

The Creative Universe and the Creating God

Prologue

T. Albert Bai

Stanford University, Stanford, CA 94305

How we view the inner workings of the natural world, how we view human beings and history, and how we view God's creation and providence of the universe are the three main aspects of our world view. Ideally, they should be internally consistent and logically compatible with each other. Although it is not easy to build such a world view, the three aspects of our world view should be internally consistent and compatible with each other at least at a basic level.

Today we are experiencing a serious challenge to our world view. The traditional view of God is that an omnipotent and benevolent God not only knows what is going to happen but also preordains it. Such a traditional view faces serious challenges on two fronts. First, the enormous historical evils unleashed during the twentieth century pose a serious challenge to the concept that an omnipotent and benevolent God supervises history. After killing tens of millions of people, the First World War—claimed to be “the war to end all wars”—led to another world war. The Second World War was waged with more sophisticated war machines and claimed even more lives. The Holocaust was an evil of unimaginable magnitude. Even less than a decade ago, mass killings were committed in the former Yugoslavia, Somalia, and Rwanda. If God is omnipotent and benevolent, why did He not prevent such evils?

The second challenge comes from rapid scientific progress in this age of science. For many people, the term “age of science” conjures up modern-day technological wonders that science has made possible, such as jet airplanes and spaceships, DVD players and cellular phones, personal computers and supercomputers, missiles and nuclear weapons. However, science is more than the source of knowledge for technological development. People like Bertrand Russell and Isaac Asimov have said that whatever makes the current age different from earlier ages is due to science.

One of the important contributions of science is that it has changed our view of the universe profoundly. Only recently, we have become capable of answering many fundamental questions that had puzzled great thinkers throughout human history.

- How did the continents and oceans form?
- What is the source of energy for volcanic and seismic activity?
- Why did dinosaurs become extinct?
- What is the mechanism for biological inheritance?
- How old is the earth?

- How was the solar system formed?
- What is the energy source of stars?
- How old is the universe?
- What are the building blocks of the universe?

As recently as in the 1950s, scientists could not answer most of these questions with certainty. They are only a few examples of the fundamental questions that we have recently become capable of grappling with. Even on the origin of the universe and the origin of life, we now have much better insights than before. Many scientists think that we are now near the threshold of developing a unified description of the universe.

Although the scientific view of the natural world has gone through revolutionary changes in the twentieth century, it is not well known to the general public. As a result, today's society does not readily accept the modern scientific view of the natural world, although it is willing to accept the technological benefits that modern science has made possible. There are several reasons for this.

Since the empirical study of nature has become the tradition of natural science, only phenomena that can be measured and tested by empirical investigation are now regarded as the proper domain of natural science. As a result, the scientific community is not interested in philosophical or theological interpretations of scientific discoveries. These tasks have been left largely for philosophers and theologians. However, because science advances rapidly and relies heavily upon mathematics, it has become more and more difficult for philosophers and theologians to follow the progress of science. Even professional scientists have become too specialized to understand the progress of science outside their own specialties. For ordinary people, following the progress of science has become nearly impossible. Through the news media, they hear bits and pieces about black holes and white dwarfs, supernova explosions and the big bang theory, plate tectonics and new seismological theories, quarks and neutrinos, chaos and fractals, the double helix and genetic engineering; but they do not know how to fit these bits and pieces into a coherent picture. Some people lose the sense of belonging to a world described in such unfamiliar terms.

Until the nineteenth century, natural philosophers regarded the philosophical interpretation of new scientific discoveries as their domain. When Sir Isaac Newton wrote his seminal book, he did not name it “The Mathematical Principles of Natural Science” but named it instead *The Mathematical Principles of Natural Philosophy*. Furthermore, in those days, philosophers and intellectuals in other disciplines were able to understand the essence of new scientific discoveries and discuss their metaphysical implications. Thus, they helped to make the world comprehensible. Regrettably, this tradition has been lost.

