Methods of Teaching About Time

John M. Moore
Michigan State University

METHODS OF TEACHING ABOUT TIME

John N. Moore, M.S., Ed. D.
Professor Emeritus
Natural Science
Michigan State University

ABSTRACT

Megaevolutionary scenarios supposed to answer origin questions rest upon assumptions and estimates, and not measurements. Prehistoric time frame reductions are reviewed. Semantic confusion caused by megaevolutionists' misue of "age," "dating," "old," "record," and "young" are discussed.

INTRODUCTION

In teaching about origin questions the problem of time must be handled carefully. Time considerations are particularly important to any extended discussion of origin questions, such as the origin of the universe, of life on the earth, or of human beings. Actually the problem of time is the "Achilles heel" of all who raise inquiries about the distant past.

Whereas events of the past involving human activities can be documented commonly by means of some written records, no direct observations and no experiences by human beings are available regarding origin questions, such as the origin of the universe, of life on the earth, or of human beings. Therefore students should be helped to perceive clearly that all discussions of the distant past are after the fact.

Of course teachers and students should understand that proper, orderly scientific activity entails direct or indirect quantified studies of objects and/or events in the present natural environment of living scientists. However, scientists have no instruments to measure the age of the universe. Scientists have no instruments to measure the appearance of the first life on the earth. Further, scientists have no instruments to measure the age of any rock, any bone, or any artifact assumed to have been used by some postulated ancestor of present human beings. Scientists can only offer estimates of time before the present (B.P.), but never any measurements. These assertions should be explained.

BRIEF HISTORY OF AGE DETERMINATIONS

For more than one hundred years evolutionists like Charles Lyell and Charles Darwin have insisted upon very, very long periods of time for the scenarios that they offer as answers to origin questions. For many decades these men and their early followers in schools of most nations around the world have upheld the idea of an old earth and universe. They have tried to support their preconceived ideas by various means of estimating the age of the earth.

Different scientists have calculated various rates of change, such as the cooling of the earth, sedimentation, and accumulation of salt concentrations in the oceans. But none of these methods of calculation resulted in the great lengths of time evolutionists have contemplated. Also, fossils in sedimentary layers have been used to formulate a time scale (the so-called geologic column), but such efforts are dependent upon circular reasoning: the age of a fossil is the age of a rock layer, which is the basis of the age of a fossil.

IS TIME MEASURED OR ESTIMATED?

Upon careful analysis, teachers can show students that evolutionists must deal with imagined time periods about the past when they raise inquiries about origins of present objects and/or events. Students should realize that any contentions about immense periods of time before the present are made without any independently validated geo-

chronometers. The following are specific characteristics of a valid, reliable geochrono-meter:

a. Detection of change in some physical quantity
b. Accurately sensitive to measure time interval in question
c. Known zero setting of the instrument
d. Instrument runs at a constant rate
e. Instrument has not been reset

Not one of these characteristic requirements can be associated with immense periods of past time. Specifically, geochronometers can only be used in proper, orderly scientific manner with regard to present, physical materials in the natural environment. Therefore students should always be apprised of the necessity of recognizing the difference between measurements of actual objects and/or events during the lifetime of a scientist, and the estimated time considerations about things of the past, which are totally beyond any proper check or confirmation by any known instrumentation.

To gain significantly increased estimates of time B. P., in recent years, evolutionists have employed radiometric decay of certain elements as a basis for estimating time. The most commonly used radiometric methods for estimating the age of the earth involve radio-active decay of uranium to lead, potassium to argon, and rubidium to strontium. By such methods of decay analysis the often quoted "age" of the earth is given as 4.5 billion years B. P. (Carbon-14 analyses are limited to organic materials containing carbon, and are not directly useful in deriving time estimates of rocks.)

