

A BELIEVING SCIENTIST APPROACHES THE SCIENCES

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Abstract

Understanding the relation between science and religion is important and relevant. For various reasons the relation is sometimes one of conflict and sometimes cooperation. The Bible gives several examples of the conflict. Since both theological and scientific interpretations change with advancing knowledge, caution is necessary in basing one's theology on any particular scientific model. Examples of cooperation are also described, particularly the important positive influence that Christianity has had on the development of science.

A correct understanding of the relation between nature and revelation is based on a recognition of the multi-dimensional attributes of God's character — rational and dependable, omniscient and eternal, truthful and just, loving and merciful. The human response can be symbolized by our stewardship of the environment and time. The range of God's attributes may present paradoxes at times, but all are important and must be balanced to give a complete picture.

INTRODUCTION

Science/religion issues deal with ultimate realities, with the decision of whether to "worship" the Creator or the creature (creation), with whether a supreme being is above the creation and can supernaturally intervene (through 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 the 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*, an understanding of the science/religion interface is needed for working in a technological society and for sharing beliefs with the scientifically trained.

Relevance

A recent issue of *Time* magazine gave the fourth in their series of the 100 most influential people of the century. It discussed the contributions of 25 scientists and thinkers and the major ways science has shaped life at the end of the century. It concluded with an article entitled, "What's Next?" by Sir John Maddox, the former editor of *Nature*. He says "The pace of discovery is likely to accelerate." Then he enumerates some of the scientific and philosophical challenges for the century ahead: a theory of everything, life's beginning, human evolution, human thinking, and understanding life. All are at the interface between science and religion.

Is it possible to integrate science and faith? to be a believer in God and a world-class scientist at the same time? The 3 April 1997 issue of *Nature* contained an article entitled "Scientists are still keeping the faith." It found that 40% of American scientists believe in a personal God. [It

should be noted however, that a more recent issue had an article by the same authors, "Leading scientists still reject God." (Larson and Witham)

Christian Leadership Ministries, a division of Campus Crusade for Christ, publishes a news journal, *The Real Issue*, addressing Christian scholarship. It contains a number of articles written by scientists who have integrated their science with their faith: Walter Bradley (mechanical engineer and former chair of that department at Texas A&M), Paul Chien (biologist and chair at University of San Francisco), Michael Behe (biochemist and author of *Darwin's Black Box*), Owen Gingerich (senior astronomer at the Smithsonian and Harvard), Fritz Schaefer (a quantum chemist at University of Georgia and several-time nominee for the Nobel Prize in Chemistry), and Phil Johnson (law professor at University of California, Berkeley and although not a scientist the author of *Darwin on Trial*).

Recent news journal articles have emphasized the possibility of integrating science and faith. *The Wall Street Journal* contained an article, "Faith and Reason, Together Again: Who says it's possible to believe in science and God? Scientists do." (Robinson) The July 20, 1998 *Newsweek* cover story was entitled "Science Finds God." (Begley) It gave examples of several prominent scientists such as Allan Sandage, Jocelyn Bell Burnell, and John Polkinghorne who are believers. The November 9, 1998 *Newsweek* editorial was entitled, "The Gospel from Science" with a subheading of "The news from the cosmos is staggeringly improbable and theologically suggestive." (Will) These articles emphasize the need for theism without addressing a short chronology or a world-wide flood, however, one report did that as well. The June 16, 1997 issue of *U.S. News & World Report* has an article, "The geophysics of God: A scientist embraces plate tectonics — and Noah's flood." (Burr) It describes John Baumgardner, a scientist at Los Alamos National Laboratory in New Mexico, who is attempting to model plate tectonics in a short time frame.

