evolutionist Blair Scott, Communications Director of American Atheists, Inc., admitted in the Butt-Scott Debate concerning the Earth, "Now if I take the Cambrian Explosion, on its own, the logical conclusion I would draw is, 'Wow! It was created'" (2011). Donoghue conceded, "[T]he degree to which animal evolutionary history extends beyond the Cambrian is a controversy rich in speculation but sparse in evidence" (p. 155). *ScienceDaily*, reporting on research at the University of Texas at Austin, said, "This rapid diversification, known as the Cambrian explosion, puzzled Charles Darwin and remains one of the biggest questions in animal evolution to this day. Very few fossils exist of organisms that could be the Precambrian ancestors of bilateral animals, and even those are highly controversial" ("University of Texas at Austin," 2008, emp. added). Evolutionary biologists D. Osorio, J.P. Bacon, and P.M. Whittington, writing in *American Scientist*, explained:

As Darwin noted in the *Origin of Species*, the abrupt emergence of arthropods in the fossil record during the Cambrian presents a problem for evolutionary biology. There are no obvious simpler or intermediate forms—either living or in the fossil record—that show convincingly how modern arthropods evolved from worm-like ancestors. Consequently there has been a wealth of speculation and contention about relationships between the arthropod lineages (1997, emp. added).

In truth, evolution predicts an evolutionary history in the fossil record, and the record falsifies that prediction.

Regardless, in spite of the complete failure of evolutionists in finding missing links, Nye erroneously argues that evolution predicts transitional fossils and can allegedly predict where to find them, in this case *Tiktaalik* being found in a swamp in Canada. [NOTE: We would be curious to hear what other such predictions have actually yielded results, in his opinion, considering not one fossil has been found which has conclusively proven to be transitional.] Nye said, “They made a prediction that this animal would be found, and it was found. So far, Mr. Ham and his world view, the...Creation model, does not have this capability. It cannot make predictions and show results.... The big thing I want from you, Mr. Ham, is can you come up with something that you can predict? Do you have a Creation model that predicts something that will happen in nature?” Ironically, the Creation model predicts that no such transitional fossils will be found when examining the fossil record, and that engaging in the pursuit of such fossils is foolish and a waste of valuable scientific capital. When creationists look at the fossil record, we expect to find fully functional, distinct species when they first appear in the fossil record, and that is precisely what we find—including the example of *Tiktaalik*.

An exhaustive list of predictions which can be made based on the Creation model would fill volumes, but we intentionally used the words “predict” and “prediction” regarding creationist positions throughout this article to highlight the fact that the Creation model can make many predictions. The following are a few sample predictions from the Creation model, understanding, of course, that not all creationists are in agreement with any one model:

- The Creation model predicts that matter and energy will not spontaneously generate, nor can it last forever (i.e., the Universe cannot pop into existence or be eternal), and the evidence from science has verified that truth, though naturalistic evolution must erroneously predict the possibility of one or the other (Miller, 2013b).
- The Creation model predicts that life cannot spontaneously arise in nature from non-life, and the evidence from science has verified that truth, though naturalistic evolution must erroneously predict that abiogenesis can occur (Miller, 2012b).
- The Creation model predicts that, since the Universe was designed, it will be replete with evidences of design. Proofs of complexity, planning, intent, and purpose will be seen everywhere, and nature bears this truth out (see the various Design topics under the category, “Existence of God,” at www.apologeticspress.org).
- The Creation model predicts that the Universe will appear older than it is, since God created it to be fully functional from the beginning. Daughter elements would have been in existence from the beginning, as well as mature light and tree rings (Lyons, 2011; Miller, 2011a).
- The Creation model predicts that similar designs will be found in various living things since all life shares a common Designer and since, from an engineering design perspective, optimal designs would be expected to be repeated in creatures that utilize similar habitats, have similar diets, etc. (Miller, 2014b). This prediction has proven to be valid. Evolutionists call such similar structures “homologous structures,” although they interpret the evidence as being proof of a common ancestor, rather than common Designer.
- The Creation model predicts that life will produce according to its kind, in keeping with Genesis one (God having initially created each of the original proto-species). Microevolution will occur, but evolution across phylogenic boundaries (i.e., macroevolution) will not. The evidence verifies that prediction (Miller, 2014c; Butt, 2008).
- The Creation model predicts that life forms will appear fully-formed and functional in the fossil record when they appear, without an evolutionary history linking them to a single-celled organism. The fossil record verifies that prediction (see the Cambrian Explosion discussion above, as well as Thompson and Harrub, 2003b, pp. 1-98).
- The Creation model predicts that, since the Flood actually occurred, archaeology and history will provide ancient stories from independent civilizations around the world that bear witness to its occurrence, although the details of the stories will likely be different, having been corrupted over time (with the exception of the divinely guided record). The evidence verifies that prediction (Lyons and Butt, 2003).
- The Creation model predicts that every organ on the human body will be shown to have a purpose, either now or in humanity’s ancient past. There will be no such thing as a vestige of our past “evolutionary history” (i.e., a vestigial organ) that has no purpose today. The latest evidence continues to verify that prediction (Bergman, 2000; Houts, 2011; Lyons, 2008; DeWitt, 2008).
- The Creation model predicts that the dry land might have initially been in the form of one landmass (Genesis 1:9) that was broken up and rapidly divided (likely during and after the

