

AN ADVENTIST APPROACH TO EARTH ORIGINS

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IMPORTANCE OF ORIGINS ISSUES

Science/religion issues are important because they have to do with ultimate realities, with whether to "worship" the Creator or the creature (creation), with whether a supreme being is above the creation and can supernaturally intervene (with miracles, an Incarnation, a resurrection, a new birth, an Advent). *As Christians*, evolution/creation questions affect an understanding of: (1) the relation of faith and reason and the nature of inspiration, (2) God's character and how He relates to evil, competition, and death, (3) relationships to other humans and to the environment, and (4) self-worth and need of a Savior. *As Seventh-day Adventists* the issues are important because of belief in the Sabbath as a memorial of a 7-day creation and belief in a short future for the earth. *As evangelists*, one must understand the science/religion interface to work in a technological society and to share beliefs with scientists.

EVIDENCE FOR: MORE THAN NATURALISTIC SCIENCE

This paper is one of a set of three. The other two are entitled "A Biblical-Christian Approach to the Sciences" and "Integrating Faith and Learning in the Teaching of Physics". The two associated papers note that science developed in a civilization with a Christian world view, that many of the founding fathers of science were devout Christians, and that prominent scientists today are also believers. Evidence from developments in physics during this century suggests that a totally naturalistic world view is insufficient to explain all the scientific observations. However, this evidence may lead to various metaphysical philosophies such as the New Age, pantheism, and eastern mysticism. Thus, evidence for a personal designer/creator is discussed next.

EVIDENCE FOR: A DESIGNER/CREATOR

The design argument and its strengths

The complexity of a simple living cell suggests that life was designed. Scientists have made numerous statements about the improbability of life arising from non-life, with the following as representative quotations (Bradley):

The current scenario of the origin of life is about as likely as a tornado passing through a junkyard beside Boeing airplane company accidentally producing a 747 airplane. - Sir Fred Hoyle, in *The Intelligent Universe*

The origin of life appears to be almost a miracle, so many are the conditions which would have had to be satisfied to get it going. - Sir Francis Crick in *Scientific American* (February 1991)

The simplest bacterium is so ... complicated from the point of view of a chemist that it is almost impossible to imagine how it happened. - Harold Klein, chair of National Academy of Sciences committee, in *Scientific American* (February 1991)

Improbability arguments easily catch one's attention. The immense number of different ways to assemble a simple protein is easily calculated. Selecting from 20 varieties of amino acids, a sequence of 100 units can be assembled in 20^{100} different ways, or about 10^{130} which is 1 with 130 zeroes after it. If the handedness and the conditions for forming a peptide bond are included, the chances of randomly forming the requisite sequence are astronomically

small. Closely related arguments can be made from information theory. Hubert Yockey's article, entitled "A Calculation of the Probability of Spontaneous Biogenesis by Information Theory", says: "One must conclude that, contrary to the established and current wisdom, a scenario describing the genesis of life on earth by chance and natural causes which can be accepted on the basis of fact and not faith has not yet been written."

The irreducibly complex structures of higher organisms lack a step-wise evolutionary explanation; and the corresponding, structurally intermediate fossils are rare. The irreducible complexity argument, or argument from perfection, emphasizes that nothing works until everything works. It describes a system that is composed of several well-matched, interacting parts that contribute to the basic function, wherein the removal of any one of the parts causes the system to effectively cease functioning. A book published in 1996 by Michael Behe, *Darwin's Black Box: The Biochemical Challenge to Evolution*, describes examples of irreducible complexity from biochemistry, an area that Darwin and his colleagues knew nothing about. Independent of any evidence from the fossil record, this book gives evidence for design:

[B]iochemistry offers a Lilliputian challenge to Darwin. Anatomy is, quite simply, irrelevant to the question of whether evolution could take place on the molecular level. So is the fossil record. It no longer matters whether there are huge gaps in the fossil record or whether the record is as continuous as that of U.S. presidents. And if there are gaps, it does not matter whether they can be explained plausibly. The fossil record has nothing to tell us about whether the interactions of 11-cis-retinal with rhodopsin, transducin, and phosphodiesterase could have developed step-by-step. Neither do the patterns of biogeography matter, nor those of population biology, nor the traditional explanations of evolutionary theory for rudimentary organs or species abundance. (p.22)

Examples of irreducible complexity included in the book are: the cilium, blood coagulation, vesicular transport, the body's immune system, and the biosynthesis of AMP. The author states that *no* papers are available offering a testable, Darwinian scenario for the evolution of these complex systems.

Possible weaknesses of the design argument

A god-of-the-gaps argument. Design can easily appear to be a god-of-the-gaps argument to be refuted as further evidence is discovered. This has happened often enough in the past, and some biochemists see hints of evolutionary explanations for hemoglobin, cilia, and vision. It is easy to ride the bandwagon when science presents evidence for fine-tuning and design, but without care it can set one up for disillusionment. Premature appeal to special divine activity to explain nature damages the Christian apologetic. In referring to the gap between life and non-life, Andrew Ellington, an Indiana University professor, warns that "to trumpet the barrier today is to eat your words when it falls tomorrow. If you make a proof of Jesus (or Buddha or any supernaturalism) on the back of abiogenesis, be prepared for the disproof as well. Such a disproof is unfair, and not necessarily logically linked, but it will be so perceived." However, perhaps irreducible complexity is different than other god-of-the-gaps arguments because additional information widens the gap instead of narrowing it.

Other. A rigorous *definition of design* needs yet to be carefully articulated. A *higher probability* for forming a 100-amino-acid protein may be possible, if only a few of the 100 amino acids are critical and if a functional molecule can be formed in a myriad of ways. *Flaws in design*, such as the panda's thumb and the arrangement of rods and cones in the eye, have been urged as evidence against an intelligent Designer. Hen's teeth, pseudogenes, vestigial organs, and other examples provide *evidence of evolution*. The ichneumonid wasp laying its eggs in a caterpillar provides evidence only of an *evil designer* unlike the biblical God. Some of these arguments can be answered by including the results of sin as a destructive agent, or assuming that we really don't know how God works; however, these are only partial answers and on-going study needs to be done.

Naturalistic explanations for apparent design

Self-organization. This explanation is probably the most popular current alternative to a Designer. In complex systems far from thermodynamic equilibrium, order and new properties can arise spontaneously. Self-organization results. These complex systems can be explained by simple laws: the complexity of the Mandelbrot set can be derived from a simple equation; the infinite variety of snowflakes can be explained from some simple laws of chemistry and geometry.

However, complexity theory may work better at explaining design on computers than in real life. At a summer 1993 conference at the Santa Fe Institute in New Mexico where these topics were being studied, Participants in the discussions constantly returned to the necessity to calibrate models and their parameters against observation of the real-world systems they purport to simulate. Questions were raised and left largely unresolved about the potential usefulness and hidden dangers of models as "flight simulators" ... The agenda included a number of examples of applications of models and of the behavior of real systems. Here is where the greatest divergences in views of complexity and the need for "reality checks" emerged most visibly. The discussion involving these contributions can best be summarized in terms of its emphasis on increasing, wherever and however possible, the amount of "hard" data that can be used to test the validity of models. (Cowan and Pines)

The anthropic principle. This alternative to a Designer states that: we wouldn't be here if it weren't that the conditions were right for us to exist. This explanation is rather lacking in appeal and not the one most generally espoused by the scientific community. It is like explaining why you can see an elephant in your living room by saying that you wouldn't see it there if it wasn't there.

Other. *Infinite time and space* have been suggested as possible explanations for the coincidences. Infinite time could be provided by multiple universes in series, and infinite space by having multiple universes in parallel. Unfortunately these can't be tested scientifically, but only discussed philosophically.

Perhaps design in nature is only a *construct of the human mind*. Nature appears ordered because the human mind is a product of nature and sees some of itself there.

Perhaps the *designer is just the environment*. The apparent design of the environment for the organism may in fact be the design of the organism for the environment by natural selection and survival of the fittest. The explanation easily works for many adaptations seen in nature.

Darwinian evolution—useful scientific principles taken to an unwarranted excess

Mechanistic laws govern nature. Mechanistic laws (invoking no supernatural intervention) have worked well in the physical sciences, and it was hoped that they would work in all areas of the biological sciences as well. The attempt was made to leave God out as an explanation, to use natural law as all-sufficient with no place for the supernatural or miracles, to treat life as governed by chance with no purpose, and to reject teleology. For some this has led to meaninglessness, disillusionment, pessimism, and despair. Bertrand Russell in *A Free Man's Worship* wrote:

That Man is the product of causes which had no prevision of the end they were achieving; that his origin, his growth, his hopes and fears, his loves and his beliefs, are but the outcome of accidental collocations of atoms; that no fire, no heroism, no intensity of thought and feeling, can preserve an individual life beyond the grave; that all the labor of the ages, all the devotion, all the inspiration, all the noonday brightness of human genius, are destined to extinction in the vast death of the solar system, and that the whole temple of Man's achievement must inevitably be buried beneath the debris of a universe in ruins—all these things, if not quite beyond dispute, are yet so nearly certain, that no philosophy which rejects them can hope to stand. Only within the scaffolding of these truths, only on the firm foundation of unyielding despair, can the soul's habitation henceforth be safely built.

However, mechanistic laws are not sufficient to explain everything, even in the physical sciences.

Nature changes. In the last century, society exhibited evidence of change, growth in knowledge, and progress. Charles Darwin rejected fixity of species and proposed that change and progress occurred in the biological realm as well. His theory of evolution was an extrapolation of the ubiquitous variation he saw in tropical animals. However, biological variation and change has its limits; it is not necessarily progress; and direct evidence for development of new types of organisms is lacking.