Even the scientific journals are talking about how to integrate science and faith. "Science and God: A Warming Trend" appeared in the 15 August 1997 issue of *Science* (Easterbrook) It stated, "Can rational inquiry and spiritual conviction be reconciled? Although some scientists contend that the two cannot coexist, others believe they have linked destinies." In "Where Science and Religion Meet," the February 1998 *Scientific American* describes the U.S. head of the Human Genome Project, Francis S. Collins, who strives to keep his Christianity from interfering with his science and politics. (Beardsley) A more recent issue reports on renowned scientists who contemplate the evidence for God in "Beyond Physics." (Gibbs) Again these are scientists who believe in God, but not necessarily a literal interpretation of Genesis 1-11. The *American Scientist* had an article that emphasizes this point, "Creationism's Geologic Time Scale." It says, "should the scientific community continue to fight rear-guard skirmishes with creationists, or insist that "young-earthars" defend their model *in toto*?" (Wise)

Several important recent conferences have tried to understand the integration of science and faith. The C. S. Lewis Summer Institute was such a conference held at Cambridge in England in 1994. The Mere Creation conference, emphasizing the evidence for design in nature, was held at Biola University in the Los Angeles area in 1996. The Program of Dialogue Between Science and Religion was sponsored by the American Association for the Advancement of Science and the Templeton Foundation, April 14-16, 1999.

Conflict or Compatibility

What kind of relation should exist between science and religion? Should it be one of conflict or compatibility? Inspired writings present both possibilities.

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: "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* states

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. (p.522)

On the other hand, compatibility 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 1 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." (p.411)

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 1600s. 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 Draper's *History of the Conflict between Religion and Science* and 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.

Reasons for Conflict or Compatibility

Compatibility between science and religion occurs as long as God takes first priority, as long as the Creator is worshiped, as long as science studies nature to understand the Creator. Conflict arises when God is not given His rightful position, when the creature takes the place of the Creator. Ideally, (1) nature — that is the creation — points to the Creator, rather than science treating nature as an end in itself, independent of any Creator, Sustainer, or Savior; (2) the complexities of nature manifest God's infinite wisdom, rather than science believing it can unravel all the complexities of nature itself; (3) the inter-relationships of nature demonstrate God's love and personal concern for mankind's welfare, rather than science seeing no personal God of love behind the natural world; (4) God's good handiwork [Gen. 1:31] leads to an appreciation for the beauty of His character, in contrast to the beauties and marvels of nature being appreciated for their own sake with no thought of their source; (5) the law and order in nature lead to an understanding of God's government and the moral law governing human behavior; and (6) the resources of nature are used with good stewardship to bring glory to God, rather than being exploited for selfish ends.

CONFLICT BETWEEN WORSHIP OF THE CREATOR AND WORSHIP OF THE CREATION

Old Testament Examples

The worship of nature was an integral part of the pagan religions that surrounded the Jews of the ancient Near East. (Ringgren)

The ten plagues in 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. (see PP 758; Horn, p.296; Breasted)

The Canaanites often worshiped their nature gods in beautiful natural settings. (see Horn, p.469) 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 worshiped Baal. (Judges 6:25) Solomon married wives from the surrounding nations and built high places for them on the hills of Jerusalem. (1 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.” (1 Kings 14:23)

During the reign of Ahab and Jezebel, the kingdom of Israel worshiped 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. (see Horn, p.99-100) 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. (1 Kings 18)

The nature gods were not like Yahweh (Drane, p.68): they were not personal gods (e.g., with conscious, thinking, rational personhood); they would only bring blessings when given sacrifices; they were only interested in the rituals, not the affairs of normal life; 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) The judgment on Israel for practicing idolatry upon “every high hill” (e.g., 1 Kings 14:23; 2 Kings 17:10; Jer. 2:20; Eze. 6:13) is paralleled by the judgment of Noah’s flood covering “all the high hills” (Gen. 7:19).

Last-day Examples

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 7 last plagues, similar to the plagues of Egypt, show that nature is ultimately under God’s control, not science’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. According to the second angel, the system of salvation by works has fallen. Great Babylon, and before it the tower of Babel (PP 119), were symbols to humanity’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 worshiped 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)

SCIENCE/RELIGION CONFLICTS ARE STUDIED TO WORK TOWARD COMPATIBILITY

Science is the human interpretation of nature; the theology of religion is the human interpretation of revelation. These limited human interpretations can be in conflict, but as new data becomes available and study is done hopefully these interpretations change and develop and become more compatible.

