

**What is the Relationship between Science and Religion?
George E. Keller, III, Ph.D.**

**Samford University**

**Conditions of Use**

These notes and the slides they accompany are freely available for use and/or modification by individuals and groups to promote understanding and dialogue in science and religion with the stipulation that they may not be sold or traded individually, collectively, or otherwise for any form of financial or material gain. The source of all images in the accompanying slides is either noted directly (if required by the author) or may be viewed by clicking an image (in edit mode) and then clicking “Send to Back.” These forms of crediting images must be included in any use or derivation of these materials.

The contents of these notes and the accompanying slides reflect the views of the author and should not be assumed to represent the position of Samford University or its employees.

**Overview**
The relationship between science and religion has typically been characterized as one of conflict, especially on the issue of origins (creationism vs. evolution). The historical reality is that science and religion have more often been complementary to each other, and the relationship has been dynamic. Science and religion are both important facets of modern life, and many of the questions in this series deal with issues that are at the intersection of science and religion. The purpose of this unit is to expose participants various ways that others have categorized science and religion and to provide some strategies for evaluating the big questions of science and religion.

*What is Science?*
While the term science is generally used to designate knowledge of the natural world, this slide suggests that original definition was simply knowledge (as opposed to wisdom, which was considered superior). Before the 19th century, many people practiced natural philosophy, which sought to study the natural world, and natural theology, which attempted to use the natural world to learn more about God. Natural philosophy eventually gave rise to physics and science according to its modern definition. It is worth noting that various branches of science have significant differences in their methods, e.g., physicists and chemists can perform controlled experiments, while astronomers and paleontologists must rely on observations.

*A Definition of Science*
This slide gives one definition of science that agrees with most common definitions of science as currently practiced. The important words are highlighted.
Science in often taught as a collection of facts, but science as practiced consists of problem-solving and investigation.
Most philosophers of science agree that it is impossible to prove anything conclusively in science. If you think about it, scientific proof would entail showing that something happens the same way in all circumstances in the present, the past, and the future. Since the future and past cannot be tested, all statements within science must be considered as being tentatively true. Note that a single instance can disprove a scientific statement.
Empirical knowledge is obtained by the senses. In science the senses are enhanced by microscopes, telescopes, and other forms of technology.
Science seeks to explain the natural world. There is some difference between the definitions of hypothesis, theory, and law, but in general hypotheses are testable statements of a narrow topic. Theories entail a number of hypotheses that are (and have been) tested and have never been disproven. For example, Einstein’s theory of relativity predicted the bending of light as it passes by a large object; the bending was experimentally verified years later exactly as predicted. The term “law” is almost never used for new explanations, perhaps because of the fear that they will be disproved. We speak of Newton’s laws and Einstein’s theory of relativity even though they explain the same things. To some degree, laws are more mathematical than theories. Regardless, a scientific theory describes a powerful explanation rather than a guess.

*What is Religion?*
The Protestant Reformation and increased exposure of Europeans to other religions led believers to justify their religion as the true one. Since science didn’t receive its current definition until the 19th century, religion and science technically couldn’t have been in conflict until the latter date.
 *A Definition of Religion*
Religion is probably harder to define than science if one takes into account all religions.
The supernatural power may be God or gods or forces that act on humans (as in Buddhism).
The institution includes churches and the Church universal as well as religious leaders and the power and influence they exert.
The practices associated with religion serve to unite believers in community, to educate them, and to change their lives in positive ways. The institutions serve to educate leaders and provide resources to make a difference in individual believers, in the community, and in the world.
Religion seeks answers though most believers hold that the answers cannot be known (at least in this world) by mortals. The importance is in the striving toward the answers rather than the answers themselves.

*How Do We Know Things in Science?*
Ideally science is repeatable and is the same for everyone (though some philosophers of science dispute this in practice). Science is most repeatable when it controls all variables except the one being measured, though this is hard to do. When controlled experiments can’t be carried out, observation and inferences drawn from them must suffice. Scientists generally say that about 1000 hours of observation are needed to draw meaningful conclusions. Ethology is the study of animal behavior in the wild. Once obtained, scientific methods, data and conclusions are published in journals where they are available to all scientists. *How Do We Know Things in Religion?*
The general forms of knowledge are considered to be revealed (sacred texts and individual revelations), nature (referred to in the past as the book of nature, which complements the Bible for Christians). Reason was held to be a branch of natural knowledge that can be used to learn about God. In the late 19th century, higher biblical criticism led to the study of the Bible by the same techniques used to evaluate other ancient texts, looking at/for confirmatory texts from other cultures, correlating biblical stories with archeology, and other methods.

