THE NEW SCIENCES OF RELIGION

by William Grassie

Abstract. In this essay I examine the new sciences of religion, spanning the traditional fields such as the psychology, sociology, and anthropology of religion to new fields such as the economics, neurosciences, epidemiology, and evolutionary psychology of religion. The purpose is to welcome these approaches but also delineate some of their philosophical and theological limitations. I argue for pluralistic methodologies in the scientific study of religious and spiritual phenomena. I argue that religious persons and institutions should welcome these investigations, because science affects only interpretative strategies and does not present a fundamental challenge to core religious commitments. Indeed, the new sciences of religion can help religions in becoming more effective and wholesome. I am critical of confusing the scientific study of religion with scientism and trace this ideological project back to August Comte. In the end I deconstruct the metaphoric boundary that places religion on the inside as the object and science as the subject on the outside looking in.

Keywords: anthropology of religion; economics of religion; epidemiology of religion; evolutionary psychology; neurosciences of religion; neurotheology; psychology of religion; sociology of religion

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The last few years have witnessed a torrent of new books by noted scientists purporting to scientifically explain religion, mostly with the intention of explaining religion away (Stenger 2007; Dawkins 2006; Dennett 2006; Harris 2004; 2006; Hamer 2005; Wilson 2002; Boyer 2001). What is religion? What is spirituality? How does one study it? How does one teach it? What does it mean to take a scientific approach to the study of religion? Are religions healthy and functional for individuals and societies, or unhealthy and dysfunctional? These are difficult questions at the center of some of the most challenging controversies of the twenty-first century.

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In this essay I employ the metaphor of inside and outside to characterize different ways of studying religion (McCutcheon 1999). In studying religion from the *outside*, through science, I survey different theories and the limitations of those theories. I argue for pluralistic methodologies in the scientific study of religious and spiritual phenomena. I also argue that religious persons and institutions should welcome scientific investigation, because science affects only interpretative strategies and does not present a fundamental challenge to core religious commitments. In the end, I deconstruct the circle and challenge the boundaries that place religion on the inside as the subject and science on the outside as the objective onlooker. I begin and end with the problem of definitions.

The Problem of Definitions

The words themselves—*religion* and *spirituality*—beg for rigorous definitions, but this will prove elusive. The term *religion* is derived from the Latin verb *religare*, which means "to tie together, to bind fast." In the original understanding, religion was about expressing proper piety, that is, binding oneself to God. Later the term would also be used to designate a bounded belief system and set of practices, as in the religions of the Greeks, Romans, Jews, Muslims, Hindus, Chinese, and others.

Today, in the United States, it is common for people to say that they are "spiritual, not religious." The definition of *spiritual* is elusive also. The term derives from the Latin *spiritus*. The Latin verb root is *spirare*, literally "to breathe or blow." The connotation is that we are surrounded by a divine reality as pervasive, intimate, necessary, and invisible as the air we breathe. Similar concepts can be found in the Hindu word *prana*. The Chinese concept of *chi* energy may be analogous. Jewish mystics noted that the sacred name of God in Hebrew, YHWH, a name written in the Bible but never pronounced aloud by pious Jews, might itself be understood as the sound of human breath—an inhalation *YH* and an exhalation *WH*. Thus, every time a person breathes, she is actually saying the name of God. Muslim mystics make similar claims about the aspiration of the name *Allah*. To talk of spirituality, then, is to affirm that there is an all-encompassing realm, an invisible reality that somehow transcends and sustains human life, consciousness, and values.

In the contemporary context, the phrase "spiritual, not religious" is used to disassociate oneself from the institutional and historical manifestations of religions. One wants the goods without the long histories of failures and hypocrisy. Religions are organized groups. Spirituality is something an individual can have without being implicated in the ambivalent complexity of human societies and institutions. In this sense, "spiritual, not religious" can be seen as a modern manifestation of a historical, sociological cycle of trying to recapture the imagined authentic and uncorrupted origins of re-

ligion. Humans, of course, are a social and political species, so it is only a matter of time before "spirituality" also gets messy. Indeed, the notion "spiritual, not religious" is itself the product of a culture that emphasizes individualism and consumerism. It is also the product of a religious history of recurrent reformations that seek to return to an original, unmediated, pure connection with a foundational moment, a mystical experience, or the teachings of a charismatic leader.

I prefer the term *religion* precisely because it invites us to look at, and, more important, take responsibility for, the entire complexity of the phenomena—the good, the bad, and the ambivalent. This is not to say that I do not also seek to breathe and take direct personal inspiration from an invisible spiritual reality that is all around me, everywhere, all of the time; I just do not trust myself or anyone else to be an unbiased and uncorrupted pure vessel for that everywhere-present Presence, whatever it might be.

The term *religion* does not simply translate into other cultures and languages. In Sanskrit, the Hindu term used to indicate religion is *dharma*, which means the teaching or practice, but this is hardly a parallel concept, and much that is not *dharma* would count as religion in Hinduism. In Chinese, the term *Zongjiao* was coined in the modern era to mean religion. The etymology of the term reflects a Confucian understanding of the teaching of lineage. In Judaism, the Hebrew word *dat,* meaning law, is used to indicate religion, reflecting a Jewish religious preoccupation with religious laws and justice. In Arabic, the term religion is translated as *din*, meaning simply the path or the way.

Regardless of how it is translated, the modern European concept of religion has now traveled the world, and humans everywhere in our global civilization struggle to understand how religions stand apart from and perhaps transcend other dimensions of human culture.

Religion from the Inside

Most people in the past and even today study religion from the inside, as believers and practitioners of a particular tradition. A Jew studies Judaism; a Buddhist studies Buddhism; a Muslim studies Islam. Later we will consider what it means to study religion from the outside, as a nonbeliever and nonpractitioner, but for now it is important to note that a serious study of a religion from the inside is complicated and engaging work. The subject matter—"my religion"—deals with *self, society,* and *cosmos*. Religion from the inside has a lot to say about what it means to be a fully realized individual human, living in a social context with other humans in a universe imbued with power, purpose, and significance.

The subject matter—my religion—is *diverse, particular,* and *universal*. Any serious study of one's own religion from the inside will show that there is heterogeneity within any major tradition. The tradition as a whole

and in its diversity relates to particular histories, languages, and cultures. In spite of this diversity and particularism, every religion is also making universal truth claims that apply to all humans everywhere at all times, indeed truth claims about the fundamental character of the universe as a whole. One of the major preoccupations of the study of religion from the inside is this diversity and arguing for normative views of one's understanding of a tradition in opposition to what would be seen as heretical understandings of that same tradition—liberal interpretations versus conservative interpretations, charismatic mystical approaches versus rational textual approaches, Sunni Muslims versus Shiite Muslims, Theravada Buddhists versus Mahayana Buddhists, Protestant Christians versus Catholic Christians, Evangelical Protestants versus other Protestants, and so forth.