Man as a part of nature. The Copernican revolution removed the earth as the center of the universe. A logical next step assumed that man is not so special either. After all, physical and chemical laws and biological processes are the same for man as for the rest of nature. However, in fact, man is unique; conscious mind and moral instincts cannot be reduced to these laws of nature.

Struggle and natural selection in nature. Alfred Lord Tennyson in his poem, *In Memoriam*, gave form to the concept of struggle and natural selection:

- Are God and Nature then at strife,
That Nature lends such evil dreams?
So careful of the type she seems,
So careless of the single life, ...
- 'So careful of the type?' but no.
From scarped cliff and quarried stone
She cries, 'A thousand types are gone;
I care for nothing, all shall go. ...
- Who trusted God was love indeed
And love Creation's final law—
Tho' Nature, red in tooth and claw
With ravin, shriek'd against his creed—

In Darwin's autobiography, he acknowledged his debt to Thomas Malthus' book, *Essay on Population*, in the often-quoted passage:

In October 1838, that is fifteen months after I had begun my systematic inquiry, I happened to read for amusement "Malthus on Population," and being well prepared to appreciate the struggle for existence which everywhere goes on from long-continued observation of the habits of animals and plants, it at once struck me that under these circumstances favorable variations would tend to be preserved, and unfavourable ones to be destroyed. The result of this would be the formation of new species. Here then I had at last got a theory by which to work.

However, the observance of struggle does not necessarily make it right or applicable to humans, especially the excesses that have at times been seen in social Darwinism.

Conclusions on design

There are two types of design arguments: (1) the conditions for life were fine-tuned, and (2) life itself was designed. The second type of argument is valid in any kind of creation theory. However, some evidence for the first type of argument is not compatible with all creation theories. This evidence from astrophysics assumes a Designer who works through naturalistic processes in the formation of the physical matter of the universe.

The argument from design is a strong argument. It is faith-affirming for the *believer* when facts in the natural world provide empirical evidence consistent with belief in a Designer and the supernatural God of Scripture. It provides evidence for the *unbeliever* to suggest that a totally naturalistic world view is not sufficient.

The argument is strongest when it is carefully presented and doesn't claim more than it can deliver. Exaggerated negative predictions of the past only made the Christian appear a fool when they happened: "man will never synthesize any organic molecules" or "man will never set foot on the moon". Scientists like to have incontrovertible facts, but the design argument doesn't go that far. The existence of God cannot be proved. Blaise Pascal in his *Pensées* observed that "We have an incapacity for proving anything which no amount of dogmatism can overcome. We have an idea of truth which no amount of skepticism can overcome."

The evidence for design—the difficulty in arriving at a spontaneous origin for life and the gaps in the fossil record—suggest that a Designer/Creator may be a better explanation of the data than what naturalistic science offers. However, this evidence is also consistent with some kind of progressive creation. The issue of time—how long life has existed on earth—is next addressed.

EVIDENCE FOR: A SHORT TIME SCALE AND A UNIVERSAL FLOOD

My personal philosophy

To me, the issue of a short time scale is a much more difficult topic than the issues of naturalism/supernaturalism and design for life, so I will start with my personal philosophy.

Although I myself prefer a (short-age) recent, world-wide, catastrophic flood model to a (long-age) evolutionary model, I do not believe a short-age model is best supported scientifically: much data does not easily fit, no comprehensive model is available, and a supernatural component must be included. I am not overly concerned with this situation, because I am not basing my belief in short ages on science. So, what do I do?

Empirical evidence should be necessary for any belief system, and I do find evidence (as discussed above) that a totally naturalistic world view is insufficient. This leads to some kind of a religious approach to life, which in my case is Bible-based Christianity.

With a Christian world view as a basis, it is difficult to picture the biblical God of love as using competition, survival of the fittest, the rule of tooth and claw, and death as His preferred method for the development of life; however, we find evidence for this kind of activity throughout the geologic record. In order to harmonize this evidence with a biblical world view, it is easiest to assume that this destructive activity was the result of man's sin (and thus happened after the creation of man) and was buried in a world-wide flood. This suggests (although doesn't require) a short time period since God created the various life forms, man fell, and sin resulted in the destruction of the world.

It is from that philosophical framework that I try to find at least some empirical evidence that preferentially supports short ages and more that is at least consistent with it; however, I don't expect overwhelmingly good scientific evidence, nor to be able to prove my viewpoint, because a supernatural component must be included.

Some of this evidence is presented in the next several sections; however, this and similar evidence should not be used as good scientific reason to believe in short ages, because it can easily leave one with an incomplete picture, and thus a philosophical misunderstanding: (1) If one believes that the limited data consistent with a short-age model makes it a defensible scientific model, he can easily be unprepared for facing the much greater weight of data that has been fit into the long-age theory. The weight of scientific evidence is on the side of long ages. (2) If one believes it is safe to accept the Bible because science supports it, it is tantamount to putting science above the Bible and reason and sense perception above revelation. Belief in a short chronology [and perhaps the Bible as well] can then easily be discarded when the scientific evidence is found to be lacking.

The sample evidence below and other evidence similar to it can be useful in suggesting that some scientific data is consistent with a short-age model, as long as it is recognized that: (1) The arguments are in a very simplified format, but are more complicated and equivocal when all factors are taken into account. (2) At least part of the evidence for rapid, wide-spread activity fits easily into a long-age model as well. (3) Any comprehensive geologic model doesn't fit all the data, so that problems with a long-age model do not necessarily mean that a short-age model is correct. (4) Significant data exists that has no good explanation in a short-age model. (5) No comprehensive, short-age model is even available. (6) Ultimately, a biblical short-age model would be expected to include some supernatural activity, immediately making it unacceptable as a scientific model at all.

Some scientific data preferentially supports a short chronology

Paraconformities. How long did it take to lay down the rock layers, for example those so readily seen in the Grand Canyon? The standard interpretation requires millions of years; however, flat contacts representing the passage of tens of millions of years (as dated by fossils) between layers can be found rather frequently. Major erosion would be expected at these contacts, if left exposed for long periods of time. The frequent lack of significant erosion suggests that the successive layers were deposited much more rapidly. (Roth, 1988)

Paleocurrents. Is geologic activity local or wide-spread? A massive collection of data is available suggesting that ancient water currents were uni-directional over wide areas. The standard geological paradigm would expect water to flow into a depositional basin from many different directions; whereas, a flood model would more likely propose flood waters sweeping across large areas in a single direction, as is observed.

Some (reinterpreted) scientific data will now fit either paradigm

Catastrophism. In the last 20 or 30 years, more and more geologic evidence has been interpreted in terms of catastrophism. Examples include: turbidites, the channeled scablands of Washington state, and meteor impacts (such as a possible one defining the Cretaceous/Tertiary boundary). Fossilization processes and mass burials also suggest catastrophic activity. Mount St. Helens is a modern day example of this kind of catastrophic activity, where sediments hardened rapidly and deep canyons were quickly eroded. (Roth, 1986; Brand)

Yellowstone fossil forests. In some places, Yellowstone National Park has more than 70 volcanic layers, each of which contains upright trees. If each layer represents a forest requiring 1000 years to mature, the total time required would be more than 70,000 years. Much research has gone into studying these layers. Results suggest that instead of being buried forests, the trees may have been destroyed, transported (with some oriented vertically), and buried rapidly by successive volcanic eruptions. (Coffin)

Coconino footprints. Some rock layers in the middle of the geologic column have been interpreted as being deposited under desert conditions. That would be difficult, if most of the rocks in the geologic column were deposited during a world-wide flood. The Coconino sandstone in the Grand Canyon area is one such example. However, recent studies suggest that trackways in this formation more closely resemble modern trackways made under water. (Brand and Tang)

Some scientific data is difficult to fit into a short chronology

Order in the fossil record. The geologic column is based on the order of fossils in the (sedimentary) rocks. The following table gives a general idea of the types of life found at different levels in the column.

The standard column with times listed in millions of years.

Phanerozoic			
Cenozoic			
2	Quaternary	ice ages, man	
65	Tertiary	mammals	--- flood ends ?
Mesozoic			
135	Cretaceous	flowering plants	
200	Jurassic	dinosaurs	
230	Triassic		
Paleozoic			
300	Permian	mass extinctions	
350	Carboniferous	coal	
405	Devonian	fish	
435	Silurian	land vegetation; air breathing arthropods	
500	Ordovician	trilobite	
575	Cambrian	explosion of life forms	--- flood starts ?
Precambrian			
4600 (earth formed)		few fossils, single celled	
15000 (Big Bang)			

The Colorado plateau is one area where the sequence can be observed, but the order is worldwide, so that index fossils from this sequence do well at correlating from one area of the earth to another. A long-age evolutionary model easily explains the order by gradual development over long periods of time. Sudden appearances in the record, such as the Cambrian explosion and the appearance of angiosperms, are difficult but not impossible to explain. A short-age flood model explains the order by ecological zonation and by differential animal behavior, motility, flotation, and sorting; however, some specific features are not particularly easy to explain: biogeography, the detailed small-scale order, the general lack of mixing (no humans with dinosaurs, no angiosperm pollen with trilobites), and the observation that fossils (even of animal types assumed to be on Noah's ark) become more and more similar to modern forms as one moves up the geologic column.

Radiometric dating. Evidence that the matter of the universe, the solar system, and the earth are old comes from such areas as: element and isotope abundances, the naturally occurring radioactive isotopes, the Oklo phenomena, the concordance between various radiometric dating methods, and the constancy of radiometric decay rates. The life associated with these old rocks is assumed to have a corresponding old age. This evidence presents a significant problem for a short-age model. Following are some attempted approaches to the problem, but no coherent short-age explanation is available.

