Chapter Six

DIALOGUE ON THE COSMOS

When one considers the current scientific theories about the origin and structure of the universe, there are several issues that cause consonance and dissonance with religion.

Critical Questions

Some of the science-and-faith issues include: Does the universe have a beginning? Is the universe static or dynamic? Does the universe have value or purpose? What is the significance of the earth? Each issue is discussed below.

Does the Universe Have a Beginning?

The Big Bang theory projects that the universe had a beginning, that it began as an infinitely small point called a singularity. Thus, there is consonance between the scientific theory and theological claims of God creating the universe. Some have carried the relationship beyond consonance to apologetics. As an example, Pope Pius XII in 1951 said that the beginning of the Big Bang provided grounds for belief in God. The problem with basing your religious proofs on science is that scientific theories are never complete and do undergo refinements; a faith based on scientific theories appears to crumble when the scientific theory changes. A classical example of this is the work of Thomas Aquinas, who blended Christian theology with Aristotelian science that included an earth-centered universe. Refinement of cosmology from an earth-centered model to a sun-centered model put a tremendous stress on the Thomist theology.

Currently, scientific understanding of the earliest part of the Big Bang cosmology is incomplete because the early universe was smaller than an atom. General relativity, which Big Bang cosmology

is based on, explains the behavior of the very large but not the very small. Quantum mechanics, discussed in chapter 10, explains behavior at the subatomic level. A combination of general relativity and quantum mechanics is needed to model the very small universe. This approach is called *quantum gravity* with its cosmological model called *quantum cosmology*. At present there is no consensus on how to achieve this combination. One attempt is the work of Stephen Hawking. Hawking's calculations result in imaginary time. His calculations imply that as one approaches the singularity, time becomes imaginary. Thus, in Hawking's model the singularity can never be reached. If his model is correct, then the universe would be finite but have no beginning. Not everyone agrees with Hawking's results and more work is needed before there is a quantum cosmology. But Hawking's proposal does show the potential danger of using the singularity as an apologetic.

The idea of creation may conflict with the concept of God found in some religions or with the worldview present in some cultures or philosophies. But does the idea of creation conflict with a scientific understanding of the universe? The modern age has tended to regard the scientific explanation of things as the most accurate and reliable kind of knowledge. This view reflects a bias or presupposition about the value of different kinds of knowledge. It assumed a virtual absolute truth to scientific knowledge based on the scientific method, yet this value is one imposed from the outside rather than from within the scientific method. Science could never live up to the expectation placed upon it by the modern era. The scientific method itself actually suggests the limitation of scientific knowledge.

To ask if science conflicts with creation, one must first ask, Which science? As chapter 4 has suggested, the scientific community has adopted many explanations for the working of the universe over the last few thousand years. Must the Bible present a particular scientific understanding of the universe in order not to conflict with science? Rather than presenting a particular science, the Bible presents a scientifically neutral view of the universe. The idea of creation does not conflict with the earth-centered universe of Aristotle and Ptolemy, the sun-centered universe of Copernicus, the static universe of Newton, the dynamic universe of Einstein, or even the finite and unbounded universe of Hawking. None of these sciences may prove creation, but they do not conflict with the idea

of creation either. For all of these cosmologies of the physical universe, creation cannot be excluded scientifically. The cosmologies themselves, on the other hand, have been found lacking. One after another they have given way to new cosmologies.

When religion is wed to any particular science, it is crippled. When the science fails, the religion fails with it. The science and the religion of ancient Egypt and the Celts was the same. The cosmology was the religion. When the cosmology died, the religion died. When the Christian academy wed itself to the science of Ptolemy as well as the metaphysical worldview of Aristotle, it created enormous problems for itself. When the eighteenth-century Christian academy wed itself to the mechanical cosmology of Newton, it gave up its own voice. In both cases, the content of Christian faith was abandoned to the cosmology until it was identified with the cosmology. In the modern period, process theology has created a metaphysic around evolutionary theory. This wedding of religion to science usually occurs to give religion the "respectability" of science. It leaves it, however, with nothing to say on its own. When the science eventually fails and a new science takes its place, the theologians must scramble to find a new scientific rationale. While liberals tend to rush to adopt the new scientific rationale for religion, conservatives tend to defend the old science long after it has been discredited because the old science has become so enmeshed with the old religion.