For instance, there are hundreds of different sects within Christianity. Recently, I had the opportunity to visit with Maronite Christians in Lebanon. They speak Arabic in their homes and use the ancient language of Syriac-Aramaic in their liturgies. Their priests marry, but the Maronite Church is affiliated with the Roman Catholic Church, which forbids the marriage of priests. It would take a lot of history to explain this interesting situation. In spite of these idiosyncrasies, their understanding of Christianity—of sin, sacrifice, sanctification, and salvation—is taken to be universally true for all people, not just Lebanese Maronites. We could fill this article and indeed many libraries with other examples around the world of a tradition's diversity, particularity, and universality.

A serious study of religion from the inside requires a lot of work. One needs to study the tradition, its sacred scriptures, the original languages in which scriptures were written, the translations and interpretations of those scriptures, the histories of the tradition, the legal codes and case law within that tradition, the liturgical practices, the saints and sages, and the tradition's teachings about the everyday mundane life—all of this while paying attention to one's own personal experiences as a believer and practitioner within the tradition. Of course, studying the tradition—my religion—is supremely about some concept of the Sacred, the Divine, a notion of Transcendence, God-by-whatever-name (see Diagram 1).

We will come back to the Divine Mystery, the God-by-whatever-name question, at the center of all religious phenomena, again and again in this discussion. We will never be done with it. Note, however, how intimidating a serious study of religion from the inside would be. A scholar of Christianity, for instance, would need to know Latin, Greek, and Hebrew just to begin with biblical interpretation. A serious scholar also would study Aramaic and Syriac, because these were the languages spoken in first-century Palestine by Jesus and the apostles. Then he certainly would need to know French, German, and English, because much of Christian history and thought was shaped inside of these European languages and cultures. And that is just the language-study part of the curriculum.

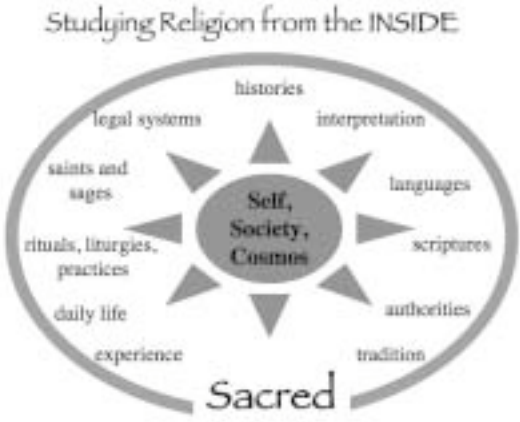

Diagram 1. Studying religion from the inside.

Believers and practitioners of a religion are always looking for a short cut to the Sacred that will bypass all of this hard work—and understandably so. It is just too much homework, and life is short. The contemporary phenomenon of "spiritual, not religious" is a recurrent phenomenon as old as humanity. Religion would be rather useless if one were required to do all of this hard work—hence the hope and the promise of having "authentic" experience and "unmediated" inspiration of the spiritual origins that motivate the religious quest. In the Christian idiom, we might call such an experience being "born again," but who would not prefer the ecstasy of Saint Paul at the crossroads to the agony of Jesus on the cross? Spiritual inspiration is so much easier than strenuous scholarship or sacrificial service. Of course, a lifetime devoted to the serious study of religion from the inside, particularly in today's world, is not likely to be a very remunerative career choice.

The Challenge of Comparative Religion

We also are confronted today with the challenge of studying religion from the outside, because we live in a world where we are confronted with diverse beliefs and practices. The German poet and philosopher Johann Wolfgang von Goethe said that "he who knows one, knows none." Goethe was talking about human languages. If you know only your *Muttersprache*, the language you were raised speaking, you do not really understand the magic of language at all. It is by learning a foreign language with some facility and felicity that one understands grammatical, semantic, and semiotic structure of language in general, including one's own.

The question is whether Goethe's aphorism about human languages is applicable to human religions. When studying a human language, after a

lot of hard work and practice one can hope to experience a remarkable and progressive gestalt shift in which outside knowing becomes inside knowing. When fluency is acquired, the student begins to think, feel, and dream inside that foreign language, no longer translating as she goes but living within that language. Can one have the same experience of a foreign religion? Can one be fully Muslim and Buddhist at the same time, switching back and forth as if between English and French? Can one be Christian, Jewish, and Hindu at the same time, especially when we understand that the traditions themselves sometimes talk of exclusive truth claims available only to the initiated member? It may not be possible, but one useful insight from the analogy to human languages is that we should not think it easy to obtain multiple fluencies in comparative religions. Comparative religion may be no easier to approach than, say, learning Mandarin or Tamil as an outsider.

The Religion of No Religion

Another reason that we are confronted with the challenge of studying religion from the outside is that many today claim to have no religion at all, to have rejected religious claims to truth as false consciousness and irrational ideologies. The vantage point that supposedly allows one to reject religious worldviews *in toto* is science, or, more appropriately, scientism. The aim of scientism is to replace religion with a scientific and rational view of the self, society, and cosmos, a view that must be both factual and normative. This is the view of most of the authors mentioned at the beginning of this essay, who in their recent books purport to naturalize and explain religion away—as far away as possible.

With the rise of modern science and the European Enlightenment, religion was increasingly seen as a thing apart, a set of beliefs and practices that were superstitious, irrational, regressive, and backward. The French philosopher August Comte (1798–1857) proposed a theory of cultural history understood as staged developments in which religion would be replaced by science. Thus, science was seen as the rational and natural successor to religion. It was in this milieu that the social sciences arose in the nineteenth century, including the notion of the scientific study of religion (Sharpe 1986; Pals 1996).

Karl Marx (1818–1883) argued that the economic system was foundational in understanding human society. If the economic system changed, everything else about the society would change—the legal system, the educational system, the family system, and the religious beliefs and institutions. Marx used the metaphor of a house with its foundation and the superstructure built on top of this base. Economics was privileged, in Marx's view, because it was through the economic system that humans got the necessities of survival. Change the economic base, that is, the modes of production, and everything in the superstructure would have to change as

well. The Medieval economy was based on feudal estates owned by nobility and agricultural labor provided by peasants. In Marx's understanding, this feudal economic system gave rise to the institution and beliefs of the Roman Catholic Church. With the rise of middle-class merchants, guilds, and industrialization in early capitalism, Catholicism gave way to Protestantism. Marx developed the idea of alienation and false consciousness. Belief in God was a fantasy akin to children believing in Santa Claus and resulted in humans' being alienated from their true potential to become creative laborers. Marx famously referred to religion as "the opium of the masses" because it promoted docility among terribly oppressed workers in the growing industrial cities in Europe. (To the extent that Marx was on to something true about religions, we should be expecting profound changes in religions in the twenty-first century based on the current globalized economic system of production.)