Radiometric dating is not a perfect science, so its problems can easily be emphasized. Discordance between different radiometric dates is not uncommon (although often understood) due to argon retention (only pertinent for K/Ar dating), to metamorphic resetting, and to different source areas for sedimentary rock. Coals, expected to be millions of years old, have been dated with carbon-14 at 40 thousand years. Perhaps the only dates published are those that agree with expectations. Other questionable evidence has also been suggested such as: pleochroic halos for polonium, lack of helium in the earth's atmosphere, and the small depth of meteor dust on the moon.

Perhaps one can accept that the rocks are really old, but the associated life is young independent of the radiometric dates. If old matter, but young life is accepted, some suggestions from geochemistry may help with the sequence of dates: fractionation/zonation in the magma chamber, crustal material incorporated in the magma as it moves, isochrons instead being mixing lines, and argon escape in submarine volcanic rock being dependent on hydrostatic pressure.

Several other features should be kept in mind when discussing the age of the universe and the earth: (1) Extrapolation back in time is reasonable, but requires caution. (2) Unexpected scientific discoveries in the past have changed age estimates by several orders of magnitude. (3) Evidence from special and general relativity suggest that our perception of time is relative, rather than absolute. (4) Perhaps time is just the god-of-the-gaps for evolution—given enough time anything can happen, so that the impossible becomes possible and the possible probable. (5) God's supernatural intervention can at times provide appearance of age, such as for the water-to-wine miracle.

Geological evidence. Although not totally impossible to fit into a short-age model, the following evidence is easier to explain in a long-age model: cooling of batholiths and tectonic plates, coral reef growth rates, "annual" sedimentary layers that in places may number in the millions, ice core data, length of time for geomagnetic reversals, reworked sediments, and fossilized evidence of significant animal activity.

Theological and scientific implications of different time models

Entire universe young. This view is held by many young-earth creationists. YES This model is the simplest to defend theologically, due to almost complete lack of contrary evidence in Scripture. Quite possibly this was the understanding of the ancient Israelites. NO It fits very poorly with much of the scientific evidence.

Solar system and earth young -BUT- universe old. There were other previously created worlds, and the devil sinned before this earth was created (Job 1:6; 38:7; Ps. 33:6; Col. 1:16; DA 834; PP 41,42; GC 497; SR 19). This may be the most common understanding held by Seventh-day Adventists. YES It helps scientifically in explaining astrophysical phenomena, such as light from stars that appear to be millions of light-years away. NO If the Sabbath commandment of the immutable Decalogue is for the entire universe, it would suggest that the entire universe was created during a 7-day creation week. An old universe model could accept long ages for stellar evolution; however, it arbitrarily states that the star in our solar system (Earth's sun) was a fiat creation.

Life on earth young (6000 years) -BUT- materials of earth and solar system old (billions of years). The soft (or passive) gap theory suggests that the heavens in Genesis 1 include only the atmosphere and the earth includes only the dry land. The *Review and Herald* has suggested this view on various occasions (1860, 1887, 1964, 1993, 1998). YES This view may assist in explaining the old radiometric dates as actual ages for the rocks, without necessarily assuming that the constituent fossils are also old. NO This model is not inherently obvious in the creation account, and is only suggested by science; however, even the science has problems. The rocks with little life (Precambrian) and those with much life (Phanerozoic) are geologically similar in many ways, so that arguing for an old Precambrian and a young Phanerozoic may not be consistent. In addition, if the sun and moon were not actually created on the fourth day but only appeared to an observer, perhaps the plants and animals were not really created during creation week but only appeared on their respective days as well. Accepting the stellar evolution of the sun rather than its fiat creation on day 4 would have been just as unacceptable for the Israelites as accepting the evolution of life rather than its fiat creation on the other days. The Israelites needed to reject all of the nature gods, including the sun god Ra, as independent of Yahweh.

Life on earth young (approximately 10 thousand years) -BUT- not exactly 6000 years. Using the genealogies of the patriarchs between Adam and Abraham, the various Old Testament manuscripts provide a range of ages since creation. YES This view more easily harmonizes some archaeology (carbon-14 dates) with Scripture. NO Ellen White makes numerous statements about the age of the earth being about 6000 years, so this view suggests that inspired documents are not necessarily accurate in all scientific details.

Recent creation and world-wide flood -BUT- somewhat extended time (20 thousand - 1 million years). **YES** This view removes problems with archeology and carbon-14 ages and many questions about the ice ages. **NO** No suggestion of these extended times is found in the biblical chronologies, and Ellen White suggested that ages should not be measured in tens of thousands of years.

Recent creation, local flood -BUT- previous life, no world-wide flood. This view is sometimes called the hard (or active) gap theory. The fossil record is due to a long period of life that was destroyed before the 7-day creation of Genesis 1 occurred. **YES** Although death in the fossil record would be before Adam's sin, it could still be placed after the devil's sin and be the result of his experimentation. This model agrees with the uniformitarian geologic column and long ages. **NO** It may be difficult to explain why the animals from an ancient creation are so similar to those of a recent creation. The Bible suggests that creature death is the result of Adam's sin. The Bible assumes a world-wide flood (1Pe 3:20; 2Pe 2:5;3:6; Lk 17:27; Mt 24:39): migration would have been easier than an ark to save life from a local flood; God promised not to destroy the earth again with a flood (Ge 8:21;9:11) and many local floods have occurred since then.

One literal 7-day creation week -BUT- occurring millions of years ago. This view has been suggested, but not amplified significantly. **YES** The Sabbath as a memorial of a 7-day creation is retained. The suggested long ages of science are accepted. **NO** An ancient creation associated with an ancient fall and death would result in a mixed burial of many kinds of organisms, unlike the observed paleontological sequence.

God as Creator -BUT- working over long time periods. Progressive creation and theistic evolution are accepted by many evangelical Christians who are scientists. **YES** It accepts the standard scientific interpretation of long ages for the geologic data, but still holds God as Creator and Designer. **NO** It removes the literalness of Genesis 1-11 attested by other Bible authors (creation: Heb 11:3; 2Pet. 3:5 / Adam and Eve: Mt. 19:4-6; 1Tim. 2:14-16 / origin of sin: Rom. 5:12 / flood: Heb. 11:7; and see above). It allows for death before sin and calls into question the goodness of God's character.

Conclusions on time

Science. There does appear to be good scientific evidence for long ages (even for life on earth). The standard techniques are reasonably good with no obvious major problems. A fairly comprehensive long-age model with supporting evidence exists, whereas no good comprehensive short-age naturalistic model exists. However, science is not perfect, so one is not irrational for not accepting all of it. Radiometric dating has problems, and some scientific evidence exists for short ages.

Inspiration. Short ages for life on earth (and even for the matter of the universe) may be best theologically. Origins questions are intended to be answered by the Bible, whereas science is not best equipped to answer them. Outside evidence can be used to check a biblical interpretation, but the interpretation shouldn't be changed if it would destroy the Bible's internal consistency. However, scripture misinterpretations have occurred in the past (a geocentric universe, fixity of species, ...), so it is important not to require more than the Bible requires. Care must be taken not to repeat dogmatic mistakes of the past, and the Bible should not be used as a science textbook.

Conflict. Conflict between science and revelation on time issues is very apparent and no clear final answer is currently available. For comparison, other examples of necessary conflict due to our finite comprehension are available: the divine/human nature of Christ, the dual wave/particle nature of light. Some scientific data fits a short chronology best, more fits a long chronology best, and much can fit both.

Therefore. Various resolutions to the conflict should be considered, weighing the pros and cons of each. One can be more objective when considering several options, rather than just one. I prefer to work with a combination of models (although uncomfortable with the extremes listed). With the chance of erring in developing an earth history model, I prefer caution—biblical certainty over scientific certainty. Some corroboration for belief from the physical world should be expected, but it is unlikely to be overwhelming, considering the difficulty of analyzing God's activity scientifically.

Any of the models have significant problems. There is a lot we don't know about time that will not be understood until heaven. There is a need for continued study and the willingness to change one's opinion as necessary. However, for me there are two non-negotiable points: any origins model that misrepresents God's character or that puts man's reason above God's revelation is totally unacceptable.

CONCLUSION

Several quotations have helped me in dealing with the evidence. First, Job's response to God after God had asked him so many difficult questions:

Behold, I am vile; what shall I answer thee? I will lay mine hand upon my mouth. Once have I spoken; but I will not answer: yea, twice; but I will proceed no further. — Job 40:4,5

I know that thou canst do every thing, and that no thought can be withholden from thee. Who is he that hideth counsel without knowledge? therefore Have I uttered that I understood not; things too wonderful for me, which I knew not. — Job 42:2,3

The chapter in *Steps to Christ* on "What to Do With Doubt" is very helpful, with the following quotation being of particular interest:

God never asks us to believe, without giving sufficient evidence upon which to base our faith. His existence, His character, the truthfulness of His word, are all established by testimony that appeals to our reason; and this testimony is abundant. Yet God has never removed the possibility of doubt. Our faith must rest upon evidence, not demonstration. Those who wish to doubt will have opportunity; while those who really desire to know the truth will find plenty of evidence on which to rest their faith. (SC 105)

And we find that Jesus dealt tenderly with doubting Thomas:

... Many who, like Thomas, wait for all cause of doubt to be removed, will never realize their desire. They gradually become confirmed in unbelief. Those who educate themselves to look on the dark side, and murmur and complain, know not what they do. They are sowing the seeds of doubt, and they will have a harvest of doubt to reap. At a time when faith and confidence are most essential, many will thus find themselves powerless to hope and believe.

