Relationship between religion and science

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(Redirected from Science and religion)

The relationship between religion and science takes many forms as the two fields are both broad. They employ different methods and address different questions. The scientific method relies on an objective approach to measure, calculate, and describe the natural/physical/material universe. Religious methods are usually more subjective (or intersubjective in community), relying on varying notions of authority, ideas believed to have been revealed, intuition, belief in the supernatural, individual experience, or a combination of these to understand the universe.

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Overview

Historically, science has had a complex relationship with religion; religious doctrines and motivations have sometimes influenced scientific development, while scientific knowledge has had effects on religious beliefs. A common modern view, described by Stephen Jay Gould as "non-overlapping magisteria" (NOMA), is that science and religion deal with fundamentally separate aspects of human experience and so, when each stays within its own domain, they co-exist peacefully.[1] Another view known as the conflict thesis, which has fallen from favor amongst historians but retains popular appeal, holds that science and religion inevitably compete for authority over the nature of reality, so that religion has been gradually losing a war with science as scientific explanations become more powerful and widespread.[2] This view was popularized in the 19th century by John William Draper and Andrew Dickson White. However, neither of these views adequately accounts for the variety of interactions between science and religion (both historically and today), ranging from antagonism to separation to close collaboration.[3]

The kinds of interactions that might arise between science and religion have been classified by John Polkinghorne FRS[4] as:

1. **Conflict** when either discipline threatens to take over the legitimate concerns of the other
2. **Independence** treating each as quite separate realms of enquiry.
3. **Dialogue** suggesting that each field has things to say to each other about phenomena in which their interests overlap.
4. **Integration** aiming to unify both fields into a single discourse.

Polkinghorne further suggests that 3 and 4 can be classified in terms of:

   a. **Consonance**
      The two fields retain due autonomies, but the statements they make must be capable of appropriate reconciliation with each other without strain
   b. **Assimilation**
      An attempt at the maximum possible conceptual meeting. Neither is absorbed totally by the other, but they are brought closely together.

Perspectives on the historical relationship between religion and science

Science and Religion are portrayed to be in harmony in the Tiffany window "Education" (1890).
The 19th century

was a period in which the perception of an antagonism between religion and science was especially strong. During this period what scholars today call the historical conflict thesis developed. According to this model, any interaction between religion and science almost inevitably would lead to open hostility, with religion usually taking the part of the aggressor against new scientific ideas.[5] The framing of the relationship between religion and science as being predominantly one of conflict remained common in the historiography of science during the late 19th and much of the 20th centuries, was favoured by many scientists in the last 100 years, and is still prevalent in popular culture. However, most contemporary historians of science now reject it, considering that the conflict thesis has been superseded by subsequent historical research,[6][7] as is expressed by Gary Ferngren in his historical volume Science & Religion:

"While some historians had always regarded the [conflict] thesis as oversimplifying and distorting a complex relationship, in the late twentieth century it underwent a more systematic reevaluation. The result is the growing recognition among historians of science that the relationship of religion and science has been much more positive than is sometimes thought. Although popular images of controversy continue to exemplify the supposed hostility of Christianity to new scientific theories, studies have shown that Christianity has often nurtured and encouraged scientific endeavour, while at other times the two have co-existed without either tension or attempts at harmonization. If Galileo and the Scopes trial come to mind as examples of conflict, they were the exceptions rather than the rule.[8]"

Today, much of the scholarship in which the conflict thesis was based is considered to be inaccurate. For instance, a claim that was first propagated in the same period that originated the conflict thesis[9] is the supposition that the Catholic Church from the Middle Ages believed that the Earth was flat, and that only science, freed from religious dogma, had shown that it was round. This claim was mistaken, as the contemporary historians of science David C. Lindberg and Ronald L. Numbers write: "there was scarcely a Christian scholar of the Middle Ages who did not acknowledge [Earth's] sphericity and even know its approximate circumference."[10][9]

The attitudes of religion towards science

Hinduism, Buddhism, Confucianism, Taoism, Judaism, Christianity, and Islam all developed many centuries prior to the modern era; their classical works show an appreciation of the natural world, but most of them express little or no interest in any systematic investigation of it for its own sake. However, Buddhism's investigation of Dharma precludes the use of numerous non-systematic methods and sources, including authority, common sense, opinions, tradition, and scripture.[11] Some early historical scientific texts have been preserved by religious groups, notably Islam collected scientific texts originating in various countries and Christianity brought them to Europe during the renaissance.

