

An Old Age for the Earth Is the Heart of Evolution

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Abstract

An accommodationist claim about chronology runs something like this: “Even if it could be shown that the earth is young (which it is not), that would be irrelevant to the chronology of the universe, because there are independent evidences that the universe is as old as evolution says it is. Furthermore, the age issue is not really important.” Such statements are not true. The centrality of long ages to evolutionary thought has long been emphasized. Fur-

ther, the supposed evidences of the vast antiquity of planets, stars, galaxies, and the universe ultimately rest on the belief in the evolutionary age of the earth. The long chronologies for the universe and its parts are therefore not independent of the alleged old age of the earth. If the earth is shown to be young, the evidence for an old universe crumbles.

Time Is the Central Requirement for Evolution

Old-universe apologist Hugh Ross writes that “age need not even be an issue” in discussing origins (Ross, 1994, p. 10), and maintains that “the age of the universe and of the earth” is a “peripheral point” (Ross, 1994, p. 8). On the other hand, decades ago astrophysicist Arthur S. Eddington acknowledged the absolute primacy of time, without which evolution would be impossible and inconceivable: “Looking back through the long past we picture the beginning of the world—a primeval chaos which time has fashioned into the universe that we know” (Eddington, 1930, p. 11). Such a statement could be taken to imply that time has supplanted the Creator. Since this remains the conventional perspective of the function of time in cosmic evolution, it follows that the age issue implicitly enters into virtually all evolutionary theorizing.

Eddington was not only an eminent scientist but a well known popularizer of science, especially astronomy. He repeatedly stated his belief in the centrality of time for naturalistic development. In the evolution—or the “becoming”—of the universe, he wrote, “Time occupies the key position” (Eddington, 1933, p. 91). As with Eddington, Carl Sagan acted not as an originator of chronological thought, but as an advocate of the primacy of time in evolution. Sagan also described the evolution of the universe with “time” replacing God as the First Cause:

For unknown ages ... there were no galaxies, no planets, no life. ...A first generation of stars was born. ...In the dark lush clouds between the stars, smaller raindrops grew, bodies far too little to ignite the nuclear fire...Among them was a small world of stone and iron, the early Earth. ...One day a

molecule arose that ... was able to make crude copies of itself ... life had begun. Single-celled plants evolved ... plants and animals discovered that the land could support life. ...[Some animals] became upright ... emerging into consciousness. At an ever-accelerating pace, [consciousness] invented writing, cities, art and science, and sent spaceships to the planets and the stars. These are some things that hydrogen atoms do, given 15 billion years of cosmic evolution (Sagan, 1980, pp. 337–338).

If to Sagan time was the “creator” which brought the universe into existence, planetary astronomer William K. Hartmann has expressed the same idea, namely, that time is really the only necessity for evolution—a “long” time:

From all we have just said, we conclude that if planetary surfaces with the necessary conditions—liquid water and the ‘CHON’ chemicals (carbon, hydrogen, oxygen, and nitrogen)—exist long enough anywhere, life is likely to evolve (Hartmann, 1991, p. 621).

With time as the evolutionary agent, it is no wonder that the evolutionary expectation of finding extraterrestrial life has over the decades gone from disrepute to popular acceptance (Henry, 2002, p. 170). On the other hand, without sufficient time, evolution, nature’s “self-realization,” would not happen at all (Easterbrook, 1996, p. 48).

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Evolutionary Chronology Is Tied to the Age of the Earth

All evolutionary cosmic ages are in the final analysis based on an old age for the earth, so if this chronology is destroyed for the earth, it is demolished for the cosmos as well. The sun is thought to be old because the earth is old, other stars are thought to follow a mode of operation and chronology based on that of the sun (Bahcall, 1990, p. 56; Fix, 1999, p. 385), and the Hubble constant and the age of the universe are adjusted in an attempt to make the cosmos older than the stars (Goldsmith, 1985, p. 115).

