Woodmorappe's Shell Game: Refuted with Literature from his Creationist Allies

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For decades, the wild imaginations of young-Earth creationists (YECs) have repeatedly failed to weaken the reliability of radiometric dating (as examples: Cook, 1966; Kofahl and Segraves 1975; Woodmorappe, 1979; Arndts and Overn, 1981; Slusher, 1981; Morris, 1981; Mandock, 1982; Woodmorappe, 2001). Through their efforts, YECs have clearly demonstrated that they are willing to grasp at any supernatural or natural fantasy to attack radiometric dating and prop up their antiquated biblical interpretations.

YEC Woodmorappe's (1999) approach to explain away radiometric dates is fairly unique, but is just as unrealistic as other creationist attempts. Woodmorappe (1999, Figure 20, p. 51; p. 52, 85, 87-92) claims that all radiometric dates may be nothing more than the products of "chance," that is, random numbers. According to Woodmorappe (1999, p. 16, 21-22, 51-54, 82, 85, 95, etc.), geologists submit samples for radiometric dating, unknowingly obtain random and meaningless results, and then usually publish only those results that can be rationally "explained away" or happen to correspond with their "preconceived expectations." Woodmorappe (1999, p. 16) further claims that geologists are so biased and effective in "picking and choosing" the dates that they want from among the "many" random or otherwise bad analyses that radiometric dating is not falsifiable. In other words, Woodmorappe (1999, p. 16) believes that we're so deceived by our biases in favor of radiometric dating that we're unable to detect our own mistakes.

Using four "quasi-Monte Carlo" logarithmic distributions, Woodmorappe (1999, p. 87-92) attempts to demonstrate that it is relatively easy to randomly generate a pair of "concordant dates" (within 2.5% of each other). Because Woodmorappe (1999, p. 87) recognizes that most published terrestrial radiometric dates fall between a few million years up to 2500 to 3000 million years, he arbitrarily limits the range of dates in his four distributions as shown in the following table:

Distribution Type	Range of Possible Dates	Log Values	Mean
Short-running Log-Linear	**1 million to 2500 million**	**6.00 to 9.40**	**50 million years**
Long-running Log-Linear	**10 million to 3500 million**	**7.00 to 9.54**	**186 million years**
Short-running Log-Normal	**7.24 to 2750 million (3 Std. Dev.)**	**6.86 to 9.44**	**141 million years**
Long-running Log-Normal	**7.8 to 3900 million (3 Std. Dev.)**	**6.89 to 9.59**	**174 million years**

The log normal distributions are classical two-tailed "bell-curves," where the probabilities decrease away from the means. With the log-linear distributions, there are equal probabilities that a "date" will fall into one of the following ranges: 1 million to 10 million, 10 million to 100 million, 100 million to 1000 million, etc. (Woodmorappe, 1999, p. 87). According to Woodmorappe (1999, p. 87, 89), the "short-running" log distributions are more "applicable" in "producing" K-Ar "dates," whereas methods with longer half-lives (Rb-Sr, Sm-Nd, and U-Pb) are supposedly better represented by the "long-range" log distributions.

EVALUATING WOODMORAPPE'S CLAIMS

We could test the scientific validity of Woodmorappe's (1999, p. 87-92) Lotto Game in at least a couple of different ways. First of all, we could randomly select articles from the peer-reviewed literature and through a survey ask the authors and their geochronologists if they discarded any radiometric dates as part of their studies and, if so, how many. Such a survey would be difficult, but it would be valuable. Nevertheless, if the results were unfavorable to creationism and showed that scientists were not typically getting their results from a large pool of random numbers, YECs could simply claim that the surveyed participants lied to cover up a "demonic radiometric dating conspiracy."

An easier alternative is to evaluate the radiometric dates obtained by Steve Austin, Andrew Snelling and Woodmorappe's other YEC allies and see if their dates are really random or not. If Woodmorappe's (1999, p. 87-92) Lucky Draw is right, YECs, as well as scientists, should get nothing but random results from their samples. With his YEC allies, Woodmorappe (1999, p. 87) doesn't have to worry about any biases in favor of radiometric dating. As long as the dates are older than 10,000 years, everyone can be certain that Snelling,

Austin and other YECs would treat their dates with joyous contempt. That is, under Woodmorappe's Shell Game scenario, Austin, Snelling and other YECs would have no motive for discarding any ridiculously old, young or negative dates to support any supposed "anti-biblical conspiracy." If anything, Austin and Snelling would be the first people to loudly proclaim that they got wildly inconsistent and apparently random results from their samples.