Because science does not provide a complete story of how we human beings are related to the universe and God, some people revert to Bronze Age mythologies and pseudo sciences. In

this age of science and technology, creation science, which is based on ancient myths, is popular among fundamentalists. It appeals to them because it provides a complete story, however simplistic, about the world we live in. Several scholars have written books discussing how to integrate the modern scientific view of the natural world with Christian theology, but they have not significantly influenced the theology of traditional theologians. As a result, moderate and liberal Christians, who do not accept creation science, have not integrated the modern scientific view of the universe into their world view.

Past attempts to integrate the classical scientific view of the natural world with the classical view of God led to an unattractive world view. The classical view of God was largely shaped by Thomas Aquinas (1225-74), who integrated the biblical God and the Aristotelian absolute God. The image of the Roman emperor who wielded absolute power was also integrated into the classical view of God. When the determinism of classical science and the classical view of God were integrated, it led to deism. According to this view, the omnipotent and omniscient God who transcends time has planned the entire course of the universe in the beginning and left the universe to run by natural laws according to His plan. Such a deistic God has no direct relevance to our lives and is far from the dynamic God of the Bible. This leads many theologians to think that science has no relevance to their efforts to understand God. This is another reason why the modern scientific world view has not been integrated with mainstream theology.

However, the world portrayed by modern science is very different from the deterministic world of classical science. Realizing the significance of such changes, many scientists have recently written books popularizing new scientific developments and their metaphysical implications. However, these books are, in general, still difficult for people who are not well versed in science. Furthermore, these books are too topical to discuss world views, and many people do not have time to read enough of them to form a coherent world view. Several scholars with backgrounds in both science and theology have written books discussing how to integrate the modern scientific world view with Christian theology.[1-15] But they are academic books, which are not easy reading for lay people or for theologians without a science education.

The main goal of this book is to introduce a world view in which the scientific view of the natural world, the view of humanity and history, and the view of the Creator are in harmony with each other at least at a basic level. Because the challenges to the traditional world view come from the empirical world, I start with discussions of the empirical world. While world history is common knowledge to all educated people, modern science is not. Therefore, I devote a large portion of this book to discussions of how the progress of science has changed our views of the physical world. I emphasize scientific concepts and their implications for the world view, keeping scientific explanations as accurate as possible without the full benefit of mathematics. Mathematical expressions used in the text involve only elementary multiplication and division. For interested readers, the appendices at the end of the book provide more detail. For metaphysical and theological interpretations of scientific discoveries, I have made ample references to other sources to help the reader find more material. In writing this book, its readability has been a concern of mine, and Bill Watterson's

cartoon on the cover has been inspirational. If this book makes the reader think about fundamental problems, learn something new, and comprehend the world a little better, its aim is fulfilled.

Contrary to the common view, the modern scientific view of the natural world is not inherently atheistic or antagonistic to religion. Therefore, religion does not need to be hostile to science. Instead, theology should provide mental superstructures based on a scientific understanding of the world. In the latter part of this book, I discuss how God works in a universe whose operation can be described by natural laws. In the context of our understanding of our relationship with the universe and God, we come to terms with the problems we face in life. How to cope with tragedy is one of these problems.

A new paradigm can be introduced only as a whole package, not piecemeal. For example, when Copernicus recognized the sun as the center of the Solar System, he was able to explain the orbits of all the planets at once instead of explaining the orbit of one planet at a time. In his special theory of relativity, Einstein redefined all the concepts of dynamics and electromagnetism. Because I introduce a new world view, I have to address many fundamental questions of life and may be accused of grandiosity. I do not pretend to have developed original answers to these questions by myself, but I aim to make understandable to the general public, from a new viewpoint, the thoughts of great thinkers who have reflected on them.

Without an organizing theme, one can hardly write a book about a world view, because its discussions have to encompass wide-ranging subjects. The organizing theme of this book is the openness of the future. According to modern science, the future of the universe is open. The details of the future can be neither determined nor predicted very accurately because quantum mechanics has a probabilistic aspect, because some chaotic dynamic systems are highly sensitive to their initial conditions, and because causal chains are complicatedly interwoven. The subjects of Chapters 3 and 4 are chosen from this viewpoint.

The openness of the future means that the passage of time changes the characteristics of the universe instead of simply rearranging existing things. As time passes, new material organizations with novel properties emerge. The emergent nature, evolutionary character, novelty, and inventiveness of the natural world and human society are discussed in Chapters 5 through 8.

