

## TEACHING THEORIES ON ORIGINS: AN APPROACH THAT WORKS

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### ABSTRACT

An effective approach to teaching about theories on origins defines the two general concepts, gives the requirements of a scientific theory, and examines the direct scientific evidence found in the fossil record to see if it supports common ancestry of all life or the sudden appearance of complete organisms. No legal objection on constitutional grounds is possible since religious doctrine is not promoted or even discussed. "Key words: Abrupt appearance, dating, evolution, fossils, origins, science teaching."

### INTRODUCTION

There are only two basic concepts on how life on Earth originated: It either evolved from a common ancestor or various types of organisms first appeared abruptly for some reason. The crust of the Earth contains hundreds of billions of fossils that indicate the characteristics of past life. They provide direct scientific evidence relating to the two theories on origins. There is nothing unconstitutional about public schools impartially presenting the scientific evidence found in the fossil record.

This paper describes an approach to teaching about theories on origins that avoids the problems previously encountered by creationists when they attempted to correct the unconstitutional situation in public education where only evolution was taught and all data that contradicted it were censored. This new secular approach defines the two theories on origins, explains the scientific method, and presents the relevant scientific data in an unbiased manner, allowing students to make up their own minds about which theory better fits the data.

### WHAT IS SCIENCE?

Although evolution is taught almost universally as a fact, philosophers of science say that it does not even qualify as a scientific theory. For a postulated explanation of some natural phenomenon to be considered a scientific theory, it must meet certain requirements.

First, the idea must be about some repeatable process, and, second, the process must be observable, either directly or indirectly. Unique, one-time-only events cannot be repeated, so they are not science. Third, the idea must be repeatedly testable, and, for the test to be valid, it must be capable of disproving the idea.

Another important aspect of a scientific theory is that it must be held tentatively and abandoned if it flunks a single valid test, or it must be patched up to be made consistent with new data. If a theory must be repeatedly modified to make it fit the data, this certainly reduces confidence in it.

The requirements of a scientific theory are much debated by philosophers of science, but there is widespread agreement on the testability requirement. Professor Karl Popper, called the greatest philosopher of science who has ever lived, gained acceptance of the testability criterion. Herman Bondi has said: "There is no more to science than its method, and there is no more to its method than Popper has said." (1)

Unfortunately, science students and many science teachers are virtually unaware of what constitutes true science. Yet it is absolutely imperative that students have a clear understanding of the scientific process before they study about theories on origins. Perhaps there is no harm in elementary schools teaching about scientific principles and laws that are well established and about which there is no controversy. But it is both bad educational

practice and quite unethical for schools to teach a theory that is highly controversial without first explaining the scientific method and presenting competing theories along with the scientific data in an unbiased manner. It is inexcusable for schools to violate these rules when handling theories on origins. There certainly could be nothing unconstitutional about adhering to the rules of science--especially in defining the two theories on origins.

#### THE THEORIES DEFINED

The theory of evolution states that all living things have had a common ancestor, that is, everything evolved from a single cell. Three possible explanations have been offered to account for evolution. The first, and most common, is a purely mechanistic one, which relies on natural processes alone. The second explanation is theistic evolution, and a third could be some unknown, perhaps yet-to-be discovered, process.

The purely mechanistic explanation involves the spontaneous generation of the universe and the spontaneous generation of the first living cell. The simplest living cell that will reproduce itself is estimated to contain about a trillion bits of data in its genes. That is equivalent to the number of letters in all of the books in the world's largest library. The first living cell containing that much data is supposed to have organized itself from non-living chemicals. Then that first cell began making mistakes in reproduction (mutations) which were acted upon by natural selection to weed out the less fit producing the millions of species on the Earth. An alternative widely accepted concept is punctuated equilibria. It involves large jumps or rapid bursts of evolution, abruptly producing new species, followed by long periods of stasis. Dr. Stephen Gould of Harvard, coauthor of this theory candidly admits why he abandoned gradualism: "The fossil record offered no support for gradual change. New species almost always appeared suddenly in the fossil record with no intermediate links to ancestors in older rocks of the same region." (2)

The abrupt appearance theory, on the other hand, holds that many different types of living organisms first appeared on Earth with every organ and structure complete. The same three possible explanations can be used for this theory: purely mechanistic, theistic, and unknown. However, all imply pre-existing intelligence before life abruptly appeared on Earth. The mechanistic explanation could involve the arrival of life on Earth from elsewhere by spaceship. No specific time span is required for the abrupt appearance theory, and students should evaluate all available scientific evidences objectively without making uninformed, preconceived judgments about time.

