

A Critique of the Notion, *Evolution AS Science*
As Found in *Biology* (Miller/Levine), Prentice-Hall, 2000 (5th edition)
A California State Approved Life Science Textbook
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The entire notion of *Evolution AS Science* is based on the assumption that all things in nature are of natural phenomena: "Is there [a] way to explain the world around Us? One way is to assume that all events in nature have natural causes [p.6]." When it comes to showing that evolution is the process used by nature to form life and all its diversity (p.269-) science is invoked, with its very methodology (p.7) modified to accommodate both the assumption of natural causes and the conclusion of an evolutionary process.

To be true science the methodology requires observation and stating a problem, forming and testing a hypothesis, recording and analyzing of data, forming a conclusion and replication of the work done in the original research (p.7). However, to declare evolution to be science (p.269-) something must be added, while at the same time something else subtracted from the methodology. And, of course, in all of this, an *objectivity of the premise* must be sacrificed!

A basic *assumption* of natural causes (Naturalism) must be *the* premise (and it must be vigorously promoted), while at the same time the process of *replication*, (a most essential element of the scientific method) must be compromised. In order for an activity to be considered scientific (and therefore *science*), it must be possible to replicate (repeat) the observations of the experiment or activity previously engaged.

Since the *Molecules to Man* (Classical Evolution) process has never been *observed* and can never be *replicated* then what remains of the vaunted Scientific Method when it comes to evolution is the forming and testing of hypotheses (classical *speculation*), recording and analyzing data (based solely on speculation and naturalistic assumptions), and the drawing of conclusions (forming more speculation)! In that light one must ask, "*How can evolution be considered science?*"

As the *Biology* textbook is quick to assert, "[An] important characteristic of the scientific spirit is the refusal to accept an explanation without evidence or proof [p.7]." And as the previous textbook used at this grade level asked, "Are these speculations reasonable?" So, let us see where this speculative methodology leaves us.

What follows is an emphasized (*italicized and underscored*) version of the textbook's discussion of "The First Signs of Life," beginning on page 342, since the fundamentals of the Creation/Evolution debate centers around the *Origin of Life* and the *Creation of the heavens and the earth*. And since we are looking for observation, experimentation, and replication, a good place to start is with the classical and always cited Miller/Urey experiment. Here is how the textbook presents it:

Experiments performed in 1953 by American scientists Stanley Miller and Harold Urey provide a fascinating glimpse of the ways in which complex molecules may have first appeared on the young Earth. Miller *approximated* the Earth's early atmosphere [*assumed*] by mixing methane, water, ammonia, and hydrogen in a flask. He then *simulated* the energy from sunlight and lightning by triggering electrical sparks in the flask.

In just a few days, a "soup" of molecules formed including urea, acetic acid, lactic acid, and several amino acids. Miller's original guesses about the Earth's early atmosphere were probably incorrect, and therefore his experiments have been repeated many times using different compounds. Remarkably, these experiments also have produced organic compounds. In fact, one of Miller's most recent experiments (in 1995) produced cytosine and uracil, two of the bases found in DNA and RNA.

None of these experiments have produced life. However, they have shown how mixtures of the organic compounds necessary for *life could have arisen from simpler compounds* present on the primitive Earth. This laboratory evidence is supported by the discovery of organic compounds in meteorites that have crashed to Earth from space. In 1969, in fact, one large meteorite was found to contain each of the five bases found in DNA and RNA. This suggests that such compounds can indeed form in the absence of life, and

that *meteors may even have carried organic compounds* onto the Earth's surface [a GRAND SPECULATION indeed!].

The Formation of Complex Molecules

A collection of bases, amino acids, and other organic molecules, however, is certainly not life. What might have happened next? Russian scientist Alexander Oparin and American scientist Sidney Fox have shown that the organic soup on the early Earth would not necessarily have remained a mix of simple molecules. In the absence of oxygen, for example, amino acids tend to link together on their own to form short protein chains. Other compounds can link together to form simple carbohydrates, alcohols, and lipids.

But there's more. Collections of these molecules tend to gather into tiny round droplets. Some of these droplets grow and even divide to form new droplets. Others can break down glucose. These droplets are not living cells, but they do suggest ways in which the first cells might have begun to form.

The First Living Systems

We are still left with the difficult task of explaining how the complex system of protein synthesis evolved from this soup of organic molecules. Today, DNA can make proteins only with the help of several enzymes and several kinds of RNA. And DNA can replicate itself only with the help of another batch of enzymes. But these enzymes and RNA are assembled by DNA! Can you see the problem? No part of this system can exist without the others. So how could the whole thing have gotten started in the first place? No one knows for certain, but scientists have offered some interesting hypotheses [suggestions/speculations].