Let's look at Austin and Snelling (1998) Discordant Potassium-Argon Model and Isochron "ages" for Cardenas Basalt (Middle Proterozoic) and Associated Diabase of Eastern Grand Canyon, Arizona which contains K-Ar dates for the Cardenas Basalt and associated Proterozoic diabases from the Grand Canyon, Arizona, USA. This article is full of errors, which likely include the improper submission of altered samples to supposedly "date" original igneous events. Despite the otherwise fatal flaws in this article, the dates can still be used to test Woodmorappe's Lotto claims. That is, whether the dates are accurate or absurd for whatever reason, we can still calculate the probabilities of whether a series of dates are really random or not. Again, if any utterly absurd and random radiometric dates were obtained as Woodmorappe Roulette predicts (especially any negative dates or results in excess of 4500 million years), they would be immediately and widely displayed in the Institute for Creation Research (ICR) and Answers in Genesis (AIG) literature and websites.

Austin and Snelling's (1998) samples were dated with K-Ar by Geochron Laboratories, a radiometric laboratory in Cambridge, Massachusetts, USA. Although Austin and Snelling (1998) informed Geochron personnel that the samples have a general "basaltic" composition and that they should expect "a lot" of argon from the samples, they never gave individuals at Geochron expected ages or locations for the samples. Because Geochron personnel had no way of knowing the origins and ages of the anonymous samples, they could not have known which dates were reasonable and which were not. Furthermore, Austin and Snelling (1998) make no accusations that Geochron personnel wanted age estimates as a way of "cheating" or "culling" any possibly unreasonable results. Even if the dates were in excess of 4.5 billion years or had negative values, Geochron personnel could still view them as part of some sort of special laboratory isotope study. That is, such a study could involve spiking samples with pure isotopes so that they would produce unusual dates as part of some legitimate experiment. So, if Geochron personnel want to keep Austin and Snelling as valued customers, they have no choice but to truthfully report whatever results they get with Austin and Snelling's anonymous samples and not try to make any second-guesses. Therefore, with Austin and Snelling (1998), as well as their other articles that contain original

radiometric dates, we are dealing with dates in the hands of analytical chemists and YECs that have no motive and/or ability for identifying and removing any ridiculous results. Indeed, Austin and Snelling (1998) clearly state that they submitted 13 samples for dating and they list all 13 corresponding dates for those samples.

The 13 K-Ar dates in Austin and Snelling (1998, Table 1) ranged from 577 to 984 million years. Dates on the Cardenas Basalt and associated diabases from the literature are also included in Austin and Snelling's table and range from 791 to 1013 million years. Now according to Woodmorappe Bingo, Austin and Snelling (1998) should have gotten a series of random numbers that could potentially range from negative dates to results that greatly exceed 4500 million years (Woodmorappe, 1999, p. 87). Yet, Austin and Snelling clearly state that their 13 samples only have values between 577 and 984 million years, which are close to the dates for the related samples from the literature. If Woodmorappe's charges that radiometric dates are based on "chance" are correct, where are the dates in excess of 1000 million years and the values below 500 million years in Austin and Snelling (1998)?

With the data from Austin and Snelling (1998), log values of the 500-1000 million year K-Ar dates fall into the positive second standard deviation for Woodmorappe's short-running log normal distribution (381 to 1,020 million years). Only about 13.6% of all values from a normal distribution would be found in the range of 380 to 1,020 million years. Using Woodmorappe's short-running log normal distribution, the chances of obtaining 13 dates in a row within the range of 500-1000 million years are MUCH LESS than 1 in 180,000,000,000.

With the short-run log-linear distribution, the 1 million to 2500 million year range is converted into logs of 6.00 to 9.40. Dates between 500 to 1000 million years ago would be located between logs 8.70 and 9.00. What is the probability that Austin and Snelling (1998) could randomly obtain 13 values in a row, which are located between logs 8.70 and 9.00? The probability is about 1 in 5,000,000,000,000.

If Woodmorappe really believes in his claim that radiometric dates are nothing but "chance" or throwing darts at a concordia diagram (1999, p. 85), he should advise Austin and Snelling to stop spending money on radiometric dates and start picking stocks and betting on ponies at the track. But Austin's "luck" doesn't stop here. He (1997) published the dates of five samples from the Mt. St. Helens' dacite lava dome, which erupted in 1986. Similarly, Austin did not provide the locations or expected ages of the samples to Geochron personnel,

so that they would not be biased. Austin (1997) simply told Geochron personnel that the samples were from dacites and that they should NOT expect much argon.