Historical Judeo-Christian-Islamic view
In the Medieval era, some leading thinkers in Judaism, Christianity and Islam, undertook a project of synthesis between religion, philosophy, and natural sciences. For example, the Islamic philosopher Averroes, the Jewish philosopher Maimonides, and the Christian philosopher Augustine of Hippo, held that if religious teachings were found to contradict certain direct observations about the natural world, then it would be obligatory to re-evaluate either the interpretation of the scientific facts or the understanding of the scriptures. The best knowledge of the cosmos was seen as an important part of arriving at a better understanding of the Bible, but not yet equal with the authority of the Bible.

This approach has continued down to the present day; Henry Drummond, for example, was a 19th century Scot who wrote many articles, some of which drew on scientific knowledge to tease out and illustrate Christian ideas.

From the 11th century, however, scientific methods were being applied by both Muslim scientists and Christian scientists to domains such as optics and planetary orbits, with results which threatened the Church's sacred dogma. Christianity asserted religious certainty at the expense of scientific knowledge, by giving more explicit sanction to officially correct views of nature and scripture. Similar developments occurred in other religions. This approach, while it tended to temporarily stabilize doctrine, was also inclined toward making philosophical and scientific orthodoxy less open to correction, as accepted philosophy became the religiously sanctioned science. Observation and theory became subordinate to dogma. Islam took an even harder line, canonizing Medieval science and effectively bringing an end to further scientific advance in the Muslim world. In Europe, scientists and scholars of the Enlightenment responded to such restrictions with increasing skepticism.

**Fundamentalism**

The phenomenon of religious fundamentalism, especially Protestant, Christian fundamentalism which has arisen predominantly in the United States, has been characterized by some historians as originating in the reaction of the conservative Enlightenment against the liberal Enlightenment. In these terms, the scientific community is entirely committed to the skeptical Enlightenment, and has incorporated, into its understanding of the scientific method, an antipathy toward all interference of religion at any point of the scientific enterprise, and especially in the development of theory. While many popularizers of science rely heavily on religious allusions and metaphors in their books and articles, there is absolutely no orthodoxy in such matters, other than the literary value of eclecticism, and the dictates of the marketplace. Typically, fundamentalists are considerably less open to compromise and harmonization schemes than their forebears. They are far more inclined to make strict identification between religiously sanctioned science, and religious orthodoxy; and yet, they share with their early Enlightenment forebears the same optimism that religion is ultimately in harmony with "true" science. This is reflected also in their historical-grammatical approach to scripture and tradition, which they increasingly view as a source of scientific and religious certainty. Most significantly, they are openly hostile to the scientific community as a whole, and to what they call "scientific materialism."

The fundamentalist approach to modernity has also been adopted by the Islamic movements among Sunni and Shi'a Muslims across the world. For example, an Enlightenment view of the cosmos is accepted as fact, and read back into ancient texts and traditions, as though they were originally intended to be read this way. Fundamentalists often make claims that issues of modern interest, such as psychology, nutrition, genetics, physics and space travel, are spoken to directly by their ancient traditions, "foretold," in a sense, by their religion's sacred texts. For example, some Muslim fundamentalists and Muslims claim that quantum mechanics and relativity were predicted in the Qur'an, while Jews claim that the Torah can be understood according to modern sciences.

**Non-fundamentalist religious views**

In between these positions lies that of non-fundamentalist religious believers. A great many Christians and Jews still accept some or many traditional religious beliefs taught in their respective faith communities, but they no longer accept their tradition's teachings as unquestionable and infallible (indeed this is a basic tenet of mainstream Protestant Christian thought and of other faith perspectives open to dialogue with science). Liberal religious believers do believe in god(s), and believe that in some way their god(s) revealed their will to humanity. They differ from religious fundamentalists in...
that they accept that even if their religious texts were divinely inspired, they are also human documents which reflect the cultural and historic limitations and biases of their authors. Such believers are often comfortable with the findings of archaeological and linguistic research and historical-critical study. They will often make use of literary and historical analysis of religious texts to understand how they developed, and to see how they might be applied in our own day. This approach developed among Protestant scholars in the 18th and 19th centuries, and is now to found among other Christians, Liberal Jewish communities and others.