#### ARE ORIGINS THEORIES SCIENTIFIC?

Both theories of origins pertain to historical, unrepeatable processes or events, so neither qualifies as a truly scientific theory. Evolution theory cannot be tested because, according to its proponents, it proceeds too slowly to be observed, and it would take hundreds of thousands of years to convert one species into another. As evolutionist Theodosius Dobzhansky stated:

These evolutionary happenings are unique, unrepeatable, and irreversible . . . The applicability of the experimental method to the study of such unique historical processes is severely restricted before all else by the time intervals involved, which far exceed the lifetime of any human experimenter. (3)

In 1980 the British Museum stated in a display that Darwinism was not testable science. But regardless of the fact that neither theory of origins meets the criteria of a scientific theory, both can be compared against pertinent scientific data to see which is the more reasonable explanation of origins.

#### THE FOSSIL RECORD--DIRECT SCIENTIFIC EVIDENCE

There are two kinds of evidence that permit the evaluation of these two theories: direct and indirect. The only direct evidence that relates to how life came about is found in the fossil record. The remaining evidences include embryology, homology, and serology. These are only indirect evidences which can be interpreted to support either theory.

Geologists believe that the order in which sedimentary rocks are found and the fossils they contain give a picture of the history of the Earth. Most of the Earth's surface is covered with rocks formed when sediments deposited mostly under water became cemented together. These rocks, up to 10 miles deep, contain uncountable billions of fossils. There is, certainly, no scarcity of fossils. In fact, the world's museums contain over 100 million fossils (there are 250,000 living species). These fossils tell us about the characteristics of once-living animals and plants. Students can objectively evaluate the theories on origins by comparing them against scientific data contained in the fossil record then decide which one more closely fits the facts.

## AGE OF EARTH AND GEOLOGIC COLUMN

Before discussing fossils, it is necessary to review the concept of historical geology, which is closely associated with evolution and involves the theme of this conference: The Age of the Earth. The treatment of time is extremely important. If the wrong approach is used on this issue, the proponents of censorship will be quick to use it as a red herring to detract attention from the incontestable direct fossil evidence that gives no support for common ancestry evolution. Through years of experience, the author has found that the only effective approach to the time issue is good old reliable open academic inquiry. Public schools are obligated to present all relevant evidence objectively and not just data selected to favor one preconceived idea about time. No one should fear an open airing of all the facts but, for some reason, evolutionists cannot face them. When evolutionists fight for censorship of time data, they place themselves in the category of the flat earthers--a term they love to apply to creationists.

The dating of prehistoric events is too complicated for public school students, especially those in lower grades, to comprehend. So it is best to begin by noting that scientists have not found any reliable dating technique and defer a discussion of dating until the fossil evidence has been examined to see which theory it supports. Once students discover that there is no fossil evidence for common ancestry of life, they are much more receptive to an objective treatment of the time issue. In discussing the fossil record, use the latest assumed time scale for the purpose of discussing the Geologic Column.

About 100 years ago, after observing the rocks in England, Scotland, and France, men from Great Britain put together a hypothetical arrangement of rocks called the Geologic Column. Nowhere on Earth do the rocks actually all appear in this sequence. Only small segments of the column are found at any one location. Since its inception, the only significant change in this column has been in the time scale. During the last 100 years the estimated age of the Earth, on the average, has doubled every 15 years; but the Earth is currently estimated by most (not all) geologists to be about 4.6 billion years old.

## CAMBRIAN EXPLOSION

The earliest clearly discernible fossils are found in the Cambrian rock strata. The billions of fossils found there are all of highly complex forms of life. Rocks below the Cambrian are mostly void of indisputable fossils, although what are believed to be evidences of single-celled organisms are found below the Cambrian. The absence of Precambrian fossils has been characterized by paleontologists as the major mystery of the history of life. (4) Charles Darwin was painfully aware of this when he wrote: "To the question why we do not find rich fossiliferous deposits belonging to these assumed earliest periods prior to the Cambrian system, I can give no satisfactory answer." (5) Today, the picture has not changed according to prominent evolutionists: "Geologists have discovered many unaltered Precambrian sediments and they contain no fossils of complex organisms." (6) So, in the Cambrian rocks is found a sudden explosion of billions of very complex creatures, representing all major phyla in the animal kingdom with no ancestors leading up to any of them. There is a huge gap between the single-celled protozoa and these highly complex creatures. Likewise, there is no evidence of the development of a single cell from inanimate matter.

## INVERTEBRATE TO VERTEBRATE

One of the invertebrates such as a sea squirt, clam, or starfish is supposed to have developed a backbone and turned into a fish, but there is no fossil evidence of this transformation. Gould confesses: "All paleontologists know that the fossil record contains precious little in the way of intermediate forms; transitions between major groups are characteristically abrupt." (7) Even in imagination exercises, evolutionists find it difficult to conceive how creatures with hard shells could have converted them into the skeleton of a fish. Fully developed vertebrates (heterostracan fishes) have been found in Cambrian rocks. (8)