G. Cairns-Smith and J. Bernal note that amino acids and nucleic acids (DNA and RNA) stick to the repeating structures of clay crystals. Held together in a regular pattern on clay crystals, these molecules combine to form proteins and polynucleotides. Other researchers note that some kinds of RNA can join amino acids into protein chains without help from protein enzymes. What's more, some forms of RNA can copy themselves and can "edit" other RNAs, adding and deleting nucleotides.

These experiments support a hypothesis first suggested [*speculation*] in 1968 by Francis Crick and Leslie Orgel. Crick and Orgel suggested that RNA, rather than DNA, functioned as life's first information storage system. According to this hypothesis [*speculation*], life based on RNA could have started when RNA fragments began to copy and edit themselves and assemble proteins. Over time, these RNAs could have evolved to the point where they produced protein enzymes that took over the work of bringing about chemical reactions. Later, the job of storing genetic information could have similarly been passed on to DNA. In this way, over millions of years, RNA, DNA, and proteins could have evolved into the complex system that characterizes life today.[!!!]

The authors of this 2000 edition have become quite sophisticated (and increasingly subtle) in their speculative portrayals in attempting to show that *evolution is science*. In an earlier (1986) textbook, different authors were more revealing (and relatively more candid!) in their discussion of life's origin. Notice, the characters remain the same!

Are [these] speculations of origins reasonable? What would happen if a simulated primitive atmosphere were exposed to an energy source? In 1952, Stanley Miller and Harold Urey, at the University of Chicago, decided to find out. Using apparatus like that shown in figure 10.30, they passed electric sparks through ammonia, methane, water, and hydrogen. The electric sparks simulated lightning, and the gases were like those on the earth long ago. Nothing else was added. When the substances were analyzed later, it was found that some simple amino acids had been produced.

That experiment has been verified. Other investigators have used ultraviolet light instead of electric sparks. They have obtained the same kind of results. Since those first experiments, researchers have synthesized many other kinds of organic molecules, including nucleotides and carbohydrates.

Do those experiments suggest a way in which life might have originated in the distant past? Yes, but it is still a long way from complex molecules to even the simplest of known organisms. How, then, might those simple organisms have arisen?

THE FIRST CELLS WERE PROBABLY HETEROTROPHS

As time went by [Watch out for the "Once Upon A Time" scenarios!], it seems likely that some amino acids in the "organic soup" formed polypeptides and proteins. Other simple *organic molecules also might have formed* larger, more complex molecules. Eventually, some of the larger *molecules might have combined* into clusters, and the clusters might have merged to form a primitive cell.

That is a far-reaching assumption. The formation of primitive cells from clusters of organic compounds is more difficult to explain than the formation of the organic compounds themselves under the earth's primitive conditions. The assumption is that at first, large organic compounds in the organic soup were grouped together at random, forming many types of aggregates. Those different types of aggregates might have competed with each other for the organic molecules in the soup that were needed for growth and reproduction. In that competition, some aggregates *would have had* a composition and an organization that made them more successful than other aggregates. Eventually, natural selection crowded out the less successful ones.

Scientists have proposed different models for a pre-cell. A Russian scientist, A.I. Oparin, suggested that *pre-cells might have been* like coacervates. Coacervates are clusters of proteins or proteinlike substances held together in small droplets within a surrounding liquid, as shown in figure 10.31a. Sidney Fox, of the University of Miami, thinks pre-cells were more like microspheres, cooling droplets from a hot water solution of polypeptides. Each microsphere forms its own double-layered boundary as it cools.

The ancestors of *primitive cells could easily have been* of several kinds. Different kinds, with different capabilities, might have come together. In that way some of the *features could have developed* that are seen today in the simplest heterotrophic bacteria. The *cell ancestors formed* a membrane that separated them from their external world. They began to grow by using compounds in the surrounding environment for spare parts and energy. They evolved a process of reproduction, producing others like themselves.

So, based on all of the "speculation" and "far-reaching assumptions," the numerous levels of "might have," we are now able to conclude that evolutionary ancestors formed, they began to grow, and they evolved. . . . In that light, we are certainly entitled to ask, "Is the belief in evolution an objective science?"

In the teaching assignment I have held for the past few years, teachers are responsible for all high school subjects including the physical and life sciences as well as world and American History. In this capacity, I have the responsibility to assess curriculum and materials over a broad range of subjects and levels.

One of the things I have grown to appreciate when it comes to the matter of evolution in the textbooks is the more honest and straightforward manner used by history textbooks as opposed to the pompous, subtle and often obscure language employed by the authors of science texts. One suspects that, at least in this area of concern, science writers have an agenda to promote, while the authors of history textbooks tend to be more open-minded.

A case in point would be the accurate description of the impact that a belief in evolution has had on society over the past two hundred years, depicted in "The Challenge of Science" and "the Darwin Furor" sections in Prentice Hall's *World History: Connections To Today/The Modern Era* (pp.154-155, 1999 edition).