Sigmund Freud (1856–1939) also believed that religion was an unhealthy illusion. He rejected Marx's theories as overly optimistic about human capacities to lead moral lives in harmonious cooperation with others. For Freud, the base or foundation of human society was to be found in the instincts and structures of the human psyche. The human brain was shaped by millennia of evolution and the necessity of survival and reproduction. Freud shared with Marx a materialist understanding of psychosocial causation. Also, Freud was influenced by Darwin in emphasizing survival and reproduction as the biological backdrop imprinted in the structures of our brain. Freud understood there to be an eternal struggle between our individual instincts for sex, food, and aggression and the needs of society for us to control our instincts. Fulfilling our instinctual desires makes us content but renders life short and brutish, full of deadly competition. Denying our instinctual desires, as required by civilization, makes us miserable but renders life orderly and luxurious. Freud understood religion to be one of the ways that society programmed the Superego, the internalized "should," the guilt that regulates the instinctual Id. Freud understood belief in God to be a form of infantile regression: Human beings create God in our own image, not the reverse, in order to have an imaginary protective parent figure in our psyche to comfort and control us in adult life.

Other social scientists we could mention and discuss at this stage include Emil Durkheim (1858–1917), Maximillian Weber (1864–1920), E. B. Tylor (1832–1917), and James George Frazer (1854–1915). They all bought in to what would later be called *secularization theory*, a recycling of Comte's vision of historical progress of leaving religion behind (Preus 1996). Their philosophy became the default ideology of elite European and American universities in the twentieth century with the disestablishment of the Protestant establishments in most of those same universities (Marsden 1996; Hollinger 1996). Whatever else one can say about religion in the twenty-first century, it appears that secularization theory is patently wrong. Increased

scientific insights and economic benefits do not inevitably lead to secularization. This empirical fact is alternately ignored or denounced by many in higher education today.

One important exception in the antireligious trend among social scientists was the American psychologist William James (1842–1910), regarded as a pioneer in the philosophical movement known as Pragmatism and the psychological movement known as Functionalism. James argued that the truth of a belief or practice is established a posteriori by its practical, functional consequences in someone's life. If belief in God leads to a healthy and constructive life, it could be understood as true for all practical purposes. The individual's experiences and the lived consequences of those experiences in life were proof enough of the truth of religion. In his famous book *Varieties of Religious Experience* (1902), James developed a phenomenological approach to religion, taking first-person accounts of religious experiences of numerous historical persons at face value, adopting an attitude of positive agnosticism toward the larger truth claims, and looking toward the functional and practical consequences of those beliefs, practices, and experiences in the individual's life (James [1902] 1961). We return later to this approach—the phenomenology of religion, along with functional accounts and pragmatic assessments of religion.

It is important to note at this stage of our discussion that the social sciences—psychology, sociology, economics, and anthropology—were largely founded by thinkers who took for granted that there was no truth content or value to religions, that religions were irrational, superstitious, regressive, and dysfunctional. They all bought into Comte's vision that the natural trajectory of human civilization, as it became more economically and scientifically developed, would be to forsake these childish beliefs and adopt scientific attitudes and worldviews. To use psychological terminology, the social sciences were founded with a lot of *anima* toward religion, so it is little wonder that the faith factor is the forgotten variable in the social sciences in the decades that followed, as these sciences and their respective guilds within the university developed, expanded, and evolved.

It is not an overstatement to say that the modern research universities were founded with an explicit agenda of getting rid of religion. The religious virtue of spiritual enlightenment was turned upside down by the Enlightenment. Perhaps we can laugh about this as a backhanded proof of Freud's oedipal complex. In this case the father to be killed was the religious institutions that created the modern university in the first place. Freud met a similar fate, as the father of psychology, and is largely denied and displaced within his own guild.

In any case, there is ironically a lot of ideological and emotional baggage here. Science, most would agree, needs to be first descriptive, not prescriptive. Because of the ideological baggage of scientism, disciplines such as sociology, psychology, and anthropology have largely not developed an ad-

equate descriptive phenomenology of religion and spirituality. Instead, the founders of these disciplines and their intellectual descendents have dismissively sought to put religion neatly into an intellectual box, a single, simplistic paradigm by which it could be neatly dismissed.

Deconstructing the Base-Superstructure

The early social theorists on religion all used some version of Marx's base-superstructure model of causation, although they may not have used these exact terms. Some natural or material factor is foundational—economics for Marx, the human psyche for Freud, society for Durkheim—and this determines the beliefs and behaviors of individuals in society. Religion was created and determined by other forces. Religion was not itself a cause. When the foundation changes, so too changes that built on top, in this case religion. The early Freud was more optimistic about the Enlightenment project. He believed that if we could understand the origins of religion in human history we might better take control over it, hence his book *Totem and Taboo* (Freud [1918] 2000). Without necessarily crediting Comte, all adopted a progressive view of increased secularization as a good that resulted from economic and scientific development. The later Freud was less optimistic. He did not really understand the foundation to be all that mutable, so we are simply stuck with the dilemma described in his book *Civilization and Its Discontents* ([1930] 1961) and with it a dark premonition about the violent chaos about to be unleashed in Enlightenment Europe.

The German sociologist Max Weber wrote his famous book *The Protestant Ethic and the Spirit of Capitalism* ([1905] 1958) partly as a rebuttal to Marx. The point was to reverse Marx's causal relationship, to take religion out of the realm of the superstructure and put it into that of the foundation as a driver of economic change. Weber argued that the values of worldly asceticism, independence, and self-discipline nurtured by Protestant Christianity, particularly Calvinism, played a central, albeit unintended, role in the development of European capitalism. He contrasted this with the influence of Catholicism. In other writings, Weber argued that the religions of China, India, and the Muslim worlds were antithetical to the rationalities and sensibilities of modern capitalism. Weber himself was not religious. He understood science and its mode of rationality to be an "iron cage" that required the disenchantment of the world ([1905] 1958, 181).

Today, most social theorists would reject the base-superstructure model of explanation as too simplistic. It is not clear what is foundational and what is the causally dependent variable because everything reciprocally affects everything else. Religions, like humans, are complex and dynamic. Most informed social theorists are also forced to reject secularization theory. Religions are on the rise throughout the world despite dramatic economic growth and scientific advance.

Universal or Particular

Intellectual despisers of religion today are most likely to turn to Darwinism for their theoretical models. In the early decades of the Darwinian revolution, competing visions of Social Darwinism were used to justify all manner of conflicting ideologies—predatory capitalism, European racism, European colonialism, eugenics, and sexism. Even Communism sought to align itself with the Darwinian worldview. After the horrors of Stalinism and Nazism, biological approaches to understanding human behavior fell into disrepute. It was not until the 1970s that the application of Darwinian theory to humans was revived under the rubric of sociobiology (Wilson 1978). Today the term *du jour* is evolutionary psychology (Cartwright 2000).

There is a lot to commend in the application of biological principles to the study of religion. We are, after all, evolved animals. We are constrained by the necessities of survival and reproduction. Our genetic and psychic dispositions were encoded over hundreds of thousands of years of our species' evolution. Much has changed in recent human history, but we are still basically the same biological beings as our near ancestors on the savannahs of Africa, eking out existence as hunters and gatherers in small wandering tribes. The basic physiological trajectory and psychological repertoire of human life has changed little over the millennia. We are conceived in passion, born in pain, and have a long period of childhood dependency. If we are lucky, we grow older and are initiated into adulthood with its pleasures and pains and a growing mastery of skills and ideas, always with the necessity of crafting our lives and identities in networks—familial, social, economic, cultural, and ecological. We may have children. If we are lucky, we grow old, perhaps wiser. We all anticipate and someday confront the terror and the mystery of death. In that respect, we are the same creatures as our early Pleistocene relatives one to two million years ago.