Some religious approaches acknowledge the historical relationship between modern science and ancient doctrines. For example, John Paul II, leader of the Roman Catholic Church, in 1981 spoke of the relationship this way: “The Bible itself speaks to us of the origin of the universe and its make-up, not in order to provide us with a scientific treatise, but in order to state the correct relationships of man with God and with the universe. Sacred Scripture wishes simply to declare that the world was created by God, and in order to teach this truth it expresses itself in the terms of the cosmology in use at the time of the writer”. This statement would reflect the views of many non-Catholic Christians as well. An example of this kind of thinking is Theistic evolution.

This understanding of the role of Scripture in relation to science is captured by an oft-quoted phrase: "The Bible tell us how to go to heaven, not how the heavens go." The phrase is often quoted in discussions of the relations between cosmology and theology. In the realm of biology and theology, the saying coined by Thomas Jay Oord is more appropriate: “The Bible tells us how to find abundant life, not the details of how life became abundant.”

Bahá’í view

In the Bahá’í Faith, the harmony of science and religion is a central tenet. The principle states that truth is one, and therefore true science and true religion must be in harmony, thus rejecting the view that science and religion are in conflict. ‘Abdu’l-Bahá, the son of the founder of the religion, asserted that science and religion cannot be opposed because they are aspects of the same truth; he also affirmed that reasoning powers are required to understand the truths of religion and that religious teachings which are at variance with science should not be accepted; he explained that religion has to be reasonable since God endowed humankind with reason so that they can discover truth. Shoghi Effendi, the Guardian of the Bahá’í Faith, described science and religion as "the two most potent forces in human life.

Science and religion, in the Bahá’í writings, are compared to the two wings of a bird upon which a person's intelligence can increase, and upon which a person's soul can progress. Furthermore, the Bahá’í writings state that science without religion would lead to a person becoming totally materialistic, and religion without science would lead to a person falling into superstitious practices.

Hindu view

The term "Hinduism," like the word religion, requires special attention before one can adequately discuss relationships. Jonathan Edelmann has argued that an essential or singular definition of Hinduism is misleading, even though a number of Hindus have attempted to say what the relationship with Hinduism and science is. Edelmann argues that any constructed relationship between Hinduism and science must specify which of the many Hindu traditions is being used, since the term Hinduism can apply to any number of theological and ontological views, ranging from personal theism to atheism.

Some proponents of Hinduism claim that Hinduism is not afraid of scientific explorations, nor of the technological progress of mankind. According to them, there is a comprehensive scope and opportunity for Hinduism to mold itself according to the demands and aspirations of the modern world; it has the ability to align itself with both science and spiritualism. This religion uses some modern examples to explain its ancient theories and reinforce its own beliefs. For example, some Hindu thinkers have used the terminology of quantum physics to explain some basic concepts of Hinduism such as maya, the illusory and impermanent nature of our existence.

The attitudes of scientists towards religion

According to a 1996 survey, belief in a god that is "in intellectual and affective communication with humankind" and belief in "personal immortality" are most popular among mathematicians and least popular among biologists. In total, about 60% of scientists in the United States expressed disbelief or doubt in such a god. This compared with 58% in 1914 and 67% in 1933. Among leading scientists defined as members of the National Academy of Sciences, 72.2% expressed disbelief and 93% - disbelief or doubt in the existence of a personal god in 1998.

A survey conducted between 2005 and 2007 by Elaine Ecklund of University at Buffalo, The State University of New York and funded by the Templeton Foundation found that over 60% of natural and social science professors are atheist or agnostic. When asked whether they believed in God, nearly 34% answered "I do not believe in God" and about 30% answering "I do not know if there is a God and there is no way to find out." According to the same survey, "many scientists see themselves as having a spirituality not attached to a particular religious tradition." In further analysis, published in 2007, Ecklund and Christopher Scheitle conclude that "the assumption that becoming a scientist necessarily leads to loss of religion is untenable" and that "it appears that those from non-religious backgrounds disproportionately self-select into scientific professions. This may reflect the fact that there is tension between the religious tenets of some groups and the theories and methods of particular sciences and it contributes to the large number of non-religious scientists.