BASIC FACTORS IN AGE ESTIMATIONS AND THEIR APPLICATION

This short paper is not the place to describe those methods in detail, but I want to make explicit an effective way to open any discussion of estimates of the age of the earth. I have found it is imperative to focus student attention upon the questionable assumptions that are basic to radiometric methods, as follows:

a. Each method is based upon the assumption of a constant rate of decay.
(There is no way to know how valid this assumption is over the immense lengths of time imagined by evolutionists. Furthermore, evidence is available that rates involved in natural processes are changeable.)

b. Each method is based upon the assumption that no decay elements were present when any rock sample was formed.
(This is impossible to know as nearly all lead might be considered primordial, and some argon gas might have escaped. In fact contamination by water transported uranium salts and by atmospheric argon is possible so that both methods of time estimation are subject to correction factors.)

c. Each method is based upon the assumption that radioactive decay occurs in a closed system.
(No one knows the initial or primeaval ratios of elements involved in radiometric methods. Furthermore, the concept of a closed system is ideal and basically nonexistent in the natural environment, as is brought out by Dr. Henry M. Morris in his discussion of more technical limitations of radiometric methods.)

Since each of these assumptions underlying radiometric time estimates is open to challenge, evolutionists certainly do not gain any absolute dates about the distant past. The only objective facts from empirical radiometric methods are ratios of certain elements found in present rocks. Teachers are obligated to remind students that no one knows initial or primeaval conditions; and, therefore, are obligated to remind students that evolutionists must interpret identified present ratios of elements on the basis of certain questionable assumptions. Only estimates of time B. P. can be gained from radiometric methods.

In academic freedom teachers can teach about ideas of old age, but to be fully responsible they should also teach about ideas of young age. There are excellent, scientifically based methods for estimating that the earth and universe are relatively young. Again, the scope of this paper cannot include an in depth itemization of facts, but references by Dr. Thomas Barnes and Dr. Harold Slusher do contain excellent resource material for teachers.

In brief example, the magnitude of the magnetic moment of the earth has been observed for approximately 150 years to be decaying at a steady rate. Using reasonable assumptions and extrapolations back in time, a maximum "age" of the earth is estimated to be only

10,000 years B. P. Likewise accumulation of cosmic dust on the surface of the earth and in the oceans and on the moon; concentrations of nitrates in the oceans, and the amount of accumulated helium in the atmosphere of the earth can be used to estimate an approximate "age" of 10,000 years B. P. Similarly evidence for a possible young "age" of the universe can be gained from studies of star clusters and from studies of short period comets.

Actually, estimates of the age of the earth and the solar system vary widely over a range as great as 100 years to 4.5 billion years, and each investigator must make a decision as to which method of estimation is most reasonably accurate. Students, in turn, should realize that, most often, if an individual thinks that an old age is most logical, the methods that yield an old age will be employed. Conversely, if an investigator holds that a young age is most reasonable, then methods that yield a young age will be utilized.

It is noteworthy that the time factor in many prehistoric sequences has tended to be reduced rather than extended. The rule of reduction is almost unbroken when the following severe cuts can be listed; a date (i.e., estimate) of 10,000 years is reduced to 3,000 years; a date of 18,000 years is reduced to 10,000; a date of 1,000,000 is reduced to 50,000. The Magdelanian culture that once was assigned the dates from 50,000 to 18,000 years is now estimated to have been 15,000 to 8,000 years B.P.

Other examples of reduction could be cited with respect to Carbon-14 estimates about Niagara Falls, desert lakes, and Neolithic cultures. The periods supposedly occupied by Paleolithic Man, Mesolithic Man, and Neolithic Man were once used to derive an estimated sum of the time involved for all such peoples. It is now recognized, however, that various ages may have been contemporaneous, just as the Indians of North America were still in a so-called Stone Age when the Industrial Revolution began in Europe, and some Australian aborigenes were still in a Stone Age when the first atom bomb was dropped on Hiroshima.

CONFUSING WORDS AND TERMS

Underlying all of the above is the crucial need for careful communication to students of the great danger of semantic confusion in the terms used to convey connotations of time during discussions of origin questions. Attention should be given, at least, to 12 key "cover words" so commonly involved in confusions of language regarding origin of the universe, of life on the earth, and of human beings. For example:

1. Advanced: Used by those attempting to show relationships between and among living and fossil organisms, but usually without any criteria or any demonstration of genetic lineage.