It matters not with respect to our biology whether we are Muslim, Hindu, Christian, Buddhist, Jew, Atheist, or Stoic. It matters not what ethnic or racial background we belong to. We can all interbreed—that is, we are one biological species—and we are all confronted with similar psychological, social, and biological challenges by virtue of being *Homo sapiens sapiens*. Anthropologist Donald Brown has compiled a list of three hundred human universals that appear in every human culture (Brown 1991). The question now becomes, How then do we account for the variation in human cultures and religions, and how significant are these variations?

In recent decades the academic study of comparative religion has rebelled against grand theories of religion and instead has focused on differences, described with increasing detail and nuance. It is too simplistic and certainly counterfactual to say that all religions are the same. The academic rebellion is partly in opposition to Mircea Eliade (1907–1986) and others

who claimed to have a grand unified theory of religion, theories that were obscurantist in their leaps to overgeneralize. Other religious universalist theorists, such as Carl Gustav Jung (1875–1961), tended themselves to be morphed by their intellectual descendents into their own sectarian creeds and cults (Jung 1971). The fashion today in the guild of the American Academy of Religion is to distrust religious universalism, grand theories, and triumphant syntheses, even as the new sciences of religion aspire to achieve this God's-eye analytic vantage point on the phenomena of religion.

Religions themselves tend to be uncomfortable with the label *religion*, suggesting that they are merely one among many. "Authentic" Christianity, for instance, invites its followers to have a personal relationship with Jesus Christ, the Lord and Savior, and "by no other name" shall salvation be achieved (Acts 4:12 NRSV). It makes an exclusivist claim, although we could point to other scriptural sources and interpretations that would argue within the Christian idiom against this exclusivism. There is simply no such thing as generic religion, which puts a damper on the proposed scientific study of religion. The twentieth-century Harvard philosopher and atheist George Santayana notes:

> All religion is positive and particular. Any attempt to speak without speaking any particular language is not more hopeless than the attempt to have a religion that shall be no religion in particular. . . . Every living and healthy religion has a marked idiosyncrasy. Its power consists in its special and surprising message and the bias, which that revelation gives to life. The vistas it opens and the mysteries it propounds are another world to live in; and another world to live in—whether we expect ever to pass wholly over into it or no—is what we mean by having a religion. (Santayana [1905–06] 1993)

An Analogy to Linguistics

Let us turn Santayana's analogy between particular religions and particular human languages upside down, recalling also our discussion of Goethe's aphorism. Instead of supporting his extreme particularist conclusion about religions as incommensurate, the analogy to human languages actually provides a new way to think in universal categories about religions.

All human languages are idiosyncratic. Nevertheless, the field of linguistics allows us to talk about the common grammatical structures of different human languages. True, one cannot practice linguistics without using a specific human language to discuss the philosophy and structure of language. English linguists speak in English as they compare Chinese and Russian. French linguists speak in French as they compare Hindi and Arabic. Chinese, Russian, Hindi, and Arabic-speaking linguists are happy to return the favor in comparing English and French. All of them use the same concepts and terminology—nouns, verbs, tense, phonemes, semantic meanings, semiotic codes, and so on—and apply these concepts universally to deciphering the universal regularities of particular human languages.

Nor are these living human languages ever really isolated islands unto themselves. Particular human languages evolve over time, and this often involves significant borrowing from other languages. Furthermore, while something is surely lost in translation, every living human language can be translated. The term for "dog" or "god" in various languages is particular, seemingly arbitrary, but that which is universally referenced is real, explicitly in the case of the dog and perhaps implicitly in the case of god. The diversity of human languages is surely particular and idiosyncratic, but it would be strange to declare chauvinistically that the only valid way one can order a cup of coffee is in German: *Eine Tasse Kaffee, bitte!* The implication here is that there is a universal "grammar" of religions, that they are not fundamentally incommensurate, and that we can go beyond the idiosyncrasies to decode common patterns, structures, and functions.

The idea of creating a universal human language, Esperanto, is and was a misconceived idea, because it would necessarily become merely one new particular language among the many. Such is also the case with religions. A religion of all religions is simply a new particular religion, as in the case of the Baha'i faith. A science of all religions, not unlike linguistics, may be a possibility, although we might be forced to use a particular religion in order to plumb the deeper semantics of the phenomena.

It also is not the case that all religions necessarily reject the validity of other faiths, even as they make their own specific claims. Part of the genius of Hindu civilization is its ability to absorb and incorporate many diverse religions and incompatible philosophies into its synthesizing spirit. Jews understand themselves to be a chosen people with a special covenant with God, but this is not to say that God does not also relate to other peoples and faiths. Islam also affirms the diversity of faiths as part of God's plan: "We have created you male and female, and have made you nations and tribes that you may know one another. The noblest of you, in the sight of Allah, is the best in conduct" (Qur'an, Sura 49:13).

These are complex texts and traditions, so additional verses and examples can be cited to contradict this implied inclusivity. I argue later in this essay that these contradictions are necessary in any great religious tradition, simply as by-products of an objective phenomenology of the human condition and the ambiguity of life in the universe. At this stage I need only note that particular religions recognize and sometimes affirm the legitimacy of other particular religions. Concerns about orthodoxy and heterodoxy are historically mostly matters internal to particular traditions and not so much between traditions.

Unity and Diversity

Let me go a step further and make the bold assertion that there is more functional diversity within a great tradition than between great traditions.

This is perhaps analogous to what we now know about ethnic diversity and genetics. Tracing the genetic diversity of humans through our mitochondrial DNA reveals that we may have more in common genetically with someone of another race than with someone of our own. In the case of religions, I am saying that there is more functional diversity of beliefs between Christians and other Christians than between Christians in general and Buddhists in general.

Such a statement requires phenomenological and functional analyses of religion. For instance, Western appropriations of Buddhism tend to focus on meditative practices and the supposed lack of belief in supernatural deities, but this obscures the actual practices of the vast majority of Buddhists. The largest branch of Buddhism by far is known as Pure Land Buddhism, in which believers devote themselves to a particular Bodhisattva in hopes of sitting out eternity in a hedonistic heaven through the grace and supernatural intervention of the Bodhisattva. This is functionally the equivalent of Pentecostal Christianity, Bhakti Hinduism, and devotional Islam.

