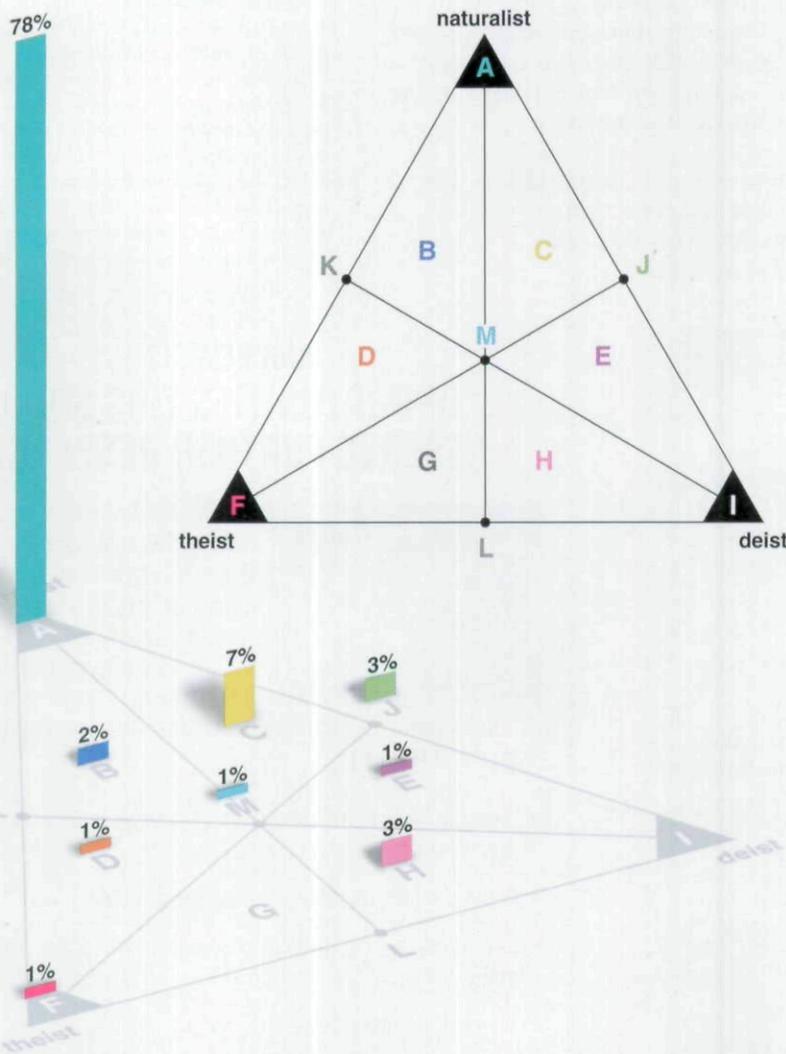


Evolution, Religion and Free Will

Gregory W. Graffin and William B. Provine

The most eminent evolutionary scientists have surprising views on how religion relates to evolution



DURING THE 20TH CENTURY, three polls questioned outstanding scientists about their attitudes toward science and religion. James H. Leuba, a sociologist at Bryn Mawr College, conducted the first in 1914. He polled 400 scientists starred as “greater” in the 1910 *American Men of Science* on the existence of a “personal God” and immortality, or life after death. Leuba defined a personal God as a “God to whom one may pray in the expectation of receiving an answer.” He found that 32 percent of these scientists believed in a personal God, and 37 percent believed in immortality. Leuba repeated basically the same questionnaire in 1933. Belief in a personal God among greater scientists had dropped to 13 percent and belief in immortality to 15 percent. In both polls, beliefs in God and immortality were less common among biologists than among physical scientists. Belief in immortality had dropped to 2 percent among greater psychologists in the 1933 poll. Leuba predicted in 1916 that belief in a personal God and in immortality would continue to drop in greater scientists, a forecast clearly borne out by his second poll in 1933, and he further predicted that the figures would fall even more in the future.