Is the Universe Static or Dynamic?

The concept of a static universe was one of the dominant ideas of science for centuries. It did not matter whether the cosmos was earth-centered or sun-centered or Milky Way galaxy-centered; in all cases the cosmos was considered to be static—the same yesterday, today, and tomorrow. Furthermore, these models gave no information about the origin or fate of the universe.

Only in the twentieth century did scientists seriously propose the revolutionary idea of a dynamic universe. The Big Bang model was a paradigm shift that caused scientists to propose that the universe has a life cycle: The universe had a beginning, has been expanding ever since, and has a predicted ending. For philosophical reasons, some scientists resisted this paradigm by reformulating the static model into the Steady State model. Although this model contains continuous creation, to these scientists its static, no-origin, no-end features were reassuring. By the end of the

twentieth century, the dominant model of cosmology was a dynamic, expanding-universe model. Thus, at the beginning of the twenty-first century, religion must address the consonance and dissonance associated with a dynamic-universe model.

The deistic understanding of God grew out of the understanding of a static universe. The deists believed that God created the universe, like a watchmaker who fashions a watch. He wound it up and then left it alone. A static, mechanistic universe has no place for involvement by God. The deists, therefore, did not believe in miracles or the divine nature of Christ. Thomas Jefferson, one of the most prominent deists of his time, took scissors to his Bible and cut out all references to the miraculous!

Though the opening verses of the Bible affirm that God's creation of the physical universe is complete in its scope, the rest of Genesis 1 makes clear that creation is not a static activity of God. Creation began one day (Gen. 1:5) and is not finished until a seventh day (Gen. 2:2). If the days of Genesis 1 are meant to be understood as twenty-four-hour solar days, then all creative activity of God lies in the past as a static event. If the days of Genesis 1 have a different meaning, however, then the seventh day may lie in the future as described in Revelation as the end of the present created order and the beginning of a new heaven and a new earth in a new age.

Rather than a God who intervenes in a static universe, the Bible portrays a God who is involved in the day-to-day activity of running a universe. God appears as one responsible for and involved in each new life. God sends the rain on the just and the unjust alike (Matt. 5:45). Such passages may mean that God determines by a decisive act where each drop of rain will fall. Such passages could also mean that God continually calls the process into being which makes rain possible. As we saw in chapter 5, the form of the Hebrew verbs in Genesis 1 suggests that God began to call all of creation into being, but that the action is not completed.

The Book of Hebrews probably gives the clearest interpretation of the meaning of time in creation and the dynamic involvement of God in creation across time. Hebrews follows the New Testament pattern of attributing the work of creation to the Son:

> But in these last days he has spoken to us by his Son, whom he appointed heir of all things, and through whom he made the universe. The Son is the radiance of God's glory and the exact representation of his being, sustaining all things by his powerful word (Heb. 1:2–3).

The choice of the term *universe* represents an interesting interpretation of this text by the translators for a modern audience since the ancients had no word for what we call today the universe. The Revised Standard Version translates the Greek word as "world" which would imply cosmos rather than the planet Earth. The King James Version of 1611 translated the word as "worlds." The word in the text is actually the word *aionas* (eons) which means "ages." Hebrews suggests that the Son made the ages and that he sustains or continues to uphold creation by the same word by which he began creation (see also John 1:1–3). Paul also affirmed the dynamic nature of Christ's involvement with creation in his letter to the Colossians when he said, "He is before all things, and in him all things hold together" (Col. 1:17). The continued existence of the created order depends upon the exercise of the will of God (Rev. 4:11).

