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## Scientists Speak Up on Mix of God and Science

By [CORNELIA DEAN](#)

At a recent scientific conference at City College of New York, a student in the audience rose to ask the panelists an unexpected question: "Can you be a good scientist and believe in God?"

Reaction from one of the panelists, all Nobel laureates, was quick and sharp. "No!" declared Herbert A. Hauptman, who shared the chemistry prize in 1985 for his work on the structure of crystals.

Belief in the supernatural, especially belief in God, is not only incompatible with good science, Dr. Hauptman declared, "this kind of belief is damaging to the well-being of the human race."

But disdain for religion is far from universal among scientists. And today, as religious groups challenge scientists in arenas as various as evolution in the classroom, AIDS prevention and stem cell research, scientists who embrace religion are beginning to speak out about their faith.

"It should not be a taboo subject, but frankly it often is in scientific circles," said Francis S. Collins, who directs the National Human Genome Research Institute and who speaks freely about his Christian faith.

Although they embrace religious faith, these scientists also embrace science as it has been defined for centuries. That is, they look to the natural world for explanations of what happens in the natural world and they recognize that scientific ideas must be provisional - capable of being overturned by evidence from experimentation and observation. This belief in science sets them apart from those who endorse creationism or its doctrinal cousin, intelligent design, both of which depend on the existence of a supernatural force.

Their belief in God challenges scientists who regard religious belief as little more than magical thinking, as some do. Their faith also challenges believers who denounce science as a godless enterprise and scientists as secular elitists contemptuous of God-fearing people.

Some scientists say simply that science and religion are two separate realms, "nonoverlapping magisteria," as the late evolutionary biologist Stephen Jay Gould put it in his book "Rocks of Ages" (Ballantine, 1999). In Dr. Gould's view, science speaks with authority in the realm of "what the universe is made of (fact) and why does it work this way (theory)" and religion holds sway over "questions of ultimate meaning and moral value."

When the American Association for the Advancement of Science devoted a session to this idea of separation at its annual meeting this year, scores of scientists crowded into a room to hear it.

Some of them said they were unsatisfied with the idea, because they believe scientists' moral values must inevitably affect their work, others because so much of science has so many ethical implications in the real world.

One panelist, Dr. Noah Efron of Bar-Ilan University in Israel, said scientists, like other people, were guided by their own human purposes, meaning and values. The idea that fact can be separated from values and meaning "jibes poorly with what we know of the history of science," Dr. Efron said.

Dr. Collins, who is working on a book about his religious faith, also believes that people should not have to keep religious beliefs and scientific theories strictly separate. "I don't find it very satisfactory and I don't find it very necessary," he said in an interview. He noted that until relatively recently, most scientists were believers. "Isaac Newton wrote a lot more about the Bible than the laws of nature," he said.

But he acknowledged that as head of the American government's efforts to decipher the human genetic code, he had a leading role in work that many say definitively demonstrates the strength of evolutionary theory to explain the complexity and abundance of life.

As scientists compare human genes with those of other mammals, tiny worms, even bacteria, the similarities "are absolutely compelling," Dr. Collins said. "If Darwin had tried to imagine a way to prove his theory, he could not have come up with something better, except maybe a time machine. Asking somebody to reject all of that in order to prove that they really do love God - what a horrible choice."

Dr. Collins was a nonbeliever until he was 27 - "more and more into the mode of being not only agnostic but being an atheist," as he put it. All that changed after he completed his doctorate in physics and was at work on his medical degree, when he was among those treating a woman dying of heart disease. "She was very clear about her faith and she looked me square in the eye and she said, 'what do you believe?' " he recalled. "I sort of stammered out, 'I am not sure.' "

He said he realized then that he had never considered the matter seriously, the way a scientist should. He began reading about various religious beliefs, which only confused him. Finally, a Methodist minister gave him a book, "Mere Christianity," by C. S. Lewis. In the book Lewis, an atheist until he was a grown man, argues that the idea of right and wrong is universal among people, a moral law they "did not make, and cannot

quite forget even when they try." This universal feeling, he said, is evidence for the plausibility of God.

When he read the book, Dr. Collins said, "I thought, my gosh, this guy is me."

Today, Dr. Collins said, he does not embrace any particular denomination, but he is a Christian. Colleagues sometimes express surprise at his faith, he said. "They'll say, 'how can you believe that? Did you check your brain at the door?'" But he said he had discovered in talking to students and colleagues that "there is a great deal of interest in this topic."