Richard Dawkins asserts that
relationships make predictions about the real world which makes them testable scientific theories. The argument is that gods and deities that answer prayers inevitably require an overlap with the natural world and thus become observable and testable.\textsuperscript{[22]}

The presence or absence of a creative super-intelligence is unequivocally a scientific question, even if it is not in practice — or not yet — a decided one. [...] The moment religion steps on science's turf and starts to meddle in the real world with miracles, it ceases to be religion in the sense Gould is defending, and his amicability concordia is broken. Note, however, that the miracle-free religion defended by Gould would not be recognized by most practicing theists in the pew or on the prayer mat.

Sigmund Freud asserted in his lectures that his work, in effect challenged the notion of the great chain of being by demonstrating that no human mind was fully rational but instead had a significant amount of their cognition arise from their unconscious mind. He often likened the significance of his theory to those of heliocentrism and evolution in challenging man to view himself as strictly part of the physical universe. Freud viewed such discoveries as an appropriate insult to the ego of mankind.\textsuperscript{[23]} From a biochemical point of view, one could include the progress from the synthesis of urea and the discovery of the structure of DNA as further insulting the ego by demonstrating that the stuff of life was the same atoms as those of the inanimate universe, thus discrediting the notion of vitalism and supporting the philosophy of mechanism. One of Freud's early mentors, Theodor Meynert, held the view of the human mind and even ideas were merely the result of strictly physical processes rather than revelations. Such a soulless view of man's existence can be depressing and tends to strip human existence of the meaning and purpose that religion seems to artificially provide unless one finds that pleasure, the propagation of the human race and the advancement of knowledge and civilization alone suffice to give life meaning.

**Scientific study of religion**

Scientific studies have been done on religiosity as a social or psychological phenomenon. These include studies on the correlation between religiosity and intelligence (often IQ, but also other factors). A recent study on serotonin levels and religiosity\textsuperscript{[24]} suggests a correlation between low serotonin levels and intense religious experiences. Also of popular interest are the studies regarding prayer and medicine, in particular whether there is any causal or correlative link between spiritual supplication and improvement of health. Surveys by Gallup, the National Opinion Research Centre and the Pew Organisation conclude that spiritually committed people are twice as likely to report being "very happy" than the least religiously committed people.\textsuperscript{[25]}

An analysis of over 200 social studies that "high religiousness predicts a rather lower risk of depression and drug abuse and fewer suicide attempts, and more reports of satisfaction with life and a sense of well-being"\textsuperscript{[26]} and a review of 498 studies published in peer-reviewed journals concluded that a large majority of these studies showed a positive correlation between religious commitment and higher levels of perceived well-being and self-esteem, and lower levels of hypertension, depression and clinical delinquency.\textsuperscript{[27][28]} Surveys suggest a strong link between faith and altruism.\textsuperscript{[29]} Studies by Keith Ward show that overall religion is a positive contributor to mental health.\textsuperscript{[30]} Michael Argyle and others claim that there is little or no evidence that religion ever causes mental disorders.\textsuperscript{[31]}

Some historians, philosophers and scientists hope that the theory of memetics, reminiscent of the theory of genetics, will allow the modeling of the evolution of human culture, including philosophy and religion. Daniel Dennett's book Breaking the Spell attempts to begin such an analysis of modern religions. The idea that evolutionary processes are involved in the development of human culture and religion is not particularly controversial among natural scientists, however other approaches based on social sciences such as anthropology, psychology, sociology and economics are more prevalent in academic use.

**Philosophy of science**

Since the era of logical positivism, the philosophy of science has shifted away from scientific realism towards instrumentalism and confirmation holism, both of which weigh in significantly on the relationship of science and religion.

Scientific realism tends to rely on the hypothetico-deductive method. This requires that evidence inconsistent with a theory's initial predictions be taken as falsification of it. For instance, Neptune was discovered when Uranus deviated from its path as predicted by Newton's theory of gravity. Had Neptune been unobservable by telescope, the theory that an undiscovered planet had caused the deviation would have been falsified. Central religious claims are often held to be un falsifiable (or at least exceedingly hard to falsify to the point of being practically unfalsifiable), and hence adverse to science, or at least outside the domain of science; the coupling of religion and science is often described as pseudoscience.

Instrumentalism postulates that concepts and theories are merely useful instruments whose worth is measured not by whether the concepts and theories are true or false (or correctly depict reality), but by how effective they are in explaining and predicting phenomena. As such, it may accept some methods of inquiry and sources of information, those of a religious variety in particular, which are seen as taboo by the majority of logical positivist and realist scientists. For example, as long as the theory that praying cures diseases can sufficiently explain and predict the phenomenon, it would be taken as a useful theory by instrumentalist scientists, without considering its truth value. Paul Feyerabend's "scientific anarchy" posits a similar view on the nature of scientific inquiry. Under this view, religion is not seen as being, in principle, incompatible with science.