Coming back to the solar system, the moon is assumed to be slightly older than the oldest rocks on earth, and the solar system is dated from meteorites on the assumption that it is older than both the earth and the moon (Goldsmith, 1985, p. 366). Cratered planets such as Mercury are dated by comparison with the moon (Hubbard, 1984, p. 197). Indeed, it is generally true that “the relationship between crater density and age determined for the Moon has been used to estimate the ages of other planets and satellites” (Fix, 1999, p. 188). This chain of chronological reasoning would be logical were it true that first some meteorites formed out of the putative solar nebula, then moons and planets (Whipple and Green, 1986, p. 222; Hubbard, 1984, p. 9; Norton, 1998, pp. 349-350). Further, it is not true that meteoritic dating points unambiguously to a 4.5 billion year age for the solar system (Gariépy and Dupre, 1991, pp. 216–217; Williams, 1992, p. 2).

The chain of chronological reasoning traced above is not based on actual observation, but on inference, a fact pointed out occasionally:

Many things loosely described as scientific ‘facts’ are not really facts at all. For example, you might have the impression that this book stated the ‘fact’ that the universe is between 10 and 20 billion years old. But such a usage of the word ‘fact’ is really just a habit of speech that is seen to be imprecise on close examination. In reality, the age astronomers assign to the universe is an *inference* from the large amount of observational data that we have [emphasis in original] (Robbins, 1988, p. 445).

In other words, there are no data compelling the acceptance of evolutionary ages, but researchers have reached the conclusions they wanted to believe.

Over the last century and a half, physicists and astronomers eventually accommodated themselves to geological dates for the age of the earth, readjusting their cosmic and stellar dates so as not to conflict with terrestrial claims. Physicists as well as astronomers were tying their chronologies into the evolutionary time frame for the earth:

The conflict between physics and astronomy over the Age of the Earth was resolved in the 1950s. ...[T]he conflict between physics and geology ... had ended 50 years earlier with a complete reversal by the physicists [in favor of geological dates for the earth]; this time it was the astronomers who revised their estimates and suddenly switched to a much longer time scale [to avoid conflict with the geologists]. They had decided that Hubble had underestimated the intrinsic luminosities of distant stars and the Cepheid variable scale of distances had to be recalibrated; together the two corrections [read: adjustments] expanded the time scale by a factor of 4, with further increases to come in subsequent decades. By the mid-1980s, estimates of the age of the universe generally ranged from 10,000 to 20,000 m.y., safely beyond the estimates of the Age of the Earth, which had stabilized at 4500 to 4600 m.y. ...According to David Raup, *one result of this episode is that ‘geology has a curious moral authority over astrophysics’*... [emphasis added] (Brush, 1989, p. 173).

The first widely-accepted rationale for radiometric dating of the earth was put forward by T.C. Chamberlain. He based his estimates on the putative time for biological evolution, saying that his view “takes due account of biological requirements” (Brush, 1989, p. 172), meaning that the presumed age of the earth for biological evolution had to be consulted before radiometric dates could be selected to “confirm” this old age. Richard Milton, who is not a young earth advocate, nevertheless points out that the readiness to reject radiometric dates except those giving “expected values” is why various radiometric methods can be claimed to converge in the “ages” they “measure” (Milton, 1997, p. 49):

Thus the published dating figures *always* conform to preconceived dates and never contradict those dates. If all the rejected dates were retrieved from the waste basket and added to the published dates, the combined results would show that the dates produced are the scatter that one would expect by chance alone [emphasis in original] (Milton, 1997, p. 51).

Woodmorappe (1999, pp. 1, 6) makes the same observation.

Evolution Dates the Sun by the Evolutionary Age of the Earth

Evolution asserts that the earth is billions of years old. Astronomers for several generations have stated that this is the only real reason the sun is believed to have an age of

billions of years. In the 1920s Eddington wrote, Formerly the contraction theory of Helmholtz and Kelvin held sway. This supposes that the supply [of the sun's energy] is maintained by the conversion of gravitational energy into heat owing to the gradual contraction of the star. The energy obtainable from contraction is quite inadequate in view of the great age now attributed to the sun (Eddington, 1926, p. 289).

And why did Eddington view solar contraction as insufficient to supply the sun's energy output over the sun's lifetime? Because, "It is not much use extending the age of the earth without extending the age of the sun" (Eddington, 1926, p. 295). In other words, as the evolutionary age of the earth expanded in the early twentieth century, the supposed age of the sun expanded to keep pace.

