“Zoloft works better than God,” a Catholic priest once told me during a conversation about depression. This is not the kind of man to give up on faith; our talks always finish with his reminders to pray. But in matters of body, and in matters of mind more and more, he and many others sense the right thing to do—religiously—is to consult a scientist.

In recent years, such common sense has given rise to a new paradigm in the study of human religiosity, one founded in a laboratory understanding of biology and the human mind. Together, these researchers are attempting to “biologize” religion, recalling E.O. Wilson’s notorious call for inquiry into human values “to be removed temporarily from the hands of philosophers and biologized.” And, like Wilson’s, their efforts have been fraught with controversy.

Driven by a growing confidence in cognitive science, neuroscience, evolutionary psychology, and genetics, the wider public has begun to embrace truly scientific (as well as pseudo-scientific) explanations of religious beliefs and practices. This idea takes root in an era that led the first President Bush to declare the 1990s “the decade of the brain,” one in which mental illnesses are treated increasingly through psychiatric...
drugs rather than analysis or spiritual practice alone.

Popular magazines, from *Newsweek* and *Time* to the *New York Times Magazine*, have parodied the research around with catchy labels like “the God spot,” “the God gene,” and “Darwin’s God.” People with a variety of religious perspectives, from Western Buddhists to evangelical Christians to the anti-religious, have explored and discussed biological accounts of belief, each bringing to it their sometimes contradictory assumptions and interpretations. Biologizing is a research project, but it is also a manifestation of a public desire to understand religiosity in the terms of science.

So what happens to religion when it is biologized? Many would intuitively believe philosopher and “New Atheist” Daniel Dennett, whose best-selling *Breaking the Spell* framed biologizing religiosity and overcoming it as two sides of the same coin; one leads naturally to the other. Confident in the possibility of this research, Dennett contends that “we” should “gently, firmly educate the people of the world, so that they can make truly informed choices about their lives,” choices that he believes will involve dispelling religion.

Less optimistically, but along similar lines, cognitive anthropologist Scott Atran suspects that “religious belief in the supernatural will be here to stay” despite those who come to understand it scientifically. He and other biologizers prefer to maintain a more agnostic stance than Dennett, purporting to pursue a scientific study of religion apart from biases and agendas. Scientific methods, they suggest, liberate the study of religion from ideological and theological debates.

Yet the lines between religion and the scientific study of it are not so clear. Biologizers depend on traditional ways of conceptualizing religiosity that have particular ideological connotations. In turn, believers of various stripes are eager to respond creatively to scientific research, and in some cases they head to the laboratory themselves to shed new light on their own beliefs and practices.
This should not be surprising. What we know of as science and religiosity have not been static absolutes but are constructed variously, often in terms of one another. For all that scientific methods offer the study of religion, they are not necessarily an escape from the influence of the ideologies and theologies that accompany it. Neither are they exempt from the divisions of approach and focus that have fueled religious conflicts for centuries.

Biologists refer to themselves by a handful of names and are affiliated with a number of different disciplines. They can be arranged into three groups—cognitivists, neurotheologians, and evolutionary biologists—based on the alliances they have formed and the methods they rely on.

Whereas some biologists do their work on religion in formal scientific contexts, others are professional researchers whose ideas on religion are more of a hobby—published in the popular press rather than peer-reviewed publications, often lacking scholarly sophistication. Therefore, evaluating the biologists means looking not just at their findings and interpretations but also at the peer communities they either create or neglect.

Cognitivists

Many of the most sophisticated biologists today rely on the methods of cognitive science and evolutionary psychology. These anthropologists, psychologists, and religious studies scholars are working to build a comprehensive and experimental explanation of religiosity—including beliefs and practices—in terms of universal mechanisms in the human mind.

