

The Evolution of Life, Probability Considerations and Common Sense

By Dr. John Ankerberg and Dr. John Weldon

Introduction

The purpose of this article is to bring home the folly of belief in naturalistic evolution. The point is belabored intentionally because evolutionists frequently argue that probability considerations do *not* disprove evolution.

Unfortunately, in the long run, the unjustified materialistic assumptions of modern scientific naturalism can only prove a serious embarrassment to modern science. Evolutionary science today is in the unenviable position of the emperor with no clothes on. No one has the daring to tell the poor man he is naked until a little child exclaims what is obvious to everyone. Modern science, in its naturalistic speculation, is naked today, with only a few “children”—non-evolutionary and creationist scientists—willing to shout the obvious.

The Greatest Magic in the World: Everything We See From Nothing at All

We can illustrate the embarrassment of modern science by considering its attempt to explain the origin of the material universe from either 1) literally nothing or 2) virtually nothing. Equally embarrassing is its attempt to explain life from non-life.

In fact, two of the most unbelievable scenarios of the modern evolutionary story are that 1) *nothing* created the material universe and 2) lifeless matter created all living diversity in its endless life forms.

Both of these scenarios are so implausible that, rationally, they must be considered nonsense. In fact, both assumptions are flat out impossible.

The Probability of Life

The laws of probability govern all kinds of daily activities from calculating insurance rates to large purchase orders. The science of probability is one of the trustworthiest disciplines there is. And it has a logical bearing on the issue of origins:

The laws of probability are proven trustworthy. The whole of science and every day practical living is based on the reliability of the probable happening and the improbable not. One need do no more than be consistent with this accepted standard of reality when considering what to believe in relation to the origin of life.¹

When one reads through the literature on evolution that discusses the probability of the evolution of life, one finds all sorts of euphemisms for the word impossible including “terribly low;” “not conceivable;” “infinitesimally small;” “highly implausible” and “unimaginably small.”

It would appear that these terms are used because there is no other choice. To really believe in what is impossible is absurd. Evolutionary scientists do not want to be seen as believers of the absurd.

We have no qualms about using the word “impossible” if it fits. And when considering naturalistic evolution, no other word is even adequate.

We later cite Nobelist Dr. George Wald who concluded that the spontaneous generation of a

living organism was impossible. He went on to say that, even so, he chose to believe that spontaneous generation occurred because after all, here we are. He argued that time was the hero of the plot.

In many ways, time *is* the hero of the plot for the evolutionist. It's even a "deity" of sorts. The evolutionist says that time and chance created life whereas the theist says that God created life. The problem is that time and chance cannot produce miracles. Contrary to Dr. Wald's assertion, time cannot make the impossible inevitable. Even infinite time cannot change an apple into a helicopter or a frog into a prince. To think so is to believe either in absurdities or fairy tales. As Dr. Gish illustrates in his *Evolution: The Fossils Still Say No* (1995 p. 5):

Frog + time (instantaneous) > Prince = nursery tale

but

Frog + time (300 million years) > Prince = science

Further, the fact that we exist does not prove evolution occurred, unless one assumes that life *only* originates by naturalistic evolution. At this point, many evolutionists criticize creation scientists for making the same kinds of assumptions they make. Creationists argue the fact of the impossibility of evolution proves creation. Evolutionists argue that the fact of life proves evolution.

But is evolution really proven? Is it even probable? Is it even *possible*?

Remember what we have to do is to evolve life. We only have chance and dead matter or lifeless chemicals to start the process. These must make the leap to a small prebiotic molecule (e.g., an amino acid, sugar, nucleic acid base). This molecule must then make an incredible leap to a larger molecule (e.g., a polymer of amino acids). Then there is an even greater leap to the first primitive cell and then the unheard of leap to the first form of complex life such as an eucaryote cell having an organized nucleus bound by a membrane. Then evolution has to produce every living thing.

W. R. Bird, author of a definitive critique of evolution, *The Origin of Species Revisited* points out that for the evolution of life, "Such small probabilities are treated as impossibility under statistical rules, in the context of the possible number of events in the entire universe during its entire age."²

Even some evolutionists will admit the impossibility of evolution. For example, Ambrose of the University of London writes concerning the emergence of new species, "the probability is so small in terms of the known age of the universe that it is effectively zero."³

Creationists and non-evolutionists that have studied probability considerations have long argued that, for all practical purposes, they show evolution to be impossible. What evolutionists don't want to admit is that, even when you adjust for their criticisms of probability calculations, the effect is still to make evolution an impossibility.⁴ Let's consider some examples of scientists and researchers who have stated this.

According to Walter James ReMine in his impressive anti-evolutionary text, *The Biotic Message*, "The origin of life by chance in a primeval soup is impossible in probability in the same way that a perpetual motion machine is impossible in probability.... A practical person must conclude that life didn't happen by chance."⁵

In "Was Evolution Really Possible?" Moshe Trop, Ph.D., with the Department of Life Sciences, Bar-Ilan University, Ramat Gan, Israel, concludes his discussion by noting that "All calculations made of the probability [that life could evolve by chance, lead to the conclusion

that] there could have been *no possibility* of the random appearance of life....”⁶

Probability Calculations

In his article, “The Queen of Science Examines the King of Fools,” David J. Rodabaugh, Ph.D., Associate Professor of Mathematics at the University of Missouri, Columbia, Missouri, shows that given all the time evolutionists claim is necessary, the probability that a simple living organism could be produced by mutations “is so small as to constitute *a scientific impossibility*” — “the chance that it could have happened anywhere in the universe... is less than 1 [chance] in $10^{2,999,942}$.”⁷ A figure like this is termed exponential notation, and is the figure one with almost three million zeros after it. Figures like this are terminal to evolution. (We will discuss exponential notation shortly.)

In another article, Dr. Rodabaugh takes the argument to absurd levels to show that “It is *impossible* that evolution occurred.” Even giving evolution every conceivable chance and even “assuming that evolution *is 99.9999% certain*, then ‘evolution [still] has only a 1 in 10^{132} chance of being valid... Therefore, even with the beginning assumption that evolution is *a virtual certainty*, a conditional probability analysis of the fossil record [alone] results in the conclusion that evolution is a demonstrable absurdity.”⁸

According to the French expert on probability, Emile Borél, his “single law of chance” (1 chance in 10^{50}) beyond which things *never* occur, “carries with it a certainty of another nature than mathematical certainty... it is comparable even to the certainty with which we attribute to the existence of the external world.”⁹ Here we see that one chance in 10^{132} is *no* chance.

