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How Accurate Are Scientific Dating Techniques?

A truly rational person must be willing to admit what he or she does not know.

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The universe is approximately 13.8 billion years old." "Tyrannosaurus rex went extinct about 65 million years ago." "The earliest fossils of modern humans are about 200,000 years old." Assertions like these are in almost every science documentary and textbook, delivered in a matter-of-fact way that makes them seem uncontroversial. Often, authors and presenters do not even try to explain how they derived their numbers. Other times, they cite sophisticated-sounding data about red shift wavelengths, radioactive decay or dendrochronology.

Whether or not they show their work, scientists almost universally insist that Bible believers should replace their faith-based beliefs about the physical realm with explanations for the universe, the Earth, dinosaurs and ancient civilizations that are "scientific."

But is this anti-faith approach actually logical? Is it actually scientific? How much do scientists really know, and does real science actually conflict with the Holy Bible?

You need to understand the answers to these questions. Only 24 percent of Americans believe the Bible is the literal Word of God, and a major reason for their disbelief is the idea that the Bible is, at best, an unscientific book of parables and moral recommendations. To prove whether the Bible is infallible truth from God, you have to prove what it says about the age of the universe.

Age of the Universe

Many scientists used to believe that the physical universe has always existed, but it is now generally recognized that this is not the case. One of the main proofs of this truth was highlighted by the late theologian Herbert W. Armstrong in *Does God Exist?* (see sidebar). Uranium is a radioactive element that decays into lead at a consistent rate. Uranium and other radioactives have not existed long enough to have decayed into lead. So, at some point in the past, they were created. One theory is that these elements were manufactured in stars, but even stars burnout and die after a certain period of time. Therefore the physical universe had a beginning.

When, then, did matter come into existence?

Many scientists say the universe is 13.8 billion years old because they believe in the big-bang theory. Because cosmic radiation from stars shifts toward longer wavelengths as they move away from Earth, astronomers have postulated that the universe is expanding in all directions. If the universe is expanding, it must have been smaller in the past. Current models say all matter was once packed into a "singularity." Based on their best attempts to measure the rate of expansion, astronomers estimate that this singularity exploded 13.8 billion years ago.

These specific ideas do not necessarily conflict with the Bible. In fact, when some scientists first suggested the big-bang theory in the 1920s, many of their peers rejected it as too religious.

Genesis 1:1 states, "In the beginning God created the heaven and the earth," revealing that matter has not always existed. It was created. Genesis 1:2 then states that after this initial creation, the Earth became "without form, and void." So God had to renew the face of the Earth.

The God of the Bible could have created matter 13.8 billion years ago from a central point. But since God is all-powerful, He could have created it numerous other ways. (The Bible does not say.) The currently accepted age of 13.8 billion years is conjecture based on the fact that galaxies visible from Earth appear to be drifting away from the Milky Way. That does not necessarily mean that the entire universe is expanding, or that all matter was once compressed into a singularity. In fact, scientists can find no center from which the universe is expanding.

So, how old is the universe? Scientists just don't know. In Job 38:4, God reminds them of what He told the patriarch Job: They were not there when He "laid the foundations of the earth."

It is only logical to believe that, at some point, a spiritual God created the physical universe!

Age of the Earth

Scientists use radioactive decay equations to assert that Earth is 4.5 billion years old. In Australia, zirconium silicate crystals have been discovered with pockets of uranium and lead trapped inside them. They are thought to be the oldest known minerals on Earth. Geologists assume that the lead trapped in these crystals used to be uranium that decayed into lead over millions of years. Since the rate at which uranium decays into lead is known, geologists have calculated that it took 4.3 billion years for the lead trapped in these crystals to form. If this is true, then the Earth must be at least 4.3 billion years old.

Again, this age is not necessarily unbiblical, but Genesis 1:1 records that God "created the heaven and the earth," indicating that the universe and Earth came into existence together. In his seminal work *Mystery of the Ages*, Mr. Armstrong noted that this verse implies "that the whole material universe was created simultaneously with the Earth." Therefore, if Earth really is around 4.5 billion years old, the entire physical universe must be around the same age.

Genesis 1:2 is referring to a renewing of the Earth that took place about 6,000 years ago.