In His treatment of Thomas, Jesus gave a lesson for His followers. His example shows how we should treat those whose faith is weak, and who make their doubts prominent. Jesus did not overwhelm Thomas with reproach, nor did He enter into controversy with him. He revealed Himself to the doubting one. Thomas had been most unreasonable in dictating the conditions of his faith, but Jesus, by His generous love and consideration, broke down all the barriers. Unbelief is seldom overcome by controversy. It is rather put upon self-defense, and finds new support and excuse. But let Jesus, in His love and mercy, be revealed as the crucified Saviour, and from many once unwilling lips will be heard the acknowledgement of Thomas, "My Lord and my God." (DA 808)

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A BIBLICAL-CHRISTIAN APPROACH TO THE SCIENCES

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INTRODUCTION

What kind of relation should exist between science and religion? between nature and revelation? Should it be one of conflict or cooperation? The inspired writings present both views.

Conflict is definitely found. Some aspects of nature were not to be part of the worship of Israel because of their association with heathen worship. Through Moses, God said, "Thou shalt not plant thee a grove of any trees near unto the altar of the Lord thy God". (Deut. 16:21) *The Great Controversy* says that

To many, scientific research has become a curse. God has permitted a flood of light to be poured upon the world in discoveries in science and art; but even the greatest minds, if not guided by the word of God in their research, become bewildered in their attempts to investigate the relations of science and revelation. (GC 522)

On the other hand, cooperation is seen, for example, in Psalm 19:1, "The heavens declare the glory of God; and the firmament showeth his handywork." Romans 1:20 states that, "The invisible things of [God] since the creation of the world are clearly seen being perceived through the things that are made, even His everlasting power and divinity." And Paul seems to approve of the scientific method in I Thessalonians 5:21, where he says "Prove all things; hold fast that which is good." *The Ministry of Healing* says, "Nature testifies that One infinite in power, great in goodness, mercy, and love, created the earth, and filled it with life and gladness." (MH 411)

CONFLICT BETWEEN WORSHIPPING CREATOR AND CREATURE

Old Testament stories of conflict

Stories in Scripture serve as warnings of the failure that comes from putting the creature above the Creator. This worship of nature was an integral part of the pagan religion that surrounded the Jews of the Near East.

The ten plagues on Egypt were specifically directed against the nature gods. The plague of hail destroyed the sacred objects of worship, the cattle and sheep. The plague of locusts revealed a God in control of the animals. The plague of darkness showed the weakness of the sun god Ra. The turning of water to blood was directed against Osiris, the god of the Nile, whose yearly flooding brought soil, fertility, and wealth to Egypt; the Nile god appeared to have within itself the power of rejuvenation, regeneration, and resurrection.

The Canaanites often worshipped their nature gods in beautiful natural settings. Before the Israelites entered Canaan, God instructed them to "utterly destroy all the places, wherein the nations which ye shall possess served their gods, upon the high mountains, and upon the hills, and under every green tree". (Deut. 12:2) Before Gideon attacked the Midianites, he cut down the groves where his own people worshipped Baal. (Judges 6:25) Solomon married wives from the surrounding nations and built high places for them on the hills of Jerusalem. (I Kings 11:5,7) Because of Solomon's apostasy, 10 of the tribes rebelled under Jeroboam, but he also made "groves on every high hill". (I Kings 14:23)

During the reign of Ahab and Jezebel, the kingdom of Israel worshipped Baal. Yearly rituals between Baal the weather god, and Anat the goddess of love and war, involved temple prostitutes and ensured the next season's fertility. The three and a half years of famine foretold by Elijah and the futile incantations of the priests and prophets of Baal on Mt. Carmel showed the impotence of this storm god. The lightning and rain in answer to Elijah's prayer made obvious to the Israelites that instead Yahweh was in control of nature. (I Kings 18)

The nature gods were not like Yahweh: they were not personal gods; they would only bring blessings when given sacrifices; they were only interested in the rituals, not the affairs of normal life; and they did not demand

exclusive worship. The worship of these nature gods was never eradicated, so that the Israelites were still building the high places of Baal in Jeremiah's time, and God allowed them to be taken into captivity to Babylon. (Jer. 19:5-9)

Last day examples of conflict

The tendency remains today to worship the creature, instead of the Creator. Nature is a good gift from God, and science can appropriately be used as a tool for its study, but when the creation takes priority over the Creator, it is false worship. The difference between worshipping the Creator and the creation can be very subtle for Satan will even make "fire come down from heaven on the earth in the sight of men" as Elijah did (Rev. 13:13). However, the 7 last plagues, similar to the plagues of Egypt, show that nature is ultimately under God's control, not humanity's.

The three angel's messages (Rev. 14:6-12) contrast the worship of the Creator and the worship of the creature (the creation). The first angel calls all to "worship him that made heaven, and earth, and the sea, and the fountains of waters". The third angel warns against worshipping the creature—any human institution or endeavor set up to take the place of God—for "If any man worship the beast and his image, ... The same shall drink of the wine of the wrath of God".

The first angel reminds that there is more than natural law—there is also a moral law that should cause all to "Fear God, and give glory to him; for the hour of his judgment is come". To prepare for the judgment, the first angel has "the everlasting gospel to preach unto them that dwell on the earth". It points beyond salvation by personal effort to the One who can re-create. The system of salvation by works has fallen. Great Babylon, and before it the tower of Babel, were symbols to mankind's ingenuity and wisdom, his probing the secrets of nature, and his attempts to save himself. Nebuchadnezzar said, "Is not this great Babylon, that I have built for the house of the kingdom by the might of my power, and for the honour of my majesty". (Dan. 4:30)

The symbol of those who worship the creature, or beast, is the mark. Nothing in creation is more important to life on earth than the sun. The Egyptians realized that and worshipped the sun. The Roman empire did the same and set up their own day of worship. In contrast, the symbol of those who worship the Creator is found in the fourth commandment, "For in six days the Lord made heaven and earth, the sea, and all that in them is, and rested the seventh day: wherefore the Lord blessed the sabbath day, and hallowed it". (Ex. 20:11) The Sabbath as a symbol or ritual is meaningless in itself, but it points to the essence of the Bible message.

God's interaction with the creation

In Bible times God was seen as the direct cause of all that happened in nature. He controlled the weather—the rain to fall on the just as well as the unjust, the plagues of Egypt, the drought in the time of Elijah. God caused leprosy and blindness as punishment. He was directly responsible for the fertility of Sarah and Hannah.

Most of the founding fathers of science studied nature to learn how God works. St. Thomas Aquinas pointed out the need for faith where reason couldn't explain. Newton envisioned a mechanistic universe, but one where God made adjustments to keep it working smoothly.

As more and more was understood about the world, a feeling arose in the last century that given enough time all phenomena could be explained by natural means. If God's direct agency was not needed as an explanation for the weather, for health, for fertility, etc., then perhaps God's interaction was not needed at all, even for life and its origin. Science would be inhibited by assuming that some observations in the natural world required a supernatural explanation beyond human understanding. Thus, the god-of-the-gaps argument fell into disrepute.

The scientific method

The scientific method of arriving at truth by human reason and experimentation (rather than by supernatural revelation) came to be seen by many as the best and only method for arriving at truth—a method that is objective, rational, reductionist, deterministic, and naturalistic.

Science is seen as *objective*, independent of the observer and his religious or political bias, with no place for emotions or feelings. This feature provides for a common bond between scientists of different political or religious persuasions.

Much of science is *rational* and can be studied by logic and reason, for which mathematics provides a tool. This leads to the belief that in principle all areas of human experience can be understood by human reason.

A *reductionist* approach assumes that the whole is no more than the sum of its parts. The natural world can be reduced to its simplest form to study, with the complete picture being built up of the independent pieces.

The scientific method assumes that the natural world is *deterministic*. Direct cause and effect relations make scientific observations repeatable and scientific models falsifiable. Observations about N-rays, the fifth force, and cold fusion could not be consistently repeated, and models about Lamarckianism and the aether could be falsified, so none are still part of science. The criterion of repeatability is more difficult to apply to the historical parts of geology, evolutionary biology, and cosmology, but is made possible by using the dictum that "The present is the key to the past". The deterministic nature of the world gives scientific models their predictive power, for example in filling in the table of the elements. A deterministic world view allows for no beginning to the universe—a beginning would be an effect without a cause.

A *naturalistic* world view sets up a philosophical framework where mankind explains the workings of nature without invoking the supernatural. That this philosophy has worked so remarkably well in the physical sciences, has led to the belief that it can work in other areas as well. In biology, a naturalistic world view does away with teleology and any explanations based on a Designer.

Conflict or compatibility between science and religion

Probably one of the most dramatic incidents in the history of the relation between science and religious faith was the condemnation of Galileo by the church in the 1600's. The conflict over the fixity of species and evolution in the last century is the other prime example, with the Scope's trial in this century as a focal point in the United States. The two best-known Victorian versions of the science/religion conflict are John William Draper's *History of the Conflict between Religion and Science* and Andrew Dickson White's *A History of the Warfare of Science with Theology in Christendom* where numerous examples are given to make the point. Today, science classwork rarely includes any references to religion.

There is a conflict, but the case is often exaggerated. For example, a flat earth was not the generally accepted church doctrine of the Middle Ages (Gould). The next section suggests reasons for the science/religion conflict. The third section outlines some principles for lessening the conflict. The fourth section provides examples of cooperation—the important, positive influence that Christianity had on the development of science. The final section discusses some of the limitations of science.

REASONS FOR EITHER COOPERATION OR CONFLICT

Cooperation occurs as long as God remains supreme, that is, as long as the Creator is worshipped. The conflict only comes when God is no longer given His rightful position, and when the creature takes the place of the Creator.