Using probability and other calculations, James F. Coppedge, author of *Evolution: Possible or Impossible?*, concludes concerning the origin of chirality, or “left-handed” amino acids that,

No natural explanation is in sight which can adequately explain the mystery that proteins use only left-handed components. There is little hope that it will be solved in this way in the future. Even if such a result occurred by chance, life would still not exist. The proteins would be helpless and nonliving without the entire complicated DNA-RNA system to make copies for the future.¹⁰

Indeed, “The odds against the necessary group of proteins being all left-handed ‘is beyond all comprehension.’”¹¹

As the reader can see, when we employ probability calculations relative to the origin of life, we end up with very large numbers, unimaginably large numbers. In part, that’s the problem. These numbers are so incomprehensible they almost become meaningless. Nevertheless, if evolutionists can use an incomprehensible billions of years of earth history to make evolution *seem* feasible, we can also use incomprehensible numbers to show the absurdity of evolution, even if these numbers do tend to bend the mind at dizzying speeds.

Comprehending Large Numbers

To help the reader understand large numbers, we have prepared a chart of illustrations. Again, these very large numbers are written using exponential notation. Thus, for ease of writing, rather than write out all the zeros in a large number, the number of zeros is placed above the number 10. For example, the figure one million, having six zeros, is written exponentially as 10^6 ; one billion, with nine zeros, is 10^9 ; one trillion, with twelve zeros, is 10^{12} , etc. The kinds of numbers we are dealing with involve hundreds to billions of zeroes, depending on what we are trying to calculate and the odds assigned to a given event. (In the calculations below, the odds cited are often skewed vastly in *favor* of evolution. This shows that even given

CHART: Comparison of Exponential Numbers

Comparisons of Time

Seconds in one year	31.6 million.
Seconds in 15 billion years	10^{18} .
(A picosecond is one- <i>trillionth</i> of a second.)	
In 15 <i>billion</i> years, there are	10^{30} picoseconds.

Comparisons of Weight

A whale weighs 2,000 tons	or 6.4×10^6 ounces.
The earth weighs	5,882,000,000,000,000,000 tons
or	10^{26} ounces
or (one gram is 1/450 of a pound).	10^{27} grams
Our Milky Way galaxy weighs	3×10^{44} grams.

Comparisons of Distance

The distance to the nearest star	4.3 light years
or	40 trillion kilometers
or (a micron is 1/25,000 of an inch)	10^{22} microns

Comparisons of Size

The circumference of the earth is	26,000 miles
or	1.6×10^9 inches.
The diameter of the "known" universe is	an estimated 30 billion light years
or	192,000,000,000,000,000 miles
or	10^{27} inches.

The number of grains of sand that would fill one beach is trillions and trillions. Yet 10^{100} grams of sand would fill the *entire universe*.

Comparisons of Measure

Atoms are very small.

One million hydrogen atoms can be lined up, one on top of the other, on the edge of a piece of paper. 3,000 *trillion* of them are needed just to cover the period at the end of this sentence.

A measly 1/4 teaspoon of water has 10^{24} molecules, but the estimated number of *atoms* in the *entire universe* is "only" 10^{79} .

The total number of electrons and protons in the universe is 10^{80} .

The total number of smallest particles that would fill the universe is 10^{120} .

It takes 2.5×10^{15} electrons, laid side by side, to make one inch. Counting all these electrons at one per second would require 76 million years.

notion that not only biopolymers but the operating programme of a living cell could be arrived at by chance in a primordial organic soup here on the Earth is evidently nonsense of a high order.¹³

DeNouy provides another illustration for arriving at a single molecule of high dissymmetry through chance action and normal thermic agitation. He assumes 500 trillion shakings per second plus a liquid material volume equal to the size of the earth. For *one* molecule it would require “ 10^{243} billions of years.” Even if this molecule did somehow arise by chance, it is still only one single molecule. Hundreds of millions are needed, requiring compound probability calculations for each successive molecule. His logical conclusion is that “it is totally impossible to account scientifically for all phenomena pertaining to life.”¹⁴

Even 50 years ago, scientist Harold F. Blum, writing in *Time's Arrow and Evolution*, wrote that, “The spontaneous formation of a polypeptide of the size of the smallest known proteins seems beyond all probability.”¹⁵

Noted creation scientists Walter L. Bradley and Charles Thaxton, authors of *The Mystery of Life's Origin: Reassessing Current Theories*, point out that the probability of assembling amino acid building blocks into a functional protein is approximately one chance in 4.9×10^{191} .¹⁶ “Such improbabilities have led *essentially all scientists* who work in the field to reject random, accidental assembly or fortuitous good luck as an explanation for how life began.”¹⁷ Now, if a figure as “small” as 5 chances in 10^{191} is referenced by such a statement, then what are we to make of the kinds of probabilities below that are infinitely less? The mind simply boggles at the remarkable faith of the materialist.

According to Coppedge, the probability of evolving a single protein molecule over 5 billion years is estimated at 1 chance in 10^{161} . This even allows some 14 concessions to help it along which would not actually be present during evolution.¹⁸ Again, this is *no* chance.

Cells and Bacteria

Consider that the smallest *theoretical* cell is made up of 239 proteins. Further, at least 124 different types of proteins are needed for the cell to become a living thing. But the simplest *known* self-reproducing organisms is the H³⁹ strain of PPLO (mycoplasma) containing 625 proteins with an average of 400 amino acids in each protein.

Yet the probability of the occurrence of the smallest *theoretical* life is only one chance in $10^{119,879}$ and the years required for it to evolve would be $10^{119,841}$ years or $10^{119,831}$ times the assumed age of the earth!¹⁹ The probability of this smallest theoretical cell of 239 proteins evolving without the needed 124 different types of proteins to make up a living cell, i.e., the chance of evolving this “helpless group of *non-living* molecules” in over 500 billion years is one chance in $10^{119,701}$.²⁰ Dr. David J. Rodabough, Associate Professor of Mathematics at the University of Missouri, estimated the more realistic chance that life would spontaneously generate (even on 10^{23} planets) as only one chance in $10^{2,999,940}$.²¹

Whether we are talking about giving evolution every conceivable chance to evolve a single protein molecule or the smallest theoretical cell, the odds are still impossible.²²

In the 1970s Sir Frederick Hoyle calculated the mathematical probability that a single bacterium could be spontaneously generated. He determined the chance of this occurring was 1 in $10^{40,000}$.