Does the Universe Have Value or Purpose?

As we discussed in chapter 1, questions about purpose are really outside the realm of the scientific method. However, this has not stopped some scientists from making statements about purpose. Since the latter part of the nineteenth century, more and more scientists have assumed that the universe has no purpose; it just is. They assumed that the universe arose from matter, developed by natural laws, and that nothing else was involved. As Jacques Barzun wrote, "Matter and Force . . . explain our whole past history and presumably would shape our future."[1] How would one test Barzun's assumptions? Scientists check their assumptions by changing the value of a variable and then repeating the process to see what will happen. For example, a chemist could check the effect of temperature on a reaction by running a series of reactions while the temperature is increased by ten degrees over that of the previous run. These experimental runs would reveal whether the outcome of the reaction depended upon the temperature.

Likewise, to test Barzun's assumption, one would need to "build" a series of universes with different values for certain fundamental variables and then observe if life develops in any of these universes. Until the advent of supercomputers, there was no way to "build" other universes. With supercomputers, scientists have been able to perform "if" calculations on the universe. If the size of the Big Bang were larger or smaller or if the fundamental force of gravity were weaker or stronger, would life still develop? If the universe

and life were just the result of purposeless natural forces, scientists had assumed that life could exist even with a lot of variance in the values of these variables. They had assumed that under the new conditions life would exist; it might not lead to life with the intelligence of humans, but life would form.

As shown in Figure 6.1, very small changes in the fundamental forces will result in a universe in which life does not develop. Scientists were surprised to learn from these calculations that the universe seems to be fine-tuned for the existence of life; seems to be fine-tuned for mankind. As the astronomer Fred Hoyle, who was an atheist, wrote, "A common sense interpretation of the facts suggests that a superintellect has monkeyed with physics, as well as with chemistry and biology, and that there are no blind forces worth speaking about in nature. The numbers one calculates from the facts seem to me so overwhelming as to put this conclusion almost beyond question."[2] These fine-tuned variables are called the Anthropic Principles. The word *anthropic* refers to anything related to humans; thus, to some scientists, these variables were fine-tuned so life and humans could be present in the universe. At least twenty-six of these variables are known.[3] Three of these are listed in Figure 6.1.

Size of Big Bang	*If smaller:* Big Crunch occurs before life can form.	*If larger:* universe expands too fast to form stars, planets, and galaxies.
Size of Gravity	*If weaker:* stars do not ignite.	*If stronger:* stars too big, burn too fast for life to develop.
Size of Strong Nuclear Force	*If weaker:* only the atom hydrogen would form and no other elements would be formed which are needed for life.	*If stronger:* all hydrogen would be converted to helium. Life, as we know it, needs hydrogen to make biological molecules.

Fig. 6.1. Life-Supporting "Coincidences" Concerning the Universe.

Size of Big Bang. The size of an expanding universe results from the interaction of an outward force due to the size of the Big Bang and inward force due to gravity. An everyday analogy of this is a paddleball which involves a ball attached to a paddle by a rubber band. Hit the ball with the paddle and it flies away, stretching the rubber band. At some point, the outward motion of the ball equals the inward pull of the rubber band. The ball stops moving outward and then the pull of the rubber band causes the ball to fly inward toward the paddle. The distance the ball flies before stopping and returning to the paddle depends upon how hard the ball was originally struck. Likewise, the larger the Big Bang the longer the space-time fabric of the universe will expand before it could be stopped by the gravitational force.

Calculations have shown that if the Big Bang were slightly smaller (one part in a billion trillion), the time taken for gravity to stop the expansion of the universe and recompact the universe would be less time than it took for life to develop in the current universe. If the Big Bang were slightly larger (one part in a million), the expansion would be too fast for gravity to collect matter into stars and planets which, according to the current model, are needed for life to form.