THE AGE OF THE EARTH. The new science of geology opened disturbing avenues of debate. In his *Principles of Geology* (1830-1833), Charles Lyell offered evidence [Speculative presumption] to show that the Earth had formed over millions of years. *His successors concluded* [hypothesized] that the Earth was at least two billion years old and that life had not appeared until long after Earth was formed. These ideas did seem [seem?!] to agree with biblical accounts of creation.

Archaeology added other pieces to an emerging debate about the origins of life on Earth. In 1856, workers in the Neander valley of Germany accidentally uncovered the fossilized bones of *prehistoric* [assumption] people, whom scientists called Neanderthal. Later scholars found fossils of other *prehistoric* [assumption] humans and animals. These pioneering archaeologists had limited evidence [open to interpretation based on assumptions] and often drew mistaken conclusions. But as more discoveries were made around the world, scholars developed *new ideas* about early human life.

The Darwin Furor

The most disturbing new idea came from the British naturalist Charles Darwin. In 1859, after years of research [and a great deal of speculation], he published *On the Origin of Species [By Means of Natural Selection, or the Preservation of Favored Races in the Struggle for Life]*. Darwin *argued* that all forms of life had evolved into their present state over millions of years. To explain the long, slow process of evolution, he put forward his theory of natural selection.

THEORY OF NATURAL SELECTION. Darwin adopted Malthus's idea that all plants and animals produced more offspring than the food supply could support. As a result, he said, members of each species constantly competed to survive. Natural forces "selected" those with physical traits best adapted to their environment. For example, short-necked giraffes, unable to reach the tender leaves at the top of trees, would starve. Longer-necked giraffes would survive and pass the trait on to their offspring. This process of natural selection later came to be called "survival of the fittest."

Over time, said Darwin, natural selection would give rise to entirely new species. He applied this theory [speculation/hypothesis] to humans. "Man," he declared, "is descended from some less highly organized form." He claimed that humans, like all life forms, were still evolving.

THE UPROAR. Like the ideas of Nicolaus Copernicus and Galileo Galilei in earlier times, *Darwin's theory ignited a furious debate between scientists and theologians*. To many [most] Christians, the Bible contained the only true account of creation. It told how God created the world and all forms of life in six days. Darwin's theory [speculation/hypothesis], they argued, reduced people to the level of animals and undermined belief in God and the soul.

While some Christians eventually came to accept the idea of evolution, others [most] did not. Controversy over Darwin's theory [notion] has continued to the present day.

SOCIAL DARWINISM. Darwin himself never promoted any social ideas. However, some thinkers used Darwin's theories [ideas] to support their own beliefs about society. Their *ideas* became known as Social Darwinism, applying the idea of survival of the fittest to war and economic competition. Industrial tycoons, argued Social Darwinists, earned their success because they were more "fit" than those they put out of business. War brought progress by weeding out weak nations. Victory was seen as proof of superiority.

Social Darwinism encouraged racism, the belief that one racial group is superior to another. By the late 1800s, many Europeans and Americans claimed that the success of western civilization was due to the supremacy of the white race. Karl Pearson, a British mathematician, wrote:

"History shows me one way, and one way only, in which a high state of civilization has been produced, namely the struggle of race with race, and the survival of the physically and mentally fitter race."

By the end of the century, such ideas would be used to justify the global expansion of European power [And the likes of Adolph Hitler and Nazi Germany!].

IN THE FINAL ANALYSIS

It is not a difficult task to show the fallacy — and the dangers — of evolution from within evolutionary-biased textbooks. The inherent problem the fallacy of evolution poses for education, however, is that students are inculcated in the notion that evolution is *truth* at a vulnerable time in the formation of their

analytical skills. Without the maturity of these essential skills they emerge from their science classes, and from their high school experience with the belief that evolution (and the requisite notions of millions and billions of years) are elements of universal fact as opposed to simply ideas based on nothing more than wild speculation.

One might ask why it is that some very intelligent people are blinded by the nature of the evolution dogma, but then realize that these very people stake the fundamentals of their faith system about life, its beginning and ending, and its hereafter, on this notion. To these folks *Nature* has become their creator and *Evolution* is their religion. And to the extent that Naturalism and Evolution have captured the imagination of a culture, to that extent it becomes the Myth of that culture. That is largely the state of matters today in the Western world, as it has been for the past century.

Some, such as Dr. Philip Johnson, assert that the 20th Century belongs to the evolutionist, while the 21st Century will look to Divine Intelligence for its governing influence. That remains to be seen. In the meantime, we need to continue to challenge the *Myth of Evolution* and assert the Genesis Account of Creation as the foundational Truth of our fundamental existence.