Similarly, scholars of religion and apologists for specific religions have tended to draw a sharp divide between the monotheism of the Abrahamic faiths, the "Western religions," and the polytheism and nontheism of "Eastern religions." Here, too, I think we miss the point. Jack Miles in his book *God: A Biography* (1995) offers a psychohistorical reading of the biblical book of Genesis and concludes that we have traded many gods with many personalities for a single God with multiple-personality disorder. In practice, the monotheistic traditions often elevate Satan to a force independent of God, which technically is heresy and turns them into something more akin to Zoroastrianism, with its concept of the dueling deities of Light and Darkness. Furthermore, the monotheistic faiths include a whole array of angels, archangels, and saints, which further blurs the lines with the supposed Hindu polytheism. Hinduism, in theory, is more accepting of this ambiguity even as it affirms its own kind of transcendent unity in the notion of Brahman. "The Truth is one, but the wise man calls it by many names" is the classic verse from the ancient Rig Veda (1.164.46).

The new sciences of religion should be understood as akin to the field of linguistics, seeking the "grammatical" structures of religion in general based on a careful analysis of particular religions. We also can study the evolution of particular religions and their family trees. Only then can we engage in philosophical speculation about the nature of religion as such and whatever universals might be deduced or implied. Based on the biological and anthropological commonality, there is a lot of exciting work to be done that must include textual, theological, and philosophical analyses. It is time for the intellectual pendulum to swing toward a study of the universality of religions, although in doing so we cannot ignore the details.

Studying Religion from the Outside

The new sciences of religion, to which we now turn, include all of the old disciplines—sociology of religion, psychology of religion, economics of religion, and anthropology of religion. The old masters in these fields need to be studied and debated anew, the new empirical research critically considered and absorbed. Important new theorizing and empirical research about religion is currently being done in these fields. These disciplines have matured. There is now a self-critical history of the fields that is appropriately taught, studied, and debated, and this leads to humility and critical introspection about the fields themselves and past mistakes.

The new sciences of religion, as already mentioned, tend to focus on biological models in studying religion from the outside. These disciplines are often quite new: cognitive neurosciences of religion, behavioral genomics of religion, medical epidemiology of religion, physiology of religion, evolutionary psychology of religion, game theory of religion (see Diagram 2).

Studying religious and spiritual phenomena from the outside can fruitfully involve all of these disciplines, but it cannot ignore the details and complexity of the phenomena inside the circle. One cannot be an effective scientist of religion without also being a humanistic scholar of religion. The details inside the circle still matter. History, tradition, authorities, scriptures, languages, interpretations, legal systems, saints and sages, rituals, liturgies, practices, daily life, and subjective experience are all part of the data set for any responsible scientific study of religion.

Diagram 2. Studying religion from the outside.

We also should not assume that religious and spiritual phenomena can be exhaustively described, understood, or explained by any single scientific paradigm on the outside. The scholar-scientist may be enamored with the using of rational-choice theory in economics to understand religions or with the role of neurotransmitters in specific religious experiences inside the brain, but these cannot result in a complete understanding of the phenomenon, which involves the self, society, and cosmos and is heterogeneous, particular, and universal. If the scientist uses a single analytic framework to understand religion, the phenomena will surely tend to conform to the theory, because the theory acts as a filter for what we see or fail to see. A single scientific paradigm induces empirical myopia.

The new disciplines being applied to the scientific study of religious and spiritual phenomena are exciting and promising, but they are not yet mature in comparison with the more established fields of psychology, sociology, and anthropology of religion. The new disciplinary protagonists often display a lack of familiarity with the history of these endeavors and the complexity of the phenomena they purport to scientifically study. Often they are motivated by ideological concerns, going back to Comte, of displacing and abolishing religion from the world. In the case of Richard Dawkins (2006) or Daniel Dennett (2006), I am reminded of the proverbial armchair anthropologist who sits in his university study theorizing about some tribe in Borneo or Brazil without ever having done any field work. He is not going to live among the natives, learn their languages, eat their food, play with their children, and talk with the elders. This Victorian-era anthropologist certainly is not going to be a participant observer. Furthermore, he is studying the tribe with the intention of ensuring its extinction, because he detests the "ignorant heathens."

Actually, it is not clear to me that scientists can ever legitimately study something—animal, vegetable, or mineral—that they do not on some level believe is intrinsically fascinating and beautiful, worthy of respect and a great deal of their effort. Science is perhaps best understood as *altruistic fidelity to the phenomena*, and it matters not whether the phenomena are particles, proteins, or people. Beware of rotten fruit in sheep's clothing (to mix Jesus' metaphors) and radical atheist scientists purporting to study religion.

Naturalizing Religion

Of particular note is the claim that we can naturalize religion, explaining the phenomena specifically with evolutionary categories. The new intellectual fad assumes that Darwinian categories—variation, survival, and reproduction—can be applied to understanding the origins and function of religion. Curiously, there is no agreement about how to apply evolutionary models.

One protagonist in this school is Pascal Boyer, a physical anthropologist at Washington University in Saint Louis, Missouri. Boyer argues that the human brain evolved in the Pleistocene, if not long before, to be an "agency detector." In other words, there was survival fitness in thinking of objects in the environment as potential agents, given that some of them were also predators who intended to eat humans for dinner. The human brain has evolved to be a *hyperactive agency detection device* (HADD), and it is in this capacity that we find the origins of religion. Humans began to attribute agency and personality to the forces of nature given their proclivity to see agency in the phenomenal world. For Boyer, religion is a dysfunctional by-product of a naturally evolved mental capacity. Religion has no survival function—indeed, quite the opposite in his view (Boyer 2001).

A second school in this debate on how to apply evolutionary theory to the study of religion is represented by Dawkins (1976; 2006) and Dennett (2006). Both argue that hominid evolution gave rise to an ideational capacity independent of our genes. Once you have human brains in a cultural space, ideas can take on a life of their own. Ideas replicate and spread in the software of human brains, independently of the hardware of our genes. Dawkins coined the term *memes*, an analogy to genes, as a metaphor that some take quite literally. The supposed memes act just like selfish genes by hijacking individual brains in order to replicate. The religion meme in Dawkins's view is a deadly virus, "comparable to the smallpox virus but harder to eradicate." Religions are delusional, regressive, dysfunctional, and antithetical to science. Teaching children religion is a form of "mental child abuse" (Dawkins 1997).

A third school of thought assumes that religions must be functional because they persist. Religions must have adaptive value in promoting survival and reproduction, or they would not exist. David Sloan Wilson, a biologist at Binghamton University, New York, promotes this point of view by resurrecting multilevel selection theory. He argues that religions promote in-group altruism and social cohesion, thus promoting the survival and reproduction of the group in competition with other groups. He believes that religions are functionally adaptive in evolutionary terms, even if they really are just elaborate fairy tales (Wilson 2002).