Size of Gravity. According to current cosmological theory, a star begins as a cloud of hydrogen gas held together by gravity. The force of gravity gradually pulls the hydrogen gas toward the center of the cloud, causing the temperature of the gas to increase. As the contraction continues, the hydrogen gas reaches a temperature large enough for hydrogen atoms to fuse into helium atoms. The star "ignites" and expands outward due to the forces released by the fusion. The size of the star is determined by the interaction between the force of gravity (inward force) and force of fusion (outward force).

Calculations reveal that if the force of gravity is slightly smaller, the collapse of the hydrogen cloud never results in a temperature large enough to cause fusion to occur. According to current theory, stars are needed for life to exist. Other calculations reveal that if gravity were slightly larger, the resulting hydrogen clouds would be larger, thus forming larger stars. The larger a star, the faster it "burns" its nuclear fuel and the shorter its life span. Thus, in a universe with a stronger gravity, the life span of stars would be too short for life to develop.

Size of Strong Nuclear Force. As discussed previously, the strong nuclear force is the strongest of the four fundamental forces and is responsible for the binding of protons and neutrons to form atomic nuclei. The strength of the strong nuclear force will determine which combinations of protons and neutrons in the nucleus are stable. For example, in the carbon atom, a nucleus containing six protons and six neutrons is stable, while a nucleus containing six protons and eight neutrons is unstable.

Calculations have revealed that if the strong nuclear force were slightly weaker, only the nucleus of the hydrogen atom would be stable. All other atomic nuclei (combinations of protons and neutrons) would be unstable. Thus, with a weaker strong nuclear force, elements such as carbon, nitrogen, and oxygen would be unstable. Since these elements are needed for life as we know it, life would not develop in a universe with a weaker strong nuclear force. Further calculations have revealed that if the strong nuclear force were slightly larger, the helium nucleus would be much more stable than the hydrogen nucleus. Under these conditions, all hydrogen would be converted to helium. Again, life as we know it requires hydrogen to exist; and life would be impossible within a universe having a larger strong nuclear force. Further issues concerning life and the fine-tuning of the universe for life will be discussed in chapters 7, 8, and 9.

What Is the Significance of the Earth?

The earth orbits a "typical" star in the outer arm of its galaxy. In addition, the earth is one of many planets. It is not the largest planet or the smallest. Assuming a materialistic explanation of the earth's origin, there does not seem to be anything special about the earth. However, these "insignificant" facts about the earth and sun actually are interesting "coincidences" that imply that the earth is in the right place for life to flourish. Figure 6.2 lists some of these life-supporting coincidences.

Worldview and Interpretation

In the dialogue between science and faith, a person's basic assumptions have a great deal to do with how they interpret the Bible in areas related to science and how they interpret the physical world in areas related to the spiritual domain. When does the biblical text speak literally and when does it speak allegorically, figuratively, or metaphorically? Was Jesus serious when he said, "If

Size and mass of sun	*If larger:* sun would burn out too quickly for life to flourish.	*If smaller:* life supporting distance from sun would be much closer than now. At this closer distance, gravitational tidal forces would disrupt a planet's rotational period, making life support difficult.
Distance of sun from center of galaxy	*If closer:* radiation from other stars would be too great for life to exist. Also, the stellar density gravitational forces would destabilize the earth's orbit.	*If farther:* there would not be a large enough concentration of heavy elements to form rocky planets like the earth.
Distance of sun from closest galactic spiral arm	*If closer:* radiation from other stars would be too great for life to exist. Also, the stellar density gravitational forces would destabilize the earth's orbit.	*If farther:* there would not be a large enough concentration of heavy elements to form rocky planets like the earth.
Distance of earth from sun	*If closer:* earth would be too warm for liquid water to be found on surface of the planet. This is not good for human life as about 60 percent of a human's body is composed of liquid water.	*If farther:* earth would be too cool for liquid water to be found on surface of earth. In other words, all water would exist as ice.
Size of earth and strength of earth's gravity	*If larger:* earth's atmosphere would retain too much ammonia and methane (both toxic) for life to flourish.	*If smaller:* earth's atmosphere would lose too much water.