Whatever actually occurs in the sun—whether fusion only, or fusion with a degree of contraction—the sun's presumed age is based ultimately on the alleged age of the earth. Eddington made this point repeatedly: "Geological, physical, and biological evidence seems to make it certain that the sun has warmed the earth for more than a thousand million years [now taken to be some 5 billion years]" (Eddington, 1959, p. 162). In context, the "physical" evidence to which Eddington referred was nothing more than the supposed geological and biological "evidence" that the earth is old. Eddington was explicit about this:

On such an important question we should not like to put implicit trust in [astronomical arguments] alone, and we turn to the sister sciences for other and perhaps more conclusive evidence. ...The age of the older rocks [of the earth] is found to be about 1,200 million years. ...The sun, of course, must be very much older than the earth and its rocks (Eddington, 1929, p. 96).

The evolutionary ages of the oldest terrestrial rocks have expanded since Eddington's time from 1.2 billion years to some 3.8 billion years (Milton, 1997, p. 17).

Two generations ago, physicist and science popularizer George Gamow described the same dependence of solar dating on the evolutionary age of the earth: "Our sun is now only about 3 or 4 billion years old..." And the reason for this age?—"...since the estimated age of our earth is of that order of magnitude" (Gamow, 1953, p. 301). The same logic for dating the sun at billions of years continues to this day:

By the end of the nineteenth century, geological evidence had increased the estimated age of the Earth to several *hundred* millions of years, and the discovery of radioactivity at the close of the century made it possible to measure the Earth's age with

even greater certainty at around 4.5 *billion* years. ...[It] is hard to imagine how the Earth could be much older than the Sun [emphases in original] (Robbins, 1988, p. 295).

Indeed, this rationale for dating the sun has been commonly acknowledged: "The Sun's age was measured at 4.6 billion years by dating planetary matter" (Hartmann, 1991, p. 381). Hartmann has worded this statement in such a way as to imply that evidence from outside the earth confirms the sun's old age, but this statement is misleading, for in context the "planetary" material to which he refers is nothing more than the rocks of the earth. In a more forthright assessment, astronomer John Fix says,

Geologists have found rocks 3.5 billion years old that contain fossils of marine organisms. These discoveries clearly demonstrate that the Sun has warmed the Earth for at least 3.5 billion years and probably for as long as the Earth has existed (Fix, 1999, p. 386).

Researchers are sometimes objective about the faulty reasoning illustrated in the preceding paragraphs. Solar expert John Eddy stated that,

I suspect that the Sun *is* 4.5-billion years old. However, given some new and unexpected results to the contrary, and some time for frantic recalculation and theoretical readjustment, I suspect that we could live with Bishop Ussher's value for the age of the Earth and the Sun. I don't think we have much in the way of observational evidence in astronomy to contradict that. Solar physics now looks to paleontology for data on solar chronology [emphasis in original] (Kazmann, 1978, p. 18).

This is a staggering statement, for Eddy admitted that there is really no hard evidence that the sun is very old. Indeed, Eddy went so far as to propose the possibility of returning to Ussher's chronology which puts creation at 4004 BC. Since Eddy's last sentence quoted above claims that evolutionary solar chronology depends on "paleontology," Eddy has again affirmed that the conventional age of the sun is based ultimately on nothing more than the presumed evolutionary age of the earth.

Evolution Dates the Solar System and Universe by the Evolutionary Age of the Earth

Hartmann claims that, "The age of the solar system is 4.6 Gy [billion years]. This figure has been derived from studies of rocks from three planetary sources: the meteorites ... the moon, and Earth" (Hartmann, 1983, p. 119). There appear to be three independent dating sources (the mete-

orites, the moon, and the earth) referenced here, but in fact the age of the moon is worked out to agree with the earth's alleged age (Hammond, 1974, p. 911; Fix, 1999, p. 186), and that of meteorites is worked out to be slightly older than the earth (Fix, 1999, p. 335). This may appear surprising, since these chronologies are based on radiometric dating results, but the fact is that,

In general, dates in the 'correct ball park' are assumed to be correct and are published, but those in disagreement with other data are seldom published... (Mauger, 1977, p. 37).