It is also important to realize that these radioactive decay calculations are based on a significant assumption. Since lead is usually excluded when zirconia crystals form in Earth's magma, geologists assume that all the lead in these crystals is a product of radioactive decay. But this is an unprovable assumption. The universe is too young for all the uranium to have decayed into lead. But that does not mean that God did not create any lead in the original creation. If these crystals contained lead when God originally formed them, they are younger than supposed.

So, how old is Earth? Scientists simply don't know! God told Job that He was the one who laid the stones in the foundations of the Earth. Only He knows what atoms were in these stones in the day that they were created (Job 38:6).

Age of the Dinosaurs

Scientists say that various species of dinosaurs lived during the Mesozoic Era, and that this era supposedly occurred from 250 million years ago to 65 million years ago. But dinosaur fossils contain no radioactive elements for paleontologists to date. They estimate the age of a fossil by trying to discern the age of the rock layer in which it was found.

Fossils form when sediments cover a plant or animal and harden into rock. But scientists have to admit that there is no good way to determine the age of sedimentary rock. The best that geologists can do is estimate the age of any neighboring igneous rocks by measuring radioactive elements, then use that age to approximate the age of the sedimentary rock.

This process is error-prone for two main reasons. First: You cannot conclusively determine the age of igneous rocks without knowing the exact chemical makeup of these rocks when they originally formed. Second: Rock layers are not always chronological, and scientists know it.

Mr. Armstrong noted that the error-prone ways geologists date rock strata are actually the foundation of the evolutionary hypothesis (see sidebar). In his autobiography, he recounted how he studied research from Prof. Thomas Chamberlin showing that sometimes the most recent rock strata were actually below the most ancient strata.

So, you cannot necessarily determine a rock's age by its location.

How then do geologists determine the age of rock strata? Well, since they assume the theory of evolution is true, they estimate how many millions of years ago a particular fossil specimen lived and then use the age of the fossil to determine the age of the rock strata. In other words, geologists determine the age of sedimentary rock by citing the age of the fossils inside the rock. And paleontologists determine the age of fossils by citing the age of the sedimentary rock layer.

This is irrational, circular reasoning!

So, how old are the dinosaurs? Again, scientists don't know. No evidence of dinosaurs and humans coexisting has ever been found, so it seems evident that dinosaurs became extinct before God placed mankind in the Garden of Eden around 6,000 years ago (Genesis 2:8). The Bible reveals little on the topic. Again, scientists don't know how long ago dinosaurs

roamed the Earth.

Age of Mankind

The oldest human remains are dated the same way that dinosaur fossils are dated: by attempting to date rock layers. But more recent human remains can be dated using a particular type of measuring radioactivity: carbon dating.

Scientists say the oldest human remains that have been radiocarbon dated are about 40,000 years old. Yet, when you understand the science behind radiocarbon dating, you find the technique is not verifiable prior to perhaps 3,500 years ago.

Radioactive carbon atoms decay into ordinary carbon atoms like uranium decays into lead. Most carbon atoms have a nucleus containing six protons and six neutrons. Scientists call these atoms carbon-12. But solar radiation causes some carbon atoms to pick up two extra neutrons.

Scientists call these atoms carbon-14.

About one out of every trillion carbon atoms is a carbon-14 atom. Plants, animals and people incorporate carbon dioxide, including carbon-14, from the atmosphere into their bodies. As long as an organism is alive, the carbon-14 ratio in it equates roughly to the carbon-14 ratio in the atmosphere. Once it dies, the carbon-14 ratio decays back into carbon-12.

Since this radioactive decay process happens at a set rate, scientists can calculate how long an organism has been dead if they can determine two things: 1) how much carbon-14 is in the dead organism, and 2) how much carbon-14 was in the organism when it was alive. The first can be measured with a mass spectrometer. The second is a best guess.

Carbon-14 levels in the atmosphere change over time. Scientists were not present to measure the organisms when they died. So they cannot be confident how much carbon-14 was in the organism at that point. The best they can do is try and determine the age of a dead organism by other means, such as historical records or pottery styles. They can then measure the carbon-14 in the organism and calculate how much carbon-14 must have been in it when it died.

Using many such samples, scientists have established rough calibration curves for the amounts of carbon-14 in the atmosphere during a given year.

The catch is that there are few specimens of known age before the eruption of the Santorini volcano around 1600 B.C. Dating older organisms using carbon-14 is a shot in the dark, because there is nothing to reliably establish how much carbon-14 was in the atmosphere.