There is conflict when: (1) science sees nature as an end in itself, independent of any Creator, Sustainer, or Savior; (2) mankind thinks he can unravel all the complexities of nature himself; (3) mankind sees no personal God of love behind the natural world; (4) the beauties and marvels of nature are appreciated for their own sake with no thought of their source; (5) the laws of nature are not seen to extend to a moral law governing human behavior as well; and (6) the natural resources of earth are exploited for selfish ends.

On the other hand, there is cooperation when: (1) nature—that is the creation—points to the Creator; (2) the complexities of nature are seen as manifesting God's infinite wisdom; (3) the inter-relationships of nature are seen to demonstrate God's love and personal concern for mankind's welfare; (4) God's good handiwork leads to appreciating the beauty of His character; (5) the law and order in nature lead to understanding God's government; and (6) the resources of nature are used with good stewardship to bring glory to God. There is cooperation between science and religion when science studies nature in order to understand the Creator.

First, and basic to the others: nature points to the Creator, and away from ourselves. Psalm 104 exemplifies this approach. In contrast, Jeremiah shows his distress at Israel who made idols out of wood and stone: "in the time of their trouble they will say, Arise, and save us. But where are thy gods that thou hast made thee? let them arise, if they can save thee in the time of thy trouble." (Jer. 2:27,28)

Second: nature shows God's wisdom, not mankind's. Much is said about God's wisdom in Job. Chapter 28, for example, states that wisdom is not to be found in nature, but in the fear of the Lord. Near the end of the book God asked Job, "Who is this that darkeneth counsel by words without knowledge? Gird up now thy loins like a man; for I will demand of thee, and answer thou me". (Job 38:2,3) God asked plenty of questions about nature that Job was unable to answer.

Third: God is a personal God, not some impersonal natural force. In the Sermon on the Mount, Jesus portrays God as one who takes care of the "fowls of the air" and the "lilies of the field."

"Therefore take no thought, saying, What shall we eat? or, What shall we drink? or, Wherewithal shall we be clothed? ... for your heavenly Father knoweth that ye have need of all these things. ... [and] all these things shall be added unto you." (Matt. 6:25-33)

The book *Education* says,

"No intangible principle, no impersonal essence or mere abstraction, can satisfy the need and longings of human beings in this life of struggle with sin and sorrow and pain. It is not enough to believe in law and force, in things that have no pity, and never hear the cry for help. ... We need to clasp a hand that is warm, to trust in a heart full of tenderness." (Ed 133)

Fourth: the beauties of nature show the goodness of God and are not themselves to take prominence. At the end of the creation "God saw everything that he had made, and ... it was very good". (Gen. 1:31) But the first and second commandments prohibit worshipping nature as god, including "any likeness of any thing that is in heaven above, or that is in the earth beneath, or that is in the water under the earth". (Ex. 20:4) And Paul speaks of "the wrath of God" against those "Who changed the truth of God into a lie, and worshipped and served the creature more than the Creator, who is blessed for ever". (Rom. 1:18,25)

Fifth: God has instituted a moral law as well as natural law. Nature relentlessly obeys her laws, but humanity doesn't. "The stork in the heaven knoweth her appointed times; and the turtle and the crane and the swallow observe the time of their coming; but my people know not the judgment of the Lord". (Jer. 8:7) Romans 1 outlines the lack of moral law for those who worship the creature more than the Creator.

Sixth: Mankind is a steward of God's world. Natural resources are not mankind's to plunder. God says, "every beast of the forest is mine, and the cattle upon a thousand hills. ..." (Ps. 50:10,11) In the creation, God said to Adam and Eve, "Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth". (Gen. 1:28) And the time will come when God will "destroy them which destroy the earth". (Rev. 11:18)

PRINCIPLES IN RELATING SCIENCE AND SCRIPTURE

Several of these concepts are now expanded to suggest principles for reducing the conflict between science and religion: (1) God's ways are much greater than humanity can understand or imagine; (2) God's character is love; (3) faith is based on evidence, not proof; and (4) a balanced approach is necessary.

God is much greater can be imagined

Whether we try to visualize the great size of the universe or the small size of the atom, God controls it all. It is greater than we can imagine: "For my thoughts are not your thoughts, neither are your ways my ways, saith the Lord." (Isa. 55:8)

The book of Job talks of the wonders of creation. After all the misery that Job went through, God still didn't explain it all. Instead God asked Job numerous questions about nature and let him know that He was in control. Job's response was, "Behold, I am vile; what shall I answer thee? I will lay mine hand upon my mouth. (Job 40:4) But God kept asking questions. Finally Job said:

I know that thou canst do everything, and that no thought can be withholden from thee. Who is he that hideth counsel without knowledge? therefore have I uttered that I understood not; things too wonderful for me, which I knew not. (Job 42:2,3)

Our picture of God is too small. The essence of the second commandment in contrast to the first emphasizes the problem with too small a picture of God. The first commandment prohibits the worship of other gods

besides the true God. The second commandment goes a step further and prohibits even the worship of human representations of the true God. In the time of Israel, these were idols. The Old Testament Jews wanted something they could see as a symbol of their God. This symbol however, would lower their conception of the true God. It would be easy to come to believe that the true God was no more than their representation of Him. God told them that they had not seen Him in the Mount, so they were to make no representation of Him. (Deut. 4:15-19)

Today as well, it is natural to have too limited a picture or concept of God. J.B. Phillips gives examples in his book, *Your God Is Too Small* (1961). One chapter is entitled "Grand Old Man". Since God was around in Old Testament times and even before, He must be very old. A nice old man, but not very up to date. He understood how the farmers thought, but wouldn't understand today's culture very well. Would Jesus be able to run a computer? Would He know how to fly a jet aircraft? Surely he would have trouble running a nuclear power plant. He would be fooled by all the "high-tech" special effects in today's video productions. Would he be able to fathom modern communication by FAX, Internet, etc.? The initial reaction is that these are too "high-tech" for God, but of course it is obvious that He knows all about the intricacies of technology.

Reason is important, but God is too big for human reason to comprehend. The wisdom from above is needed. Paul says in I Corinthians 1:

(19) For it is written, I will destroy the wisdom of the wise, and will bring to nothing the understanding of the prudent. (20) Where is the wise? where is the scribe? where is the disputer of this world? hath not God made foolish the wisdom of this world? ... (23) But we preach Christ crucified, unto the Jews a stumbling-block, and unto the Greeks foolishness; (24) But unto them which are called, both Jews and Greeks, Christ the power of God, and the wisdom of God. (25) Because the foolishness of God is wiser than men; and the weakness of God is stronger than men.

God's character is love

How does one deal with the problem of pain, suffering, and death in the world? As the atheist, Steven Weinberg says,

I have to admit that sometimes nature seems more beautiful than strictly necessary. Outside the window of my home office there is a hackberry tree, visited frequently by a convocation of politic birds: blue jays, yellow-throated vireos, and, loveliest of all, an occasional red cardinal. Although I understand pretty well how brightly colored feathers evolved out of a competition for mates, it is almost irresistible to imagine that all this beauty was somehow laid on for our benefit. But the God of birds and trees would have to be also the God of birth defects and cancer. (p.250)

There is a logical explanation: "An enemy hath done this." (Matt. 13:28) This is an important answer in the conflict between evolution and creation. Competition, survival of the fittest, the rule of tooth and claw, suffering, pain, and death are not part of God's ideal plan for development. He may use this of necessity and allow all things to "work together for good to them that love God" (Rom. 8:28), but His use of that as a preferred plan would be in conflict with a God who knows when a sparrow falls and is creating a heaven where the wolf and the lamb will lie down together. Provonsha says that the God of evolution is the God of Nietzsche:

to attribute the salient features of the theory of evolution to God is to come up with the wrong kind of God! The God of the evolutionary hypothesis, as it is commonly understood, would be Nietzsche's god, not the Father of Jesus Christ. (p.75)

However, the logical explanation is not sufficient. John 11:35 states that "Jesus wept"; He knew He would raise Lazarus, but he was touched by sorrow. Philosophy is fine for answering philosophical questions, but what many need is not theology or the logical explanation, but the personal touch of another who is also hurting. Humanity needs to know of a loving, caring personal God, of a Christ who suffered along with us here on the earth, who knows our sorrows as well as our joys. This is the God of Isaiah 53:3, "He is despised and rejected of men; a man of sorrows, and acquainted with grief: and we hid as it were our faces from him; he was despised, and we esteemed him not." And the God of Hebrews 4:15, "For we have not an high priest which cannot be touched with the feeling of our infirmities; but was in all points tempted like as we are, yet without sin."

Evidence for faith, but not proof

Eve had evidence for faith in God's word, but there was also apparent contrary evidence. She "saw that the tree was good for food, and that it was pleasant to the eyes, and a tree to be desired to make one wise". (Gen. 3:6) "Eve really believed the words of Satan, but her belief did not save her from the penalty of sin. She disbelieved the words of God, and this was what led to her fall." (PP 55) She was the first scientist and based her decision on the evidence of her senses.

The Israelites had plenty of evidence of God's power to deliver them, but they also had good reason to be afraid of the Canaanites. The evidence appeared to be against them. Their mistake was in not remembering God's power.

In the conquest of Gilead and Bashan there were many who recalled the events which nearly forty years before had, in Kadesh, doomed Israel to the long desert wandering. They saw that the report of the spies concerning the Promised Land was in many respects correct. The cities were walled and very great, and were inhabited by giants, in comparison with whom the Hebrews were mere pygmies. But they could now see that the fatal mistake of their fathers had been in distrusting the power of God. This alone had prevented them from at once entering the goodly land. (PP 436)

Christ had evidence at His baptism that He was the Son of God, but in the wilderness the evidence seemed to be against Him. He appeared to be the fallen angel instead of Lucifer. Christ's first temptation was to prove to Satan that this was not the case, but He resisted that temptation to use proof.