There is thus a concentration of accepted radiometric dates around the values preconceived as being correct, for such "figures are obtained by omitting, with no objective reason, the much broader deviations" (Waterhouse, 1979, p. 499). The apparent convergence of radiometric dating results is more a chimera than reality because "many age determinations which do not agree with currently accepted time scales are simply rejected as wrong..." (Paul, 1980, p. 184). Even for the currently popular neodymium/samarium dating method, "In the majority of cases the ages are off and the [discrepant] data disappear in a lab-datafile" (Jagoutz, 1994, p. 156). When all is said and done, the age of the earth remains the chronological baseline for evolution. More will be said about meteoritic dating of the solar system and the earth below.

Chronologies for other planets such as Mars may be worked out by comparison with the assumed lunar chronology (Short, 1975, pp. 246, 248), but since the lunar chronology is based on the presumed age of the earth, such chronologies are not truly independent. Nonetheless, such chronologies have been entrenched for many decades, and it has become common to speak of them as if they are independent verifications of evolutionary ages (Podosek, 1999, pp. 1863–1864). A recurrent phenomenon in the history of science is that a paradigm becomes so widely accepted that the basic assumptions behind it are no longer questioned, and the paradigm is taken as virtually self-evident truth (Kuhn, 1970, pp. 10–11). This appears to have come to pass in general with evolutionary chronologies. In such a situation, there may be the appearance of vigorous debate, but the debate is actually constrained within "safe" boundaries so as to leave the paradigm untouched (e.g., asking whether primordial meteoritic material is 4.55 or 4.65 billion years old, but *not* questioning whether the range of ages under discussion has any validity). To expose fundamental fallacies of the paradigm is nearly always unacceptable (Kuhn, 1970, pp. 15–21, 37, 77–78, 177).

In dating the conventional age of the cosmos, the presumed size of the universe is the only "evidence" of its

age: "... its size is inextricably bound up with its age. The Universe is fifteen billion light years in size because it is fifteen billion years old" (Barrow and Tipler, 1986, p. 3). But the estimated size of the universe is tied to the presumed expansion rate allegedly due to the putative Big Bang. The quantity employed to describe the rate of expansion is the Hubble constant (Fix, 1999, pp. 600–601; Pasachoff, 1985, p. 261). It might seem as if we have in the Hubble constant at last a truly independent dating method, but in fact the size of the Hubble constant is evaluated to give an expansion time (or age) which is proportional to the evolutionary age of the earth: "By using the Hubble relation, and working backward in time, the time of the big bang can be estimated" (Kornberg, 1978, p. 10). If this last point seems questionable, consider the following.

When the Hubble constant was initially evaluated, the "upper limit" age it gave was too small to satisfy evolutionary geologists:

Unfortunately, the reciprocal of Hubble's constant gave an age for the universe of only 1.8 billion years. Rocks on earth were then already known to be as old as 3.0 billion years. Obviously, the universe could not be younger than the earth (Kornberg, 1978, p. 10).

Once again, a supposedly independent evolutionary chronometer works out in reality not to be independent, but is tied back to an old age for the earth. Indeed, the Hubble constant has been changed by a factor of four or more since the 1920s (Brush, 1989, p. 173; DeYoung, 1995, p. 9), a revision which has corresponded to evolutionary inflation of the age of the earth (De Vaucouleurs, 1970, p. 1204). On the other hand, though at one time the earth's evolutionary age was predicted by some to be almost indefinitely inflatable (De Vaucouleurs, 1970, p. 1204), it settled at around 4.5 billion years. This completed the chronological paradigm shift initiated primarily by Charles Lyell a century and a half earlier in the 1830s (Milton, 1997, p. 77; Easterbrook, 1996, p. 77).

Evolution Has Dated the Earth by Arbitrary Uniformitarian Assumptions

If the evolutionary age of the earth were valid, then the evolutionary chronologies depending on the earth's age might be valid as well. However, the earth's evolutionary age has been established by invoking arbitrary assumptions. Physicist George Gamow described how the earth's age was set:

Thorium and the common isotope of uranium

(U^{238}) are not markedly less abundant than the other heavy elements. ... Since the half-life periods of thorium and of common uranium are 14 billion and 4.5 billion years, respectively, we must conclude that these atoms were formed not more than a few billion years ago. On the other hand ... the fissionable isotope of uranium (U^{235}) is very rare, constituting only 0.7 percent of the main isotope. ... The half-life of U^{235} is considerably shorter than that of U^{238} , being only about 0.9 billion years. Since the amount of fissionable uranium has been cut in half every 0.9 billion years, it must have taken about seven such periods, or about 6 billion years [now taken to be 4.5 billion years], to bring it down to its present rarity, if both isotopes were originally present in comparable amounts (Gamow, 1952, pp. 15–16).

