A RESPONSE TO HARTZOG

Jerry McDonald

The article you have just read is an email from Robert Baty's email discussion list, of which Rick Hartzog is a member. To let the reader in on the discussion; Todd Greene and I are presently engaged in a written discussion on the age of the earth. I presented my first affirmative and Todd has presented half of his first rebuttal. While I wait for his second half I decided to go ahead and begin my second affirmative. I have contended a number of times that you cannot date fossils in sedimentary rock because there is no organic substance (nothing with DNA) that could be used to date using the ^{14}C method of dating, and you don't use radioisotope dating on anything but igneous rocks, where you will find no fossils. Even Todd Greene understands this simple rule. In his first rebuttal he wrote:

> "He attempts to conjure up some kind of problem by pointing out the fact that fossils cannot themselves be dated directly (i.e., by using radiometric dating), and that radiometric dating can only be used on igneous rock.
>
> Yes. That's right. This, of course, isn't any big revelation to anyone who knows anything about geology, so what is the problem?"
>
> http://www.challenge2.org/greene1reb1prop.pdf.

In actuality radiometric dating covers both radioisotope and radio carbon ^{14}C dating. However, the point is that even Greene understands that you don't directly date sedimentary rock.

Now Hartzog did bring up something that was interesting and so I wanted to deal with it. He wrote:

> "Direct dating grains of the igneous minerals such as **zircon found within sedimentary layers** will also yield an age – **not the age of the layer,** but the OLDER age of the igneous grains which weathered away from parent rock and were deposited as sediment"
>
> http://groups.yahoo.com/group/Maury_and_Baty/message/18227.

This is really the only statement that deserves any attention, but we will give the rest some any way. There are two things that need to be noticed in his statement: (1) "Direct dating of igneous minerals such as zircon **found within sedimentary layers…**," and (2) and zircon are "igneous grains which are weathered away from the parent rock and deposited as sediment." One source states:

Dating sedimentary rocks using in situ U-Pb geochronology of syneruptive zircon in ash-fall tuffs <1 mm thick

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Abstract
Absolute ages for sedimentary rocks are required to construct a temporal framework in which to decipher Earth's history. The most reliable method for dating Precambrian sedimentary rocks is U-Pb geochronology of zircon in intercalated volcanic rocks. However, extracting sufficient zircons involves destructive mineral separation procedures, often requiring several kilograms of sample. We have dated felsic tuffs <1 mm thick using single polished thin sections from diamond drill core of Neoarchean shale from the Pilbara craton, Australia. The tuffs contain abundant euhedral zircon crystals, commonly 10–30 μm long. In situ SHRIMP (sensitive high-resolution ion microprobe) geochronology of the zircon in 8 tuffs gives 207Pb/206Pb dates between ca. 2600 Ma and ca. 2680 Ma, all consistent with their stratigraphic position and available age constraints. The dates represent the timing of syndepositional volcanism and provide reliable estimates for the age of deposition. Zircons in a 0.5 mm tuff band 15 mm above the Jeerinah impact layer provide an age of 2632 ± 7 Ma, which represents a close approximation for the timing of a major asteroid impact, the strewn field of which is distributed across two Archean cratons. In situ geochronology of zircon in felsic tuffs requires only small volumes of sample and is especially useful for drill core samples where material is limited. It avoids the destruction of samples associated with mineral separation, retaining textural information and avoiding potential contamination. This approach adds significantly to the number of sedimentary rocks that can be dated accurately.

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Now while this abstract does discuss dating sedimentary rock by dating zircons, it discusses dating the zircons that are found in the volcanic tuff on or near the sedimentary rocks. Hartzog argues that zircon crystals can be found **within sedimentary rock layers**: "*grains of the igneous minerals such as zircon found **within sedimentary layers***." Andrew Snelling wrote:

> "For this reason, zircon is the most frequently used mineral for U-Th-Pb radioisotopic dating, particularly in igneous rocks of acid to intermediate composition. More recently baddeleyite has been used in dating mafic igneous rocks. Also, zircon grain are sometimes found in sedimentary rocks and so are analyzed to determine the supposed date of the sediment source rocks.... This is dramatically illustrated by the contact metamorphic effects of a Tertiary granite stock on zircon crystals in surrounding metamorphosed Pecambrian

sediment and volcanos" (*Radioisotopes And The Age Of The Earth*, pp. 163, 166).