The general field of cognitive science emerged in the context of artificial intelligence research with computers after World War II. “The last thirty years of cognitive science,” researcher Edwin Hutchins has noted, “can be seen as attempts to remake the person in the image of the computer.” Through that metaphor—a machine that people can build from bottom up and understand—human intelligence begins to appear explainable in terms of its biological “hardware” or “wiring” running the learned “software” of experience. Biologizing then becomes a matter of computerizing.

Coupled with the success of Noam Chomsky’s linguistics in the 1950s, cognitive science represented a departure from the then-dominant behaviorist mode of psychology, which refused to explicate the internal logic of mental processes and looked only at how various influences condition behavior. Since then, researchers from a number of disciplines, including linguistics, philosophy, and psychology, have allied themselves with cognitive science, rejecting the limits behaviorist thinking imposed.

Over the course of the 1980s and 1990s, a theoretical and experimental framework for a cognitive study of religious belief began to emerge. In 1993, anthropologist Stewart Guthrie’s Faces in the Clouds explained beliefs about supernatural beings in terms of an evolved human tendency to anthropomorphize what we perceive. The same mental systems that helped our ancestors spot a concealed predator, Guthrie argued, compel people to see spiritual beings behind the forces of nature and events in our lives.

With experimental studies and publications, anthropologist Pascal Boyer and psychologist Justin Barrett further probed the counterintuitive logic of supernatural representations, rendering Guthrie’s anthropomorphism as a “hyperactive agency detection device.” By evaluating how test subjects in a variety of cultural contexts intuitively described narratives about supernatural action, for instance, Barrett claims to elucidate the cognitive processes beneath, and sometimes opposed to, the formal theological formulations of religious beliefs. Supernatural beliefs that follow certain patterns, Boyer and Barrett argue, are more easily grasped by human minds, facilitating their transmission and retention in culture.

By the early 2000s, the cognitivists had a theoretical model grounded in enough evidence to produce several comprehensive synthetic works. Boyer’s Religion Explained, written for a non-expert audience, is a readable and triumphant cognitivist manifesto. Anthropologist Scott Atran’s In Gods We Trust is an impressive
scholarly synthesis. Meanwhile, other scholars have used this approach to develop an account of ritual behavior based on cognitive underpinnings. A frequent subject of major media coverage, cognitivists represent a growing trend in the study of religion, complete with peer-reviewed literature, a growing public following, and eager graduate students.

Neurotheologians
Whereas cognitive science treats the brain as a computer to be studied through inputs and outputs, a group of neuroscientists, who call themselves “neurotheologians,” examine the inner workings of the brain using sophisticated imaging technology.

In recent decades, brain science has had a growing impact on ordinary life in industrialized societies, and this impact has generated considerable explanatory currency. Matthew Alper, whose personal quest in The “God” Part of the Brain has become a cult classic, tells of his conversion to science after being prescribed psychiatric drugs. “Whereas in the past, however, in which I had admired the sciences, I now revered them. Science had saved my life. I was indebted to it. God didn’t save me. I didn’t save me.” And so, the same faith that many placed in a god or religion, I now placed in science.

In addition to drugs, neurofeedback therapies that combine EEG scans with behaviorist-like conditioning are making the workings of our brains more accessible for clinical adjustment. Popular books offer “mind hacks”—neuroscientific tricks that one can try at home to improve cognitive performance. With the advent of such therapies that transform our whole sensation of personhood, laboratory researchers renew the salvific promise of religious authorities.

Some of the earliest and most-cited attempts to use brain science on religion were cognitive neuroscientist Michael Persinger’s “God helmet” experiments at Laurentian University in Ontario in the 1980s. In the early experiments, he modified a snowmobile helmet to direct electromagnetic fields at the brain’s temporal lobes, which he and others surmised might be associated with religious experience.

The results of these tests were astonishing but controversial. Reportedly, 80 percent of the volunteers who donned the helmet had some kind of extraterrestrial experience, and of those, most sensed the presence of a person in the room. In the years since, these experiments have attracted public attention. Persinger’s helmet has been featured in Wired, Newsweek, and on the BBC. Richard Dawkins tried the helmet, as did psychologist Susan Blackmore. Although Dawkins reported little effect from the trial, Blackmore found the experience “extraordinary.”

