

A BELIEVER'S APPROACH TO THE SCIENCES

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I believe that the title of this talk is certain to be misunderstood. We are going to test that belief.... I want each of you to think for just a moment about what two of the words mean. What (or who) is a "believer"? And what are "the sciences"? Take a moment and write on a piece of paper a short description of who and what you are thinking of when you read those two words in the title.....

I want a few of you to read what you wrote for "believer", please.....

I'm writing this before we read your responses, but I'm pretty sure that most of you read the word "believer" and wrote down something about a Christian. Perhaps you included Jews, Muslims, and so on, but I'm quite sure that virtually everyone thought of someone espousing a religious faith in the supernatural. The reason I think this is that I did the same thing when I first saw the title, and that conception persisted even while I wrote a considerable part of what I'm going to present to you this morning.

However, before I was finished, a note on an e-mail posting from Phillip Johnson (a post about the "Index" of forbidden books that the Catholic Church used to put out [ended in 1066], and that today it's the scientific community that seems determined to protect their dogma from books filled with "heresy") reminded me of something that is absolutely true about human beings – that is, we are ALL "believers" in something. Atheists, agnostics, deep ecologists, Gaia fanatics, etc. all believe in something, even if it's only that nothing exists except matter and energy. And every one of these believers must approach the sciences in some way or another. That "one way or another" involves interpreting the data of the natural world within the confines of the basic set of assumptions that is made about the way things are in this universe. No one studies the stars, or the human body, or the molecular genetics of the cell, with his mind a "clean slate". We all bring some basic assumptions with us as we begin whatever work we are doing.

It is now part of the conventional wisdom that what we have in our minds powerfully affects what we perceive of and how we interpret what is going on around us. Many psychologists make a living helping people figure out why they get so angry at something that everyone around them sees as a "little thing"; or why they keep on entering into unpleasant, even destructive relationships; or why they are miserable when they have a nice family and live in relative luxury. In each case, it is how the individual perceives his circumstances, far more than the circumstances themselves, that determines his level of happiness or misery. Some people, with their own mental constructs of how things should be and how we ought to react to something less-than-ideal, are blissful in a given set of circumstances, while we find that others in the same circumstances are miserable and angry, based on their very different assumptions and expectations.

This is a mundane analogy for what I'm calling the "world-view", which is a mental map, more or less complete, of how the universe is set up, with many of our choices about

what we will believe flowing from an initial, all-important, decision. The initial decision is whether we are going to believe in a Higher Power, or not. I will oversimplify by saying that “naturalists” are those who believe that there is NO “Higher Power”, while “theists” are those who do believe in a Higher Power, some cosmic intelligence outside of what we perceive as the “natural” world. Theists believe, at some level, what John tells us in the first verses of chapter one of his gospel:

“In the beginning was the Word....all things were made by Him and without Him was not anything made that was made.”

The universe is not eternal; it has a beginning; and before it existed there was “logos”. The “naturalists”, represented today by those who accept Darwinism, believe instead something more like this:

“In the beginning were the particles, and the particles became man, and man imagined God.”

Notice that naturalists should NEVER be identified as those who “do not believe” in this or that. Naturalists are believers just like the rest of us – they just believe in something different. This is a really important point, and it will be clear later on why we must always insist upon it.

Now let’s move to the “sciences” -- I want some of you to read to the group what this word brought to your minds.....

Again, I’m writing before we hear your responses, but (if I were a betting man) I’d bet that virtually everyone wrote something about Chemistry, Physics, Computers, etc., or about the scientific method, or about “facts”, measurements, and so on. Most people are deeply confused about what “science” really is, not knowing that the single word is used as an umbrella term to cover some very diverse activities. This confusion is, I believe, fostered by the scientific community, in some cases consciously, and in most because none of us have really been brought up to think about it at all. Here is an illustration from a popular science magazine in the United States, talking about the failure of public school science education, and unintentionally illustrating the source of the problem they are decrying. This and other overheads will appear as an attachment to your copy of this talk.**

As you can see, the article illustrates beautifully an important distinction that we must make before we can prepare and implement a rational approach to “the sciences” for SDA Christians. That is, we must recognize that the term “science” is being used to cover two very different enterprises. One way of distinguishing these two is to label one as “empirical science”, and the other as “historical science”. Empirical science is what I was betting most of us wrote down when we looked at the word “sciences” – it’s what we’re all taught in school when the subject is the “scientific method”. This method of learning involves 1) making observations and asking a question, 2) formulating the hypothesis or “trial answer” that helps explain the observations by answering our question, and 3) devising and carrying out an experiment that will test our hypothesis, to help decide whether our trial answer is correct or not. Let’s apply the method to “the problem of the returning salmon” along the west coast of North America..... Once the data are in and the statistical tests have been applied, the results may support the

trial answer we chose (they can never “prove” it), in which case we devise new experiments to test, and try to disprove, the hypothesis. This is the method first described by Francis Bacon over 400 years ago.