However, he does not say that zircon is found within sedimentary rock layers. All that I have quoted have said that zircon is found in igneous rocks, volcanic tuff and in some sedimentary rocks. However, this does not mean that they are found within the layers of sedimentary rocks. Hartzog would have us believe that there are mixtures of layers of igneous and sedimentary rocks. Such isn't true. While you will find grains of zircon in sedimentary rock it is because there is igneous rock nearby.

In the glossary of the first RATE book, the word "zircon" was defined this way:

> "**Zircon**[8] A mineral which consist of zirconium *silicate* with a *chemical* formula of $ZrSIO_4$. It has a distinctive accessory *mineral* in *granites* and related to *granite rocks*, as well as in some *metamorphic* and *sedimentary rocks*. Because it is a hard *mineral* which is resistant to *weathering* and erosion, it is often present in sand deposits on beaches and along rivers. It contains trace amounts of uranium (U) and thorium (Th) and therefore is radioactive and an important *mineral* for uranium-thorium-lead (U-Th-Pb) radioisotope dating" (Ibid, p. 558).

It isn't something that is weathered away from the parent rock and settled into the sedimentary layers. It is resistant to weathering. It likely gets into sedimentary rock when granite is formed from lava and it splashes on to the sedimentary rock. Now there is a way to weather zircons away, but only by chemical weathering which is a different subject altogether.

Hartzog tells us that the "direct radiometric dating of sedimentary rock is possible." He can't have it both ways. If "(d)irect dating grains of the igneous minerals such as **zircon found within sedimentary layers** will also yield an age – **not the age of the layer,** but the OLDER age of the igneous grains" is what is directly dated, then the sedimentary rock is **not** directly dated. It is **in**directly dated because you did not date the sedimentary rock, you dated the zircon grains within the rock. These two statements are self-contradictory because one statement says that you can directly date sedimentary rock, while the other says that the you don't directly date the sedimentary rock, but the zircon grains within the rock. In other words he is says A then not A. Whenever one's position involves self-contradiction that position is erroneous. He can't have it both ways, either you can directly date sedimentary rock (which means you take the rock itself and date it) or you can't directly date sedimentary rock (because you have to take the zircon grains that are found within the rock, which Hartzog says give an older age than the sedimentary rock itself, and date those) which is not dating the rock itself. If you date the zircons and they give an older date than the rock itself as Hartzog says then what you are doing is giving an indirect dating to the sedimentary rock which goes in direct contradiction to the statement he made about directly dating sedimentary rocks.

Hartzog further writes:

> "Fossils can also be directly dated -- far beyond McDonald's 10,000 year limit.
>
> Looks like Jerry didn't know, going into this debate, enough about geology to affirm anything about what it does or doesn't show."

Fossils in rock cannot be dated period unless there is some organic substance still left in it, and there are no fossils in igneous rocks. Now Robert Baty, and Todd Greene tried to trick me with what are called "fossil molds" in igneous rocks where lava will destroy something like a tree and leave an impression, but there is no fossil there, all that is there is just a mold of what was once there. This is different from finding a rock with a fossil in it. This is why they call it a "fossil **mold**" rather than a "fossil." If it was a fossil there would be no reason to call it a mold, it would just simply be called a "fossil."

Hartzog says that I have a serious misconception about DNA and ^{14}C dating , but I don't think so because in order to have DNA there must be some **carbon** which is a

> "chemical element, symbol C; for physical constants see Periodic Table. Carbon is nonmetallic and was discovered in ancient times. It occurs in 3 allotropic forms: amorphous (as in coal, or charcoal), graphite, and diamond. All living things contain carbon, which forms more compounds than any other element" (*The 21st Century Webster's Family Encyclopedia, Revised Edition, Volume 2,* p. 124).