More recently, a team of Swedish researchers attempted to replicate the experiments using double-blind methods, which some of Persinger’s trials lacked, and the new helmet had no effect. Although some use these findings as evidence against Persinger’s approach, he insists that the Swedish team did not expose subjects to magnetic fields for long enough.

The idea of a “God spot” that Persinger pioneered caught the attention of a number of neuroscientists. V.S. Ramachandran, professor at the University of California, San Diego, and bestselling author, has done experiments that reveal the religious proclivities of temporal lobe epileptics. Neuroscientist Rhawn Joseph has argued in a series of flamboyant, self-published books for the centrality of the limbic system as the “transmitter to god.” Joseph even suggests that these areas “contain neurons that fire selectively in response to visual images of faces, hands, eyes, and complex geometric shapes, including crosses.” Together, Persinger, Ramachandran, and Joseph all tend to assume that experiences that look “religious” should have their origin in a single brain center, giving the concept of religion its own neural correlate.

Arguably the most influential neurotheologian today is Andrew Newberg at the University of Pennsylvania. In the early 1990s, he and elder neuroscientist Eugene d’Aquili began to devise experiments that used single emission computed tomography (SPECT) equipment to examine
meditating Tibetan Buddhist monks and praying Franciscan nuns. This equipment detected clear differences between normal brain states and peak spiritual experiences, and major similarities were found between the different groups. On the one hand, regions associated with thinking and planning showed a noticeable increase in blood flow. On the other, the images revealed decreased activity in the posterior superior parietal lobes, which Newberg calls the “orientation association area.” These, in turn, he uses for popular audiences, manage the distinction between “me and not me.” Unlike Persinger and others, however, he is not eager to localize religiosity in any one specific brain region.

The neurotheologians’ findings demonstrate significant public appeal, having been featured in numerous major magazine articles and radio broadcasts. Such reports readily entertain metaphysical reflections on what these findings might mean, just as the scientists themselves do in their popular books. Work on religion remains on the fringes of conventional neuroscience. Yet as more established neuroscientists begin to turn their attention toward it, the neurology of religion is poised to enter the mainstream.

Evolutionary Biologists

When Dean Hamer’s *The God Gene* was published in 2004, it was the subject of *Time* cover story. Hamer, a geneticist at the National Institutes of Health, made a name for himself ten years earlier by controversially arguing for the existence of a “gay gene,” and predictably, his new book garnered a lot of attention. It claims that a particular gene, VMAT2, triggers spiritual tendencies. Hamer describes making this discovery alone and in his spare time, apart from his funded research at the NIH. In an addiction study conducted for other purposes, he noticed that VMAT2 seemed to account for some participants’ survey scores on a “self-transcendence” scale.

Although much of Hamer’s book tries to qualify the brazenness of its title (other genes are involved in religiosity, “spirituality” is more the dependent variable than “god,” etc.), skepticism remains about whether anything has actually been demonstrated. Carl Zimmer’s October 2004 review in *Scientific American* suggested an alternative title: *A Gene That Accounts for Less Than One Percent of the Variance Found in Scores of Psychological Questionnaires Designed to Measure a Factor Called Self-Transcendence, Which Can Signify Everything from Belonging to the Green Party to Believing in ESP, According to One Unpublished, Unreplicated Study*. Zimmer maintains, however, that shortcomings of the “god gene” theory stem mainly from Hamer’s desire to publish controversial books, and that future work in genetics may shed useful light on religiosity.

David Sloan Wilson’s *Wilson’s Cathedral* proposes a more sophisticated evolutionary approach. Wilson, a biologist, combines the idea of group selection with rational choice theory. He attempts to demonstrate that, by coordinating group activity, religiosity has a “secular utility” that caused god genes to succed in the course of human evolution. Although the logic of group selection is controversial among biologists, Wilson’s application of it to religion is compelling.