One hundred and forty-nine eminent evolutionary scientists responded to a recent poll about their views on religion. In a change from the methodology used in previous studies of such beliefs, the authors allowed their subjects to place themselves at one of several points on a ternary scale (above). The majority (78 percent) described themselves as naturalists (A). Only two claimed to be full theists (F), but two also described themselves as more theistic than naturalistic (D). Those who considered their beliefs to be midway between naturalism and deism chose J, and one evolutionist chose M, indicating no preference for any description. Three percent did not answer.

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Edward J. Larson, professor of law and the history of science at the University of Georgia, and science journalist Larry Witham, both theists, polled National Academy of Sciences members in 1998 and provided further confirmation of Leuba's conjecture. Using Leuba's definitions of God and immortality for direct comparison, they found lower percentages of believers. Only 10 percent of NAS scientists believed in God or immortality, with those figures dropping to 5 percent among biologists.

2003 Cornell Evolution Project

Our study was the first poll to focus solely on eminent evolutionists and their views of religion. As a dissertation project, one of us (Graffin) prepared and sent a detailed questionnaire on evolution and religion to 271 professional evolutionary scientists elected to membership in 28 honorific national academies around the world, and 149 (55 percent) answered the questionnaire. All of them listed evolution (specifically organismic), phylogenetics, population biology/genetics, paleontology/paleoecology/paleobiology, systematics, organismal adaptation or fitness as at least one of their research interests. Graffin also interviewed 12 prestigious evolutionists from the sample group on the relation between modern evolutionary biology and religion.

A primary complaint of scientists who answered the earlier polls was that the concept of God was limited to a "personal God." Leuba considered an impersonal God as equivalent to pure

naturalism and classified advocates of deism as nonbelievers. We designed the current study to distinguish theism from deism—that is to say a "personal God" (theism) versus an "impersonal God" who created the universe, all forces and matter, but does not intervene in daily events (deism). An evolutionist can be considered religious, in our poll, if he calls himself a deist.

Comprised of 17 questions and space for optional comments, this questionnaire addressed many more issues than the earlier polls. Religious evolutionists were asked to describe their religion, and unbelievers were asked to choose their closest description among atheist, agnostic, naturalist or "other" (with space to describe). Other questions asked if the evolutionary scientist were a monist or dualist—that is, believed in a singular controlling force in natural science or also allowed for the supernatural—whether a conflict between evolution and religion is inevitable, whether humans have free will, whether purpose or progress plays a role in evolution, and whether naturalism is a sufficient way to understand evolution, its products and human origins.

Perhaps the most revealing question in the poll asked the respondent to choose the letter that most closely represented where her views belonged on a ternary diagram. The great majority of the evolutionists polled (78 percent) chose A, billing themselves as pure naturalists. Only two out of 149 described themselves as full theists (F), two as more theist than naturalist (D) and three as theistic naturalists (B).

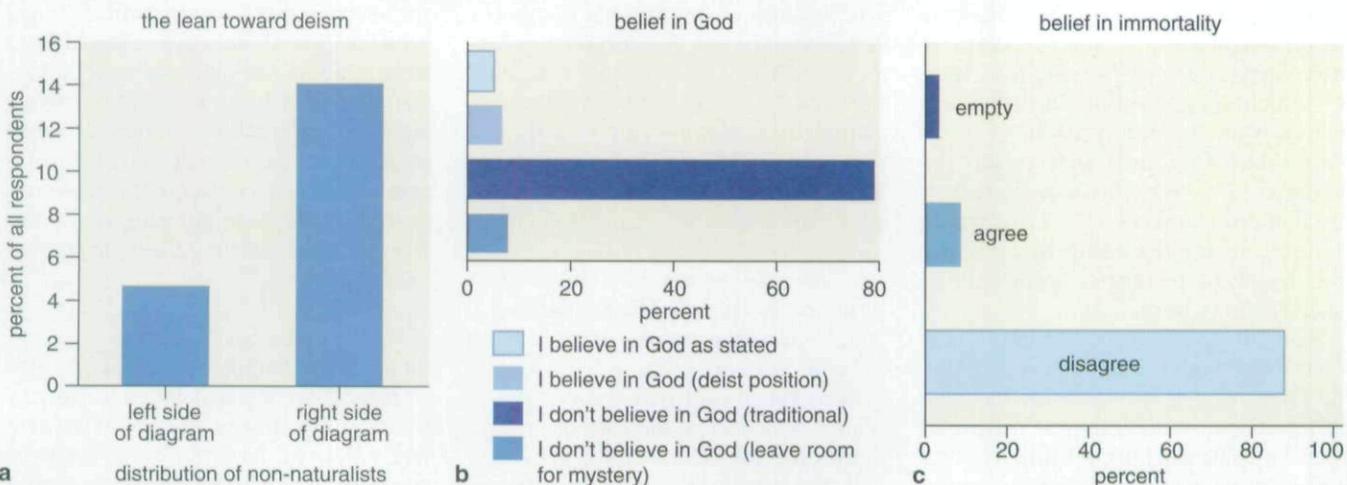
Taken together, the advocacy of any degree of theism is the lowest percentage measured in any poll of biologists' beliefs so far (4.7 percent).