Hoyle confessed what most scientists are, strangely, unwilling to confess, “The likelihood of the formation of life from inanimate matter is one to a number with 40 thousand naughts [zeros

after it]. *It is enough to bury Darwin and the whole theory of evolution.* There was no primeval soup, neither on this planet or on any other, and if the beginnings of life were not random they must therefore have been the product of purposeful intelligence.”²³

But Harold Morowitz, a Yale University physicist, gave a far more realistic “probability” for a single bacterium. He calculated the odds of a single bacterium emerging from the basic building blocks necessary were 1 chance in $10^{100,000,000,000}$.²⁴

This number is so large it would require a library of approximately 100,000 books just to write it out! Ponder that!

In his book, *Origins—A Skeptic’s Guide to the Creation of Life on Earth*, Robert Shapiro comments concerning the probabilities calculated by Morowitz,

The improbability involved in generating even one bacterium is so large that it reduces all considerations of time and space to nothingness. Given such odds, the time until the black holes evaporate and the space to the ends of the universe would make no difference at all. If we were to wait, we would truly be waiting for a miracle.²⁵

Googols and Factorials

Again, these numbers are unimaginable. That’s why even scientists don’t know what to do with them. Consider that a given individual’s chance of winning the state lottery is about one in ten million. The odds of winning each successive week involve the multiplication of probabilities so that the odds of winning the lottery every single week of your life from the age of 18 to 99, a period of 80 years, is 1 chance in $4.6 \times 10^{29,120}$. In other words, it is infinitely more likely that you would win the lottery every week of your life consecutively, from the day you were born, without missing even one winning weekly ticket, for 80 years, than it is that we would have the spontaneous generation of a simple bacterium.²⁶

Physicist Dr. Howard B. Holroyd refers to the book, *Mathematics and the Imagination*, where the authors, Kasner and Newman, name the extremely large number 10^{100} , a “googol.” Noting the fact that there could only, at most, have been 4.8×10^{38} possible mutations in all the life forms throughout the history of earth Dr. Holroyd writes,

It is not possible in a googol of operations to select at random, from the possible infinity of forms, the shapes and arrangements of the dextral and sinistral bones of even one mammal.... Let us recognize that if a result depends upon a hundred factors, and if the probability of getting each one right is 1 in 10, then the probability of getting the whole 100 right is only one in a googol.²⁷

Dr. Holroyd also discusses factorial numbers. A factorial number is a number that multiplies each successive number by the next number. So ten factorial would be to multiply $1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8 \times 9 \times 10$. Seventy factorial is around a googol (1.198×10^{100}). Sir Arthur Eddington estimated the total number of electrons and protons in the entire universe as approximately 3.145×10^{79} . This is infinitely less than 100 factorial, which equals 9.3×10^{157} . But when it comes to evolution, we are not dealing with 100 factorial but millions X millions factorial. To illustrate, there are 5,000 fibers in the auditory nerve of man that may be connected to the brain in 5,000-factorial ways—and probably only one is correct. The optic nerve has about one million fibers, and these may be connected to the brain in one million factorial ways. The odds they could have been connected correctly by chance cannot even be written out long-hand. Holroyd proceeds to show by several other examples how absurd belief in chance evolution is. He points out that the straight hydrocarbon chain $C_{40}H_{82}$ has about 6.25×10^{13} isomers. It would be impossible for the entire human race, working full time for four billion

years, just to study all the isomers of this single organic molecule of no great size.²⁸ (Yet it just happened to evolve by chance.) When we consider there are ten billion cells in the cerebral cortex, that there are several trillion nerve connections between cells in the brain, plus many other amazing factors, it becomes “preposterous beyond words” to believe that all this originated by chance:

Surely the probability of the whole body is far less than that of any of the internal organs: that of two eyes to send two images over two cables of 1,000,000 conductors each to form one image is less than that of one eye; and surely that of one eye is much less than merely taking the bones of the skeleton and placing them into their proper positions. [—which he calculates as 1 chance in approximately 5.6×10^{388} .]²⁹

Miracles Without End

The point here is that the existence of mankind—or of living things generally—isn’t just one miracle, it is a succession of innumerable miracles. Every beneficial combination of factors to produce the simplest mechanism for evolution to occur would require more miracles.

All this and more are why evolution can rationally be classified as one of the “worst superstitions of all time.”³⁰ And it explains why Dr. Holroyd is correct in concluding that evolution is not just physical and mathematical nonsense, “it is logical nonsense as well, for a sound thinker does not assume anything which must be deduced from his theory.”³¹

So perhaps now we have some idea of the odds against evolution. Neither words nor figures can adequately convey them. But two final illustrations may help.

Texas Silver Dollars

On a cross-country drive, co-author John Weldon drove through the great state of Texas. As he drove through Texas, he was reminded of an illustration of Professor Don Stoner used in our book on messianic prophecy.³² In that book we showed that the odds that, by chance alone, Jesus would fulfill only eight Old Testament prophecies, was 1 in 10^{17} . To illustrate how infinitesimal such a chance is we used the state of Texas. First, we filled the entire state of Texas two feet deep with silver dollars. We marked one with an “X” and stirred up all the silver dollars throughout the state. Then, we blindfolded, say, an evolutionist, had him drive anywhere he wished in the state of Texas, stop, get out of his car, reach down into the silver dollars and pick one out. The odds that he would find the one marked silver dollar are 1 in 10^{17} , or one in one hundred quadrillion, or one in 100 million billion. Now, anyone who has driven through Texas knows how long it takes. You drive and drive and drive for hours before you reach another state. If you imagine that as you drive, *everywhere you look*, the land is covered with silver dollars two feet deep, the mind boggles—and yet your field of vision from the road is only an infinitesimal part of Texas. To drive the entire state so that you saw every acre would take years.

Yet this number, one chance in 10^{17} , is nothing compared to one chance in $10^{1,000}$, the chance distinguished *evolutionists* gave for the formation of a simple precursor to life. Trying to comprehend one chance in $10^{100,000,000,000}$, the chance development of a simple bacterium, would drive one insane. In telling us to believe that such odds are not only conceivable but also probable, evolutionists would drive us all bananas.

Electrons and Gigantic Balls

Consider a final illustration, again of a number infinitely smaller than $10^{1,000}$.

How large is the number one in 10^{157} ? 10^{157} contains 157 zeros. Let us try to illustrate the

size of this number.