### **Polling Scientists on Beliefs**

According to a much-discussed survey reported in the journal *Nature* in 1997, 40 percent of biologists, physicists and mathematicians said they believed in God - and not just a nonspecific transcendental presence but, as the survey put it, a God to whom one may pray "in expectation of receiving an answer."

The survey, by Edward J. Larson of the University of Georgia, was intended to replicate one conducted in 1914, and the results were virtually unchanged. In both cases, participants were drawn from a directory of American scientists.

Others play down those results. They note that when Dr. Larson put part of the same survey to "leading scientists" - in this case, members of the National Academy of Sciences, perhaps the nation's most eminent scientific organization - fewer than 10 percent professed belief in a personal God or human immortality.

This response is not surprising to researchers like Steven Weinberg, a physicist at the University of Texas, a member of the academy and a winner of the Nobel Prize in 1979 for his work in particle physics. He said he could understand why religious people would believe that anything that eroded belief was destructive. But he added: "I think one of the great historical contributions of science is to weaken the hold of religion. That's a good thing."

### **No God, No Moral Compass?**

He rejects the idea that scientists who reject religion are arrogant. "We know how many mistakes we've made," Dr. Weinberg said. And he is angered by assertions that people without religious faith are without a moral compass.

In any event, he added, "the experience of being a scientist makes religion seem fairly irrelevant," he said. "Most scientists I know simply don't think about it very much. They don't think about religion enough to qualify as practicing atheists."

Most scientists he knows who do believe in God, he added, believe in "a God who is behind the laws of nature but who is not intervening."

Kenneth R. Miller, a biology professor at Brown, said his students were often surprised to find that he was religious, especially when they realized that his faith was not some sort of vague theism but observant Roman Catholicism.

Dr. Miller, whose book, "Finding Darwin's God," explains his reconciliation of the theory of evolution with his religious faith, said he was usually challenged in his biology classes by one or two students whose religions did not accept evolution, who asked how important the theory would be in the course.

"What they are really asking me is 'do I have to believe in this stuff to get an A?,' " he said. He says he tells them that "belief is never an issue in science."

"I don't care if you believe in the Krebs cycle," he said, referring to the process by which energy is utilized in the cell. "I just want you to know what it is and how it works. My feeling about evolution is the same thing."

For Dr. Miller and other scientists, research is not about belief. "Faith is one thing, what you believe from the heart," said Joseph E. Murray, who won the Nobel Prize in medicine in 1990 for his work in organ transplantation. But in scientific research, he said, "it's the results that count."

Dr. Murray, who describes himself as "a cradle Catholic" who has rarely missed weekly Mass and who prays every morning, said that when he was preparing for the first ever human organ transplant, a kidney that a young man had donated to his identical twin, he and his colleagues consulted a number of religious leaders about whether they were doing the right thing. "It seemed natural," he said.

### **Using Every Tool**

"When you are searching for truth you should use every possible avenue, including revelation," said Dr. Murray, who is a member of the Pontifical Academy, which advises the Vatican on scientific issues, and who described the influence of his faith on his work in his memoir, "Surgery of the Soul" (Science History Publications, 2002).

Since his appearance at the City College panel, when he was dismayed by the tepid reception received by his remarks on the incompatibility of good science and religious belief, Dr. Hauptman said he had been discussing the issue with colleagues in Buffalo, where he is president of the Hauptman-Woodward Medical Research Institute.

"I think almost without exception the people I have spoken to are scientists and they do believe in the existence of a supreme being," he said. "If you ask me to explain it - I cannot explain it at all."

But Richard Dawkins, an evolutionary theorist at Oxford, said that even scientists who were believers did not claim evidence for that belief. "The most they will claim is that there is no evidence against," Dr. Dawkins said, "which is pathetically weak. There is no evidence against all sorts of things, but we don't waste our time believing in them."

Dr. Collins said he believed that some scientists were unwilling to profess faith in public "because the assumption is if you are a scientist you don't have any need of action of the supernatural sort," or because of pride in the idea that science is the ultimate source of intellectual meaning.

But he said he believed that some scientists were simply unwilling to confront the big questions religion tried to answer. "You will never understand what it means to be a human being through naturalistic observation," he said. "You won't understand why you are here and what the meaning is. Science has no power to address these questions - and are they not the most important questions we ask ourselves?"

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