No evolutionary scientists in this study chose pure deism (I), but the deistic side of the diagram is heavy compared to the theistic side. Eleven respondents chose C, and 10 chose other regions on the right side of the diagram (E, H or J). Most evolutionary scientists who billed themselves as believers in God were deists (21) rather than theists (7).

The responses to other questions in the poll parallel those in the ternary diagram and are summarized in graphs below. Furthermore, most (79 percent) of the respondents billed themselves as metaphysical naturalists. They were strongly materialists and monists: 73 percent said organisms have only material properties, whereas 23 percent said organisms have both material and spiritual properties. These answers are hardly surprising given previous polls. But the answers to two questions were surprising to us.

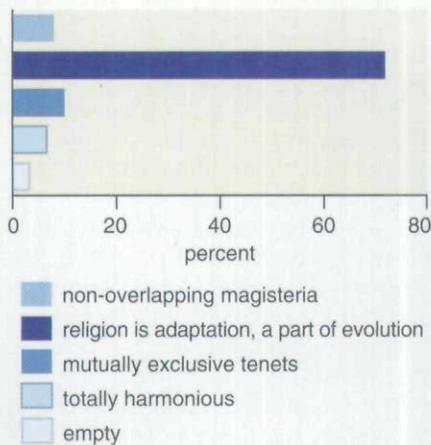
How Evolution and Religion Relate

Evolutionists were presented with four choices on the relation between evolution and religion: A, they are non-overlapping magisteria (NOMA) whose tenets are not in conflict; B, religion is a social phenomenon that has developed with the biological evolution of *Homo sapiens*—therefore religion should be considered as a part of our biological heritage, and its tenets should be seen as a labile social adaptation, sub-



Of those evolutionists who claimed a belief in God, the majority placed themselves somewhere on the right side of the ternary diagram on the facing page (a). Nonetheless, when asked simply whether they believed in God, nearly 80 percent said no (b). When asked if they believed in immortality, an even larger majority (almost 90 percent) said that they did not. These results are unsurprising, matching well with polls done in 1914, 1933 and 1998.

how evolution and religion relate



When asked how religion and evolutionary science relate, 72 percent of the respondents thought that religion is an adaptation—simply a sociobiological result of evolution. Surprisingly, more view them as mutually exclusive tenets than subscribe to Stephen Jay Gould's concept of non-overlapping magisteria.

ject to change and reinterpretation; C, they are mutually exclusive magisteria whose tenets indicate mutually exclusive conclusions; or D, they are totally harmonious—evolution is one of many ways to elucidate the evidences of God's designs.

Only 8 percent of the respondents chose answer A, the NOMA principle advocated by Stephen Jay Gould, rejecting the harmonious view of evolution and religion as separate magisteria. Even fewer (3 percent) believe that evolution and religion are "totally harmonious," answer D. A weak response to both of these options is unsurprising since the participants are so strongly nonreligious, shown by their answers to other questions in the poll. But we did expect a strong showing for choice C, which suggests that evolution and religion are mutually exclusive and separated by a gulf that cannot be bridged. This was the answer chosen by Richard Dawkins, who has a strong reputation for declaring that science has much better answers for human society than does religion.

