

FORUM

Guidelines for Writing About Science and Religion

When scientists write about the relation between science and religion, I suggest they follow four principles: (1) Be accurate in statements of fact and in the use of terminology; (2) use examples that are germane to the issue at hand; (3) provide conclusions that follow logically from the given premises and discussion; and (4) acknowledge that the practice of science has its own dogma.

Scientists routinely follow the first three principles when writing their science reports. But a recent *Eos* article on science and religion [Carter, 2006] violated these three principles. It is important to discuss how scientists sometimes err in statements on religion because nonscientists will detect any errors and will conclude that scientists cannot make a rational case for their position.

Carter [2006] starts by considering the Terri Schiavo case, which involved a medical patient in a persistent vegetative state and the legal dispute between her parents and her husband over the removal of life-support equipment. One can argue whether the intervention by the Florida legislature and the U.S. Congress was wise or unwise. However, this case was a dispute over patients' rights and who gets to decide to terminate life-support treatment. It was not a dispute about "medical science" and "medical research," as Carter states. The author goes against the first two principles by using incorrect terminology and arguing about a court case that was not about scientific knowledge, and therefore not addressing his alarm over possible religious influence on space policy.

Carter also complains that "President George W. Bush opposes stem cell research." This is inaccurate. President Bush opposes embryonic stem cell research, an important distinction for some people for ethical reasons discussed further in this article. Embryonic stem cell research, where stem cells are removed from a developing human embryo that is killed in the process, differs from adult stem cell research where no human individual dies in a process that uses stem cells obtained from a human subject after birth. President Bush authorized funding for adult stem cell research on 20 December 2005 when he signed the Stem Cell Therapeutic and Research Act of 2005 (H.R. 2520).

In defense of stem cell and cloning research, Carter offers "the likelihood that ultimately thousands of patients will be relieved of pain and suffering through the use of stem cells, cloned cells, and even cloned organs." However, this claim of possible medical benefits is not science but salesmanship, and does not belong in a science or religion debate.

Scientists, as well as religious people, have concerns that the quest for scientific knowledge should not be exempt from ethical concerns even if great benefits are promised. We would not, for example, allow medical research on kidnapped adult patients. Also, many AGU members would raise ethical concerns about any research proposal that allowed unmitigated release of greenhouse gases into the atmosphere to conduct wonderful studies on the mechanism of planetary warming and the possibility that such warming may increase food production from some crops.

Garen [2006] offers good advice on the relationship between science and religion, but he expresses a too restricted view of religious thinking when he states that many religious people "base their judgments about medicine, abortion, [and] stem cell research...according to their strict interpretations of Scripture to the exclusion of other sources of information, especially scientific...." It is inaccurate to assume that most religious people are Fundamentalists, and such assumptions may lead to erroneous generalizations about religion (principle 1).

Scientists should be aware that there are religious groups that try to make full use of scientific knowledge in developing ethical teaching. For example, in the *Catholic Bishops of Pennsylvania* [1999] discussion of ethical medical care for unconscious patients, they start with the question of whether a patient who has been long unconscious is alive or dead, and they declare that only medical science, not theology, can provide the answer. The bishops summarize medical studies on the question before developing a moral position.

In addition, many religious people actually base their opposition to abortion and embryonic stem cell research on findings of modern biology: The most crucial step

in forming a new human being occurs when a human sperm fertilizes a human egg, with DNA received from each parent. All the development that follows to adulthood is a continuum, which leads many people to conclude that the human embryo deserves the same protection of life as an adult human. Rather than deplore this argument, scientists should rejoice that religious people have willingly embraced the new findings from biology.

In Carter's [2006] discussion of a dogma (which is rephrased here to avoid double negatives) that "God could have created other worlds," the author expresses his concern that a Catholic scientist who found "evidence suggesting that Earth is the only place in the universe where life has developed [might] not report that finding for fear of being accused of heresy." But there is no problem here. Such hypothetical evidence merely says that while God could have created other worlds, He chose not to, a conclusion that does not contradict the dogma. The author's argument, which goes against principle 3, does not lead to his conclusion that the dogma would inhibit a religious scientist, and his example gives no basis for mistrusting Catholic scientists.

Carter might be less fearful of undue influence by religion on science if he recognized that a scientist's actions could also be influenced by nonreligious dogma (principle 4), sometimes labeled "political correctness." For example, if a scientist found evidence that women were underrepresented in some scientific specialty because they were just not interested in that specialty, could he or she report that finding without fear of being accused of gender bias? The currently accepted doctrine seems to be that women should be fully represented in every professional field and that anything less must be a sign of discrimination. If women express a lack of interest in the field, the response seems to be that our professional societies must try harder to interest them. I am not arguing that this policy position is false, but that it appears to be a position one is not allowed to question, as former Harvard University president Lawrence Summers, who spoke about this issue, discovered.

In summary, scientists must avoid errors of fact and logic. Such errors nullify what the scientist is trying to say about religion and can cause nonscientists to question the reasoning abilities of scientists on science issues.

The views expressed are the author's and not necessarily those of the U.S. Naval Observatory or of the Department of the Navy.

References

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