Electrons are very small objects. They are much, much smaller than atoms. As noted, it would take 2.5 times 10^{15} of them, laid side-by-side, just to make one inch. Even if we counted four electrons every second and counted day and night, it would still take us 19 million years just to count a line of electrons one-inch long.

But how many electrons are we dealing with in 10^{157} electrons? Imagine building a solid ball of electrons that would extend in all directions from the earth a length of 6 billion light years. The distance in miles of just *one* light year is 6.4 trillion miles. That would be an incredibly big ball! But not big enough to measure 10^{157} electrons.

In order to do that, you must take that big ball of electrons reaching the length of 6 billion light years long in all directions and multiply it by 6×10^{28} ! How big is that? It's the length of the space required to store trillions and trillions and trillions of the same gigantic balls and more. In fact, the space required to store all of these balls combined together would just start to "scratch the surface" of the number of electrons we would need to really accurately speak about 10^{157} .

But assuming you have some idea of the number of electrons we are talking about, now imagine marking just one of those electrons in that huge number. Stir them all up. Then appoint an evolutionist to travel in a rocket for as long as he wants, anywhere he wants to go in a 30 billion light year diameter. Tell him to stop and segment a part of space, then take a high-powered microscope and find that one marked electron in that segment. What do you think would be his chances for success? It would be one in 10^{157} .

Again, how small is one chance in 10^{157} ? The number 10^{157} can be further illustrated this way. We earlier saw that the number of atoms in the universe was estimated at 10^{78} . You could take these 10^{78} atoms and expand *each one* to the size of our own universe, with each universe having 10^{78} atoms. The total number of atoms in all these 10^{78} universes would be 10^{157} .

Yet we saw that Bradley and Thaxton calculated the chance that one single protein molecule would evolve at about one chance in 10^{191} —odds trillions of times larger than one chance in 10^{157} .

The odds of finally evolving just one man may be conservatively put at one chance in $10^{1,000,000,000,000}$. This is a figure with a *trillion* zeros. If written out in a single line it would extend some 300,000 miles—and circle the earth 24 times. It would require a *million* books just to print it! Yet again, beyond one chance in 10^{50} , *no* chance remains—ever, even in all eternity, for an event to occur.

We hope the above material has given the reader at least some small comprehension of the faith of the evolutionist. It is, again, a wonderfully large faith, a faith so large it fills the whole universe to produce miracles without end.

Faith Beyond Reason

Dr. Harry Rimmer (SC.D., D.D.) was allegedly one of only 12 men around 1940 capable of understanding Einstein's theory of relativity. He was precisely correct when he wrote the following:

I fail to see how the natural man can scoff at the faith of a Christian who believes in one miracle of creation, when the unbeliever accepts multiplied millions of miracles to justify his violation of every known law of biology and every evidence of paleontology, and to cling to the exploded myth of evolution.³³

To this point in our discussion we have cited mostly creation scientists or theists. Evolution-

ists may respond that creationists have a bias to uphold and thus our methodology or conclusions are suspect. So in our next two sections we will continue and amplify our probability argument exclusively from the writings of evolutionists.

The esteemed late Carl Sagan and other prominent scientists have estimated the chance of man evolving at roughly 1 chance in $10^{2,000,000,000}$.³⁴ This is a figure with two billion zeros after it and would require about 2,000 books to write out. This number is so infinitely small it is not even conceivable. So, for argument's sake, let's take an infinitely more favorable view toward the chance that evolution might occur.

What if the chances are only 1 in 10^{1000} the figure that a prestigious symposium of evolutionary scientists used computers to arrive at? This figure involved only a mechanism necessary to abiogenesis and not the evolution of actual primitive life. Regardless, this figure is also infinitely above Boré's single law of chance—(1 chance in 10^{50})—beyond which, put simply, events never occur.³⁵

On April 25 and 26, 1962, this scientific symposium was held at the Wistar Institute of Anatomy and Biology in Philadelphia, Pennsylvania, in which some of the most distinguished evolutionist scientists were gathered.

At the beginning of this Symposium, which was entitled, "Mathematical Challenges to the Neo-Darwinian Interpretation of Evolution," the Chairman, Sir Peter Medawar of the National Institute for Medical Research in London, England, stated the reasons why they had gathered:

... the immediate cause of this conference is a pretty *widespread sense of dissatisfaction* about what has come to be thought of as the accepted evolutionary theory in the English-speaking world, the so-called neo-Darwinian Theory.... These objections to current neo-Darwinian theory *are very widely held among biologists generally*, and we must on no account, I think, make light of them. The very fact that we are having this conference is evidence that we are *not* making light of them.³⁶

In his paper, "Inadequacies of Neo-Darwinian Evolution as a Scientific Theory," Dr. Murray Eden, Professor of Electrical Engineering at MIT, emphasized the following: "It is our contention that if "random" [chance] is given a serious and crucial interpretation from a probabilistic point of view, the randomness postulate is *highly implausible* and that an adequate scientific theory of evolution must await the discovery and elucidation of new natural laws, physical, chemical and biological."³⁷

In "Algorithms and the Neo-Darwinian Theory of Evolution" Marcel P. Schutzenberger of the University of Paris, France, calculated the probability of evolution based on mutation and natural selection. Like many other noted scientists, he concluded that it was "not conceivable" because the probability of a chance process accomplishing this is zero:

... there is *no chance* ($<10^{-1000}$) to see this mechanism appear spontaneously and, if it did, *even less* for it to remain.... Thus, to conclude, we believe there is a *considerable gap* in the neo-Darwinian Theory of evolution, and we believe this gap to be of such a nature that it *cannot be bridged within the current conception of biology*.³⁸

Evolutionary scientists have called just 1 chance in 10^{15} "a virtual impossibility."³⁹ So, how can they believe in something that has less than 1 chance in 10^{1000} ? After all, how small is one chance in 10^{1000} ? It's incredibly small—1 chance in 10^{12} is only one chance in a trillion.