Now the same Encyclopedia discusses DNA "deoxyribonucleic acid), informational molecules in the nucleus of every living cell" (Ibid, Volume 3, p. 134). You are not going to find DNA in sedimentary rock. Why not? What is sedimentary rock? According to this same encyclopedia sedimentary rock is:

> "one of three main rock classes of the earth's crust; the others are igneous rock and metamorphic rock. Sedimentary rocks consist of weathered fragments of rock transported usually by water and deposited in distinct strata. They may also be of organic origin, as in coal and some organic limestone, or they may be formed by chemical processes, as in the evaporates. About three-quarters of the earth's land area and most the ocean floor are covered by sedimentary rock. Most common are shale, sandstone, and limestone. Sedimentary rocks frequently contain fossils as well as most of the earth's mineral resources" (Ibid, Vol. 9, p. 11).

While some sedimentary rocks had their organic origin this was clearly weathered away over time as it was transported usually by water. Therefore, there is no way to directly date it using ^{14}C dating processes. While sedimentary rocks frequently contain fossils, the organic substance (of what was once alive) is now part of the rock and there is no DNA to be found in it. The only way that you

could date the fossil is if you were to find some of the DNA left from the creature that was once alive and date it. Hartzog then writes:

> "There is sometimes volcanic ash and tuff in sedimentary layers that contain fossils. By dating ash deposits above and below the fossil the fossil's age is 'bracketed'."

Todd Greene argued for "bracketing" where you find a layer of sedimentary rock then a layer of igneous rock, and I pointed out to him that it just doesn't work. Rick talks about ash and tuff being in sedimentary rock layers above and below the layers with the fossil, the fossil's age is given. The following article shows that neither Rick nor Todd have any idea about what they are talking about:

Dating Sedimentary Rock

The most widely known form of radiometric dating is carbon-14 dating. This is what archaeologists use to determine the age of human-made artifacts. But carbon-14 dating won't work on dinosaur bones. The half-life of carbon-14 is only 5,730 years, so carbon-14 dating is only effective on samples that are less than 50,000 years old. Dinosaur bones, on the other hand, are millions of years old -- some fossils are billions of years old. To determine the ages of these specimens, scientists need an isotope with a very long half-life. Some of the isotopes used for this purpose are **uranium-238, uranium-235** and **potassium-40**, each of which has a half-life of more than a million years.

Unfortunately, these elements don't exist in dinosaur fossils themselves. Each of them typically exists in **igneous** rock, or rock made from cooled magma. Fossils, however, form in **sedimentary** rock -- sediment quickly covers a dinosaur's body, and the sediment and the bones gradually turn into rock. But this sediment doesn't typically include the necessary isotopes in measurable amounts. Fossils can't form in the igneous rock that usually does contain the isotopes. The extreme temperatures of the magma would just destroy the bones.

So to determine the age of sedimentary rock layers, researchers first have to find neighboring layers of Earth that include igneous rock, such as volcanic ash. These layers are like bookends -- they give a beginning and an end to the period of time when the sedimentary rock formed. By using radiometric dating to determine the age of igneous **brackets**, researchers can accurately determine the age of the sedimentary layers between them.

Using the basic ideas of bracketing and radiometric dating, researchers have determined the age of rock layers all over the world. This information has also helped determine the age of the Earth itself. While the oldest known rocks on Earth are about 3.5 billion years old, researchers have found zircon crystals that are 4.3 billion years old [source: USGS]. Based on the analysis of these samples, scientists estimate that the Earth itself is about 4.5 billion years old. In addition, the oldest known moon rocks are 4.5 billion years old. Since the

moon and the Earth probably formed at the same time, this supports the current idea of the Earth's age.

http://science.howstuffworks.com/dinosaur-bone-age1.htm

So what is bracketing? Bracketing is taking areas of igneous rock and determining the age of it and then finding "neighboring layers or Earth" that is sedimentary rock. The Brackets are like book ends. By determining the igneous brackets researchers can determine the age of sedimentary rocks nearby. But there is no such thing as a layer of sedimentary rock and a layer of igneous rock, then a layer of sedimentary rock. Bracketing in Geology is the same as bracketing in archaeology, just as stratification are the same in both sciences. Rick needs to stay out of the science discussions because he does not know what he is talking about.