One of the most powerful of the angels, [Satan] says, has been banished from heaven. The appearance of Jesus indicates that He is that fallen angel, forsaken by God, and deserted by man. A divine being would be able to sustain his claim by working a miracle; "if Thou be the Son of God, command this stone that it be made bread." Such an act of creative power, urges the tempter, would be conclusive evidence of divinity. It would bring the controversy to an end. Not without a struggle could Jesus listen in silence to the arch-deceiver. But the Son of God was not to prove His divinity to Satan, or to explain the reason of His humiliation. (DA 119)

Thomas had evidence that Christ was resurrected, but Christ said that those were blessed who did not need that evidence.

Many who, like Thomas, wait for all cause of doubt to be removed, will never realize their desire. They gradually become confirmed in unbelief. . . . [Jesus'] example shows how we should treat those whose faith is weak, and who make their doubts prominent. Jesus did not overwhelm Thomas with reproach, nor did he enter into controversy with him. He revealed Himself to the doubting one. Thomas had been most unreasonable in dictating the conditions of his faith, but Jesus, by His generous love and consideration, broke down all the barriers. Unbelief is seldom overcome by controversy. It is rather put upon self-defense, and finds new support and excuse. But let Jesus, in His love and mercy, be revealed as the crucified Saviour, and from many once unwilling lips will be heard the acknowledgment of Thomas, "My Lord and my God." (DA 808)

Steps to Christ says that God gives evidence, but there is always room for doubt.

God never asks us to believe, without giving sufficient evidence upon which to base our faith. His existence, His character, the truthfulness of His word, are all established by testimony that appeals to our reason; and this testimony is abundant. Yet God has never removed the possibility of doubt. Our faith must rest upon evidence, not demonstration. Those who wish to doubt will have opportunity; while those who really desire to know the truth will find plenty of evidence on which to rest their faith. It is impossible for finite minds fully to comprehend the character or the works of the Infinite One. (SC 105)

God provides evidence, but it is not compelling. God gives humanity room to choose. Likewise, Christians would do well to "be ready always to give an answer to every man that asketh [you] a reason of the hope that is in you" (I Pet. 3:15), but not try to prove the point or force another to believe.

Use a balanced approach

The conflict between scientific and religious issues presents a paradox, but it is only one of a number that Christians struggle with, some for hundreds of years: the divine/human nature of Christ, predestination and free

will, justice and mercy, faith and works. In Christ's day there was the paradox of a conquering king versus a suffering servant. Other paradoxes that seem to defy human logic are found in scripture:

We find rest under a yoke. (Matt. 11:28-30)

We become first by being last. (Matt. 20:16)

We are exalted by being humble. (Matt. 23:12)

We reign by serving. (Mark 10:42-44)

We are made great by becoming little. (Luke 9:48)

We live by dying. (John 12:24,25; II Cor. 4:10,11)

We conquer by yielding, and are made free by becoming His bond servants. (Rom. 6:16-18)

We become wise by becoming fools for Christ's sake. (I Cor. 1:20,21)

We glory in our infirmities, and are strongest when we are weak. (II Cor. 12:5,7-10)

We see unseen things. (II Cor. 4:18)

Only in Christ are some of the paradoxes resolved:

It had been Satan's purpose to divorce mercy from truth and justice. He sought to prove that the righteousness of God's law is an enemy to peace. But Christ shows that in God's plan they are indissolubly joined together; the one cannot exist without the other. "Mercy and truth are met together; righteousness and peace have kissed each other." Ps. 85:10 (DA 762; see also 6BC 1071-2)

In physics, the dual character of light as both a wave and a particle is a paradox. Which model best describes light depends on the conditions under which it is observed. Some pairs of sayings can be paradoxical: "Look before you leap" and "He who hesitates is lost".

Sin latches onto one side of a paradoxical truth and ignores the other half. Error needs truth in order to deceive. The problem comes from holding an extreme position as the whole truth.

It is a fact widely ignored, though never without danger, that error rarely appears for what it really is. It is by mingling with or attaching itself to truth that it gains acceptance. The eating of the tree of knowledge of good and evil caused the ruin of our first parents, and the acceptance of a mingling of good and evil is the ruin of men and women today. (Ed 230,231)

One should not take either extreme of a paradox; balance is necessary. Many understandings are possible for a complex issue, e.g., the elephant and the six blind men of Hindustani. This approach makes it harder to say "I'm right; you're different; therefore you must be wrong".

COMPATIBILITY BETWEEN RELIGIOUS AND SCIENTIFIC WORLD VIEWS

Christian origins for modern science

Historians of science have suggested that the Judeo-Christian environment of western Europe and the belief in a monotheistic God were responsible for the development of modern science in that culture.

The *personal* God of Christianity is separate from nature. Abstract laws are reasonable, and experimenting on nature is not a frightening probing of the deity. In contrast, the impersonal nature gods of other religions made abstract natural laws unrealistic and experimentation on nature a frightening prospect.

From the Judeo-Christian monotheistic heritage, God is seen as the *law giver*. His creation should then be amenable to study using rational inquiry of cause and effect relationships. In contrast, the irrational and arbitrary gods of other cultures with their polytheism and warring factions would result in a natural world where rational inquiry would be useless.

The Genesis account pictures God creating a *world that is good*, and thus worthy of man's study. Manual labor for study is not degrading. For the Christian, and especially in the Puritan work ethic, science was an attractive vocation and its goal was to give glory to God. In contrast, Greek culture held philosophy in high regard, but manual labor was for slaves. The real world was not perfect anyway and, if studied, would quite likely give erroneous results; only ideas were perfect.

The Christian God is *free to create* as He chooses in any one of many ways. Therefore, man must study nature to find out how it functions, rather than using philosophy to determine how nature must behave. In contrast, the Greeks modeled nature indirectly using philosophy, rather than directly from nature itself. They believed that

nature could operate in only one way, that philosophy could determine that way, and that there was little need to experiment.

The Christian picture of God (personal and lawful) and how He creates (good and freely) set an excellent framework in which to study nature and form the foundation for the present scientific method. In addition, the church of the Middle Ages was the patron of education, since literacy was needed for Bible reading and logic was needed to defend the Christian faith. (Pearcey and Thaxton)

Founding fathers of science who were Christians

Sir Isaac Newton (1642-1727) developed theories of light and of universal gravitation and shares with Leibniz the honor of inventing calculus. Newton's science was closely related to his theology. In the General Scholium of his *Principia*, he states that its purpose was to establish the existence of God. It was to combat atheism, challenge the mechanical explanation, and point to the need for a wise and benevolent deity and an intelligent Creator. He wanted certainty in his beliefs and to use the Bible as a clear rule, so he had a well defined set of rules for interpreting the Bible. John Locke said that Newton had few equals in Bible knowledge. Newton believed that he was part of a remnant, chosen by God to restore the interpretation of the Bible. Later in life he wrote on prophecy and the chronology of ancient kingdoms. (Westfall)

The Christian founding fathers of science represent various disciplines. Blaise Pascal (1623-1662) was a brilliant mathematician who became a devout Christian at age 31. He carried with him all his life a description of that experience. In his *Pensées* he has valuable insights into the relation between science and religion. Robert Boyle (1627-1691) was founder of the Royal Society in London and is sometimes called the father of modern chemistry. His scruples in matters of religion prevented him from taking the oaths required of a president of the Royal Society, which he thus declined. In his will he left an endowment to provide sufficient income for an annual lectureship to combat the atheism widely professed by wits in taverns and coffeehouses. Louis Pasteur (1822-1895) made advances in biology and demonstrated that spontaneous generation did not occur. He could not understand those who affirmed that matter had organized itself and were not moved by the Infinite Power who created the worlds. William Buckland (1784-1856), a professor of geology at Oxford, was known for his systematic study of Great Britain's geologic structure, and twice served as president of the Geological Society. He was a committed Christian and Anglican clergyman and wrote a two-volume treatise entitled, *Geology and Mineralogy Considered With Reference to Natural Theology*.

Several other of the founding fathers of science were clergy. Nicolaus Steno (1638-1686) developed principles for describing sedimentary rocks that are still in use today. In his later life he turned from science to theology and was ordained a Catholic priest. He took the vow of voluntary poverty, gave all his possessions to the poor, and finally died from an ordeal of poverty and fasting. Gregor Mendel (1822-1884), an Austrian monk, did experiments on garden peas to study patterns of inheritance.

Some ideas for basic scientific principles were taken from Scripture. Lord Kelvin's (1824-1907) second law of thermodynamics, that the dissipation of energy is a universal feature, was based on two of his deepest commitments: universal natural law is created and governed by divine power, and the world is progressively developing toward an inevitable end. He summarized his belief by quoting Psalm 102:26, "all of them shall wax old like a garment". Carolus Linnaeus (1707-1778) is considered the father of taxonomy and instituted the binomial (two word) nomenclature still used today to define genera and species. The Linnaean system was inspired by his search for the distinct "kinds" of created organisms mentioned in Genesis. Johannes Kepler (1571-1630) found that the doctrine of the Trinity suggested the three part heliocentric system of the sun, the fixed stars, and the space between them.

Present-day scientists who are believers

Although not often realized, there are many present day scientists who are also believers. *The Skeptical Inquirer* may be an unlikely place to find some examples, but several are mentioned by Tom McIver, an anthropologist at UCLA. Wernher von Braun was a chief rocket engineer for the German V-2 program in World War II. In the 1960s he was director of the Marshall Space Flight Center and an administrator for planning at NASA headquarters until 1972. He wrote a forward to the 1971 Pacific Press book, *Creation: Nature's Designs and Designer* in which he says:

Manned space flight is an amazing achievement, but it has opened for mankind thus far only a tiny door for viewing the awesome reaches of space. An outlook through this peephole at the vast mysteries of the universe should only confirm our belief in the certainty of its Creator.

