

## IS THE WAR BETWEEN SCIENCE AND RELIGION OVER?

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(This copy, adhering to the wishes of the authors, uses the style and wording of the original manuscript, rather than as edited by *The Humanist*, which substituted "he or she" for almost every personal pronoun.)

The CBS television news report "For Our Times," which covered a two-week conference on "Faith, Science and the Future" held at the Massachusetts Institute of Technology a few years ago, left the viewer with the feeling that the long conflict between science and religion is at an end. Hundreds of scientists and theologians gathered to discuss issues of science and ethics and proceeded from the assumption that science and religion were two nonconflicting bodies of knowledge, equally valuable complementary paths leading toward an ultimate understanding of the world and our place in it. The conflicts of the past were said to be due to excessive zeal and misunderstanding on both sides. Peaceful coexistence and even a measure of syncretism are now assumed to be possible as long as each concedes to the other's authority in their separate worlds of knowledge: that of matter and facts for science, and that of the spirit and values for religion.

Let us be blunt. While it may appear open-minded, modest, and comforting to many, this conciliatory view is nonsense. Science and religion are diametrically opposed at their deepest philosophical levels. And, because the two worldviews make claims to the same intellectual territory -- that of the origin of the universe and humankind's relationship to it -- conflict is inevitable.

It is possible, of course, to define a nonsupernatural "religious" worldview that is not in conflict with science. But in all of its traditional Western forms, the supernatural religious worldview makes the assumption that the universe and its inhabitants have been designed and created -- and in many cases, are guided -- by "forces" or beings which transcend the material world. The material world is postulated to reflect a mysterious plan originating in these forces or beings, a plan which is knowable by humans only to the extent that it has been revealed to an exclusive few. Criticising or questioning any part of this plan is strongly discouraged, especially where it touches on questions of morals or ethics.

Science, on the other hand, assumes that there are no transcendent, immaterial forces and that all forces which do exist within the universe behave in an ultimately objective or random fashion. The nature of these forces, and all other scientific knowledge, is revealed only through human effort in a dynamic process of inquiry. The universe as a whole is assumed to be neutral to human concerns and to be open to any and all questions, even those concerning human ethical relationships. Such a universe does not come to us with easy answers; we must come to it and be prepared to work hard.

In order to understand how scientific observations are made, let's follow a hypothetical scientist into her laboratory. Suppose this scientist's task is to measure the amount of protein in a biological fluid -- a common procedure in research laboratories, hospitals, and school science classes. The scientist will proceed by carefully measuring out into test tubes both several known volumes of the fluid and also several different volumes of a "standard" solution she has prepared by dissolving a weighed quantity of pure protein. The scientist will add water to bring all the tubes to the same volume and then add a reagent which reacts with protein to produce a blue color. After the solutions in all the test tubes have reacted for a specified period of time, the scientist will measure the intensity of the blue color with a spectrophotometer. By comparing the color intensity of the unknown solutions, she will be able to calculate how much standard protein is needed to produce the same color reaction as the unknown, and this, the scientist will conclude, is the amount of protein in the unknown sample.

What our hypothetical scientist has done is to perform a controlled experiment. She must report it honestly and completely, including a description or a reference to the method. She must also be prepared to say that all variables which could have affected the reported result, to the best of her knowledge and belief, have been kept constant (for example, by using a water bath to maintain a constant temperature) or have been measured (as were the different volumes of the unknown solution and standard solution) or are random (measurement errors or perhaps proteinaceous dust motes from the surrounding air). This is the essence of the scientific method.

Clearly, such a controlled experiment would be impossible if our scientist were required to entertain the possibility that some factor exists that can affect the color in the test tubes but which can never be controlled in these ways -- a factor that cannot be held constant, cannot be measured by any physical means, and cannot be said to act randomly. But that is exactly what the religious, supernaturalist worldview does require. Untestable, unmeasurable, and nonrandom occurrences are commonplace in all supernatural religions and pseudosciences.