Theological Interpretations Change

Scientific details The best known example of a change in Scriptural understanding resulting from new science is the shift from a geocentric to a heliocentric cosmology. (Tyler) The standard cosmology of Galileo's day was uprooted, although seemingly supported by Scripture: a stationary earth (1 Chron. 16:30; Ps. 104:5; 119:90) and a moving sun (Josh. 10:12; Isa. 38:8; Hab. 3:11). Today one looks at the biblical passages as using the "language of appearance" and Scripture uses words that accommodate the non-technical perspective of the reader.

An oft-quoted, but ill-founded (Gould; Russell), example is that the Middle Ages church believed that the earth was flat, based on e.g., texts suggesting that the earth has 4 corners (Isa. 11:12; Rev. 7:1).

Other scientific allusions in the Bible that need to be reinterpreted in modern technical terms include: the windows of heaven (Gen. 7:11; 8:2; Mal. 3:10), the hare chewing the cud (Lev. 11:6; Deut. 14:7), the locust, beetle, and grasshopper having four legs (Lev. 11:21-23), being smitten by the moon (Ps. 121:6; cf. Reid), a grain of wheat dying in the ground (Jn. 12:24), and light proceeding from the eye to the object observed (Mt. 6:22).

Similar examples can be found in the writings of Ellen G. White: the 4 moons of Jupiter (White, 1985, p.113-114), stars in the solar system shining by the reflected light of the sun (Ed 14; see also DA 465), and the sun shedding its light to gladden a thousand worlds (DA 21).

It is important not to read out of inspired sources more than is intended. (Tyler) This error resulted in the dogmatic belief in fixity of species in Darwin's time, against which he overreacted with the theory of total transmutation for all species.

Symbols The importance of some of the symbols in the Bible have changed with time, e.g., the importance of circumcision and of not eating blood or meat offered to idols.

Circumcision was given to Abraham (Gen. 17:9-14) and was a life-or-death issue for Moses and his son (Ex. 4:24-26). Later the Israelites were reminded that what was really necessary was circumcision of the heart (Eze. 44:7; Acts 7:51), and physical circumcision is meaningless without heart religion (Rom. 2:25-29). The issue was discussed at the Jerusalem council (Acts 15:1,5,10,24) and not made a requirement for the Gentiles.

The requirements for the Gentiles mentioned in Acts 15:28,29 only included a prohibition on meats offered to idols, blood, things strangled, and fornication. The *meat offered to idols* was an issue for Daniel (Dan. 1:8; PK 481), but no issue for Paul, although he would not cause a brother to stumble (Rom. 14; 1 Cor. 8). The *blood and things strangled* were important to Jews in the

Old Testament and still today as kosher food (Gen. 9:4; Lev. 3:17; 17:11-14; 1 Sam. 14:32-33). It may also be important to Jehovah's Witnesses, but is not a fundamental belief of Seventh-day Adventists, although for health reasons meat is often not eaten at all. *Fornication* is prohibited as part of the 10 commandments, and is still held today.

Scientific Interpretations Change

Numerous examples of revolutions in scientific models are available, e.g., phlogiston theory, the physics model of light, a steady-state universe, and plate tectonics. Some changes have brought certain scientific models more closely in line with revelation, e.g., health and medicine and in the recognition of geological catastrophes. Here we will particularly note the decreasing role of the supernatural and the increasing role of the human in explaining the natural world.

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 (Mt. 5:45), 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. 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 19th 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, in fact, any appeal to non-naturalistic forces, has fallen 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 no more than 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 assumed to apply by using the rule that "The present is the key to the past." The deterministic nature of the world gives scientific models their predictive power, e.g., 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.

Theological Doctrines and Scientific Models

Recognizing the conflicts between, and the changing interpretations in, science and religion, caution is needed today in working toward a concordance between the two.

St. Thomas Aquinas combined Aristotle's science and philosophy with Christian theology. (Tyler) It became the official doctrine of the church in the 16th century. Aquinas used rigorous "proofs" to defend Christianity; but as a result, an attack on the science seemed to be an attack on the Bible. He believed that reason and revelation should be consistent; however, once theology was tied to science, Galileo's arguments against a geocentric scientific model appeared to undermine theology as well. One should expect a consistency between reason and revelation, as Aquinas did; however, it can be dangerous to tie one's theological belief to some particular scientific model.