Fig. 6.2. Life-Supporting "Coincidences" Concerning the Earth and the Sun.

thine eye offend thee, pluck it out?" Baptists claim the Bible as their only religious authority and Catholics add the tradition of the church to the Bible. Yet Catholics take Jesus literally when he said of the bread at the last supper, "This is my body," while Baptists regard Jesus as speaking metaphorically.

The interpretation of the Bible always carries a grave responsibility for those who view it as the Word of God. The responsibility becomes complicated if a person does not realize he is interpreting the Bible. As one well-meaning preacher remarked, "I never interpret the Bible—I just preach the truth!" This preacher is unaware of the

presuppositions, biases, assumptions, and prejudices which color his reading of Scripture. The worldview of a person will color how he or she reads and understands the Bible. Liberals and conservatives alike fall victim to this same problem, primarily when they are unaware of imposing a standard for interpreting Scripture which comes from their background.

Nowhere is the problem of interpretation more pronounced than in understanding the biblical idea of creation. In chapter 5 we have seen how the timing of creation has tended to cloud the real issue of the fact of creation. From the perspective of worldview, the fact of creation is the point of the biblical accounts of creation. The fact of creation involves the objective reality of the physical order as well as the goodness of this physical creation.

Religion, Philosophy, and Cosmology

Major worldviews take contrary positions about the physical world. In his quest to understand suffering, the Buddha concluded that suffering comes from desire. If we had no desire, there would be no suffering. Desire results from living in a physical universe where things and circumstances to desire exist. The Buddha concluded that the physical universe does not really exist. It is merely a bad delusion. Most forms of Hinduism would say that the physical world does have a form of existence, but only as an extension or manifestation of the divine. The world has no creator because it has no separate existence from the divine itself. While people may experience differentiation between themselves and the rest of the world, this difference is an illusion.

As we saw in chapter 1, science as it is known today emerged within a Christian worldview. Peoples within every culture, however, regardless of worldview, develop some kind of science or knowledge of the world around them. These approaches to the world around them among primitive people involved sophisticated astronomy capable of predicting eclipses of the sun accurately. The science of primitive peoples involves a knowledge of the medicinal value of many plants. The great cultures of India and China made scientific discoveries far earlier than western Europe, yet none of these cultures produced the methodology or the systematic industry known to modern people of all cultures as science.

In the West, science grew out of the church as a systematic examination and description of what God has done. Science, as such, has no particular worldview. It either subsists or flourishes

within the context of the prevailing worldview of a culture. Science existed in China for thousands of years, but it did not flourish, just as international commerce did not flourish, because in the traditional worldview of Confucian society, it had no contribution to make. It was interesting and entertaining, but not a part of tradition. Within Buddhist societies, science involved the observation of a world which was only an illusion. There was no point to it. It distracted people from reality. So we can see that worldview has as much to do with how one interprets nature (science) as with how one interprets the Bible (theology).

Alongside science in the modern West, a philosophical worldview has developed which has often been confused with science. *Materialistic naturalism* is a philosophical worldview which believes that the physical world is all that exists and that everything can be explained by natural processes. This view is not a logical conclusion from scientific observation. Rather, it is a philosophical perspective imposed on the data from the outside, like any other worldview. Naturalism represents in many ways the opposite of a Buddhist perspective of reality. To the Buddhist the physical world is an illusion, but to the naturalist the spiritual world is a delusion.