On the other hand, the results of the experiment may “refute” the hypothesis. They may be completely out of harmony with what must be true if our hypothesis is true. An example is when ornithologists attempted to discover why birds are so much more efficient than mammals at extracting oxygen from the air they breathe. Air passes through a bird’s lung in only one direction, rather than in-and-out, as in all mammal lungs, including ours. The hypothesis was that birds use a “counter-current gas exchange” system in their “lungs” – that is, as the air moved through the lungs, the blood would be moving in the opposite direction, thus greatly enhancing the amount of oxygen that can be extracted. The “plumbing” that directs air to enter the lung from the rear and exit it in the front, was easy to alter, surgically, and the researchers modified a duck so that the air moved in the opposite direction to the normal. If the hypothesis were correct, the air moving from front to back would have drastically reduced the amount of oxygen the bird extracted from the air it breathed, thus making it highly likely that a counter-current was the explanation for the bird’s respiratory efficiency. However, after undergoing the operation, the duck was put on a treadmill and was found to extract oxygen at exactly the same rate as before its operation. The hypothesis was rejected – and while the experiment could not tell us how birds DO achieve their efficiency, it was definitive that they don’t use a counter-current gas exchange, as is found in the gills of bony fish.

The power of Bacon’s vision of science, as practiced today, comes partly from his emphasis on “reductionism”, or experimentation on small fragments of a larger problem, so that by gradually gaining an understanding of the various pieces of the issue at hand, we can eventually discover enough to understand the whole. Of course, there is a contradiction here – if everyone is an expert in small pieces of the problem, who is going to have the breadth of vision to put all the tiny pieces together in order to gain an overall understanding? Science is, more and more, recognizing that reductionism can be carried to an extreme, and that some people need to be trained more generally, so that they have the overview necessary for assembling the pieces of the puzzle – for seeing the forest, rather than just the individual trees. I see this trend most directly in ecology, for example, in the area of restoring damaged ecosystems, such as how to take bay-side hay-fields diked and drained a hundred years ago, and restore them to productive marshland.

Bacon also wrote that it was essential to carefully record every step in an experiment, so that other investigators could repeat the procedure in order to see if they got equivalent results. Only when numerous experiments were done in the same way, and all of them confirmed the initial findings, did Bacon say we could call the results “knowledge”. It is by using this method that scientists amassed the knowledge that allowed the Wright brothers to fly, and that later built the Ford Trimotor, the DC-3, and then the 707, the 747 and other jet airliners. Furthermore, it was the scientific method being applied by many brilliant minds that took man to the moon; that has given us refrigerators and freezers, radios and televisions, computers and CD players, automobiles and SUVs, and all the other technological marvels that make our lives so much easier and more pleasant. In addition, we owe the medical revolution to the same type of empirical science.

Painstaking work in the laboratories, carefully repeated by colleagues following the protocols of earlier experiments in order to confirm the original findings, has produced vaccines, medical and surgical equipment and techniques, and all the wonders that we take for granted while they give us long and healthy lives our great grand-parents could only dream of!

All of the above falls naturally into the category of “empirical” or “laboratory” science. The second type of science – historical science – is different in a fundamentally important way. Unlike physics, unlike chemistry, unlike much of biology, practitioners of the historical sciences cannot go into the laboratory to do an experiment in order to test their hypotheses. Historical science collects data in the field, and uses those data to reconstruct the past in ways that are as true as possible to the evidence that is available. In everyday language, scientists in historical fields look at the evidence and then “tell a story” that fits the data that has been discovered. Plainly, no story can explain every single piece of evidence in hand, and equally importantly, there is often more than one story that appeals to us (depending on our world view) and, at the same time, explains the data more or less well. Since there is no way to apply an objective test to whichever story a scientist is telling, we cannot know, in the Baconian sense, that our story is correct.

Archaeology is a recognized science in today’s world, and it uses many laboratory techniques developed by physicists, chemists, and even biologists. However, archaeology has no empirical method that can test the hypothesis that David and Solomon’s kingdom never existed as described in the Bible, and many archaeologists do not believe that David’s kingdom was as extensive or as wealthy as the Old Testament tells us. There are vigorous arguments within the field, due to this lack of a definitive way of testing hypotheses. The same is true of paleoanthropology, the science of ancient man and our alleged fossil ancestry. Because of the inherent uncertainty about alternative hypotheses, there are constant arguments within the field: arguments about which fossil is the “missing link”, or about whether this or that fossil is part of man’s “ancestral line” or simply an extinct dead end, etc. This particular kind of argument never occurs in aeronautical engineering, for instance, (or in any other empirical science) because such disagreements can be settled in short order by placing competing designs in a wind tunnel and measuring the outcomes, thus showing who is right and who is wrong.