The Jewish rulers in Christ's day had a very definite model of the Messiah as the conquering king. It is easy to see how that model developed from reading the Old Testament, and in fact, their picture was partially correct, but incomplete. The disciples were able to go on to a more complete (and correct) picture, but the rulers were not. Because the Jewish rulers were entrenched in their traditions, creeds, and rites, it was much more difficult for them to accept Jesus, than it was for the disciples.

Each Christian church has a (partially) correct picture of God, but it is also incomplete. Formalizing this partially correct picture into a creedal statement can make it much more difficult to move on to a more complete picture.

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. (e.g., Jaki; Lindberg; Lindberg and Numbers)

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 during 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 formed 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)

Christian Founding Fathers of Science

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 shares 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. (Peacock) 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. (Vallery-Radot) 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*. (Heeren)

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. (Albritton) 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 (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." (Smith and Wise) 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. (Heeren; Pearcey and Thaxton) 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. (Koestler)

Believing Present-day Scientists

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 (McIver). 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. In the forward to *Creation: Nature's Designs and Designer* (Utt) 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. 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)

THEOLOGICAL ISSUES

As already noted, the essential feature in properly relating science and faith is to keep the creation — nature, the creature — subsidiary to the Creator. 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)

The issues are important and do make a difference. Thoughtful Christians need to study the issues and address the paradoxes. There are a wide range of views on how to integrate science and faith, and the various implications need to be discussed. Following are attributes of God’s character that I believe are the foundation for a correct integration of science and faith:

1) GOD: Dependable and Rational

In Scripture, God is portrayed as being dependable Himself and as the giver of natural and moral law for His creation. As God created mankind in His image, Adam and Eve were also rational beings. From this Judeo-Christian heritage of law and reason, science developed using rational inquiry into the dependable relationships in nature. Today faith must correspond to real life experiences in the natural and moral domain and must be reasonable. We are to be “thinkers, and not mere reflectors of other men’s thought.” (Ed 17) There is the need to think and discuss.

Although the creation relentlessly obeys natural law, humanity today doesn’t obey the moral law. “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 1:25 outlines the lack of moral law for those “Who changed the truth of God into a lie, and worshiped and served the creature more than the Creator, who is blessed for ever.”

As rational beings God provides us evidence for belief; however, he does not provide compelling proof because He has also given freedom of choice. Likewise, Christians would do well to “be ready always to give an answer to every man that asketh a reason” (1 Pet. 3:15), but not to require proof or to force another to believe. Eve had evidence for faith in God’s word, but not proof. She was not forced to believe. Unfortunately, she was the first “scientist” and based her decision only on the evidence of her senses; 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) This leads to the next set of attributes.

2) GOD: Omnipotent, Omniscient, and Eternal

Human reason is important, but it has its limits. God is much greater than human reason can understand or imagine from studying nature, or even Scripture. The wisdom from above is needed. In 1 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.

And in *1 Selected Messages*:

The Lord speaks to human beings in imperfect speech, in order that the degenerate senses, the dull, earthly perception, of earthly beings may comprehend His words.

Thus is shown God's condescension. He meets fallen human beings where they are.

The Bible, perfect as it is in its simplicity, does not answer to the great ideas of God, for infinite ideas cannot be perfectly embodied in finite vehicles of thought. (p.22)

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)

Much is said about God's wisdom and the wonders of creation in the book of Job. Chapter 28 states that wisdom is not to be found in nature, but in the fear of the Lord. Near the end 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." (38:2,3) After all of Job's misery, God still didn't explain it, but instead asked Job numerous questions about nature and emphasized that He was in control. Job's response: "Behold, I am vile; what shall I answer thee? I will lay mine hand upon my mouth." (40:4) And finally:

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. (42:2,3)

Our picture of God is too small. The essence of the second commandment in contrast to the first is a prohibition against having a narrow model of God. The first commandment prohibits 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 Israelites wanted something they could see as a symbol of their God. This symbol however would lower their conception of the true God and lead to believing that God was no more than the human representation. The Israelites had not seen God, so 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 some examples in his book, *Your God Is Too Small*. The chapter entitled "Grand Old Man" points out that the modern world has trouble seeing God as up to date — computers? jet aircraft? a nuclear power plant? special effects in video productions? modern communication by FAX, Internet, etc.? The initial reaction is that these are too "high-tech" for God, but of course He knows all the intricacies of technology.