Christianity and Cosmology

Modern science developed within a Christian framework as a subdivision of theology. The Christian perspective affirms both the physical world and the spiritual world, yet it does so without *dualism* because physical and spiritual reality are both aspects of creation. The affirmation of the unity of creation occurs, however, without the *modalism* of Taoism which sees opposites as the totality of reality. Christianity affirms a creator God who made both spiritual and physical reality and who has power over them. Instead of viewing the material world as evil, which frequently occurs in Eastern religion, the Bible calls the created world good. Instead of the cause of human sin, the physical world is the victim of human sin, having suffered under human mismanagement (Rom. 8:19–22).

The church of the Middle Ages believed that the physical world deserved the same systematic study as the Bible, because creation itself spoke of God, just like the Bible. The psalmist declared in antiquity:

> The heavens declare the glory of God;
> the skies proclaim the work of his hands.

> Day after day they pour forth speech;
> night after night they display knowledge.
> There is no speech or language
> where their voice is not heard.
> Their voice goes out into all the earth,
> their words to the ends of the world (Ps. 19:1–4a).

The heavens themselves say something about God. The created order itself says something about what kind of God exists. The apostle Paul observed in his letter to the Romans that "since the creation of the world God's invisible qualities—his eternal power and divine nature—have been clearly seen, being understood from what has been made, so that men are without excuse" (Rom. 1:20). Therefore, the study of nature became an acceptable academic discipline, particularly after the time of Thomas Aquinas, who adopted Aristotle's view of knowledge through sensory perception.

Christianity presented a world of substance that could be known. Unlike the world of nature religion, it was not a host of hostile deities to be appeased. It was an obedient servant which followed the "laws" of its master. The biblical image of the king of creation who ordains laws for nature persists in the language of science, which continues to think of the "laws of nature." At the same time, however, philosophical views affected how people interpreted the Bible and nature. Augustine, the great theologian of the fifth century who laid the foundations for the medieval world, followed Plato's philosophy as a basis for his theological system. Thomas Aquinas, the great theologian of the fourteenth century who laid the foundations for the modern world, followed Aristotle's philosophy as a basis for his theological system. Thus, philosophy imposed on both Scripture and nature an acceptable way to be read. Galileo's troubles did not represent a conflict between Christianity and science. Rather, his troubles came as a result of the conflict between Aristotle and science. Galileo's observations of the moon and the planets of the solar system did not contradict Scripture so much as they contradicted an Aristotelian interpretation of Scripture.

Our Place in the Universe

Modern naturalists have argued that Galileo created a crisis by taking man out of the center of the universe and relegating him to a secondary status. When the sun and the planets ceased to revolve around man, then the human race ceased to have its place of

importance. This line has proven quite popular with modern people because it sounds consistent with the modern worldview. In the modern world, people have placed themselves at the center of the universe. Through the combination of technological advances, economic prosperity, and the exaltation of the "self," the modern world has become a great mass of individuals seeking their own interests.

Removing man from the center of the universe would have seemed a foolish notion to the people of Galileo's day. No one thought man was at the center of the universe for several reasons. At that time, the universe did not exist! Rather, no one yet understood that anything went beyond the observable planets. The universe was limited to the solar system. Second, the order of importance was hierarchical, not concentric. Whether the sun revolved around the earth or the earth revolved around the sun was immaterial to one's place in the created order. God sat enthroned over all creation. God was the point of reference. Humanity's place within creation is in relationship to God.

Modern naturalists have also suggested that humanity's location within the universe makes a statement about the likelihood of the existence of God. The inference goes something like this: People live on a minor planet circling a third-rate star in a corner of an unexceptional galaxy on the back side of the universe. The inference drawn is that if God really exists, people would have a much more important place in the universe.

The naturalistic interpretation of nature with its religious conclusions has an interesting corollary in the Bible. Throughout the Bible, over centuries and cultures, in many books written by different prophets, God continually used the most unlikely people whom he found off to the side. The naturalist preoccupation with the insignificance of humanity in the grand scheme of things is a major theme of the Bible. The perception of insignificance says more about a person's perception than it says about the activity of God.