McIver mentions Frank Borman's reply to a Soviet cosmonaut about not seeing God in space: "I did not see Him either, but I saw his evidence." James Irwin formed the evangelical High Flight Foundation the year after he walked on the moon and nearly lost his life on Mt. Ararat leading a High Flight expedition searching for Noah's Ark. When Irwin was asked what he would have said were he able to dialogue with God while on the moon, he answered: "I would have said, 'Lord, is it all right if we come to visit this place?'" And how did he think God would answer? "'It's all right as long as you give Me the honor.'" (Kossick)

Walter L. Bradley served as head of the department of mechanical engineering for 4 years at Texas A&M and later as a professor and Senior Research Fellow. He has received over US\$3,000,000 in research grants and contracts resulting in the publication of more than 80 technical articles. In the spring of 1987 while on business at Cornell University, he agreed to give a Campus Crusade for Christ presentation, entitled "Scientific Evidence for the Existence of God". He says, "As I gave my presentation with eagerness that evening, I knew God was doing something special in and through my life." Over 500 students and faculty attended and a lively discussion lasted past midnight. Since then, similar lectures have been greeted with an overwhelmingly positive response at many of the major US universities. (Bradley)

Henry Schaefer is the director of the Center for Computational Quantum Chemistry at the University of Georgia. He is a five-time nominee for the Nobel Prize and was recently cited as the third most quoted chemist in the world. In a *U.S. News & World Report* article on creation, he is quoted as saying, "The significance and joy in my science comes in those occasional moments of discovering something new and saying to myself, 'So that's how God did it.' My goal is to understand a little corner of God's plan." After evaluating the cosmological evidence, Schaefer comes to the conclusion that a Creator must exist; he must have awesome power and wisdom; and He must be loving and just. Each of us falls hopelessly short of the Creator's standard, but He has made a way to rescue us if we trust our lives to Jesus Christ. (Schaefer)

EVIDENCE FROM SCIENCE THAT IT HAS LIMITATIONS

Naturalistic science is impressive

Science and technology affect almost every aspect of our lives. Our houses, our furniture, and our appliances for heating, refrigeration, and washing are designed using scientifically tested materials and technological innovations. Our food has been grown using fertilizers and pesticides, prepared with additives and preservatives, packaged in plastic and often frozen, and heated by microwave ovens. Our communication using photocopy machines, telephone, radio, television, fax, electronic mail, and the World Wide Web, is (usually) fast and efficient. Transportation by automobile or airplane is rapid and made safer by radar. We have put men on the moon. Computers do much of our bookkeeping and word processing and are becoming ubiquitous and indispensable. Our entertainment comes from CD players, VCRs, and high-tech amusement parks. Even our health and length of life have been dramatically improved by medical science discoveries, such as penicillin, the polio vaccine, laser beams, and contact lenses. And then there are such simple things as ballpoint pens and drip-dry clothes.

In my own experience, I have often been impressed by the wonders of science—from the feeling of awe while working at various particle accelerators to the wonder of cancer therapy using the proton beam at the Loma Linda University Medical Center.

Because of the high pay-off from using the scientific method, both government and private industry are willing to invest millions of dollars in scientific research, such as developing new pharmaceuticals, oil exploration techniques, high energy "atom smashers", space travel, and mapping the human genome. Scientific study displays the elegance, logic, and self-consistency of the natural world. The lure of probing the secrets of nature and developing them for the benefit of humanity surmounts political barriers and provides a brotherhood of science. It is no wonder that some believe the scientific method can be used to solve all our problems. But no matter how impressive scientific achievements are, science has limitations. The scientific method can only be directed to where it is most productive when these limitations are recognized.

The wave model of light as an example of a scientific revolution

The inductive nature of science presents intrinsic limitations. These can be illustrated by the history of a scientific model, such as the physics' model of light.

Almost all the observed phenomena of light, electricity, and magnetism were described a century ago by James Clerk Maxwell using a set of four equations. His wave model of electromagnetic radiation was comprehensive, unifying, elegant, and logical. Considering all the phenomena that the wave model of light could explain, it obviously seemed much better than the obsolete particle model of light suggested by Newton. In the late 19th century, scientists believed that the wave model of light was complete, and in need of no more than minor modifications. This reflected a general attitude in science at the time, as expressed in 1894 by Albert Michelson at the University of Chicago:

While it is never safe to affirm that the future of Physical Science has no marvels in store even more astonishing than those of the past, it seems probable that most of the grand underlying principles have been firmly established and that further advances are to be sought chiefly in the rigorous application of these principles to all the phenomena which come under our notice. (Badash)

Several pieces of data, however, had not yet been explained. Attempts to deal with these remaining problems led to two major revolutions.

Relativity. The first difficulty had to do with the medium in which light travels. Light waves travel through space where there doesn't seem to be any medium, so an all-pervading substance called aether was postulated. Many experiments were performed to detect it, but no evidence was found. Extrapolating from water waves to light waves resulted in an approximate model that worked well in explaining many phenomena, but not in predicting a medium for light. Albert Einstein solved the problem in about 1905 by simply assuming that light waves cannot be exactly modeled after other waves. In his special theory of relativity, he postulated that light waves travel independently of any medium (or reference frame).

This special theory of relativity made the very non-intuitive prediction that while observing an object moving at high speeds close to that of light, the mass of the object would appear to increase, its length would appear to shorten, and its time would appear to move more slowly. This prediction has been experimentally confirmed, and the equations of special relativity are now routinely used to describe experiments at particle accelerators. Observations at "every-day" speeds cannot be used to understand what happens at the extremely high speeds at which light travels.

Quantum Mechanics. The second difficulty had to do with whether light is actually a wave. Newton's particle model had long since been superseded by the wave model, but there were some observations, such as the ultraviolet catastrophe, that could not be explained by treating light as a wave. Overtones, sound waves with frequencies higher than the fundamental, are produced from a single vibrating piano string. However, light waves from red hot iron include very little high frequency ultraviolet. The explanation for this discrepancy came in 1900 when Max Planck modeled light in terms of particles of energy, with higher frequency light having more energy per particle. High frequency ultraviolet light would require too much energy per particle to be readily produced.

The model of light as a particle or quantum of energy was part of the development of quantum mechanics that has made some very non-intuitive predictions about the physical world at small sizes. For example, particles such as electrons must sometimes be treated as waves, thus making it impossible to know exactly where they are located, and electrons in an atom can only orbit in certain discrete shells. These predictions have since been verified. Now quantum mechanics is used to understand chemical bonding, the electron microscope, the laser, the transistor, nuclear power, and radioactivity, but in so doing it has incorporated some of Newton's particle model of 200 years before. Today we find that light is treated as a wave under certain conditions and as a particle under others. A simple understanding of water waves cannot be extrapolated to the extreme of small size.

Some limitations of science demonstrated by the new physics

From studying these two revolutions in the model of light, several limitations of science become apparent, even if the possibility of supernatural intervention is ignored. Even in the natural world, much data is unavailable. Even for some of the available data, explanations are lacking. Even for good explanations, simplified approximations (models) are used. Even though one model is used, other models are possible.

In addition to relativity and quantum mechanics, developments in astrophysics, complexity (chaos) theory, and artificial intelligence (and its relation to the conscious mind) make up the new physics that suggests some other limitations of science.

Intuition is insufficient. Our understanding of extreme conditions is limited by human experience. Models explain the unknown using the known, but reality is more than the scientific model. The 6 blind men and the elephant are a good example of this limitation. At the high speeds and energies described by special relativity mass increases. In the strong gravitational fields described by general relativity light bends and time slows, suggesting the possibility of time travel and of being outside of space and time.

Determinism is incomplete. Under some situations described by the new physics, cause and effect relations break down. Nature was once understood to be totally deterministic. Newton's laws of gravitation were used to predict the return of Halley's comet in 1757 after it was observed in 1682. The planet Neptune was discovered where it was predicted based on irregularities in the orbit of Uranus. Laplace went so far as to suggest that the future behavior of the universe was absolutely predictable in principle, if the present positions and forces on all particles were known.

However, the Heisenberg uncertainty principle of quantum mechanics states that the exact position and speed of any particle can't both be known exactly at the same time. This type of uncertainty has led to the realization that, although the general properties of radioactivity can be described, no specific cause can be given for the decay of any individual atom.

Complexity theory has found that there are many situations that are far too complex for every effect to be traced to its cause:

"...all the general features attributed to classical mechanics are in general wrong. The exactly soluble examples are not generic; they are in fact quite atypical." "... chaotic behavior, contrary to earlier beliefs, was a rather general property and not a pathological feature of some contrived system" (Dresden)

Complexity is due to slight variations in initial conditions. The idea that imprecise initial conditions, can totally change final results is illustrated by the following scenario:

For the want of a nail, the shoe was lost;
 For the want of a shoe, the horse was lost;
 For the want of a horse, the rider was lost;
 For the want of a rider, the battle was lost;
 For the want of a battle, the kingdom was lost!

A practical example from meteorology is known as the "Butterfly Effect":

It's 10:15 in the Amazon, and a butterfly flaps its wings,
 Which creates a subtle breeze that spreads pollen throughout the air,
 Causing a caribou to sneeze and send its massive herd into a stampede,
 Which adds wind and dust to a mounting storm that then becomes a hurricane,
 Which alters the global pattern of weather.

Objectivity is incomplete. The observer affects what is observed. Science assumes an unbiased observer of an objective reality, but occasionally that's not true. An often seen example of the lack of objectivity is the dual picture of the young lady and the old granny.