Flood). Evidence exists that such a landmass may have existed, and it is generally called Pangaea.

- The Creation model predicts that the Flood would have caused unusual phenomena for a brief period of time. Instead of constant nuclear decay rates, continental drift, tree ring growth, and ice core formations, for example, something akin to exponential decay rates might have been involved. [NOTE: The exponential decay pattern of life spans after the Flood (Genesis 11) supply biblical evidence for this hypothesis.] As has been discussed earlier, evidence supports such a contention.
- The Creation model predicts that humans and dinosaurs once lived contemporaneously and various lines of evidence verify that truth, including ancient drawings, stories, and figurines (Lyons and Butt, 2008).
- The Creation model predicts that dinosaurs roamed the Earth, not 65 million years ago, but in the not too distant past, and several lines of evidence verify that truth. Besides the evidences for the co-existence of humans and dinosaurs, there have been recent discoveries of soft dinosaur tissues which could not have survived for 65 million years (Lyons and Butt, 2008).
- The Creation model predicts that there will be evidences that the geologic column was formed rapidly through catastrophic activity, rather than over eons through uniformitarian processes, and such evidence is available and increasing in volume (cf. Morris, 2011; Thompson, 2002, pp. 224-230).
- The Creation model predicts that petrification can happen rapidly, rather than over eons of time, and recent evidence verifies that prediction (e.g., Akahane, et al., 2004).
- The Creation model predicts that smaller, less maneuverable, but not necessarily less complex, creatures will be found lower in the geologic column, and the evidence verifies that truth (e.g., the trilobite, cf. Thompson and Harrub, 2002a).
- The Creation model predicts that the Earth was once a tropical environment, even at the poles. If it is inferred that it did not rain on the Earth for hundreds of years until the Flood (Genesis 2:5-6), if humans had extremely long lifespans before the Flood (Genesis 5), and if the Earth was filled with herbivorous creatures (Genesis 1:29-30) before the Flood, we know the Earth was different than it is now (2 Peter 3:5-6; decaying genealogies of Genesis 11). [NOTE: Some Creation scientists infer from Genesis 1:6-8 that some form of water canopy surrounded the Earth until the Flood, creating a greenhouse-like, lush, protected environment across the entire Earth and holding some of the Flood waters (e.g., Morris, 2014; Vardiman, 2003).] Recent discoveries indicate that Antarctica was “once covered in palm trees.” According to researchers, “tropical vegetation, including palms and relatives of today’s tropical Baobab trees” once grew “on the continent’s now frozen coasts” (“Antarctica Once Covered in Palm Trees, Scientists Discover,” 2012). Recent discoveries also indicate that Greenland was once green. *ScienceDaily*, reporting on research at the University of Copenhagen, said:

Ancient Greenland was green. New Danish research has shown that it was covered in conifer forest and had a relatively mild climate. The research is painting a picture which is overturning all previous assumptions about biological life and the climate in Greenland (“Fossil DNA Proves Greenland Once Had Lush Forests...,” 2007).

Though other examples could be given, these meet the challenge posed by Nye.

Are You Supposed to Just Take Our Word for It?

Nye said concerning the Bible, “So, are we supposed to take your word for English words translated over the last 30 centuries, instead of what we can observe in the Universe around us?” In response, we would say, “No.”

The evidence we have discussed thus far is proof of the Creation model from “the Universe around us,” regardless of the Bible’s teachings. Further, the Bible can be known to be from God. It should not be accepted blindly without evidence (1 Thessalonians 5:21; Acts 17:11). What is true can be known (John 8:32). The reason we know the Bible should be trusted as coming from God is because of the characteristics it has that could not have been produced by humans (Butt, 2007). Such evidence proves that the Bible is divine and should be carefully considered by historical scientists. [NOTE: The Bible can also be known to have been transmitted faithfully over the centuries (Miller, 2014; Lightfoot, 2003).]

What Would Change Your Mind?