Evolutionist (but anti-Darwinian) Richard Milton has summarized essentially the same argument: “[If] a deposit was composed of half uranium 238 and half its daughter product lead 206, then one would draw the conclusion that the deposit was 4,500 million [4.5 billion] years old. [This] is the average figure that is found for the Earth’s crust” (Milton, 1997, p. 41). There are two arbitrary assumptions in this reasoning. It can never be known that the pairs of isotopes in question were ever present on earth in comparable amounts, as both Gamow and Milton assume. Further, the mere occurrence of radioactive decay implies nothing about how long it has been happening. This is the fallacy of confusing the time to complete a process with the interval over which the process has been occurring. The truth is that evolution needs the earth to be old, so assumptions have been selectively and arbitrarily chosen to make the earth appear old. Indeed, Gariépy and Dupre (1991, p. 216) have emphasized that “in all ancient rocks” it is impossible to know the initial abundance of uranium isotopes “since uranium is easily remobilized”; i.e., uranium minerals are transported by natural processes the effect of which is impossible to evaluate over the history of the earth.

One of the earliest attempts to derive the age of the solar system from meteoritic data, and by extension, the age of the earth, was described by Patterson (1956, p. 230), updated by Huey and Kohman (1973, pp. 3228–3229) using revised radioactive decay constants, and more recently described by Allegre et al. (1995, p. 1445). Patterson’s result of 4.55 ± 0.07 billion years was based on a whole-rock isochron (Patterson, 1956, p. 231; Faure, 1986, p. 312) for five meteorites. In fact, Patterson’s result was tied to lead isotope levels in Pacific Ocean sediments, so that ultimately assumptions sediment characteristics entered into Patterson’s analysis. The characteristics of the sediments

were predicated in turn on the supposed evolutionary history of the earth.

It has more recently been shown that meteorites do not always give evolutionary dates agreeing with those of Patterson (Gale et al., 1972, p. 57; Minster et al., 1982, p. 414). This has led to the assertion that, contrary to the assumptions discussed above and advocated by Patterson (1956, p. 235), lead isotopes were not mixed uniformly in the material from which the meteorites came (Tatsumoto et al., 1973, p. 1282; Abranches et al., 1980, p. 311; Gariépy and Dupre, 1991, p. 217). More recent assessments of ocean sediment data have shown that even these do not produce dates in agreement with the whole-rock isochron results (Zindler and Hart, 1986, pp. 507–508), leading to the assumption that there must be an as-yet undiscovered reservoir of lead isotopes within the earth’s interior. Despite the evident uncertainty in the assumptions of Patterson and his successors, Austin (2000, p. 103) has pointed out that in whole rock isochron dating these assumptions continue to be followed. One outcome of the unwarranted adherence to these assumptions is the emergence of new problems, such as the missing lead reservoir just mentioned (Gariépy and Dupre, 1991, pp. 216, 224). One suspects that this lead is missing in the same sense that the “missing links” are missing—they never existed but are seen as real in the evolutionary paradigm because of false conclusions generated by fallacious assumptions.

Because of the problems with dating by whole-rock isochrons, increased attention has been given to dating by generating mineral isochrons of individual mineral grains in rocks. Whereas a whole rock might not meet the assumptions previously discussed, it is felt that individual mineral grains might satisfy them. For example, the Allende chondrite has a number of inclusions high in Ca-Al content (CAIs). Certain CAIs from Allende produced a Pb-207/Pb-206 model age of 4.559 ± 0.004 billion years, relative to the Diablo Canyon troilite, and also formed a linear Pb-207/Pb-206 whole-rock isochron (Tilton, 1989, p. 259). Based on eight selected CAIs, Tera and Carlson (1999, p. 1877) have claimed that these CAIs produce a Pb-207/Pb-206 isochron age of 4.558 billion years, thus validating the mineral isochron results and upholding the dates derived by earlier investigators.