Instead, the wide majority, 72 percent, of the respondents chose option B. These eminent evolutionists view religion as a sociobiological feature of human culture, a part of human evolution, not as a contradiction to evolution. Viewing religion as an evolved sociobiological feature removes all competition between evolution and religion for most respondents.

Evolutionary scientists are strongly motivated to ameliorate conflict between evolution and religion. Sociobiology offers them an apparent conciliatory path to the compatibility of religion and evolution, avoiding all language of inescapable conflict. Sociobiological evolution is the means to understanding religion, whereas religion as a "way of knowing" has nothing to teach us about evolution. This view allows a place for religion and sounds superficially comforting to compatibilists.

Charles Darwin was also loath to talk about evolution and religion in *On the Origin of Species*. He sought ways to lessen the conflict between his idea of natural selection and Christianity in the period just after 1859. Asa Gray, the Harvard botanist who was so taken by the *Origin*, wrote two reviews arguing for the compatibility of the intelligent design of God and Darwin's idea of natural selection. God, according to Gray, guided the available variation and thus controlled the evolutionary process. Darwin sought Gray's permission to reprint parts of both reviews as a pamphlet that Darwin, at his own expense, distributed widely to those who raised religious objections to his views in the *Origin*. At this time, Darwin privately believed that Christianity was incompatible with his idea of natural selection but used Asa Gray's reviews to help mute public and academic uproar from religious objections to his book.

Nine years later, *On the Origin of Species* had become a huge international success, and Darwin published *The Variation of Animals and Plants Under Domestication*. No longer needing a compatibilist slant on natural selection and religion, he clearly distanced himself from Gray's views. In the last paragraph of Volume II, Darwin rejects the possibility that God was guiding evolution and writes about Asa Gray:

... no shadow of reason can be assigned for the belief that variations, alike in nature and the result of the same general laws, which have been the groundwork through natural selection of the formation of the most perfectly adapted animals in the world, man included, were intentionally and specially guided. However much we may wish it, we can hardly follow Professor Asa Gray in his belief that "variation

has been led along certain beneficial lines," like a stream "along definite and useful lines of irrigation."

If Gray were right, then natural selection was superfluous; an omniscient Creator determines the goals of evolution. "Thus," Darwin concludes in the last sentence of the book, "we are brought face to face with a difficulty as insoluble as is that of free will and predestination." Darwin, however, had solved the problem of free will more than 30 years earlier; he believed it was nonexistent. He also believed that he had solved the problem of intelligent design in adaptations—that also was nonexistent for him, a view shared by the vast majority of the world's most eminent evolutionists alive today, according to our study.

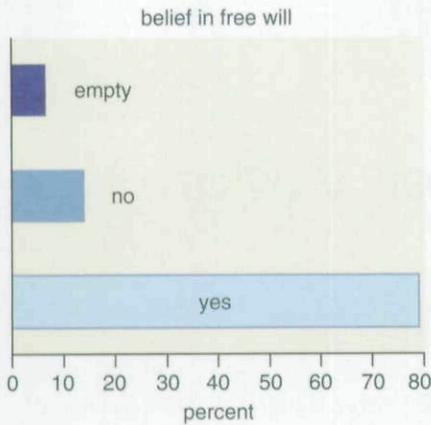
If Asa Gray represented the commonly held view of scientists who studied evolution in the 1860s, evolution could be subsumed under religion as a manifestation of God's design. Today, as our results show, the commonly held view among evolutionists is that religion is subsumed under sociobiological evolution. There has been a complete inversion of the naturalist worldview in the last 150 years.

Eminent evolutionists are now caught in a bind that reminds us of Darwin in 1859. They worry that the public association of evolution with atheism or at least nonreligion will hurt evolutionary biology, perhaps impeding its funding or acceptance. Asa Gray's gloss and that of the evolutionists in this poll, however, differ fundamentally. Gray offered a theological synthesis with natural selection that Darwin carefully used for a few years before extracting himself from it. Seeing religion as a sociobiological feature of human evolution, while a plausible hypothesis, denies all worth to religious truths. A recent informal poll of our religious acquaintances suggests that they are not pleased by the thought that their religions originated in sociobiology.