He then writes:

> "...and according to Plummer and Carlson that is good only for 40,000 years...
>
> Which is plenty long enough to falsify your debate proposition, isn't it?"

Here he quotes me and tries to argue that I I have failed in defending my proposition because of what Plummer and Carlson said. Well, yes, if the earth was in existence 40,000 years ago that would falsify my proposition, but nothing that I said gives any indication that it did. My point was the ^{14}C dating procedures don't give enough time for Todd to date the earth to 100,000 years because even according to his own people it is only good for 40,000. So if it is plenty long enough to falsify my debate proposition it is insufficient to prove Todd's (whose proposition comes up next—provided he ever finishes his first rebuttal to my first affirmative, and we finish my proposition).

Next he quotes me and writes:

> "...and if they only used Ar-Ar to date the igneous rocks, then their dates, again are way off.
>
> And again, we are supposed to accept this claim based on your demonstrated understanding of radiometric dating methods?"

No, you don't have to accept my word on this, I gave the quotation:

> "Dr. Andrew Snelling, Associate Professor of Geology at ICR (formerly with Answers in Genesis), continued the geological emphasis with a paper entitled, 'Solving the Long-Age Isotope Dating Problem: Geology and Geochemistry.' He reported on the K-Ar analyses of recent (less than 50 years old) lava flows

> at Mt. Ngauruhoe, New Zealand which produced model ages as high as 3.5 million years. He presented the view that the large age is due to excessive concentrations of Ar in the samples which render problematic the use of K-Ar and Ar-Ar as methods for dating rocks. It is not possible to distinguish the primordial Ar incorporated as a rock formed from that produced later by nuclear decay" (*Radioisotopes and the Age of the Earth, Vol. 1,* p. 11).

Now this probably won't mean anything to Rick, but it does show that I didn't come to this conclusion on my own. It came from someone who is a whole lot smarter than I am. I quoted this in an email on the CoCBanned list, so Rick had no excuse for his statement other than he just wanted to throw in an *ad hominem* at me; something that these evangelical atheists, skeptics, theistic evolutionists and old earth creationists are very good at. One thing, however, that they are very bad at is dealing with the evidence. They laugh at Dr. Flew and say that he went senile before he died, but one thing about Dr. Flew—even when he was an atheist—is that he always tried to deal with his opponent's arguments, and he was too much of a gentleman to get caught up in the insults these modern unbelievers seem to throw out.

Finally he quotes me and writes:

> "I will add this in my next installment...
> I wouldn't, if I were you."

So that all will know what this is about let me explain. Todd had given where something had been dated using "radiometric" dating methods to about 160,000 years old. This is where I came up with the point that ^{14}C dating is only good for about 40,000 years according to Plummer and Carlson, and I thought he was talking about this kind of dating because it is part of radiometric dating. However, Todd came back in an email and showed me where I had not read the article far enough, even though I thought I had read all of the article. When I found what Todd was talking about he was referring to where they had used Ar-Ar dating. I informed Todd that I would make the correction in my next installment, and it was also the reason I quoted Larry Vardiman on Dr. Snelling's paper. Rick says that I shouldn't make any correction, but I have nothing to hide so I'll go ahead and make the correction as planned.

This pretty well covers Rick's email. From it we see that he doesn't know enough about geology to be discussing it, but we've seen this out of Rick in other areas. It's one thing to throw out slurs and insults and it's another thing altogether to deal with the evidence. Rick is one who throws out slurs and insults because he can't deal with the evidence.

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