However, the Allende matrix and chondrules indicate a younger age, which Tilton (1989, p. 262) minimizes. In addition, Huey and Kohman (1973, p. 3227), by analyzing sixteen chondrites to assess the age of the solar system, concluded that the age is 4.505 ± 0.008 billion years, less than Tilton’s figure. Of course, the view can be taken that results of dating via various isotopes are converging on the true age of the earth. Minster et al. (1982, p. 414)

claim that the Rb-Sr whole-rock isochron age is 4.498 ± 0.015 billion years, a date including in its range of uncertainty that of Huey and Kohman (1973, p. 3227). A Sm-Nd whole-rock age of 4.21 ± 0.76 billion years has been obtained (Jacobson and Wasserburg, 1984, p. 141), but this discrepancy is explained by claiming that lack of significant variation of Sm-Nd within chondrites is responsible. Ar-Ar model ages for chondrites yield 4.48 ± 0.03 billion years (Gopel et al., 1994, p. 167), again a discrepancy. The discrepancies appear to be real. This would be expected since these results are based on the questionable assumptions discussed above.

The reliance on unprovable assumptions extends back to the earliest history of radiometric dating. Physicist Ernest Rutherford stated in 1904:

... for the first time suggested that an exact value [of the age of the earth] might be obtained from a knowledge of the helium content of uranium minerals ... [a]ssuming that no helium had escaped from the mineral from the time of its formation ... and relying upon the correctness of values for the rate of helium production per gram of radium and the ratio of radium to uranium for minerals wherein equilibrium has been reached... (Badash, 1968, p. 162).

In fact none of these assumptions has been proved for any radiometric method.

In 1905 B.B. Boltwood of Harvard achieved what has been described as “the first results of an accurate radioactive dating technique” using the uranium-lead method, an approach possibly “suggested privately to Boltwood by Rutherford” in correspondence now missing, or when the two scientists met at Yale University in that year (Badash, 1968, p. 163). Interestingly, “Boltwood published ... one paper on dating in 1907 and none more,” and even for Rutherford the subject of radiometric dating “was never more than something mildly interesting... Rutherford contributed original research papers on the earth-age problem at the rate of only one each decade, hardly evidence of a consuming interest” (Badash, 1968, p. 165).

Eventually English geologist Arthur Holmes took the mantle of Rutherford and Boltwood, “becoming the leading figure in obtaining wide-spread acceptance of radioactive dating techniques” (Badash, 1968, p. 166), along with T.C. Chamberlain bringing radiometric dating to the status of total acceptance in the non-creationist scientific community. Holmes presented his chronological methods and results in 1913 in his *The Age of the Earth*, and continued to refine his system through the 1930s and 1940s (Badash, 1968, p. 167). Most significantly, however, Holmes’ dates were essentially unchanged from the dates in vogue before

the discovery of radioactivity in 1896, let alone before the development of radiometric dating methods. In 1893, based on extrapolation of sedimentation rates, Reade proposed a date of 600 million years ago for the onset of the Cambrian.

In 1931, after Holmes had begun publishing his dates based on radiometric procedures, the observation was made, “Reade’s figures therefore show a rather remarkable agreement with what radioactivity teaches us now” (Schuchert, 1931, p. 21). Indeed, Schuchert believed that “stratigraphy ... would provide an important check upon radioactive results” (Burchfield, 1990, p. 205). In other words, despite the development of radiometric techniques, the dates have been changed only slightly. The rhetorical question has been posed,

What are we to make of all this? Is this some sort of amazing coincidence, or *have isotopic dates always been ‘checked’ for ‘correctness,’ first directly against this sedimentation-rate based column, and then against earlier dates that had been checked against this column?* [emphasis in original] (Woodmorappe, 1999, p. 13).

Because of this similarity of modern and pre-radiometric time scales, it has been observed, “The basic time scale has remained unchanged since 1879, when the Ordovician period was inserted between the Cambrian and Silurian” (Rowland, 1983, p. 80).

The radiometric age for the earth is ultimately based on geological assessments of the age of the earth’s rocks, and the age of the earth’s rocks is ultimately based on extrapolations of a uniformitarian deposition rate for the (conceptual) geologic column. This rate in turn was derived from Charles Lyell’s arbitrary assessment of the age of the Cenozoic (Milton, 1997, pp. 19–23, 76–77). In Lyell’s time the earth’s age was thought to be of the order of 100 million years at most. Lyell put the end of the Cretaceous and the beginning of the Cenozoic at 80 million years ago, not so drastically different from the 65 million years assumed today.