*Worldviews*
This slide makes the point that all of us have our own worldview, and that there is variation among scientists and people of faith in their worldviews. At the very least, this should make us realize that we may not have the complete truth since most others disagree with us in some aspect of our worldview.

*Scientific and Christian Beliefs*
One historical way that these two categories were understood is through primary and secondary causes. According to this understanding, God was the primary cause but worked through natural, or secondary, causes. Science investigated the secondary causes but could never prove (or disprove) the existence of God. Few people would disagree with either of the categories of beliefs presented.
*How Do Science and Religion Relate to Each Other?*
Ian Barbour’s four-fold typology is the most commonly cited classification system for beliefs about science and religion. Barbour has been criticized somewhat as presenting his categories as a progression in the order listed (from conflict to independence to dialogue to integration). In his book, Barbour gives examples of each of these and makes the point that certain issues may lend themselves more to one category than another.

*Conflict*
It is somewhat ironic that both sides of the conflict model rely on a literal interpretation of the Bible. Once this fact is recognized, it may allow people on both sides to acknowledge that there are other ways to interpret the Bible (and other sacred texts for that matter).
The media and popular culture especially like the conflict model. Historians have often portrayed science and religion as being opposed to each other in historical events such as the “imprisonment” of Galileo and the Scopes trial of 1925 in Tennessee. In both cases, the issue was more complex and the outcome more nuanced than the more simplistic popular notion. Conflict makes for good theatre and does a better job of selling newspapers, TV ad time, etc.
Some scientists seem to be seduced by the power of science in solving problems and explaining the natural world and seem eager to extend that success to as many areas as possible, perhaps even all areas.
Some Christians seem to equate the strength of their own, individual beliefs with certainty about the way things are. We are forced to admit that even if we believe something very strongly, we may still be mistaken; belief is not necessarily the same thing as knowledge.
Note that Christians who reject origins, especially evolution, don’t hold all scientists to be corrupt but only those who study origins. The logic seems to be that those who are anxious to recruit others to atheism all congregate to the study of origins but generally don’t have an influence on other areas of science (even though other areas of science rarely, if ever, mention God in their explanations).
Perhaps another source of conflict is the difference between whether the world is seen as complex or simple. Scientists mostly view the world (and, indeed, the universe) as complex, while many Christians view the world as being simple, mostly

*Independence*
The independence model retains a good deal of popularity among those who attempt to strike a balance between science and religion. The compartmentalization of each reduces the number of conflicts and agrees with other ways we compartmentalize knowledge. Further, many people agree with the claim that science is public and objective while religion is private and subjective. The problem with this model comes when people disagree about where specific topics at the interface of science and religion should be placed (evolution, for example). The conflict thus arises as some seek to put an issue in the religion camp while others put the same issue in the science camp. Another problem arises when people realize that neither science nor religion is up to the task of explaining everything. This is especially true among Christians who believe that God is creator and sustainer of everything.
Notice also that science and religion can be misused to pursue a personal belief when parts of either discipline are used in isolation.

*Dialogue*
The Dialogue model comes from a realization that science and religion have more in common than many people think. Philosophers and social scientists have written that science is influenced by culture and existing paradigms, or concepts of how the world works. Paradigms are notoriously hard to change since they often have a long history and many supporters.
One such paradigm shift occurred with the discovery of quantum mechanics. The Heisenberg Uncertainty Principle states that one cannot simultaneously know both the velocity (or momentum) and location of an atomic particle such as an electron. The act of determining one requires imparting energy to the particle being measured which changes the measurements. Thus the act of observation changes what is being observed meaning that scientists are not just passive observers. There are examples of “quantum weirdness” that question the objectiveness of the natural world. Persons of faith also have a desire to know about the real world, if for no other reason than to enrich their faith and to induce God-like qualities.