The audience asked Mr. Ham what would change his mind about Creation. Ham responded by saying, “No one’s ever going to convince me that the Word of God is not true.” We wholeheartedly disagree with such a response, as it seems to indicate that Ham is closed-minded—as though he blindly believes the Bible regardless of the evidence. This approach, again, is not what the Bible endorses (cf. Acts 17:11; John 8:32; 1 John 4:11). God expects us to examine the evidence and only believe those things that can be proven to be true (1 Thessalonians 5:21).

While it is true that the evidence harmonizes perfectly with the Creation model, a true biblical creationist remains open-minded towards all future evidence. If evidence could be presented

which cannot be harmonized with the Bible and its Creation model, that would “change our minds.” If, for example, a case of spontaneous generation or the eternity of matter, the spontaneous generation of life, the spontaneous generation of genetic information, the spontaneous generation of complex, functional design, an organ which can be known to have never served any useful purpose for humans, proof that Jesus never lived or the resurrection never happened, a prophecy of the Bible proved to be wrong, a historical or geographical error were found in the Bible, or a legitimate contradiction in the Bible were found, we would readily change our minds.

Nye responded to the audience question by stating the following:

We would just need one piece of evidence. We would need the fossil that swam from one layer to another. We would need evidence that the Universe is not expanding. We would need evidence that the stars appear to be far away, but they're not. We would need evidence that rock layers can somehow form in just 4,000 years instead of the extraordinary amount—we would need evidence that somehow you can reset atomic clocks and keep neutrons from becoming protons. Bring on any of those things and you would change me immediately.

The fossil challenge was answered earlier. Evidence that the Universe is not expanding in the way the Big Bang postulates has been provided by astrophysicist Halton Arp (**Thompson and Harrub**, 2003a; although the creationist does not really have a problem with the idea that the Universe might be expanding—only with the idea that it was originally all crammed into a cosmic egg that exploded). Creationists generally agree that the stars are as far away as they appear, as it has no bearing on the Creation model. Evidence that the rock layers could be formed quickly has been provided elsewhere as well (Morris, 2011). Creationists would not argue that neutrons had to be kept from becoming protons. Morris highlighted research, again, that indicates that the nuclear decay rates have been different in the past (2011). Sadly, though we have “brought on” the evidence, Mr. Nye will probably not be “changed immediately,” because truth is not generally the world’s real motivation.

Nye said, “For us in the scientific community, I remind you that when we find an idea that’s not tenable, it doesn’t work, it doesn’t fly, it doesn’t hold water, whatever idiom you’d like to embrace, we throw it away. We’re delighted.... If you can find a fossil that has swum between layers, bring it on!” Again, we have done so for years, and yet there has not been a change in the thinking of the scientific community because of its naturalistic presupposition. Though naturalism contradicts the Law of Biogenesis, the Law of Causality, the Laws of Thermodynamics, the laws of probability and genetics (Miller, 2013c), it has not been “thrown away.” The reason seems to be summed up best by Richard Lewontin, evolutionary geneticist of Harvard University:

Our willingness to accept scientific claims against common sense is the key to an understanding of the real struggle between science and the supernatural. We take the side of science in spite of the patent absurdity of some of its constructs..., in spite of the tolerance of the scientific community for unsubstantiated just-so stories, because we have a prior commitment, a commitment to naturalism. It is not that the methods and institutions of science somehow compel us to accept a material explanation of the phenomenal world, but, on the contrary, that we are forced by our *a priori* adherence to material causes to create an apparatus of investigation and a set of concepts that produce material explanations, no matter how counter-intuitive, no matter how mystifying to the uninitiated. Moreover, that materialism is absolute, for we cannot allow a Divine Foot in the door (1997, p. 31, 2nd and 4th emp. in orig.).

Nye claims that his evolutionary colleagues do not encourage innovators and those with new thoughts, rather than consensus views. It is clear that, if that claim is true, it only applies to those innovators with new thoughts that fit into the consensus naturalistic view (Stein and Miller, 2008).

How Are Creation Scientists Using the Creation Model Today?

Ham did not respond to the challenge of how Creation scientists are using the Creation model today. In response, we would say, “Creation scientists do the same things Creation scientists always did for hundreds of years before evolution was en vogue—true science.” Long before the popularity of evolution, many of the brilliant fathers of various scientific disciplines were, in fact, creationists who approached their work from a theistic perspective (**Miller**, 2012c).