We can further gauge the size of 1 in 10^{1000} (a figure with a thousand zeros) by considering the sample figure 10^{171} . How large is this figure? First, consider again that the number of *atoms* in the period at the end of this sentence is approximately 3,000 trillion. Now, in 10^{171} years an amoeba could actually transport *all the atoms, one at a time*, in six hundred thou-

sand, trillion, trillion, trillion, trillion *universes*, each universe the size of ours, from one end of the universe to the other (assuming a distance of 30 *billion* light years) going at the dismally slow traveling speed of 1 *inch* every 15 *billion* years.⁴⁰ The amoeba *could do all this* in 10^{171} years. Yet this figure of one chance in 10^{171} , quite literally, cannot even scratch the surface of one chance in 10^{1000} —the “chance” that a certain mechanism necessary to the beginning of life might supposedly evolve. Again, who can believe in something whose odds are 1 “chance” in 10^{1000} to 1 “chance” in $10^{2,000,000,000}$ or even far beyond this? As we saw earlier, Yale University physicist Harold Morowitz once calculated the odds of a single bacteria reassembling its components after being superheated to break down its chemicals into their basic building blocks at 1 chance in $10^{100,000,000,000}$.⁴¹ And, in fact, when you add up all the different odds for all the millions of miracles necessary for evolution, the actual “chances” that life could evolve probably couldn’t even be adequately expressed mathematically.

Please note that in exponential notation, every time we add a single number in the exponent, we multiply the number itself by a factor of *ten*. Thus, one chance in 10^{172} is *ten times* larger than one chance in 10^{171} . One chance in 10^{177} is one *million times* larger than one chance in 10^{171} . And one chance in 10^{183} is *one trillion times* larger than one chance in 10^{171} . So where do you think we end up with odds like one chance in $10^{100,000,000,000}$? In fact, the dimensions of the entire known universe can be packed full by 10^{50} planets—but the odds of probability theory indicate that not on even a single planet would evolution ever occur.⁴²

Still a Chance?

This kind of probability “progression into absurdity” is the very reason Borél devised his single law of chance—to show that beyond a certain point some things will *never* happen. For example, what are the odds that televisions will evolve into elephants? There are none, no matter how much time we allow for the event to occur. But this is essentially what evolutionists ask us to believe—that dead matter plus time plus chance produces life.

On occasion, the argument we are making here is sometimes misunderstood. Dr. Weldon’s uncle “Sam” once heard a minister deliver a sermon in church regarding the odds against life originating by chance. The minister was stating that, based on probability considerations, it was “mathematically impossible” that the universe was created by chance. The minister greeted “Sam” after the service and asked him what he thought of the sermon. Sam replied that he had “two serious problems with it.” The first was that even if there was one in a zillion chances that the universe was created by chance, then the conclusion that it was mathematically *impossible* for the universe to originate by chance was not valid. Even one chance in a zillion is still *one* chance and therefore mathematically possible. The second objection was that if there are an infinite number of opportunities for an event to occur then the odds could increase infinitely so that sooner or later the event would occur.

But again, this misses the whole point behind Borél’s single law of chance. Once we arrive at a certain point in probability considerations, *no* chance remains *regardless* of the amount of opportunities that are present. Anything beyond one chance in 10^{50} is not one chance in 10^{50} but 0 chance. And, as we have seen, the “chance” of evolution occurring is infinitely less than this. Probability considerations are important and do offer valid conclusions in the creation-evolution debate. They tell us there is *no* chance evolution will ever occur even if the universe is infinitely old.

Evolutionists respond the only way that they can. They say that given enough time even the impossible becomes possible. Nobel Prize winning biologist George Wald of Harvard Univer-

sity once wrote, “One only has to concede the magnitude of the task to concede the possibility of the spontaneous generation of a living organism is impossible. Yet here we are—as a result, I believe, of spontaneous generation.”⁴³

Wald proceeds to discuss what he means by “impossible.” Not unexpectedly, he claims that the word “is not a very meaningful concept.”⁴⁴ He goes on to say that, in terms of originating life, “Time is in fact the hero of the plot. The time with which we have to deal is of the order of 2 billion years. What we regard as impossible on the basis of human experience is meaningless here. Given so much time, the ‘impossible’ becomes possible, the possible probable, and the probable virtually certain. One has only to wait: time itself performs the miracles.”⁴⁵

Oh? Given probability considerations, on what logical basis does Dr. Wald go from the impossible to the “virtually certain”? Wald is arguing as a committed materialist who has great faith in the magical powers of matter. Even though evolution is impossible, it really can’t be impossible because after all, here we are. Later he states, “We can be certain that, given time, all these things [necessary to evolution] must occur. Every substance that has ever been found in an organism displays thereby the finite probability of its occurrence. Hence, given time, it should arise spontaneously. One only has to wait.”⁴⁶

What we are dealing with here is word games; the impossible is really possible; an event is conceded as impossible so we invoke infinite time and material to make it “possible.”

Dr. Wald himself has stated that a 99.999% probability is “almost inevitable.”⁴⁷ A little calculation shows that Wald’s initial statement that spontaneous generation was impossible is far closer to the truth than he himself proceeds to argue in his own chapter.

The word impossible is defined in the dictionary as, “*Not possible*, unable to be done or to exist” and “*not capable* of coming into being or occurring.” Also, we don’t have infinite time, we only have a few billion years even by evolutionists calculations and these calculations themselves are suspect. Nor do we have anywhere near infinite material; it was quite finite and limited. Thus, if an event is truly impossible, then it will never occur *by definition* even *given* infinite time and material. “...as Saki wisely observed: Those who use ‘chance’ to argue that ‘anything is possible’ have reached the antithesis of science, whose laws are based upon the assumption that some things occur and others do not.”⁴⁸ Evolutionists should reconsider the following statement from a standard evolutionary text on the origin of life. *The Origin of Pre-biological Systems*, edited by Sidney W. Fox, states:

A further aspect I should like to discuss is what I call the practice of infinite escape clauses. I believe we developed this practice to avoid facing the conclusion that the probability of self-reproducing state is zero. This is what we must conclude from classical quantum mechanical principles as Wigner demonstrated (1961).⁴⁹

Sir John Eccles, winner of the Nobel Prize and one of the foremost brain scientists in this century speaks of one chance in $10^{10,000}$ as being “infinitely improbable,” noting that “materialists’ solutions fail to account for our experienced uniqueness” and that therefore “we are constrained to attribute uniqueness of the psyche or soul to a supernatural spiritual creation.... We submit that no other explanation is tenable....”⁵⁰

We can only wonder, what kind of logic deduces that the infinitely more complex things in nature resulted from *chance* when all the *facts* and *evidence* we possess concerning every *single* man-made object in existence around the world says these much simpler objects had to result from intelligence, plan and design? If the “simple” objects *demand* intelligence, how do the infinitely more complex objects not demand it at all?

Further, if, in ultimate terms, there are only two possible answers to the question of origins, then the disproving of one should logically prove the other. If the chances of evolution occurring are e.g., “one” in $10^{1,000,000,000,000}$, then the chance of creation occurring would have to be its opposite—the odds being 99.9 (followed by one trillion more 9’s). Again, George Wald of Harvard has stated that a 99.995% probability is “almost inevitable.”⁵¹ Then what of 99.9999999999999999 (plus one trillion more 9’s)?—the “chance” that creation has occurred?