The Bible suggests that God has a preference for the unexpected. Abraham stands as the father of faith for Muslims, Jews, and Christians, yet what did Abraham do? He founded no religion, wrote no books, established no kingdom. He pales in comparison with the great figures of antiquity. He was a wandering Bedouin. Yet four thousand years later, we still talk about him as the model

for what it means to believe God. He believed God in the two great earth-shattering events of his life: he moved, and his wife had a baby. So the most insignificant and commonplace of events which are easily overlooked take center stage as of prime importance.

Who would ever have chosen the slaves of Egypt over the great Egyptian culture as the people through whom God would reveal himself? In that corner of the world, the Babylonians, the Phoenicians, the Greeks, or the Hittites could have offered the flower of culture through which to reveal divine truth. The choice of slaves seems unlikely, but the unlikeliness of it says more about our own value system through which we judge events.

God chose unlikely servants throughout his dealings with Israel. He chose as his greatest prophet Moses, a man who could not speak well. He chose as his greatest general Gideon, a coward who hid from the enemy. Instead of choosing the eldest sons in a culture based on primogeniture, God regularly chose the younger sons: Jacob instead of Esau, Joseph instead of his ten older brothers, David instead of his seven older brothers. In coming into the world, God did the unlikeliest thing of all. Instead of a palace, he was born in a stable.

Conclusion

The Bible does not contain scientific explanations in the sense that modern science understands them. God does not tell people in the Bible what they can learn for themselves. The nature of gravity, the spherical shape of the earth, the process of photosynthesis, the behavior of atoms, and electrical currents are not discussed. Because the Bible talks about some things that science discusses, people have a tendency to think that the Bible has made a scientific statement. Because the Bible refers to the cosmology of the ancient Middle East, people may assume that the Bible teaches this cosmology as the true science. This assumption becomes more complicated when one finds the Bible referring to Persian and Greek cosmologies as well. This assumption would come within the same category as assuming that the Bible teaches polygamy because it refers to the practice of polygamy found in the ancient Middle East.

During the modern period, the desire to conform the Christian faith to the most current science resulted in a situation called "the God of the gaps." This phrase refers to the habit of crediting God with those things science cannot explain. If it can be explained, then God did not do it. As science made broader and grander

advances in knowledge, this view of the activity of God squeezed God out almost entirely. In contrast to this approach, "the God of creation" is involved in the very things science describes.

In what sense can the Bible be accurate if it does not speak scientifically? This question betrays a surrender to the naturalistic view of the superiority of scientific knowledge in the modern era. Nevertheless, it is not necessary for the Bible to make scientific statements for it to correspond to the world described by science. One must ask if the Bible is consistent with the world described by science. The Bible talks about the kind of world in which scientific knowledge is possible because of the order established by the God who created order out of chaos. The Bible talks about a "real" physical world which can be known.

As we will see in the chapters on quantum theory and chaos theory later in the book, contemporary science faces a major challenge of uncertainty as the old science has failed. The metaphysical worldview of naturalism which denied metaphysics built an arrogant but unsustainable expectation of absolute certainty which quantum mechanics and chaos theory have dashed. The temptation has been to retreat into subjectivism and a new metaphysical worldview that denies an objective universe. Biblical faith speaks most directly to this issue in affirming a real universe caused by a creator.

As we saw in chapter 5, the grammar of the creation accounts leaves a wide door for understanding the timing and sequence of creation. This whole line of discussion, however, assumes that the Bible is intending to explain how creation occurred. This assumption grows out of the same modern preference for scientific explanations. Since the time of Thomas Aquinas in the late Middle Ages, Christian theology in the West has had a preference for literal, concrete understanding in keeping with Aristotle's emphasis on the physical, sensory road to knowledge. For more than a thousand years, however, Christians had a preference for an allegorical interpretation of Scripture that focused on the spiritual meanings of things. Perhaps as the modern era draws to a close, we may conclude that the allegorical interpretation is not always wrong and the literal interpretation is not always right.