All areas of science involving the predictions listed above are engaged in by creationists. Creationists are also strong proponents of the booming engineering field known as biomimicry and bioinspired engineering—engineering design using Creation as the blue print to mimic—as well as cyborg research (**Miller**, 2011c). Recognizing that the Universe is a result of design, rather than random chance, certainly affects an engineer’s perspective in his designs. Creation geologists study the Earth and its characteristics to study the past, but do so with catastrophism and uniformitarianism on their minds, depending on the time frame being considered. Creation

paleontologists study ancient humans to determine what life might have been like before and immediately after the Flood. Creation astronomers and astrophysicists study space from a creationist perspective, rather than a cosmic evolutionary, Big Bang perspective. Creation archaeologists study ancient artifacts as verification of the Bible and its chronology. Creation medical doctors study medicine and biology to help others, and engineers design with others in mind as well—a fundamental principle within the biblical model. Dozens of other examples could be cited. Bottom line: creation scientists do the same sorts of things evolutionary scientists do, except creationists do them from a biblical perspective, not wasting time, money, and manpower on erroneous naturalistic pursuits, like origin of life studies and Big Bang cosmology.

Keep in mind, however, that the bulk of scientific study has nothing to do with evolution or Creation and their predictions. Richard Dawkins admitted concerning some scientists:

They have decided, perhaps rightly, that they can do taxonomy better if they forget about evolution, and especially if they never use the concept of the ancestor in thinking about taxonomy. In the same way, a student of, say, nerve cells, might decide that he is not aided by thinking about evolution. The nerve specialist agrees that his nerve cells are the products of evolution, but he does not need to use this fact in his research. He needs to know a lot about physics and chemistry, but he believes that Darwinism is irrelevant to his day-to-day research on nerve impulses. That is a defensible position.... A physicist certainly doesn't need Darwinism in order to do physics (1996, p. 283, emp. added).

Such examples could be multiplied.

Upon What Do You Base Your Belief?

The audience asked Ham the question, "What is the one thing above anything else upon which you base your belief?" While Ham said the Bible, we would say, "Truth." Truth provides evidence which drives faith. The trust we have in parents or friends is based on evidence—they have proven themselves to be trustworthy. Our belief in the existence of God is based on evidence: that the Universe could not have created itself; that objective morality must come from God; that complex, functional design always, without exception, demands a Designer; that the religious inclination humans have could not have arisen from rocks and dirt. Our belief in the inspiration of the Bible is based on evidence: the scientific foreknowledge of the Bible; the unity of the Bible; the historical accuracy of the Bible; the predictive prophecies of the Bible; the lack of sustainable contradictions within the Bible. Once the Bible is accepted as inspired, the blueprint for the Creation model can be uncovered, which shapes the creationist's perspective on science.

What about all the People on the Planet Who Don't Accept the Bible?

Nye was critical of the idea that the Bible would be right and the billions of people who do not accept it are all wrong. The Bible is clear in its prediction that this will certainly be the case (Matthew 7:13-14). God is just (Psalm 7:11). He is fair. According to the biblical model, anyone who is sincerely seeking the truth will be able to find it (Matthew 5:6; 7:7-8), regardless of their location or life circumstances. In the context of discussing the Flood, Peter explained that God is longsuffering, "not willing that any should perish but that all should come to repentance" (2 Peter 3:4-9). But as in the days of the Flood, the bulk of humanity has always chosen not to "come to repentance," and therefore, dies in its sins (Luke 13:3). God will not force the world to become His disciples, since such an action would not be loving (and God is love, 1 John 4:8) and would be tantamount to His creating mindless robots lacking free will. Mr. Nye has the choice to accept the truth or reject it, and it will not be God's fault if he continues to choose, as did Pharaoh in the days of Moses, to reject the truth. The same is true of the billions on the planet that reject the truth. [NOTE: Incidentally, if Nye has a problem with the Bible because most people reject it, and so many people cannot possibly all be wrong, then why does he not have a problem with atheistic evolution, since most people reject it? According to Adherents.com, 92% of the world believes that some form of god(s) exist ("Major Religions of the World...", 2007).]

CONCLUSION

Creation is not just "a viable model of origins in today's modern scientific era," it is the viable model. Why? Because it is true. What else could be more viable than truth? Evolution simply is not a viable model, regardless of how many proponents it has, because it cannot even answer many fundamental questions, and at the same time, it contradicts the existing evidence at every turn. Ironically, Nye quoted from the *U.S. Constitution*, Article I, Section 8, arguing that the Founders' wished "to promote the progress of science and useful arts," beckoning the audience to reject Creation because of the Founders' wishes. An examination of the evidence, however, illustrates that the Founders believed in the Bible as the foundation of that scientific pursuit (Miller, 2008), and that foundation has led to the amazing nation that exists today. Sorry, kids. Bill Nye is not the true Science Guy...but the Pseudo-Science Guy (Miller, 2012a). Sadly, he is

among the many skeptics that rejected Noah's message, failed to believe in the global Flood, and missed the boat. We pray that he'll reconsider the evidence before it's too late.

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