*Integration*
Natural theology is the idea that people can discover things about God, including the questions of God’s existence, by exploring the natural world. Perhaps the most popular argument is William Paley’s argument for design based on the analogy between a watch and organisms. The argument says that we know the difference between a designed watch and an inanimate rock formed by random natural processes. Using the same relationships, we can infer that organisms with structures and processes that work so well together are also designed. That designer is God. This argument is generally rejected by most philosophers as a faulty analogy since, among other things, watches cannot reproduce themselves.
Polkinghorne offers a new natural theology by acknowledging that much of what persons of faith believe is not scientific, but neither is much of what scientists believe. For example, there are a number of physical constants that, if changed by infinitesimal amounts, would make the existence of life impossible. Some scientists postulate that those constants just happened to have their values or that there are multiple universes each with its own constant values; we just happen to be in the universe with this set. Polkinghorne points out that the luck and multiverse explanations are no more scientific than his explanation that God set the constants to give rise to the universe and life by natural means.
Barbour is a supporter of process philosophy which focuses on the processes and their inter-relations rather than objects themselves. Process philosophy thus emphasizes “becoming” rather than “being” or existence. Process philosophy’s most famous advocate was Alfred North Whitehead, a philosopher of the 20th century.

*Other views of the relationship between science and religion*
These examples came about due to some criticisms of Barbour’s typology, generally having to do with being to static or directional. More information can be found here

Stenmark, Mikael, “Ways of relating science and religion”, *Cambridge Companion to Science and Religion,* 2010: 278-295.

[Nancey](http://www.counterbalance.org/bio/murph-body.html) Murphy, "A Niebuhrian Typology for the Relation of Theology to Science," *Pacific Theological Review* XVIII, Three (Spring 1985): 16-23.

John F. [Haught](http://www.counterbalance.org/bio/jh-body.html), *Science & Religion: From Conflict to Conversion* (New York: Paulist Press, 1995), Ch. 1.

Ted Peters, Ed., *Science & Theology: The New Consonance* (Boulder, Colorado: Westview Press, 1998), p. 13-22.

*How Do We Evaluate Claims Made by Religion and Science?*
This topic is very difficult for most people. We often hear claims that we disagree with for some reason. How do we determine who is correct? The easy thing for most of us is to stick with our preconceived idea of what is correct, but some claims should prompt us to search for more information. Critical thinking is how we can do this; the thinking about our own thinking is what makes it difficult since we must look at strengths and weaknesses in our own and others’ arguments and reject those claims which are incorrect.

*Fallacies Associated with Religion and Science*
The following are indications that claims may not be true. It’s important to realize that just because the claim may be weak doesn’t mean the claim is true. However, those claims that avoid the following fallacies are more likely to be correct.

Example of begging the question: Is the Bible true? It says it is, therefore it must be true. The conclusion (the Bible is true) is used as one of the premises (the Bible says it’s true).

Example of false dilemma: either biblical creation is true or evolution is true. This argument ignores other versions of creation as well as nuanced views of creation and evolution such as theological evolution.

Example of appeal to authority: Richard Dawkins makes philosophical claims about Christianity though he is neither a theologian or a philosopher. Many persons of faith make claims about aspects of science they themselves have never studied. Note that neither example means the persons are wrong, simply that they are speaking about subjects as laypeople rather than as experts.

Example of appeal to the masses: surveys show that a majority of Americans believe in a biblical view of creation, therefore that must be correct. Surveys of Europeans in the Middle Ages would have shown an almost 100% agreement that the sun revolves around the earth.

Example of appeal to tradition: “we’ve always felt that way”.

Example of appeal to ignorance: if they can’t show how something happened, then it didn’t happen that way. The usual counter to this argument is that absence of evidence is not evidence of absence.

Example of appeal to fear: often Hitler/Nazism is used to scare people into believing a position, such as “Hitler used Darwinism to promote eugenics” or “Hitler was a Christian.”

Example of a straw man argument: since no one has seen a cat give birth to a rabbit, evolution cannot be true. Evolution has never made such a claim, so the argument is a straw man.

Example of a faulty analogy: William Paley’s argument for design based on the analogy between a watch and a living organism ignores the differences between living things and mechanical objects.

Example of slippery slope: Acceptance of certain scientific principles leads to moral decay, revolutionary social change, and other societal ills. Blind acceptance of a deity leads to leads to oppression of non-believers and the loss of freedoms. Neither of these arguments is necessarily true.

*From St. Augustine . . .*
I believe the importance of this quote is that persons of faith must demonstrate to non-believers their knowledge of science. Only if believers are credible on other matters will they be credible in matters such as (for Christians) the resurrection, the divinity of Jesus, eternal life and other, seemingly unbelievable, concepts.

*Conclusion*
The conclusion is an admonition to consider that issues of science and religion are almost always complex, and that the answers they entail are also complex. Only when we consider as many claims as possible and our own thinking about those claims can we grow in both faith and knowledge.

*Questions*
Some discussion questions are listed here. You may think of others.