However, “historical science” (as well as the kinds of arguments cited above) is found not only in the recognized “historical sciences” such as Archaeology or Paleoanthropology. It can also be found under the umbrella of “laboratory science”; for instance, when astrophysicists argue about what happened during the first few seconds after the “Big Bang”, believed to have occurred more than 10 billion years ago. No one has yet found a videotape of that event, so all that scientists can do is examine the (very limited) evidence available, then use mathematical equations to tell a story of what may have happened as the universe was being born, and finally, argue with their fellows who see it differently. Likewise, in chemistry, there is an ongoing attempt to model the early earth’s atmosphere, in order to figure out how life on the earth got started by strictly physical processes. By looking at the oldest rocks that can be found, and combining the

clues about early atmospheric conditions that can be found there with current knowledge of chemical reactions, scientists have built apparatuses to simulate what they think the early earth's atmosphere may have been like. Obviously, there is no way to know the level of reality represented by these simulations. Origin of Life research uses many scientific techniques, and is carried out in the laboratory, but it is squarely in the category of "historical science" because when the researchers ask questions, the answers they come up with cannot be checked and confirmed, nor definitively refuted.

Perhaps the most current example of a "historical" aspect of what we usually recognize as an "empirical science" is in biology. The currently accepted "scientific" explanation for the origin of life and its phenomenal diversity is best described as "Darwinism"; it tells us that life emerged as the result of chemical evolution, and that the first living cell gave rise to every variety of life on earth. The origin of life, in this scenario, was accomplished by the random interaction of chemicals to form the molecules necessary, including DNA, the various forms of RNA, thousands of proteins, including many enzymes essential to the operation of a cell, other proteins, and so on. Once this cell existed, it gradually evolved into other types of cells, then into multi-cellular creatures, and finally into the millions of different species seen on earth today, including those of us sitting in this room. This miraculous transformation was accomplished solely through mutations in the DNA molecules making up the genetic code – random changes in the arrangement of the four "letters" from which our DNA code words are formed – that were then acted on by the environment, in a process that Darwin named "natural selection".

While a great deal of evidence can be rationally interpreted to support the Darwinian view, mainly in the area of changing existing organisms to better fit their environment, the story of the origin of life, of the genetic code, and of the different body plans in the living world, exists in the realm of historical science. This is because whatever the preferred scenario for explaining these things, not one of them can be tested in the laboratory in such a way as to disprove it, or to confirm that it is the correct explanation. Darwinism, despite its current status as "scientific fact" is really no more than a story that is told to explain how we got here, incorporating as much of the evidence as possible. It does a good job in some areas, but it has significant amounts of disconfirming evidence in other areas. There is no way to test Darwin's hypothesis by experiment, and there are other stories that can be told to explain the evidence – in fact, some of the alternative stories are more robustly supported by the newest evidence available.

Despite the fact that the Darwinist story about origins is in a different category from the empirical science practiced in the science laboratories of the world, it is presented in textbooks and the popular media (magazines, newspapers, television, etc.), as we have seen, as a "fact", known to be true in the same sense as the effect of gravity or the sphericity of the earth. Furthermore, any rival to the preferred story is resisted with great energy. Often those representing the Darwinist position ignore the scientific issues involved, resorting to name-calling, an appeal to authority, and/or to constructing a straw man, which is then demolished. A current example is seen in England, where prominent Darwinists are attacking certain Christian schools (including one run by the SDA church) because their curriculum includes BOTH Darwinist evolution and Biblical creation.

These tactics are not a sign of confidence in one's arguments; rather they provide overwhelming evidence that Darwin's story of origins is a belief system, rather than a scientific proposition to be tested and perhaps disproved. In fact, the Darwinist explanation of the universe is the only option available for those who reject an Intelligence beyond our own. If there is no God, something very similar to Darwinism simply must be true, and Charles Darwin's vision of the naturalistic origin of all life is accepted as a given by the mainstream scientific community, regardless of the state of the actual evidence being gathered in the field and in laboratories all over the world. It is this fact that qualifies naturalistic scientists as "believers".

How should the "other sort of believer", the one who accepts the existence of a personal God, Who created and upholds the universe and all it contains, including this earth and its inhabitants, relate to all of this? In the last 100 years or so, most such believers have reacted in one of two ways. First are the militants, best represented by the "creation-scientists" who have formed institutes, complete with fund-raising arms, to create museums of earth's origins, to take people on educational field trips, to do research into problem areas, to organize "creation/evolution" debates in public forums, and to evangelize on behalf of Creation as a means of introducing people to Jesus Christ. In some cases, educational institutions (primary and secondary schools, as well as colleges) are established, professors with doctorates are recruited, and attempts to achieve a position of respect and acceptance have been made. In no case of which I am aware, has this last aspiration been successful. There is a lot of prejudice against the biblical view, especially in its more fundamentalist forms. These folk occupy a position on one end of a continuum, the counterparts of the aggressive and unpleasant Darwinists at the other extreme. They are almost always under attack, often unfairly, and in their frustration and zeal, they are not always as meek as might be ideal. They may very well be correct, but they have little influence in the wider society, either for creationism or for Jesus Christ.