Chance plays an important role in the openness of the future. Chance has a double meaning. In one sense it means probabilistic nature, and in another sense it means the accidental intersection of unrelated causal chains. One of the most important chance events in the history of Earth is the mass extinction that demarcates the Cenozoic Era from the Mesozoic Era. The extinction of dinosaurs is the best-known example of this mass extinction, which is now known to have been caused by the collision of an asteroid with Earth. The emergence of human beings is owed to this chance event. This topic is discussed in Chapter 9.

As Charles Hartshorne has said, chance not limited by law and order is chaos.[16] Although chance plays an important role, the operation of the universe can be described by natural laws. The temporal evolution of the quantum mechanical probabilities is deterministically described by

equations, although the outcome of a quantum mechanical interaction is probabilistic. Furthermore, the values of the fundamental constants of the universe are “fine-tuned” in such a way as to make the emergence of life possible. This is the main topic of Chapter 10. In Chapter 11, I interpret this fine-tuning of the fundamental constants as God’s design. The future of human history and the universe is open because human beings and other intelligent animals have free will. The origins of human consciousness and free will are still not well understood. In Chapter 12, I discuss the current status of our understanding of human consciousness, free will, and other human characteristics.

The future of the universe and human history is open also because God interacts with the universe and with human beings. In deism, God’s role is confined to the design and creation of the universe in the beginning. In the new world view, God is a continuous Creator. God not only enjoys interacting with the universe and human beings but also is enriched (or glorified) in the process. I discuss God’s relationship with the universe and human beings in Chapters 13, 14, and 15. God possesses an absolute, immutable aspect, as traditionally believed: His character, the purpose of Creation, and the goal of history do not change. But He also possesses a relative aspect: His knowledge of and experience with the universe and human beings change as history progresses.

In the new world view, not everything is determined by God’s will because God’s will is not the only determinative force. All things that happen in human history result from the interplay of necessity, chance, human action, and God’s will. Therefore, God is not at fault for human crimes, natural disasters, or tragedies caused by chance happenings. Nevertheless, it is God’s providence that allows chance and human free will to play roles in history.

Notes and References

1. Barbour, Ian. *Issues in Science and Religion*. Englewood Cliffs, NJ: Prentice Hall, 1966.
2. Barbour, Ian. *Myths, Models and Paradigms*. London: SCM Press, 1974.
3. Barbour, Ian. *Religion in An Age of Science*. San Francisco: HarperSanFrancisco, 1990.
4. Bube, Richard. *Human Quest*. Waco, TX: Word, 1971.
5. Bube, Richard. *Putting It All Together*. Lanham, MD: University Press of America, 1995.
6. Peacocke, Arthur. *Creation and the World of Science*. London: Clarendon Press, 1979.
7. Peacocke, Arthur. *Theology for a Scientific Age*. Mineapolis, MN: Fortress Press, 1993.
8. Polkinghorne, John. *One World: The Interaction of Science and Theology*. Princeton: Princeton University Press, 1987.
9. Polkinghorne, John. *Science and Creation*. London: SPCK, 1988.
10. Polkinghorne, John. *Science and Providence*. London: SPCK, 1989.

11. Polkinghorne, John. *The Faith of a Physicist*. Princeton: Princeton University Press, 1994.
12. Pollard, William. *Chance and Providence*. New York: Charles Scribner's and Sons, 1958.
13. Russell, R. J., Murphy, N., and Isham, C. J. (eds.) *Quantum Cosmology and the Laws of Nature: Scientific Perspectives on Divine Action*, Univ. of Notre Dame Press, 1997.
14. Russell, R. J., Murphy, N., and Peacocke, A. R. (eds.) *Chaos and Complexity: Scientific Perspectives on Divine Action*, Univ. of Notre Dame Press, 1997.
15. Schilling, Harold. *The New Consciousness in Science and Religion*. Philadelphia: United Church Press, 1973.
16. Hartshorne, C. *The Divine Relativity*. New Haven: Yale Univ. Press, 1948. p. 137.