The discoverer of radiocarbon dating, Willard Libby, admitted this in his 1960 Nobel Prize acceptance speech. "You read statements in books that such and such a society or archaeological site is 20,000 years old," he said. "We learned rather abruptly that these numbers, these ancient ages, are not known accurately; in fact, it is at about the time of the First Dynasty in Egypt that the first historical date of any real certainty has been established."

People debate precisely how far back you have to go before carbon dating techniques become useless, but practically all scientists agree to the fundamental premise that: the further you go back in time, the less reliable carbon dating techniques become.

So, how old is humanity? Again, scientists who are honest like Libby will admit that they just don't know.

Age of Trees

Since there are few historical specimens much older than the kingdom of ancient Egypt, scientists have attempted to radiocarbon date tree rings. The oldest known tree is a bristlecone pine in California's White Mountains named Methuselah (after the oldest man in the Bible). This tree has about 4,850 tree rings. Trees usually grow one ring every growing season, so many say this tree is 4,850 years old. But trees sometimes grow two rings in one year due to drought or other stresses, so it could be younger. But the Methuselah tree probably did begin growing not long after the death of biblical Methuselah.

But dendrochronologists want to extend the age of trees and other things on the Earth's surface far beyond the germination of the Methuselah tree. To do so, they have lined up the tree rings of living bristlecone pines with tree rings of dead bristlecone pines to construct a tree ring chronology going back 12,500 years or more. Yet, cross-matching tree rings is a lot more complicated than it sounds. Dendrochronologists visually compare the appearance of growth rings to one another, trying to match living and dead trees with another. But every tree grows a little differently, so visually cross-matching tree rings is actually quite subjective guesswork.

If dendrochronologists cannot determine how the trees match up, they radiocarbon date the growth rings to determine their approximate age. But what are radiocarbon dating results verified against? Growth rings! This is the same circular reasoning that Mr. Armstrong pointed out among geologists. Geologists verify fossils against rock strata, which is verified against fossils, and dendrochronologists verify tree rings against radiocarbon dating, which is verified against tree ring chronologies, which is used to calibrate radiocarbon dating techniques further.

Neither tree-ring counting nor radiocarbon dating is a conclusive way of establishing world history.

So, how old are trees? When Adam and Eve rejected God and ate from one of the very first trees (Genesis 3), God gave them their choice and let them and their descendants continue their study of trees on their own. After rejecting divine revelation from their Creator, there is a lot about them that scientists just cannot figure out.

Age of Reason

Truly rational science is based on the undeniable fact that a Creator designed the universe. When human beings reject this irrefutable fact, they limit themselves to searching for information using only their five senses and the human mind. This limits them to a fraction of the total available data, and much of that information is conflicting and corrupted.

Rejecting the Creator is rejecting rationality itself.

The natural world provides no evidence to refute the Bible's account, and those who claim it does suppress the truth and embrace foolish ideas.

The Apostle Paul explains how rejecting the Creator of the universe leads to debased thinking. "For what can be known about God is plain to them, because God has shown it to them. For his invisible attributes, namely, his eternal power and divine nature, have been clearly perceived, ever since the creation of the world, in the things that have been made. So they are without excuse. For although they knew God, they did not honor him as God or give thanks to him, but they became futile in their thinking, and their foolish hearts were darkened. Claiming to be wise, they became fools" (Romans 1:19-22; English Standard Version).

A truly rational person must be able to admit what he or she does not know. When scientists use extremely limited techniques to make enormous claims about the age of things and the credibility of the Bible, they are actually irrational and illogical. In most cases, the logic is valid, but the premise is false. If you don't have anything close to a full data set, yet consistently, commandingly act as though you do, you are not practicing pure science.

The only way to avoid endless speculation, guesswork and hopelessly incomplete information is to reason with God (Isaiah 1:18). Base your reasoning on revelation from the Holy Bible, a book inspired by the original Scientist who "laid the foundations of the earth."

Of necessity, the very presence of human intellect necessitates a superior and greater intellect to have designed, devised and produced the human mind! It *could not* have been produced by natural causes and resident forces, as evolution presupposes. Unintelligence could not produce intelligence superior to itself! Rational common sense demanded a Creator of superior mind!