A fourth school sees human culture transcending biology. Evolution surely gave rise to the human brain and its capacity for language, tool making, and culture, but once these have been achieved through Darwinian evolution, human culture begins to evolve in a Lamarckian pattern. Jean Baptiste Lamarck (1744–1829) was a French biologist who postulated a theory of evolution prior to Darwin. In his understanding, the transmutation of species occurred through the accumulation and passing on of acquired characteristics from one generation to the next. This is not how biological species evolve, at least not directly, but it is a fair description of human cultural evolution. Through education, our children do not

need to reinvent the wheel or the microprocessor, Plato or Shakespeare. To benefit from cultural accomplishments, future generations need not be genetically related to those who did the work of discovery, invention, and creation. Cultural achievements are accumulated and passed on through education. Religion, in this understanding, may be functional or dysfunctional, but it cannot be evaluated simply in terms of Darwinian categories, because human culture has partially transcended biology (Deacon 1997; Donald 1991; Rolston 1998). Science is an example of such a self-transcending cultural achievement. Science may also be functional or dysfunctional, depending on the criteria used to evaluate it. In this view, a purely biological mechanistic account of religion makes as little sense as a purely biological mechanistic account of science.

For the protagonists and partisans in these debates, these theories are presented as mutually exclusive, but this is not necessarily the case. All of these evolutionary approaches are potentially true and also limited, depending on the context and the nuance. HADD brains, ideational independence of memes, group selection theory, and Lamarckian models of cultural evolution all can be partially true and can provide interesting insights into the complex phenomena we designate as religion. None of these theories adequately accounts for the subjective religious experiences that individuals may have, experiences of being grabbed by a transcendent reality and ultimate existential truth.

To fully naturalize religion implies that we also can fully naturalize human consciousness. What is good for the religious goose is good for the scientific gander, so we also will need to naturalize science. So let us do a little thought experiment. Let us examine physicists as a particular "tribe" of humans. Let us examine their brains when they do their physics with the use of Positron Emission Tomography (PET) scans and the other tools of contemporary neuroscience. We will no doubt find that certain parts of their brain "light up." This in itself is interesting, but it tells us nothing about whether the physics is true. Similarly, we might investigate whether the activity of doing physics has evolutionary fitness value by ascertaining whether physicists as a group are more successful in passing on their genes. We might wonder whether physicists exhibit more in-group altruism and social cohesion than chemists or classicists do. All of these approaches would be absurd ways to judge the truth claims of physics.

To say that there is a correlation of certain objective brain states with certain subjective experiences does not necessarily imply causation. The opposite may be the case. Intentionality itself can change brain states. I can intend to learn physics, practice meditation, or engage in devotional prayer, and these intentions will alter my brain states, assuming I have a normally functional human brain of a certain age with the adequate training. We need some concept of top-down causation in order to understand

physical brains, mental minds, and the objective capacities of humans to change themselves and their environments.

To postulate that some human beliefs and practices are functional or even dysfunctional, for instance in promoting group survival and reproduction or not, does not exhaust the meaning of the belief or practice. Science itself may be functional, or tragically dysfunctional, say in the case of building nuclear weapons, but this does not adequately account for the evolving content of science and its meaning. Perhaps there is a strong correlation between the mathematical genius of physicists and Asperger syndrome; this still gives us no insight into the truth of physics. A reductionistic naturalization of science leads to philosophical absurdities. The British geneticist J. B. S. Haldane (1892–1964) came to the same conclusion in thinking about the brains of scientists:

> It seems to me immensely unlikely that mind is a mere by-product of matter. For if my mental processes are determined wholly by the motions of atoms in my brain I have no reason to suppose that my beliefs are true. They may be sound chemically, but that does not make them sound logically. And hence I have no reason for supposing my brain to be composed of atoms. In order to escape from this necessity of sawing away the branch on which I am sitting, so to speak, I am compelled to believe that mind is not wholly conditioned by matter. (Haldane [1927] 1932, 209)

Science itself is an example of self-transcending learning processes. Science cannot be simply naturalized and dismissed through scientific explanations of scientists, as some scientists now purport to be able to do for religion. Why is scientific cognition the only human activity to be exempted from reductionist and materialist explanation? Why then should we assume at the outset that religion is "wholly conditioned by matter"? Scientists can and must push the envelope on exploring causal patterns, but they should do so with a kind of positive agnosticism, free of an ideological agenda, full of intellectual curiosity, and expressed also with humanistic compassion toward the subjects of their studies—other humans and ultimately also themselves.

A Metaphysical Detour

We already have started to take a brief detour into the realm of metaphysics and philosophy of science. Typically science tries to understand a phenomenon by taking it apart to see how the constituent components work to create the phenomenon. This is reflected in the etymology of the word *science*, which derives from the Latin *scire*, "to know," probably akin to the Latin *scindere*, "to split," and the Sanskrit *chyati*, "to cut off." The connotation of religion is to bind together, while the connotation of science is to split apart. Holism versus reductionism is embedded in the very etymological roots of the words *religion* and *science*.

For instance, in the science of botany, we might see what plants are made of with our microscopes, noting the existence of differentiated cells, the chemical composition of these cells, the molecular processes inside the cells, the genetic structure of the plant species, the interactions of plants with their environment, and the evolution of a plant over eons. The working assumption is that a plant, or any phenomenon, is best understood by a reductionistic approach, taking it apart, as it were, and seeing how the pieces fit together. The science of botany would further assume that the causal influences that give rise to the plant in question are all material; there are no mystical vitalist forces behind living things, just a lot of complicated chemistry underneath the biology and physics underneath the chemistry. Science works by pursuing causation from the bottom up, even if the scientist herself is an example of causation from the top down.

To say one is a materialist today requires some explication, because matter turns out to be rather bizarre stuff. Atoms are not fundamental; they are divisible, on the first order, into protons, neutrons, and electrons. Far from being "matter," the atom is mostly empty space on a scale difficult to conceptualize. The single proton at the center of a simple hydrogen atom is something like a baseball sitting on the pitcher's mound at Yankee stadium, and the single electron is not even the size of a mosquito buzzing around in a "probability space" at the farthest edge of the stadium. If we break these components of the atom down further we end up with other subatomic particles whose "materiality" is strange indeed. Materialism reduced to this level of matter disintegrates into forces and fields, entangled relationships and ephemeral existence. Reductionism and materialism, however useful as a methodological approach in science, self-destruct as philosophical propositions when we push them to the limits of the very small, the very fast, the very cold, the very hot, the very dense, the very large, and the very complex. Actually, it is embarrassing that otherwise brilliant people think nothing of invoking "materialism" as one of the hallmarks of science. The concept of materialism deconstructed itself with the advent of quantum mechanics and particle physics. None of this discussion means that we are compelled to therefore adopt some form of supernaturalism, but fundamental nature turns out to be fantastically super.

Today, an informed metaphysics and philosophy of science also would need to talk about emergent properties of phenomena and different levels of organization. The concept of emergence says simply that the whole is more than the sum of its parts. We can learn a lot of interesting things about a plant cell by studying its parts and its chemistry. A quick perusal of the typically heavy undergraduate textbook on cell biology should be adequate to demonstrate just how much we have learned in the last century through this kind of reductionist approach. That being said, the cell itself could not be predicted or adequately described solely on the basis of its constituent components, even less so the phenomena of the particular plant.