Thus, it is not surprising to hear famous astronomer Sir Fred Hoyle originator of the Steady State theory of the origin of the universe concede that the chance that higher life forms might have emerged through evolutionary processes is comparable with the chance that a “tornado sweeping through a junk yard might assemble a Boeing 747 from the material therein.”⁵² As he ponders the magnificence of the world about him, even the outstanding French biochemist and Nobel Prize winner Jacques Monod admits in his *Chance and Necessity*:

One may well find oneself beginning to doubt again whether all this could conceivably be the product of an enormous lottery presided over by natural selection, blindly picking the rare winners from among numbers drawn at utter random.... [Nevertheless although] the miracle [of life] stands “explained”; it does not strike us as any less miraculous. As Francois Mauriac wrote, “What this professor says is far more incredible than what we poor Christians believe.”⁵³

Although Monod believes that life arose by chance, he freely admits the chances of this happening *before* it occurred were virtually zero:

The riddle remains, and in so doing masks the answer to a question of profound interest. Life appeared on earth: what, *before the event* were the chances that this would occur? The present structure of the biosphere far from excludes the possibility that the decisive event occurred only once. Which would mean that its *a priori* probability was virtually zero.⁵⁴

The Myth of Chance

A number of reputable scientists have stated their belief that evolution is a myth. In the following material we are going to briefly amplify this idea by concentrating on the myth of chance and what faith in chance does to science. In *Not a Chance: The Myth of Chance in Modern Science & Cosmology*, theologian and apologist R. C. Sproul points out that mythology was not only practiced by pre-modern cultures. It occurs in every culture and has even intruded significantly into the realm of science, e.g., in the spontaneous generation theory of evolution, that all life arose from dead matter solely by chance. He shows that the concept of chance—something happening totally without cause—is impossible. Again, the *Macmillan Dictionary for Students* (1984) defines impossible as, “not capable of coming into being or occurring”; “not possible” and “not acceptable as truth.”

And yet modern science argues that the universe and all life in it arose solely by chance. In the words of Nobelist Jacques Monod, “...chance *alone* is at the source of every innovation, of all creation in the biosphere. Pure chance, absolutely free but blind, [is] at the very root of the stupendous edifice of evolution....”⁵⁵

Sproul argues persuasively that, for science and philosophy to continue in fruitful fashion, the modern penchant for chance must be abandoned once and for all. If not, the stakes are not insignificant—the very possibility of doing science lies in the balance. Essentially, when logic and empirical data are neglected or neutralized in the doing of science, then “mythology is free to run wild.”⁵⁶

Modern science’s assigning the origin of the universe and all life in it to pure, random chance does an incalculable disservice to science because it:

...reduces scientific investigation not only to chaos but to sheer absurdity. Half of the scientific method is left impaled on the horns of chance. The classical scientific method consists of the marriage of induction and deduction, of the empirical and the rational. Attributing instrumental causal power to chance vitiates deduction and the rational. It is manifest irrationality, which is not only bad philosophy but horrible science as well. Perhaps the attributing of instrumental power to chance is the most serious error made in modern science and cosmology... if left unchallenged and uncorrected, [it] will lead science into nonsense.... Magic and logic are not compatible bedfellows. Once something is thought to come from nothing, something has to give. What gives is logic.⁵⁷

Chance can explain nothing because chance itself is nothing: “chance has no power to do anything. It is cosmically, totally, consummately impotent.... It has no power because it has no being.”⁵⁸ One of the most inviolate and oldest laws of science is *Ex nihilo nihil fit*—“Out of nothing, nothing comes.” When scientists ascribe absolute power to nothing, they are creating myths. Here, chance is the “magic wand to make not only rabbits but entire universes appear out of nothing.”⁵⁹

Consider again the Nobel-laureate and Harvard Professor Dr. George Wald when he stated concerning the evolution of life, “Given so much time, the ‘impossible’ becomes possible, the possible probable, and the probable virtually certain. One only has to wait: time itself performs the miracles.”⁶⁰

Time is indeed the hero of the plot in the modern evolutionary storybook. Professor Abdus Salam, winner of the Nobel Prize for Physics, comments that one reason the Big Bang occurred ten billion years ago was that “it takes about that long for intelligent beings to evolve....”⁶¹

Sir John Eccles, winner of the Nobel Prize in Physiology/Medicine comments in a similar fashion, “You cannot make life out of hydrogen and helium, and that was the original stuff. You have to have the time for the creation of all the extraordinary elements that are necessary for living existence, and so you will have to have, shall we say, something like 10,000 million years from the Big Bang....”⁶²

Again, time is not the hero and cannot perform miracles. To argue otherwise violates the laws of science, logic and common sense. Regardless, how did the universe exist *forever* and then do in time (i.e., create life) what it had not done *forever*?

More Magic

Sproul comments,

Here is magic with a vengeance. Not only does the impossible become possible; it reaches the acme of certainty—with time serving as the Grand Master Magician.

In a world where a miracle-working God is deemed an anachronism, an even greater miracle-worker replaces him: time or chance. I say these twin miracle workers are greater than God because they produce the same result with so much less, indeed infinitely less, to work with.

God is conceived as a self-existent, eternal being who possesses inextricably the power of being. Such power is a sufficient cause for creation. Time and chance have no being, and consequently no power. Yet they are able to be so effective as to render God an anachronism. At least with God we have a potential miracle-worker. With chance we have nothing with which to work the miracle. Chance offers us a rabbit without a hat and—what’s even more astonishing—without a magician.⁶³

A. E. Wilder-Smith, holding three earned doctorates in science, put it this way:

Present-day biology has also discovered a magic wand which solves all biological and chemical problems with one wave of the wand. Does the origin of the most complicated machinery of a protein molecule need explanation? Do we need to explain how optical isomers are formed? Do we wish to know why the wings of certain butterflies are decorated with eagle's eyes? The magic wand called chance and natural selection will without exception explain all of these miracles. It explains the origin of the most complicated biological machine—the enzymatic protein molecule. The explanation is fabulous—machines are formed of their own accord, spontaneously, just as the waving of a magic wand would demand. The same wand explains the billions of teleonomical electrical contacts in the brain. It explains the almost infinitely complicated wiring of the computer called the brain.⁶⁴