## FISH TO AMPHIBIAN TO REPTILE

The next transition is supposed to be from the fish to amphibian, but no fossils are found showing a gradual development of the fins of the fish into the limbs and pelvic girdle of the amphibian. The amphibian is supposed to have then changed into a reptile, but, again, no fossil evidence exists showing this transformation. (9) Herds of many types of dinosaurs are found in the fossil record--some with spikes on their tails and plates on their backs, and some with spikes on their heads--but there is no evidence showing gradual transition from one to the other. Of course, the evidence for this supposed transition is no different than for any other. Gould admits that this has been known for some time: "The extreme rarity of transitional forms in the fossil record persists as the trade secret of paleontology." (10)

## REPTILE TO BIRD

According to evolution theory, some reptile converted its scales into feathers and learned to fly. The fossil bird Archaeopteryx is presented as evidence of this transition because it had teeth, claws on the wings, and other so-called reptilian features. It appeared to have perfect feathers like those on modern birds. As Dr. Colin Patterson of the British Museum of Natural History wrote about the total lack of transitional forms:

I will lay it on the line--there is not one such fossil for which one could make a watertight argument. The reason is that statements about ancestry and descent are not applicable in the fossil record. Is Archaeopteryx the ancestor of all birds? Perhaps yes, perhaps no: there is no way of answering the question. It is easy enough to make up stories of how one form gave rise to another, and to find reasons why the stages should be favoured by natural selection. But such stories are not part of science, for there is no way of putting them to the test. (11)

Other ancient birds had teeth, and some did not. This is true of every subclass of vertebrates from fish to amphibians, to reptiles, to birds and mammals; some have teeth, and some do not. So the presence of teeth could have nothing to do with reptilian ancestry. And there are nine families of living birds that have claws on their wings. The young hoatzin of South America has claws on its wings. The touraco of Africa has claws on its wings and the ostrich also has claws on its wings--but no one has suggested that these birds are reptiles on their way to becoming birds.

Feathers are very intricately designed with thousands of tiny barbules to hook their parts together and prevent air leakage. They are completely different from scales, and they do not get their stimulus for development from the same layer of skin as do scales.

In 1977 scientists discovered bones identical to those of modern birds in rocks classified as Upper Jurassic, the same as that in which Archaeopteryx was found. Thus, they now say we will have to look for the ancestors to modern birds in rock much older than that in which Archaeopteryx was found.

## FLIGHT

The amazing feature of flight arose four times separately in insects, reptiles, birds, and mammals. Insects are not believed to have learned to fly and then turned into flying reptiles, birds, and mammals. Each of these four types of creatures is supposed to have acquired this marvelous feature independently. The fossil record shows the sudden appearance of fully developed flying insects in the form of dragonflies and cockroaches. Fully developed feathered birds and a fully developed flying mammal in the form of a bat, having a skeleton identical to that of modern bat, appear in the fossil record with no intermediate forms connecting them to a non-flying ancestor.

## REPTILE TO MAMMAL

George Simpson states that paleontological investigations have been unable to discover transitional forms leading to all 32 orders of mammals, and furthermore:

This regular absence of transitional forms is not confined to mammals, but is an almost universal phenomenon as has long been noted by paleontologists. It is true of almost all classes of animals, both vertebrate and invertebrate. (12)

## APE TO MAN

Much has been speculated about how Homo sapiens might have evolved from some ape-like ancestor. All primates, however, including tarsiers, new world monkeys, old world monkeys, anthropoid apes, and man appear abruptly in the fossil record. On the final Walter Cronkite Universe television program, world-famous Richard Leakey said that he would have to make a large question mark if asked to draw man's family tree. He said that the fossil evidence was too scanty to indicate man's evolutionary family tree, and he did not think we would ever be able to know it.

## ANY EVIDENCE FOR COMMON ANCESTRY?

Most people who consider the subject of origins with an unbiased mind conclude that the direct scientific evidence does not support the theory of gradual evolution. This is even admitted by evolutionist experts who state that it must be accepted on the basis of only indirect evidence. Dr. David Raup writes:

Instead of finding the gradual unfolding of life, what geologists of Darwin's time and geologists of the present day actually find is a highly uneven or jerky record;

that is, species appear in the sequence very suddenly, show little or no change during their existence in the record, then abruptly go out of the record. (13)

Francis Hitching confirms this: "But the curious thing is that there is a consistency about the fossil gaps: the fossils go missing in all the important places." (14) Why should not all students be allowed to hear this important information?

#### CONCLUSION

Since the theory of evolution is not backed by direct scientific evidence, it should receive no more emphasis than the theory of abrupt appearance. It seems reasonable to conclude that both theories should be given impartial representation in public education institutions.

A common objection to presenting any theory except evolution in public schools is that teaching it involves teaching religion. Promoting religion in public schools is agreed by all to be prohibited by law, although it is perfectly legal to teach about religion. However, presenting the abrupt appearance theory of origins in no way involves the teaching of religion or the interpretation of any religious document. When theories of origins are taught about in the manner presented in this paper there is rarely any controversy about the approach.

This paper follows the format and approach of an audio-visual 35-mm slide presentation used in many public schools throughout the United States since 1979. It is available from L. Sunderland, 5 Griffin Drive, Apalachin, New York 13732.

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