In between the two extremes has been found the vast majority of traditional Christians, who recognize the importance of the Creation story (and may even agree with Creation Scientists), but whose attitude to the excesses of the "evolution/creation wars" has been, in large part, "a pox on both your houses". Their silence has led to the widespread perception that there are really only two choices available to us – some form of Darwinism, or young-earth Creationism. Seventh-day Adventists have been "the exception that proves the rule" in all of this. We have consistently upheld the traditional view; we have formed an institute (the GRI), and we generally teach a more or less literal sort of creationism in our schools and colleges. However, we have also encouraged our college graduates to study geology, paleontology, and other earth sciences at secular universities, and we have almost always been careful not to identify ourselves with the "creation scientists". While our reputation has been protected by this course, our influence in the debate has been little greater than that of the creation scientists.

Today, there is a "third way" in the ongoing struggle between creationists and evolutionists. In the first place, we will get rid of both these familiar, but misleading, terms. Instead, anyone who understands what is going on is going to start using two new terms: Intelligent Design" for the scientific position that the complexity and order we see

in the universe cannot be explained by natural means, but must have had a designer, and “Darwinist” for those who believe that the entire universe, as well as life on this earth, is the result of “chance and necessity”, or the random actions of matter following the physical laws governing the universe. Once life occurred, according to the Darwinists, living beings varied in subtle ways, and these variations were selected by the forces of the environment (natural selection), so that some creatures reproduced themselves more than others, gradually changing until all of the myriad forms now seen on earth, or discovered in the fossil record, were produced.

Since all of us are “believers”, these are the two options for our approaches to “the sciences”. Plainly, creation scientists belong in the Intelligent Design “box”. So, too, do Seventh-day Adventists. Telling someone about Intelligent Design is not a very useful tool for convincing them of the sacredness of seventh day as the Sabbath, of course, but it will certainly help them understand why innocent human life has been held to be sacred by 2,000 years of Christian teaching and practice. The Intelligent Design “box” also holds those who believe that God created life, and then used the evolutionary process to “create” the different forms of plants and animals we know from fossils or find living today around the world. This makes many, who like me, derive their Origins hypotheses from the Bible, very uncomfortable. What we need to understand is that right now, the Darwinists have managed things so that their theory is the ONLY one with scientific status. This is despite the fact that the empirical evidence argues strongly AGAINST Darwinism, as we will see, later on. If we are to remedy the situation, and it is very important that a remedy be found, we will have to do it step by step. Step 1 is to get intelligent design accepted as a fully scientific hypothesis, so that Christians and other theists can see that they can believe in God and still be rational. In fact, a belief in God is the MORE rational course, given what we know today, and what is coming out of the research labs.

Finally, I want to briefly explain why it is essential that the intelligent design perspective be restored to its place in the public sphere, and that students at all levels of education be taught the scientific status of this venerable idea. In short, ideas have consequences – if society believes that man is the creation of a supreme being, who established the “natural laws” and has instructed us as to the best way to live in order to find peace and harmony amongst ourselves, then we will find that society is ordered in one of a small constellation of patterns that center on government as the enforcer of rules designed to protect the weak from the coercion of the strong, and to establish an arena in which individuals may succeed or fail according to their talents, their effort, and the workings of chance occurrences for good or ill. On the other hand, if society orders itself on the foundational thought that man is just another animal, derived from primitive ape-like creatures that evolved according to the dictum “the survival of the fittest”, then there is no principled argument against the strongest in society grabbing the reins of power and using that power to reward their friends and family at the expense of citizens who are out of favor. The overarching law of such a society must be “might makes right” because ideas like “cooperation” and “charity” are not mandates, just “strategies” that are valued only if they lead to increased power and reproductive opportunities.

The implications for a society with a Darwinist “creation myth” are spelled out in Phillip Johnson’s second book, “*Reason in the Balance*” in which he explains the effects on education, law, and other important facets of our life together. Another important book in this genre is “*Created from Animals – the Moral Implications of Darwinism*” by James Rachels, an American philosopher. These two books make it very plain why Christians must resist the current drift toward an evolutionary basis for our societies.

In closing, I believe that a (Christian) believer’s approach to the sciences should incorporate:

- A. respect for the scientific enterprise in the empirical realm (while being analytical),
- B. caution in the areas of historical science, wherever it is found, and
- C. qualified support for the Intelligent Design perspective as it seeks to establish itself as a worthy part of the scientific effort.

Literature Cited

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