The plant is an emergent phenomenon, both in its ontogeny (developmental biology) and its phylogeny (evolutionary biology). To this we must add the smoke and mirrors of ecological systems in which the plant both contributes to creating the selective environment and is also acted on by the selective environment in a fine piece of circular logic. Ecology, we are told, is a "subversive science" (Shepard and McKinley 1969) precisely because it is about emergent phenomena and does not fit the dominant reductionist paradigm.

It is not only "soft" concepts from ecology that burst the reductionist dream of a mechanistic account of complex phenomena. From the surface tension of water in a drinking glass to superfluidity and superconductivity in a physicist's lab, the behavior of huge numbers of particles cannot be deduced from the properties of a single atom or molecule. In accepting the Nobel prize for physics in 1998, Robert Laughlin noted,

> The world is full of things for which one's understanding, i.e. one's ability to predict what will happen in an experiment, is degraded by taking the system apart, including most delightfully the standard model of elementary particles itself. I myself have come to suspect most of the important outstanding problems in physics are emergent in nature, including particularly quantum gravity. (Laughlin 1999)

Levels of Explanation

The sciences are organized hierarchically from the microcosmic to the mesocosmic to the macrocosmic. At the bottom of the reductionistic hierarchy is particle physics, which is required for atomic physics. The properties of atoms are necessary for simple and complex chemistry to arise, and the chemistry is necessary for there to be biology, geology, and other mesocosmic phenomena. The biology is necessary for there to be human consciousness and culture. A universe is required for there to be atomic particles and properties of physics in the first place, as well as to be the container for all of the complex, evolving stuff—space-time and matter-energy. In ways not fully understood, it also appears that the science of the very small, particle physics, may tell us something important about the science of the origins of the universe as a whole, so the microcosmic and macrocosmic scales may loop back together. Particle physics turns out to be helpful in thinking about cosmological questions about the early universe (Primack and Abrams 2006). This may all be referred to as the hierarchy of size.

There also is a hierarchy in the chronological unfolding of the 13.7 billion–year-old evolving universe. Stellar fusion created the heavy elements, which gave rise to complex chemistry in second- and third-generation solar systems, which at least on one planet gave rise to life and consciousness. So there is both a hierarchical scale and chronological unfolding of increased, emergent complexity in the sciences. What emerges is novelty—increased layers of complexity.

Particle physics is not the least bit helpful in doing plant biology. Indeed, particle physics has limited utility in even in normal chemistry. Nor does knowing chemistry help an economist. The pursuit of a reductionist account of phenomena has led not to a grand unified theory of science but to now thousands of disciplines and subdisciplines and specializations within science. There is no such thing as a "scientific method" true for all of these disciplines and specializations. Scientists try to solve specific problems within the confines of the phenomena in question, pragmatically adopting the tools and methods most appropriate to that problem. There are levels of analyses, and biologists, or for that matter economists, can safely know nothing about particle physics and still do excellent science.

A Musical Interlude

Let us conduct a scientific study of music, specifically classical choral music. Our case study will be a work by Johann Sebastian Bach. We will examine in scientific detail one of his Cantatas, BWV 99—"Was Gott tut, das ist wohlgetan" ("What God does is done well").

Our first approach will be to carefully examine the paper on which this cantata was written. We will study the chemical composition of the paper and the ink in which the score was written. We will study the semiotic development of the notation system and the music theory behind it. This is all relevant to the subject matter, but we will not likely discover much of interest about Bach, his cantata, or our experience of listening to it.

Another approach will be to study the physics of acoustics and the instrumentation. This cantata calls for string and wind instruments and a choir. This will lead us in some interesting directions, including questions about how the human ear and vocal cords function, but we are still not going to learn much about Bach or this cantata.

Another approach will be neurological. We will place you under a fMRI or do a PET scan to try to ascertain through neuroimaging analyses the effect on your brain of listening to this cantata. Technically, we are going to have to do a lot of comparative work here with regard to other sound-perception and music-perception studies in order to isolate what, if anything, is unique to listening to this cantata as opposed to other sounds, musical pieces, and genres of music. No doubt we will learn many interesting things, at least about your brain, because it is not clear yet whether another subject, say a Chinese or Indonesian person unfamiliar with the genre or even the tonal structure, would have the same neurological experience when listening to this Bach cantata.

Another approach would be to mathematically analyze the music itself. Bach the composer was not only a musical genius but also a mathematical one. This may lead to some interesting insights, including now computer programs that can generate "original" scores in Bach's style.

We also could take a historical approach, considering Bach's life and time, the musical influences, his biography, and his musical and mathematical genius. This may be more instructive than studying the chemical properties of the paper on which the cantata was written or the physics of acoustics. Here the level of analysis better fits the topic, not that the physics is wrong or uninteresting in itself.

A scientific study of the cantata would surely also reflect on the philosophical, religious, and theological significance of this cantata, compare it to the other two hundred cantatas that Bach wrote for the liturgical calendar, and generate wonder about Bach's own religious beliefs. What does it mean to assert "What God does is done well"? How does the music reinforce the message? What influence does Bach's music and theology have on us today? How do we feel when we listen to this work or perform it?

Our scientific analysis of a single composition by Bach can be posed on many levels and can lead us in many directions, including into interpretative humanistic disciplines not normally thought of as scientific. None of these directions and levels of analysis necessarily conflicts with the others. The problems arise when we insist on a single valid level of analysis to the exclusion of others. For instance, a neuroscientist may insist that brain science is the only valid level of understanding Bach's music.

In this discussion of a new science of music are many intriguing parallels and problems common to the proposed new sciences of religion.

Emergence and Transcendence

We need to employ the concept of emergence in order to go further in this inquiry. There is ontological emergence in nature and with it different levels of reality and different practices appropriate at each level. Emergence should place philosophical limits on the claims of social scientists to reductionistically explain away religion (or for that matter any other complex human or natural phenomenon). A scientist may find correlations, say, between the Protestant ethic and the spirit of capitalism (to reference Max Weber), but this does not mean causation. A scientist may establish a functional outcome, say Orthodox Jewish marriage practices leading to maximal human fertility and reproduction, but this does not exhaust the meaning of what it means to be an Orthodox Jew, which might best be understood on a completely different level of analysis.

At the risk of belaboring the point, let us revisit my thought experiment. Imagine a neuroimaging study of Nobel laureate Steven Weinberg when he is doing physics. We note that certain parts of his brain have increased activity when he is working the problems. So we learn something interesting about his brain, possibly generalizable to other physicists' brains, but we learn nothing about whether the physics is true or not. Nor would a genetic analysis of Weinberg or physicists as a group tell us anything about the truth claims of physicists. There also is nothing in evolu-

tionary psychology (the survival and reproduction value of doing physics) that can tell us anything interesting about the truth or falsity of any detail of physics. Physics, like chemistry, like biology, and indeed like religion, is *sui generis*—a class alone, peculiar and unique to itself—except, of course, that everything is connected in scale and time in this universe of ours.