Of course, as Wilder-Smith argues, it doesn't explain anything. Further, to argue as modern science does that the universe "exploded into being" billions of years ago require the belief that the universe exploded from *nonbeing* into being. Since science has proven that matter cannot be eternal, this phrase must be taken literally. But to do so requires more faith in magic and is, in effect, a faith in self-creation, which, as Sproul shows, is something logically impossible. Thus:

We can hardly resist the inference that that which exploded, since it was not yet in being, was nonbeing, or nothing. This we call self-creation by another name. This is so absurd that, upon reflection, it seems to be downright silly. It is so evidently contradictory and illogical that it must represent a straw-man argument. No sober scientist would really go so far as to suggest such a self-contradictory theory, would they? Unfortunately, they would and they do. This raises questions about the soberness of the scientists involved. But generally these are not silly people who make such silly statements. Far from it. They number some of the most well-credentialed and erudite scholars in the world, who make a prophet out of Aristotle when he said that in the minds of the brightest men often reside the corner of a fool. In other words, brilliant people are capable of making the most foolish errors. That is understandable, given our frailties as mortals. What is not so understandable are the ardent attempts people make to justify such foolishness.⁶⁵

Of course, there is much more going on here than poor science. In Romans 1:18-25 we are told that the unregenerate deliberately suppress the truth of God as Creator. Here the truth is suppressed by the rejection of the laws of science such as the law of causality, the law of noncontradiction and the law of biogenesis, that life arises only from life. That the *rejection* of scientific principles, laws and reasoning should be so forcefully employed in *defense* of what is inherently irrational and impossible (the creation of the universe from nothing), is surely a commentary on the condition of modern origins science.

A Sin Against God?

However, because God has created us as rational creatures, it may even be argued that modern science's sin against reason is a sin against God. Scientists should *know* better. And, generally, in their rational moments they do. They know the universe didn't arise from literally nothing. The suppression of truth is to try and make it seem as if it did. *That* is the sin. Most scientists, it seems, prefer to disguise their belief in magic by making the idea of chance origins *appear* scientific and rational. Why? Because often they do not personally like the consequences of having to seriously consider the implications of a personal creator God who will hold them accountable in this life. Given the odds against evolution and for creation, this is an unwise position at best. The conclusions of Solomon still stand:

Let us hear the conclusion of the whole matter: Fear God, and keep his commandments: for this is the whole duty of man. For God shall bring every work into judgment with every secret thing, whether it be good, or whether it be evil. (Eccl. 12:13-14)

Notes:

- ¹ Dr. Monty Kester, "Is Organic Evolution Reasonable?" in *Science at the Crossroads: Observation or Speculation?*, Proceedings of the 1983 National Creation Conference, Minneapolis, Minnesota, Bible Science Association 1985, p. 107.
- ² W. R. Bird, *The Origin of Species Revisited: The Theories of Evolution and Abrupt Appearance*, Vol. 1 (New York: Philosophical Library, 1991), p. 80.
- ³ E. Ambrose, *The Nature and Origin of the Biological World* (1982), p.142 [This is assuming natural selection did not increase the probability, which would not happen, as Bird discusses in Section 3.3(a).] In *Ibid.*, p. 79.
- ⁴ Cf., Bird, Vol. 1 pp. 306-308ff.
- ⁵ Walter James ReMine, *The Biotic Message*, p. 257, cited in Wayne Frair, Book Review, *Creation Research Society Quarterly*, Dec. 1994, p. 163.
- ⁶ Moshe Trop, "Was Evolution Really Possible?" *Creation Research Society Quarterly*, March 1975, p. 187, emphasis added.
- ⁷ David J. Rodabaugh, "The Queen of Science Examines the King of Fools," *Creation Research Society Quarterly*, June 1975, p. 14, emphasis added.
- ⁸ David J. Rodabaugh, "Mathematicians Do It Again," *Creation Research Society Quarterly*, Dec. 1975, pp. 173-175, emphasis added.
- ⁹ Cited in James Coppedge, *Evolution Possible or Impossible?* (Grand Rapids, MI: Zondervan, 1973), p. 260.
- ¹⁰ James F. Coppedge, "Probability and Left-Handed Molecules," *Creation Research Society Quarterly*, Dec. 1971, p. 172.
- ¹¹ *Ibid.*, p. 171.
- ¹² See John Ankerberg, John Weldon, *Ready with an Answer* (Eugene, OR: Harvest House, 1997), especially pp. 220-228.
- ¹³ Fred Hoyle, *The Big Bang in Astronomy*, p. 527, emphasis added.
- ¹⁴ Cited in Evan Shute, *Flaws in the Theory of Evolution* (Nutley, NJ: Craig Press, 1971), pp. 23-24.
- ¹⁵ Harold F. Blum, *Time's Arrow and Evolution* (2nd ed., Princeton, NJ: Princeton University Press, 1955).
- ¹⁶ Walter L. Bradley and Charles B. Thaxton, "Information and the Origin of Life" in J. P. Moreland (ed.), *The Creation Hypothesis* (IVP, 1994), p. 190.
- ¹⁷ *Ibid.*, emphasis added; cf., William A. Dembski, "Reviving the Argument from Design: Detecting Design Through Small Probabilities," *Proceedings of the Biennial Conference of the Association of Christians in the Mathematical Sciences*, Vol. 8, (1991), pp. 101-145.
- ¹⁸ Coppedge, *Evolution Possible or Impossible?* See the additional refs. in *Darwin's Leap of Faith*, p. 371.
- ¹⁹ Coppedge, *Evolution*, p.114.
- ²⁰ *Ibid.*
- ²¹ David J. Rodabaugh, "The Queen of Science Examines the King of Fools," *Creation Research Society Quarterly*, June 1975, p. 15.
- ²² See Coppedge, *Evolution*, for an extended discussion.
- ²³ Cited in *Nature*, November 12, 1981, p. 105, emphasis added.
- ²⁴ Cited in Mark Eastman, Chuck Missler, *The Creator Beyond Time and Space*, (Costa Mesa, CA: TWFT, 1996), p. 61.
- ²⁵ Robert Shapiro, *Origins—A Skeptics Guide to the Creation of Life on Earth*, 1986, p. 128.
- ²⁶ Eastman and Missler, p. 61.
- ²⁷ Howard Byington Holroyd, "Darwinism is Physical and Mathematical Nonsense" *Creation Research Society Quarterly*, June 1972, pp. 6, 9.
- ²⁸ *Ibid.*, p. 10.
- ²⁹ *Ibid.*, p. 12.
- ³⁰ *Ibid.*, p. 13.