This fundamental incompatibility between the supernaturalism of traditional religion and the experimental method of science has been, nevertheless, remarkably easy to dismiss. The findings of science over the past three centuries have been eagerly welcomed for their practical value. The method, however, has been treated with suspicion, even scorn. It has been perceived as being responsible for revealing the material workings of ever more of the mysteries of life which used to inspire religious awe. From the point of view of the religious believer, it has seemed as though the goal of science has been to push belief in the supernatural to ever more remote redoubts until it might disappear entirely.

This is not, and cannot be, the goal of science. Rather, a nonmysterious, understandable, material universe is the basic assumption behind all of science. Scientists do not chart their progress with ghost-busting in mind. Naturalism or material monism is not so much the product of scientific research as it is its starting point. In order for science to work, scientists must assume that the universe they are investigating is playing fair, that it is not capable of conscious deceit, that it does not play favorites, that miracles do not happen, and that there is no arcane or spiritual knowledge open only to a few. Only by making the assumption of materialist monism will the scientist be able to trust the universe, to assume that although its workings are blind and random it is for this very reason that they can be depended upon, and that what is learned in science can, to some degree, be depended upon to reflect reality.

As evolution is the unifying theory for biology, so naturalism is the unifying theory for all of science. In his book *Chance and Necessity*, biochemist Jacques Monod called this basic assumption "the postulate of objectivity" since it assumes that the universe as a whole is

dispassionate of, indifferent to, and unswayed by human concerns and beliefs about its nature. Its inverse -- in which the universe is passionately involved in, partial to, and swayed by human concerns and beliefs about its nature -- is the basic assumption that underlies the supernatural, religious worldview. We call it the "postulate of design."

The postulate of a purposefully designed universe, as we have seen, destroys any meaning we might hope to find in the experimental method of science. But in so doing, it also insures that it will never be incompatible with any of the findings of science. This ability of the supernatural view to adjust itself to any finite set of facts has, ironically, made it seem easy to accept both the findings of science and the consolations of spiritualism. Scientists, as human beings, are susceptible to the temptations of these comforts. Some believe that the world of the supernatural lies just beyond where they are performing their controlled experiments, although they usually feel that it is even more evident in fields other than their own. However, we need not reject their results. As long as they are honest -- reporting not only their conclusions but also their methods and reasoning -- such nonmaterialist scientists can still contribute to the progress of science in their own fields of study.

The issue at stake here is whether or not our worldview is to possess consistency and integrity. Science has worked so well and has been so successful that it is difficult, if not impossible, to live in the modern world while rejecting its findings. But by accepting those findings as a free bounty -- while rejecting the hard assumptions and hard work that made them possible -- the supernaturalist embraces a lie.

It is often claimed that science can say nothing about values and ethics because it can only tell us what is -- not what ought to be. But once again this is a case of attempting to divorce the findings from the method of science. Properly understood, science tells us not only what is but also how we must behave if we are to understand what is. Science has succeeded as a cooperative human effort by asserting the belief that the universe can only be understood through the values of integrity and truth-telling. In the process it has become a system of values, and it has provided humankind with a language which transcends cultural boundaries and connects us in a highly satisfying way to all the observable universe. It has the potential to be used as the basis for a workable and profoundly satisfying system of ethics. Indeed, it must be so used if we are to accept its findings without self-deceit.

A naturalistic system of ethics is not likely to be popular, however, until science can overcome the currently evident public attitude of ignorance and hostility. In response to a recent San Diego Union story outlining new developments in cosmological theory, a reader pointed out that "God is in control of the universe, and the sooner these so-called scientists realize this, they will not need to invent hocus-pocus 'dark or unseen matter' as a man-made explanation instead of acknowledging the true source of all things, the all-powerful omnipotent, omnipresent God, the creator."

He's right, of course. Accept the supernatural and the hard work of making and testing theories becomes a pointless enterprise, along with all human-made explanations and meaning. But if we allow such myths to limit the scope and uses of science, we will do so to our own peril and shame.

In an article in the October 4, 1985, issue of Science, cosmologist Steven Weinberg said that, even if science manages to trace the materialist explanation back to the first ten-billionth of a second of the existence of the universe, we still don't know what started the clock. "It may be that we shall never know," he wrote, "just as we may never learn the ultimate laws of nature. But I wouldn't bet on it."

Thank you, Professor Weinberg. We needed that.

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