I came to see that there was only one possible proof of evolution as a fact. That was the assumption that, in the study of paleontology, the most simple fossils were always in the *oldest strata*, laid down first; while, as we progress into strata of later deposition, the fossils found in them become gradually more complex, tending toward advancing intelligence.

That one claim, I finally determined, was the **TRUNK** of the tree of evolution. If the trunk stood, the theory appeared proved. If I could chop down the trunk, the entire tree would fall with it.

I began a search to learn **HOW** these scientists determined the age of strata. I was months finding it. None of the texts I searched seemed to explain anything about it. This **TRUNK** of the tree was carelessly *assumed*—without proof.

Were the oldest strata always on the bottom—the next oldest next to the bottom, the most recent on the top? Finally I found it in a recognized text on geology authored by Professor Chamberlin. No, sometimes the most recent were actually *below* the most ancient strata. The age of strata was *not* determined by stages of depth. The depth of strata varied in different parts of the world.

How, then, was the age of strata determined? Why, I finally discovered in this very reputable authority, their age was determined by the fossils found in them. Since the geologists "*knew*" their evolutionary theory was true, and since they had estimated how many millions of years ago a certain fossil specimen might have lived, that age determined the age of the strata!

In other words, they **ASSUMED** the age of the strata by the supposition that their theory of evolution was true. And they **PROVED** their theory was true by the *supposition* of the progressive ages of the strata in which fossil remains had been found! This was arguing in a circle!

The **TRUNK** of the evolutionary tree was chopped down. There was **NO PROOF**!

Excerpt from *Autobiography of Herbert W. Armstrong*

Now suppose we confine ourselves to *facts*!

What, then, has science actually determined?

Discovery and study of radioactivity has proved that *there has been no past eternity of matter*! Radioactivity is described as a

process of disintegration. The atomic age is opening up new fields to explore. Soon after Madame Curie discovered the element radium, in 1898, it was discovered that radium, and the other radioactive elements as we know now, are continually giving off radiations.

So notice carefully what this FACT of science means:

Uranium is a radioactive element heavier than radium. It has an atomic weight of 238.5. In decomposing, it gives off a helium atom, weight 4, repeated three times, and then the substance left is radium, atomic weight about 226.4. Radium, then, is simply the end product of uranium after it has lost three helium atoms. Then the disintegration continues in radium. And the final product of this process of radioactive disintegration is the element lead! Now of course this process requires great periods of time. The calculated half-life of radium is 1,590 years—uranium much longer.

I have seen it myself, in the darkroom of an X-ray laboratory. A tiny portion of radium was placed on a mirror at the far end of a hollow tube, and I looked into this tube through a magnifying glass at the other end. Under this magnification what I saw appeared as a large, vast, dark sky, with thousands of shooting stars falling toward me from all directions. Actually what I saw were the emanations of tiny particles being emitted by the radium, greatly magnified.

We know, therefore, that *there has been no past eternity of matter!*

The radioactive elements in existence today have not yet been in existence long enough to have run their course, and disintegrated into lead. To have ALWAYS existed, without any definite time of *starting* in the past, this “life” period of radioactive elements long ago would have run its course. All radioactive elements would have long ago disintegrated into lead. Since these elements exist only for a definite span of years, and all the uranium, radium, thorium and other radioactive elements in the world today have not yet existed that many years, there was a time, prior to the duration of this span in the past, when these elements DID NOT EXIST!

Here we have definite scientific proof that MATTER HAS NOT ALWAYS EXISTED. Here we have definite specific elements that once, in the long ago, did not yet exist. Then there came a time, later, when these elements CAME INTO EXISTENCE.

Evolution usually postulates that things come about GRADUALLY, through the slow-moving natural processes of the present. Try to imagine, if you can, *something* coming into existence out of *nothing*, GRADUALLY! Can your mind entertain the idea?

I think not. No, I think if you are rational, you will have to accept the fact of a special and necessarily instantaneous CREATION. And SOME POWER or SOME ONE had of necessity to do the creating. There is a cause for every effect. And in accepting that inevitable FACT, *proved* by the findings of science, of the existence of that GREAT FIRST CAUSE, you have accepted the FACT *of the existence and preexistence of the Creator—God!*

Excerpt from *Does God Exist?* by Herbert W. Armstrong



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