Confirmation holism postulates that no concept or theory stands by itself. In other words, a concept or theory only makes sense, and can only be proven or falsified, in terms of the system of which it is a part. For example, a medical doctor may hypothesize as to why a patient has developed a rash, but this theory may in turn depend upon the patient having been in contact with poison ivy, which may in turn depend upon poison ivy being present in the locale or the person having recently travelled to a region where it was present, and so forth. Some concepts and theories may rest on other proven concepts and theories, while others may require proving (or assuming) the underlying concepts and theories first. This view has primarily developed out of the work of philosopher and logician W. V. Quine, and philosopher of math and science Imre Lakatos (a student of Karl Popper).
who was influenced by Quine as well as by Thomas Samuel Kuhn. Lakatos taught that scientists work within an organic system of concepts and theories (Kuhn referred to it as a paradigm, Lakatos called it a research program, Quine called it a conceptual scheme), that the core concepts and theories of this system are held with personal commitment, and that they will resist falsification by ad hoc modification or the addition and deletion of peripheral concepts and theories (a weakness in naïve falsificationism which Popper himself acknowledged). In this view, religion is likewise not seen as being, in principle, incompatible with science.

See also

- American Scientific Affiliation
- Bahá’í Faith and science
- Beyond Belief conference
- Birth cries of atoms
- Boyle Lectures
- Buddhism and science
- Center for Theology and the Natural Sciences
- Conflict thesis
- Continuity thesis
- Creation-evolution controversy
- Creationist perspectives on dinosaurs
- Deep ecology
- Faith and rationality
- Galileo affair
- Gifford Lectures
- Great chain of being
- Intelligent design
- Islam and science
- List of Christian thinkers in science
- Merton thesis
- Metanexus Institute
- Natural theology
- Philosophical and religious interpretations of the Big Bang theory
- Science and religion in Czechia and Slovakia
- Scopes trial
- Templeton Foundation
- Theistic evolution

Notes

7. ^ While [John] Brooke's view [of a complexity thesis rather than conflict thesis] has gained widespread acceptance among professional historians of science, the traditional view remains strong elsewhere, not least in the popular mind. (p. x)
11. ^ Kalama Sutta
15. ^ As Alister McGrath points out in The God Delusion this definition would exclude Deists and people like Einstein who believe(d) "in Spinoza's God"


27. Bryan Johnson & colleagues at the University of Pennsylvania (2002)


29. eg a survey (http://www.ropercenter.uconn.edu/data_access/data/datasets/social_capital_community_survey.html) by Robert Putnam showing that membership of religious groups was positively correlated with membership of voluntary organisations


31. quoting Michael Argyle and others

References


Additional reading


External links

- Counterbalance.org: Science and Religion Project (http://www.counterbalance.net/themes/sr-frame.html)
- "Faith and Reason" (http://www.pbs.org/faithandreason/) – website about the historical relations between science and religion, PBS
- Meaning of Life (http://meaningoflife.tv/)
- A collection of video interviews with prominent scientists about topics relating science and religion (requires WMV or RealMedia software)
- Religion and Science (http://www.butterfliesandwheels.com/infocusprint.php?num=27&subject=Micheal%20Ruse) An article critical of the idea that religion and science occupy different realms of inquiry by Michael Ruse (with links to many other articles of the same theme), from Butterflies and Wheels.
- Science & Spirit magazine (http://www.science-spirit.org/)
- "Science at the Crossroads" (http://www.dalailama.com/page.8.htm) – Dalai Lama address to the Society for Neuroscience, November 12, 2005
Evolution, Naturalism, and Religion (http://www.cornellevolutionproject.org/purpose.html), Greg Graffin's CornellEvolutionProject.org


Zygon Journal of Religion and Science (http://www.zygonjournal.org/)

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Categories: Articles needing additional references from December 2006 | Articles with specifically-marked weasel-worded phrases | All articles with unsourced statements | Articles with unsourced statements since February 2007 | Articles with limited geographic scope | History of science | History of religion | Integral thought | Religion and science

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