Time. Humanity is limited by time, unlike God who is eternal and timeless. Time for God doesn't correspond to human time (Ps. 90:4; 2 Pet. 3:8); God knows the end from the beginning. Cannot God create time, exist outside of time, and move in time? Only for man is time a symbol of limitations. "Time is uncontrollable, incomprehensible, indefinable, and shares in these qualities with God. ... Time is the stuff of life. Time takes priority over all else. Time is sovereign. As to God so every creature is subject to time." (Provonsha, p.80) It is the creation that must be concerned about time, not the Creator.

3) GOD: Truthful and Just

God is a God of truth. The Scriptures are a true record of God's dealing with humanity. He is just in His judgments, as well as merciful.

We also expect to find truth in the natural world. God is not trying to trick or deceive us in nature. There is need for honesty with data from the natural world, not ignoring data that doesn't happen to fit our particular paradigm. Creationists, as well as evolutionists, have their

problems, as illustrated in the book, *The Battle of Beginnings: Why Neither Side is Winning the Creation-Evolution Debate*. (Ratzsch)

4) GOD: Loving and Merciful

The God of Scripture is a God of love. So how does one deal with the problem of evil, 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)

Charles Darwin could not accept that the loving God of the Bible would design parasitism, allow the death of his child, or burn the wicked forever in hell. (see e.g., Keynes)

A logical explanation has been used to partially answer the question of evil: "An enemy hath done this." (Mt. 13:28) Death is the consequence of sin. Competition, survival of the fittest, the rule of tooth and claw, suffering, 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 (Mt. 10:29) and is creating a heaven where the wolf and the lamb will live together (Isa. 11:6; 65:25). Provonsha says of the God of evolution:

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 to explain evil.

A personal God God is a person, 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, Wherewith 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. (Mt. 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. (p.133)

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."

Contingency. And God is constantly in control. The universe is not an independent mechanism. He interacts with His creation, at times intervenes in miraculous ways in the natural order of things, and will ultimately end the sin problem. (8T 259-260)

Human Responses — Stewardship and Symbols

Humanity is a steward of God's creation, sometimes subdivided into treasure, temple, time, and talents. Here they will be discussed under two headings:

The Environment God says, "every beast of the forest is mine, and the cattle upon a thousand hills. ..." (Ps. 50:10,11) But at the creation, God gave Adam and Eve, "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)

Dominion over the environment includes dominion over the atmosphere, water, land, and climate, as well as the diversity of life and the energy resources. Humanity has done poorly at taking care of this responsibility in activities such as agriculture (and deforestation), manufacturing and industry, human population growth, and nuclear war. (Clark) As a result, "We know that the whole creation groaneth and travaileth in pain together until now." (see Rom. 8:19-22)

In addition, care for the environment is closely related to several specific doctrines: (1) Creation: as already mentioned, the earth belongs to God and we are but stewards. (2) Sabbath: we rest from our greed and give the creation a rest, e.g., the Sabbatical year. (3) Non-immortality of the soul: this contrasts with dualism which treats the physical as of less importance. (4) Eschatology: God will "destroy them which destroy the earth" (Rev. 11:18), e.g., by nuclear devastation or pollution (heat death). (5) Health: the body temple is sacred and requires pure air, water, and food. (6) Concern for the poor: those who are hurt most by pollution. (Greig)

The Sabbath. Perhaps the biggest reason Seventh-day Adventists consider a 7-day creation as fundamental is the importance of the seventh-day Sabbath. The symbol of itself is useless, as can be seen from the Jews of Christ's day; however, it can be very meaningful as a symbol of what has been discussed above:

(1) God is a personal God. — He wants to spend time with us as friends, not from a forced allegiance. A forced observance of any day of the week is contrary to His principles.