Quantum mechanics finds that light as well as electrons are both a wave and a particle until observed. What is seen depends on the experiment—you see what you are looking for. Radioactive atoms are both undecayed and decayed until observed, which led to the famous Schrödinger's cat paradox. Einstein didn't like these results of quantum mechanics and emphasized the problems with this view, but quantum mechanics seems to be right and Einstein wrong. Quantum mechanics is not about what is, but about what happens when we observe.

Objectivity is lacking in the area of astrophysics because there is only one universe to observe, and we are part of what we are observing. Objectivity is also lacking because of our own conscious mind as observers. The physical world is not a closed system, because the non-physical, free will of the conscious mind can alter it. The evidence for this conscious mind is personal, because it is a private domain, closed to science.

Reductionism is insufficient. The whole is more than the sum of the parts. Nature appears to have hierarchical levels with emergent properties, just as a novel requires a combination of alphabet letters, but is more than just spelling and grammar, and computer programs requires hardware, but are more than just computer chips and hard drives.

In the same way the conscious mind can't be reduced to just cellular interactions or computer artificial intelligence. Consciousness requires life, but is more than life; it requires matter, but is more than matter and the physical/chemical laws that govern it. The conscious mind has unique (non-reducible) features such as feelings (love, hate, beauty, humor, pain, pleasure, and envy), skills (language, foresight, music), wholistic perceptions (such as recognizing flaws in a picture), and a recognition of truthful statements. Gödel demonstrated in his Incompleteness Theorem in 1931 that there are obviously true statements that can't be proved. Conversely, there are paradoxical statements that are neither true nor false:

"One of themselves [Epimenides], ... said, 'Cretans are always liars'" (Titus 1:12)

or,

The following sentence is not true.

The previous sentences is true.

The paradox results from self-reference that can really only be appreciated by the conscious mind.

There was a beginning. It was hoped that science could explain everything, but there is a past limit, an effect without a cause. The Big Bang was resisted philosophically for this very reason.

The universe appears designed. It appears fine tuned for life, with too many coincidences to explain. Life and humans are more than the natural result of physical law. In quantum mechanics, the ratio between the strong force (that holds the protons in the nucleus together) and the electromagnetic force (that would cause them to fly apart) is finely tuned. If the strong force were larger, the protons would more readily clump together forming only the heavier elements, with no hydrogen for water and life. If the strong force were smaller, the protons would less readily clump together forming no heavier elements, and thus no carbon or oxygen that is necessary for life.

In astrophysics, the mass of the universe, the cosmological constant, and the neutron/proton mass ratio also appear to be finally tuned. Science attempts to explain this evidence for design by using the Anthropic Principle: We wouldn't be here, if the universe weren't fine tuned as it is. This explanation may be convenient, but it isn't science.

Unprecedented devastation and pollution are possible. Science often improves life, but science without morals can be destructive. Numerous examples can be given from nuclear bombs to Chernobyl's radioactive fallout. J. Robert Oppenheimer, in talking about the atomic bomb said:

In some sort of crude sense which no vulgarity, no humor, no overstatement can quite extinguish, the physicists have known sin; and this is a knowledge which they cannot lose. (Thorne, p.223)

A negative response from the standard scientific viewpoint

The standard scientific opinion is expressed well by Steven Weinberg in his book *Dreams of a Final Theory*. Chapter 3 gives "two cheers for reductionism", argues that there are no fundamentally new laws for complex systems, and decries holism as the "nuttiest extreme". Chapter 4 finds no "messages for human life in quantum mechanics that are different in any important way from those of Newtonian physics". Probabilistic interpretations do not do away with determinism or make room for human free will and divine intervention. Chapter 9 mentions that the constants of nature presently appear to be well suited for the existence of life, but Weinberg believes that a final theory would be able to prescribe values for all these constants of nature without any surprising coincidences, although he recognizes that a cosmological constant of exactly zero to 120 decimal places may still require some kind of anthropic principle for explanation. Finally, he says "it is consciousness that presents us with the greatest difficulty", but even there it "is not unreasonable to hope that ... we shall be able to recognize something, some physical system for processing information, that corresponds to our experience of consciousness".

Chapter 7 finds no use for philosophy in arriving at physical principles, and chapter 11, entitled "What About God?", finds no place for theology either. Weinberg says that "the only way that any sort of science can proceed is to assume that there is no divine intervention". As such "there is an incompatibility between the naturalistic theory of evolution and religion as generally understood". The incompatibility is not one of logic, but of temperament. Religion didn't arise to answer questions about first causes, "but in the hearts of those who longed for the continual intervention of an interested God". If no conflict is seen, "the retreat of religion from the ground occupied by science is nearly complete". To try to resolve the conflict by having science treat factual reality, while religion treats human morality doesn't work. Religion as defined by the great majority of believers definitely has something to do with factual reality.

Weinberg would like to believe in a designer, but that designer would also have to be responsible for suffering and evil. He would like to find evidence in nature of a concerned creator, but finds "sadness in doubting that we will". He does not think "that science will ever provide the consolations that have been offered by religion in facing death". Religion provides meaning and hope, but for those very reasons it seems "indelibly marked with the stamp of wishful thinking". To respond, science has done well at mechanistically explaining the natural world, but it has left humanity with a clock-work universe that provides nothing for the human spirit. A purpose in life requires the personal touch. Weinberg feels that personal need, but unfortunately does not see the solution in religion.

Weinberg finds fundamentalists and other religious conservatives in one sense closer in spirit to scientists than religious liberals. Conservatives believe in what they believe because they think it is objectively true, whereas liberals "think that different people can believe in different mutually exclusive things without any of them being wrong". However, "it is conservative dogmatic religion that does the harm" with "the long cruel story of crusade and jihad and inquisition and pogrom." Weinberg would like to strike a balance between the contributions of religion and its problems, but in so doing "it is not safe to assume that religious persecution and holy wars are perversions of true religion".

These comments should be of concern for any group that feels it has a corner on truth, whether scientific or religious. Even objective truth can be viewed from many different perspectives with each individual attaching different relative significance to different aspects. Thus the fact of objective truth gives no license for one group to force their perception of that truth on others. Weinberg does a good job of making a case for the beauty and power of naturalistic science. Unfortunately, he pictures a totally naturalist theory with no place for God.

A positive response that the naturalistic world view is not sufficient

Paul Davies in *The Mind of God: The Scientific Basis for a Rational World* says:

... There is no doubt that many scientists are opposed temperamentally to any form of metaphysical, let alone mystical arguments. They are scornful of the notion that there might exist a God, or even an impersonal creative principle or ground of being that would underpin reality and render its contingent aspects less starkly arbitrary. Personally I do not share their scorn. Although many metaphysical and theistic theories seem contrived or childish, they are not obviously more absurd than the belief that the universe exists, and exists in the form it does, reasonlessly. It seems at least worth trying to construct a metaphysical theory that reduces some of the arbitrariness of the world. But in the end a rational explanation for the world in the sense of a closed and complete system of logical truths is almost certainly impossible. (p.231)

John Polkinghorne, a mathematical physics professor at Cambridge University and Fellow of the Royal Society, also trained for the Anglican priesthood. In his book, *One World: The Interaction of Science and Theology* he says:

The rational order that science discerns is so beautiful and striking that it is natural to ask why it should be so. It could only find an explanation in a cause itself essentially rational. This would be provided by the Reason of the Creator ... we know the world also to contain beauty, moral obligation and religious experience. These also find their ground in the Creator—in his joy, his will and his presence. (p.79)

The observations that a totally naturalistic science is insufficient can lead to various metaphysical philosophies such as the New Age, eastern mysticism, Hare Krishna, and theosophy; but they also make Christianity a viable option. The new physics in no way negates the many virtues of science, but it partially undermines science as a stand-alone world view with securely independent foundations of its own.

CONCLUSION

A Christian believes that reality consists of more than science can address. The miracles recorded in the Bible, especially the incarnation and resurrection of Jesus Christ (the heart of Christianity), cannot be studied by the scientific method. These supernatural events are not presently occurring and thus are not observable, repeatable,

reproducible events. In addition, science provides no absolute standard for answering moral and ethical questions, and science has difficulty providing purpose and meaning to life since it cannot conquer death.

It is true that reason and evidence are important for faith (Isa. 1:18; I Thess. 5:21) and God provides evidence that appeals to the reason—the miracle of life, fulfilled prophecy, changed lives, and moral instincts. Likewise, God sustains His creation by natural laws that require reason to understand. However, human reason has its limits; God is too big for us to ever fully comprehend (I Cor. 1:19-29). Room for doubt will never totally be removed (SC 105-113), because our understanding is finite. Pride would be no hinderance to a belief in God if it were based on human reason alone (DA 455), but faith is based on more than just the evidence of the senses (DA 406).

Both faith and reason are needed in a complete world view, and finding a reasonable faith is a continuing process. (ST 698-711) It is not a completed conclusion, because only part of the data is available, and we only know a few of the possible interpretations; therefore, tolerance should be extended to others who see things differently. In the process, one expects not to have all the answers and not to have complete harmony. There is no need to fear looking at all the evidence; faith should be able to withstand the most careful scrutiny.

How then should reason be used in relation to faith? It can suggest to the unbeliever that his world view doesn't fit with reality, and to one who is weighing the evidence that science does not need to stand in the way. For the believer, reason and evidence serve to confirm a faith that is already present. However, scientific evidence is not a proof for God or Christianity and our apologetic cannot be to convince by reason alone. In the end, the best argument for faith is not impersonal facts, but the life of the believer.

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* Article available on the World Wide Web - <http://www.leaderu.com/memms/index.html>