- ³¹ Ibid., p. 12.
- ³² John Ankerberg, John Weldon, *The Case for Jesus the Messiah* (Chattanooga, TN: Ankerberg Theological Research Institute, 1992).
- ³³ Harry Rimmer, *The Magnificence of Jesus* (Grand Rapids: Eerdmans, 1943), p. 116.
- ³⁴ Carl Sagan, F. H. C. Crick, L. M. Muchin in Carl Sagan, ed., *Communication With Extraterrestrial Intelligence* (CETI) (Cambridge, MA: MIT Press), pp. 45-46.
- ³⁵ Emile Borél, *Probabilities and Life* (New York: Dover, 1962), Chs. 1 and 3; Borél's cosmic limit of 10^{200} changes nothing.
- ³⁶ Paul S. Moorhead, Martin M. Kaplan (eds.), *Mathematical Challenges to the NeoDarwinist Interpretation of Evolution*, Wistar Institute Symposium Monograph Number 5 (Philadelphia, PA: The Wistar Institute Press, 1967), p. xi, third emphasis in original.
- ³⁷ Murray Eden, "Inadequacies of Neo-Darwinism Evolution as a Scientific Theory" in *ibid.*, 109.
- ³⁸ Marcel P. Schutzenberger, "Algorithms and the Neo-Darwinian Theory of Evolution" in Moorhead and Kaplan, eds., 75; cf., Bird, I, 79-80; for reasons why natural selection would not modify randomness and decrease these probabilities, see Bird, I, 158-165.
- ³⁹ J. Allen Hynek, Jacque Vallee, *The Edge of Reality* (Chicago, IL: Henry Regenery, 1975), p. 157.
- ⁴⁰ Coppedge, *Evolution*, pp., 118-120.
- ⁴¹ Cited in Eastman, Missler, *The Creator Beyond Time and Space*, p. 61.
- ⁴² cf., Frank B. Salisbury, "Natural Selection and the Complexity of the Gene," *Nature*, Vol. 24, October 25, 1969, pp. 342-343 and James Coppedge, Director Center for Probability Research and Biology, North Ridge, California, personal conversation; cf., Coppedge, *Evolution: Possible or Impossible?*, passim.
- ⁴³ George Wald, "The Origin of Life" in Editors of Scientific American, *The Physics and Chemistry of Life* (NY: Simon & Schuster, 1955), p. 9.
- ⁴⁴ Ibid., p. 10.
- ⁴⁵ Ibid., p. 12.
- ⁴⁶ Ibid., p. 15.
- ⁴⁷ Ibid., p. 12.
- ⁴⁸ Gary A. Parker, "The Origin of Life on Earth," *Creation Research Society Quarterly*, Sept. 1970, p. 101.
- ⁴⁹ Sidney W. Fox (ed.), *The Origin of Prebiological Systems* (NY: Academic Press, 1965, p. 45.
- ⁵⁰ Sir John Eccles, Daniel N. Robinson, *The Wonder of Being Human: Our Brain and Our Mind* (Boston: Shambhala/New Science Library, 1985), p. 43.
- ⁵¹ George Wald in *The Physics and Chemistry of Life* (New York: Simon & Schuster, 1955), p. 12.
- ⁵² Sir Fred Hoyle, "Hoyle on Evolution," *Nature*, Vol. 294, November 12, 1981, p. 105.
- ⁵³ Jacques Monod, *Chance and Necessity: An Essay on the Natural Philosophy of Modern Biology* (New York: Vintage, 1971), pp. 138-139.
- ⁵⁴ Jacques Monod, *Chance and Necessity: An Essay on The Natural Philosophy of Modern Biology* (New York: Vintage, 1971), cf., James Coppedge, *Evolution: Possible or Impossible?*; cf. the following: Cohen, *Darwin Was Wrong: A Study in Probabilities*; Michael Denton, *Evolution: A Theory in Crisis*: (Rockville, MN: Woodbine House, 1986) pp. 308-327; John M. Andresen, "Notes on the Use of Statistics in the Debate of Creation vs. Evolution," *Creation Research Society Quarterly*, 1980, 160-162; Moshe Trop, "Was Evolution Really Possible?," *Creation Research Society Quarterly*, March 1975, 183-187; Holroyd, "Darwinism is Physical and Mathematical Nonsense" pp. 5-13; Charles B. Thaxton, Walter L. Bradley, Roger L. Olsen, *The Mystery of Life's Origin: Reassessing Current Theories*, (New York Philosophical Library, 1984); Julio Garrido, "Evolution and Molecular Biology," *Creation Research Society Quarterly*, Dec. 1973, 166-169; Larry Butler, "A Problem of Missing Links at the Ultimate Primary Stage of Evolution," *Creation Research Society Quarterly*, Dec. 1969, 128; David J. Rodabaugh, "Mathematicians Do It Again," *Creation Research Society Quarterly*, Dec. 1975, pp. 173-75).
- ⁵⁵ Monod, *Chance and Necessity*, pp. 112-13, emphasis added.

- ⁵⁶ R. C. Sproul, *Not a Chance: The Myth of Chance in Modern Science & Cosmology* (Grand Rapids, MI: Baker, 1994), p. xiv; cf., R. J. Rushdoony, *The Mythology of Modern Science*.
- ⁵⁷ *Ibid.*, pp. 10-11.
- ⁵⁸ *Ibid.*, p. 6.
- ⁵⁹ *Ibid.*, p. 9.
- ⁶⁰ George Wald, "The Origin of Life" in *The Physics and Chemistry of Life*, Ed., the editors of *Scientific American* (NY: Simon & Schuster, 1955), pp. 9, 12.
- ⁶¹ Abdus Salam, "Science and Religion: Reflections on Transcendence and Secularization" in Henry Margenau and Roy Abraham Varghese (eds.), *Cosmos, Bios, Theos: Scientists Reflect on Science, God, and the Origins of the Universe, Life, and Homo Sapiens* (La Salle, IL: Open Court, 1994), p. 100.
- ⁶² John Eccles, "A Divine Design: Some Questions on Origins" in Margenau and Varghese, (eds.) p. 161.
- ⁶³ Sproul, pp. 14-15.
- ⁶⁴ A. E. Wilder-Smith, *The Natural Sciences Know Nothing of Evolution* (San Diego, CA: Master Books, 1981), p. 26.
- ⁶⁵ Sproul, pp. 15-16.