Indeed, Speiker (1956, p. 1803) asked the rhetorical question, “I wonder how many of us realize that the time scale was frozen in essentially its present form by 1840,” that is, soon after Lyell had achieved prominence. The Cenozoic starts with the Tertiary, and the Cretaceous-Tertiary boundary is a significant demarcation in the fossil record, evidently connected with transition from Flood activity to the beginning of a post-Flood regime (Whitcomb and Morris, 1961, p. 283; Fritzsche, 1998, p. 247). However, the basis for Lyell’s chronology was not science, but rather a long-standing animus of the Word of God in general, and the chronology of Moses in particular. Lyell in

fact altered data in an attempt to make his dating scheme appear reasonable (Taylor, 1987, pp. 82–83).

Lyell was by training a lawyer, or in the terminology of the time, a barrister, a fact formally acknowledged in the title of the memorial volumes published after his death (Lyell, 1881, vol. 1, p. iii; vol. 2, p. iii). Lyell's real "hidden agenda" was revealed in private correspondence with colleagues and friends. He wrote that he had "driven" the biblical Flood "out of the Mosaic record" (Lyell, 1881, vol. 1, p. 253). He also revealed his plan for undermining the Bible. He would not make a frontal attack against the Scripture, but "conceived the idea ... that if ever the Mosaic chronology could be set down [discredited] without giving offense, it would be in an historical sketch ..." (Lyell, 1881, vol. 1, p. 271). Lyell's reference to "an historical sketch" meant a work about "historical geology" written from an evolutionary viewpoint. His well known *Principles of Geology* was the fulfillment of this plan.

In sum, Lyell using his legal skills would manufacture an opus presenting the alleged evolutionary version of the earth's geological past. He would lead his readers to doubt the chronology of Moses and the Bible as a whole without directly attacking it and without even naming it. With his *Principles of Geology*, published when he was only in his early thirties, he succeeded no doubt beyond his wildest dreams.

We are not left to wonder if Lyell was conscious of his indirect, deceitful maneuver against the Bible. He employed the same tactic generally, rarely asserting dogmatically what he wanted readers to believe, but cleverly allowing them to reach his conclusions on their own. Indeed, he wrote of his use of this tactic to encourage belief in biological evolution: "I left this rather to be inferred, not thinking it worthwhile to offend a certain class of persons by embodying in words what could only be a speculation" (Lyell, 1881, vol. 1, p. 467). Darwin observed Lyell using this tactic:

Lyell is most firmly convinced that he has shaken the faith in the Deluge far more efficiently by never having said a word against the Bible than if he had acted otherwise. ... I have read lately Morley's *Life of Voltaire* and he insists strongly that direct attacks on Christianity (even when written with the powerful force and vigour of Voltaire) produce little permanent effect; real good seems to follow only the slow and silent side attacks (Himmelfarb, 1968, p. 387).

Conclusions

"Time" in general, and the age of the earth in particular, is the heart of evolutionary theorizing. Even more, the

conventional age of the earth is the ultimate foundation for other long chronologies, both inside and outside the solar system. The evolutionary age of the earth is ultimately based on nothing more than Lyellian uniformitarianism, radiometric claims notwithstanding, and Lyell's own agenda was to displace the biblical chronology with a secular one. Aside from the evidences that the cosmos does not have a long age, it is also true that discrediting an old age for the earth discredits old ages for the universe as well. Since the earth is not truly old, the billions-of-years chronology for the sun, the solar system, and the universe has no foundation. It is therefore no wonder that the humanist community has steadfastly rejected the concept of a recent creation for the earth. It is also clear that recent creationists must continue to defend the biblical doctrine of a young earth.

Along these lines, a group of creation scientists is currently looking at the theory and results of radioisotope dating. The preliminary conclusion is that substantial radioactive decay has indeed occurred in rocks. However, this decay has not taken place slowly over geologic ages. Instead, one or more episodes of accelerated decay with greatly shortened half-lives took place in the past, thus accounting for the array of radioisotopes allegedly requiring billions of years to form. According to Vardiman (2000, p. 4),

It has been suggested that these increased decay rates may have been part of the rock-forming process on the early earth and/or one of the results of God's judgment upon man following the Creation, that is, the Curse or during the Flood.

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