Anthropologist Barbara J. King, who has spent her career studying primates, has turned to religion in her book *Evolving God: A Provocative View on the Origins of Religion*. Pointing to evidence of ape cognition, empathy, social rules, and meaning making, she suggests that “the fundamental building blocks of the religious imagination” can be found among animals. For her, the systems of emotional “belongingness” at work in ape societies are a “necessary condition” for religiosity in modern humans. But her argument is more of an invitation for further research than a conclusive theory. [Editor’s note: For more of Barbara J. King’s work on animals and religion, see “Hard Times in Big Sky,” *p. 40]*

Evolutionary biologists generally avoid polemic by stressing that their research does not question whether divine beings or mystical states are real. Still, a more subtle polemic about what constitutes real religiosity lurks beneath. Hamer, who argues that his gene affects a person’s “spirituality” rather than organized religiosity, asserts the priority of individual experience and dismisses social forms outright. For him, whereas personal spirituality is a natural instinct with a genetic basis that enabled our ancestors to survive, religion is the product of misleading memes.

David Sloan Wilson and Barbara J. King, on the other hand, emphasize social forms and pay little attention to individual experience or supernatural beliefs. Wilson’s “secular utility” and King’s “belongingness” view personal spirituality as extraneous to the critical function and value of religiosity, which is even more evident when they interpret their findings. The admiration they have for religiosity (while perhaps disagreeing with actual religious beliefs) rests on its power to facilitate group behavior. Together with Hamer, their works read like secularized efforts to interpret the function of religious legacy in the human race.

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For many, the suggestion that religiosity has its basis in biological mechanisms implies its falsity. Daniel Dennett would certainly agree. Most of the prominent cognitivists, including Pascal Boyen, Scott Arran, and Stewart Guthrie, avoid this argument, but readers generally take them to be hostile toward religious belief. Jesuit theologian John Haught, whose own work champions a science friendly Christianity, concludes that “if Boyen and others are giving us the ultimate and adequate explanation of religion, then of course we should acknowledge that our piety is pure fiction.”

Perhaps this is not necessarily true. Cognitivist Justin Barrett identifies an evangelical Christian and has been an organizer for the youth ministry Young Life. “Why wouldn’t God,” he speculates in an interview, “design us in such a way as to find belief in divinity quite natural?” His book *Why Would Anyone Believe in God?*, a summary of cognitivist research, spends its concluding chapters suggesting that these theories make a naturalist case
against atheism: "Belief in God comes naturally. Disbelief requires human intervention." When the research is presented this way, believers receive it much more eagerly than either Dennett or Haight might expect. A review of Barrett's book in Meridian, a Mormon magazine, expressed enthusiasm for his rhetorical openness to theism: "Neither coercion nor brainwashing nor special persuasive techniques need be invoked in order to account for widespread human belief in God or gods."

This ambivalence only begins to reveal the range of the religious interpretations biologizing has already inspired. In his books, Andrew Newberg speaks of an "Absolute Unitary Being" for which his research allegedly gives evidence. Whereas Michael Persinger thinks of his "God helmet" as an antidote to religiosity, another neuroscientist associated with the research, Todd Murphy, advocates the helmet's potential for spiritual enlightenment. Most outlandish of all, Rhawn Joseph claims his neurotheology as evidence that "we are in fact spiritual beings" and that our ancestors were planted on Earth by an advanced extraterrestrial civilization.

Such divergent interpretations reveal the power that scientific explanations of religion can have. The consequences of biologizing are much more complex and difficult to predict than most scientists have been willing to admit. The assumption that a scientific description of religiosity will inevitably counteract it rests on a model of static identity that has been amply refuted by modern experience. Instead, biologizing is a new move in the ongoing transformations that people have called religion or science, subject to such biases, imagination, and missteps that have always accompanied these undertakings.

Biologizing is, on the one hand, a series of new directions for serious research, and on the other, a movement with religious vitality of its own.

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