Human Free Will

Charles Darwin recognized the importance of free will to evolutionary biology. He first wrote about human free will in his M & N notebooks as he became a materialist in 1838, soon after the voyage of the *Beagle*:

The general delusion about free will is obvious because man has



When asked whether they believe in free will, most scientists surveyed said they did, apparently viewing the philosophical concept of free will to be equivalent to choice.

power of action, & he can seldom analyse his motives (originally mostly INSTINCTIVE, & therefore now great effort of reason to discover them....)

Darwin saw punishing criminals for any reason other than deterring others as morally wrong: Criminals should be pitied and rehabilitated rather than hated. Revenge he abhorred. Further, "this view should teach one humility, one deserves no credit for anything (yet one takes it for beauty and good temper)." And finally, he said, a "believer in these views will pay great attention to Education."

Our questionnaire offered evolutionary scientists only two choices on the question about human free will: A, all organisms are locally determined by heredity and environment, but humans still possess free will; B, all organisms are locally determined by heredity and environment, and humans have no free will. To our surprise, 79 percent of the respondents chose option A for this question, indicating their belief that people have free will despite being determined by heredity and environment. Only 14 percent chose no free will, and 7 percent did not answer the question.

Some philosophers have come to the view that human beings are entirely determined but still possess free will—see, for example, the views of Daniel Dennett or Ted Honderich—but we doubt the evolutionists polled have read carefully this genre of modern philosophy. This view was not mentioned in the interviews nor in the many comments generated by the free-will question. Instead, we think there is a conflation of free will with choice.

We anticipated a much higher percentage for option B and a low percentage for A, but got just the opposite result. One of us (Provine) has been thinking about human free will for almost 40 years, has read most of the philosophical literature on the subject and polls his undergraduate evolution class (200-plus students) each year on belief in free will. Year after year, 90 percent or more favor the idea of human free will for a very specific reason: They think that if people make choices, they have free will. The professional debate about free will has moved far from this position, because what counts is whether the choice is free or determined, not whether human beings make choices. People and animals both certainly choose constantly. Comments from the evolutionists suggest that they were equating human choice and human free will. In other words, although eminent, our respondents had not thought about free will much beyond the students in introductory evolution classes. Evolutionary biology is increasingly applied to psychology. Belief in free will adds nothing to the science of human behavior.

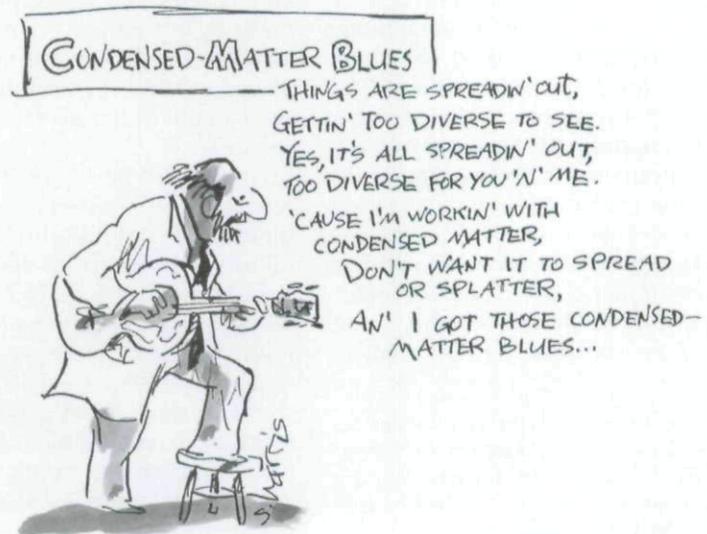
Conclusion

Only 10 percent of the eminent evolutionary scientists who answered the poll saw an inevitable conflict between religion and evolution. The great majority see no conflict between religion and evolution, not because they occupy different, noncompeting magisteria, but because they see religion as a natural product of human evolution. Sociologists and cultural anthropologists, in contrast, tend toward the hypothesis that cultural change alone produced

religions, minus evolutionary change in humans. The eminent evolutionists who participated in this poll reject the basic tenets of religion, such as gods, life after death, incorporeal spirits or the supernatural. Yet they still hold a compatible view of religion and evolution.

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