Austin's (1997) five dates ranged from 340,000 to 2.8 million years, which are much older than the 1986 AD eruption. A review of Austin's (1997) article, his Figure 4 and a good knowledge of Bowen's reaction series obviously indicate that Austin was actually sampling and dating the remains of much older rocks (xenoliths) and minerals (xenocrysts), which had been incorporated into the partially molten material as it rose under Mt. St. Helens. In other words, only a small portion of the dacite samples actually cooled in 1986 as Austin had hoped. Also, see Comments on David Plaisted's "The Radiometric Dating Game" - Part 1 for further discussions of the technical flaws in Austin (1997).

According to Woodmorappe's Vegas Game, Austin (1997) should have gotten random results at least between 1 and 2500 million years. Nevertheless, Austin's (1997) K-Ar results from Mt. St. Helens were all less than 3 million years old. So, where are the old ages? Why are there not any dates in excess of 2.8 million years? Excessively old dates would make radiometric methods look even sillier in the eyes of YECs, so Austin has absolutely no motive for withholding any ages in excess of 3 million years at Mt. St. Helens. Dates of less than 3 million years are far outside of the third standard deviation of Woodmorappe's short-running log-normal distribution, which automatically indicates that EACH one of Austin's (1997) results are highly improbable (much less than 0.3%) if Woodmorappe's (1999) crapshoot is correct.

Two of Austin's (1997) dates are 1.7 and 2.8 million years old, which are within the working range of Woodmorappe's (1999) short-running log-linear distribution. However, Woodmorappe's (1999) short-running log-linear distribution indicates that the chances of Austin obtaining five dates of less than 3 million years are also extremely remote, MUCH LESS than 2%.

In another example, Snelling (1998) dated some Australian Tertiary basalts and got five dates ranging from 37 to 58 million years. Depending on how carefully Snelling avoided xenoliths and xenocrysts, these dates are not terribly outrageous. Nevertheless, see Dr Snelling's Radioactive "Dating" Failure for further discussions that question the validity of Snelling's "research" on radiometric dating.

Snelling's (1998) five K-Ar dates of 37 to 58 million years have log values of 7.57 to 7.76. The probability that Snelling (1998) could obtain these five dates at random with the short-term log-linear distribution (possible log values of

6.00 to 9.40) is less than 1 in 1.8 million. With the short-term log normal distribution, Snelling's (1998) five dates are located in the first and second negative standard deviations. For the sake of simplicity, let's just calculate Snelling's probability of selecting five dates in a row that occur anywhere in the negative first and second standard deviations (19.5 to 141 million years, logs 7.29 to 8.15). The probability is about 2.5%. Of course, Snelling's values actually ranged from 37 to 58 million years, which yield even more remote possibilities.

Is it possible that Austin's and Snelling's radiometric dates are more random if we simply use more straightforward probability calculations rather than Woodmorappe's more elaborate logarithmic distributions? By using a simple uniform probability distribution, the chance of randomly obtaining a value between 500 and 1000 million years from a possible age distribution of 1 to 2500 million years is 1 out of 5. Nevertheless, Austin and Snelling (1998) are still extremely "lucky," because the chances of getting all 13 values in a row between 500 and 1000 million years is an unlikely 1 out of more than 1200 million! With Austin (1997), what are the chances of getting five random values in a row between 1 and 5 million years out of a possible range of 1 to 2500 million years using straightforward probability calculations? The probability is also outrageously low, less than 1 in 30,000,000,000,000! Using simplified calculations, what's the probability that Snelling (1998) could randomly obtain five dates in a row between 30 and 60 million years out of a possible range of 1 to 2500 million years? Again, the results are highly improbable, less than 1 in 4000 million!

CONCLUSIONS

Woodmorappe's own allies consistently obtained radiometric dating results that are too improbable to be random. Woodmorappe (1999) has no rational choice but to admit that radiometric dates are something much more profound than the products of "chance" and selective publishing. Woodmorappe's carnival Shell Game is clearly bogus. Once Woodmorappe realizes that his crapshoot is not supported by the "research" of his YEC allies and that it is prohibitively expensive, we can expect that he will change the plastic rules of his crapshoot or come up with alternative excuses to avoid the reality of radiometric dating (e.g., Woodmorappe, 2001).

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