2. Age: When used with specific numbers the connotation of some careful measurement is conveyed.

3. Column: A term used in geology to convey connotation of reality even though no physical referent exists with regard to the traditional "geologic column."

4. Date, Dating: These terms are used with respect to rocks or events of the past to convey the connotation of a degree of accuracy that commonly results from specific measurements by manmade chronometers. Records of the date of manmade objects, such as the first cotton gin or the first automobile are available, but dates of rocks are only estimations.

5. Historical: Commonly the term refers to activities of human beings so that the term "pre-historical" has a clear meaning. Misleading use by megaevolutionists with respect to imagined geologic events conveys connotation that real objects and events were involved in the presumed past eras of time. Most properly all imaginative narratives of geologists are pre-historical.

6. Measurement: Too often this word is used when the term "estimate" would be more accurate. Scientists have no instruments to measure the size or the age of the universe. Scientists have no instruments to measure the age of the earth. In each instance scientists are limited to stating estimates based upon particular interpretations.

7. Old: Too often employed without any clear criteria or reference point in time.

8. Primitive: Usually no criteria are used by authors who have a prior commitment to an evolutionary outlook. The term "lower" is often used in conjunction with primitive to convey connotation of lesser development than that of present organisms.

9. Record: This term is usually associated with the activities of human beings; so when evolutionists use the terms "geologic record" or "fossil record," they improperly convey the connotation of actually witnessed occurrences. Evolutionists can write and speak accurately only of the existence and description of rock layers and fossil materials.

10. Sequence: When megaevolutionists use this term in discussions of rock layers they convey connotation of known cause-effect relationship beyond any exactness of observation of formation of rock layers. When writing or speaking about rock layers or fossils in sequence, megaevolutionists regularly commit the fallacy of post hoc ergo propter hoc, which is the logical error of reasoning that something is the cause of something else merely because the former is presumed to be earlier in time.

11. Trace: A term used for presumed lineages of plants and/or animals that are only plausible. Such use of this term covers proper distinction between speculated lineages and actual genetic matings analyzed by human beings employing technical detection equipment.

12. Young: Also used too often without any clear criteria or reference to point in time.

In my book on How to Teach Origins (Without ACLU Interference), I explain many other "cover words." Teachers should be certain to help students become alert to the too common semantic confusion in the extant writings about origin questions involving these terms.

And above all teachers should understand that protection of their academic freedom and implementation of their public trust responsibility will be facilitated as they remember that they can teach about ideas of old age, and that they should also teach about ideas of young age.

REFERENCES

1. Anderson, J. Kerby and Harold Coffin, Fossils in Focus, Zondervan Publishing House, Grand Rapids, MI, 1977.

2. Barnes, Thomas G., Origin and Destiny of the Earth's Magnetic Field, Revised and Expanded Edition, Institute for Creation Research, El Cajon, CA, 1983.

3. Gish, Duane T., Evolution: The Challenge of the Fossil Record, Creation-Life Publishers (Master Books Division), El Cajon, CA, 1985.

4. Moore, John N., How to Teach Origins (Without ACLU Interference), Mott Media, Milford, MI, 1983.

5. Morris, Henry M., Scientific Creationism (Public School Edition), Creation-Life Publishers (Master Books Division), El Cajon, CA, 1974; also Scientific Creationism (General Edition), Creation-Life Publishers (Master Books Division), El Cajon, CA, 1985.

6. Slusher, Harold S., Critique of Radiometric Dating, Institute for Creation Research, San Diego, CA, 1973.

7. Slusher, Harold S. and Thomas P. Gamwell, The Age of the Earth, Institute for Creation Research, San Diego, CA, 1978.

8. Slusher, Harold S. and Stephen J. Duursma, The Age of the Solar System, Institute for Creation Research, San Diego, CA, 1978.

9. Slusher, Harold S., The Origin of the Universe, Institute for Creation Research, San Diego, CA, 1978.

10. Slusher, Harold S., Age of the Cosmos, Institute for Creation Research, San Diego, CA, 1980.