(2) God is the Lord of time, as He is Lord of all else. — He owns all time, but especially the seventh day of the week. This can be compared to: His ownership of our talents that produce income (so it should be used wisely), but especially a tenth (not a 7th, or a 12th, or anything else); His ownership of the world and humanity as stewards of the environment; His ownership of the body as the temple/dwelling of the Holy Spirit.

(3) God is wiser than humanity. — Obedience to many of His requirements is based on understanding; however, because we see His great wisdom, we are also willing to obey requirements that are not completely understood. We can worship on the seventh day, even if we do not completely understand how or what God created during those 7 days of creation: the entire universe, the local solar system, only life on earth, only the Garden of Eden, only proclamations. [The issue of a *recent* creation of life is more closely tied to the issue of death before sin, than it is to a 7-day creation.]

(4) We must rest from our labors. — Humankind is limited: in being able to create [We can create art and procreate, but not create *ex nihilo*.]; in being able to save ourselves [Since Christ is creator, He can also recreate.]; as well as, in being able to understand everything in the natural world [As humans using science, we can study, organize, and explain much in nature; but we must rest from trying to "prove" all the details of how God created and "flooded" this earth.].

(5) We are to worship the Creator. — We are not to worship the creature, whether: the sun [as the ancients did and instituted Sunday for sun-worship]; the natural world [as scientism does, and perhaps even a Christian who accepts Scripture based on the scientific evidence]; or, human wisdom [as naturalistic science does, when it says there is no more to reality than what can be perceived by the senses, and perhaps even a Christian who believes he has (or can figure out) all the scientific answers about how God created/flooded the world].

A Balanced Approach

The conflict between scientific and religious issues results from apparent paradoxes, but it is only one of a number that Christians have struggled with in trying to understand God and how He works: the divine/human nature of Christ (both Creator and creature), 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. (Mt. 11:28-30)
 We become first by being last. (Mt. 20:16)
 We are exalted by being humble. (Mt. 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; 2 Cor. 4:10,11)
 We conquer by yielding and are freed by becoming His bond servants. (Rom. 6:16-18)
 We become wise by becoming fools for Christ's sake. (1 Cor. 1:20,21)
 We glory in our infirmities, and are strongest when we are weak. (2 Cor. 12:5,7-10)
 We see unseen things. (2 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."

It is easy to latch onto one part of a paradoxical truth and ignore other parts. The problem comes from holding an extreme position as the whole truth. Current partial answers should not be accepted as complete answers. Many understandings are possible for a complex issue, e.g., the elephant and the six blind men of Hindustani.

People Relations

As science/religion issues are discussed with people, a balanced approach is useful. It combines: certainty and flexibility; the authority of the corporate body and the uniqueness of individual beliefs; the firm foundation and the landmarks on the one hand, (CWE 30-31) and growth, progress, and new light on the other; (CWE 33-42) "standing for the right" on one hand, (Ed 57) and unity, discussion, cooperation, and compromise on the other; "shaking the dust off our feet" (Lk. 9:5) on the one hand, and recognizing that "if they are not against us, they are for us" (Lk. 9:49-50), on the other. A balanced approach makes it harder to say, "I'm right; you're different; therefore you must be wrong," and easier to say, "God's right; we're both incomplete."

In his chapter on Christian Apologetics, C. S. Lewis gives a warning:

... nothing is more dangerous to one's own faith than the work of an apologist. No doctrine of the Faith seems to me so spectral, so unreal as one that I have just successfully defended in a public debate. For a moment, you see, it has seemed to rest on oneself: as a result, when you go away from that debate, it seems no stronger than that weak pillar. (p.103; see also 5T 705-706)

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)

And Christ gives an example of how to deal with doubt in his relation to 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. . . . [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)

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; 1 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 (1 Cor. 1:19-29). Room for doubt will never totally be removed (SC 105-113), because our understanding is finite. Pride would be no hindrance 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. (5T 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 completely 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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