A robust understanding of emergence, and with it the various levels of analysis and interpretation, opens up a possibility space within the mind and soul of the scientific enterprise for religious notions of transcendence, the God-by-whatever-Name mystery. Contemporary science actually is more suggestive of some notion of transcendence than it is of atheistic materialism, whatever that means. There is a cultural lag in absorbing these insights on both sides of the religion-science divide.

It is possible to think from the bottom up toward the probability of God-by-whatever-Name. It is not possible to think from the bottom up to establish God-by-any-particular-Name of any particular revealed tradition. Science will not give us the God of Abraham, Isaac, and Jacob, or Jesus Christ, my Lord and Savior, or Allah and Muhammad as his prophet, peace be upon him, or the Buddha Nature in All Things. Once we grant the possibility of a God-by-whatever-name, however, we should grant the possibility, however improbable, that this may also be a God-by-a-particular-name. Who are we to tell God what God can and cannot be in the realm of ultimate reality? Of course, the interpretations and faith commitments of particular religious communities are self-serving on this point, but God may well choose one specific historical moment and revelation to be the definitive text. Maybe the revelation received by Muhammad, peace be upon him, is indeed God's final revelation, given to an illiterate merchant in the language of Arabic some 1,400 years ago in the deserts of Arabia. Science cannot rule out God's choosing to reveal Godself to humans through certain privileged revelations. However, science can put some parameters on the plausibility of different readings of those traditions. For instance, certain readings of the first chapters of Genesis are just wrong (not that the book of Genesis is stupid; far from it). God as understood by traditional religions often seems small and parochial in view of what we now understand to be a fantastically large universe.

Caveat emptor—buyer beware! Just because nature turns out to be super, fantastically super, does not mean that it is supernatural. And while much of science is also fantastically strange, this does not mean that every supernatural belief and practice humans have or have had is therefore true. Just because quantum mechanics seems weird does not mean that every weird idea that people come up with is true, even if it is dressed up with the patina of quantum mechanics. Just because there is ontological emergence of novelty in the evolution of the universe does not mean every novel notion that people invent is true. In the name of religion and spirituality people also make the same mistake of reducing all phenomena to a

single analytic framework. The concept of emergence creates a possibility space for many strange beliefs and practices—the i-Ching, the Bible-code, Reike, the Book of Revelation, astrology—but it does not mean that any of these beliefs are in fact true. Indeed, they can be patently false if interpreted at certain levels, as for example Young Earth Creationists do when promoting an alternative natural history of the planet based on uninformed biblical literalism and no serious understanding of science. The Bible is not true; it is profound.

Exploring the Phenomenological God

None of this is to say that an atheist cannot study religion, but to do so adequately he would need to develop a phenomenology of God-talk. A scientist of religions needs a way to bracket the question of whether God exists. The scientific study of religious and spiritual phenomena cannot, as a matter of philosophy, and should not, as a matter of science, be motivated by a desire to disprove the existence of God. The philosophical debate was settled by our Medieval ancestors in the form of apophatic theology. This *via negativa* argued that any positive assertion about the character and nature of God is necessarily untrue, because the Eternal Perfect cannot be described by finite human minds with finite human languages. Any "God" that could be discovered or disproved by science simply would not be God. This is basically the position taken by the character Philo in David Hume's *Dialogues concerning Natural Religion* (1779). The apophatic God of philosophical monotheism provides an important point of departure.

What science can study is the phenomenology of what people think, say, and do in relationship to their perceptions, experiences, beliefs, practices, communities, and values. To locate God in a particular natural phenomenon, "whether in the form of anything that is in heaven above, or that is on the earth beneath, or that is in the water under the earth" (Exodus 20:4 NRSV), or even in the form of a sacred book or a particular community of faith, is an expression of idolatry. "You shall not make for yourself an image" (see Exodus 20:2–17; Deuteronomy 5:6–21). From a biblical perspective the Ten Commandments prohibit such idolatry, but ironically unreflective theists become idolaters in their tendencies to absolutize their own scriptures, traditions, and faith. When studying humans, including our religions, it helps to have an appreciation of paradox and irony.

Of course, the word *God* is merely another term from finite human language. If we cannot define it, why not dispense with it completely? the scientifically minded atheist is inclined to ask.

An analogy to mathematics at this point can inform our scientific study of religions. Once upon a time, in Indo-Arabian cultures, humans invented and discovered the concepts of zero (0) and infinity ( ). The mathematical concepts turn out to be very difficult to define. There are many differ-

ent meanings of zero and many types of infinities; nevertheless, it would be impossible to do advanced mathematics without 0 and .

God is kind of like zero and infinity. *God* is a placeholder and concept that humans *invented and discovered* in order to talk about what the twentieth-century theologian Paul Tillich referred to as "ultimate concern" ([1957] 2001). Proofs of the existence of God have fallen out of favor in contemporary theology. Rather, we should talk about what one means when one talks about "God." Even the atheist has a very specific understanding of the god that he or she does not believe in. In this pragmatic and phenomenological view, abolishing God-talk in our civilization might be like abolishing zero and infinity from mathematics. God-talk can be an invitation to engaging conversation rather than a club used to terminate conversation.

Finally, the scientifically minded atheist will argue, turning the design argument upside down: If there is a creator God, why was this creator so incompetent or even malevolent in crafting a universe, earth, and humanity so flawed, so filled with suffering, death, and moral evil? This is the theodicy argument, and modern science does give it a new edge, although the problem existed long before Darwinism or contemporary cosmology.

The Qur'an, for example, suggests that the good and the bad all come from God (Sura 4:78–79). (Similar arguments could be constructed by reading the biblical book of Job, or Romans 9.) The text is open to interpretation, and there is an internal tension with other verses. Never mind all that for now. What happens if we take out the word *God* and substitute *Universe*? The good and the bad, it all comes from the Universe. To a scientific mind, this would be self-apparent and without problem. In fact, substituting *Universe* for *God* solves nothing. Humans experience a universe filled with *logos*, which is the precondition for science, but also *eros*, *filia*, *agape*, *ethos*, and *pathos*. The universe is filled with profound ambivalence. The universe gives and the universe takes away. It is ambivalent from our limited perspective: on the one hand elegant and delightful to us, on the other painfully limited and destructive.

Any God that humans could imagine as creator and sustainer of this universe, if we are being phenomenologically observant and honest, would have to include this profound ambivalence. Abolishing god-talk does nothing to solve the theodicy problem; it only relocates it to the universe. A more interesting place to look for God is in our own unreasonable expectations that life should be otherwise, better than it is, and also that we should be better people than we actually are. This unreasonable hope, which can be a self-fulfilling prophecy, is where we are most likely to find the religious impulse. In that respect, it is perhaps better to draw a sharp distinction between beliefs and faith. Beliefs are propositions that one holds to be true. Faith has to do with questions for which one has no answers. Faith requires doubt, not certainty. A leap of faith that does not carry these uncertainties with it is not faith at all (Smith 1987).

Definitions Revisited

Early in this essay we explored etymological roots of the words *religion* and *spirituality* and questioned how best to define religion. Without a definition we can hardly know what it is we are studying with the new sciences of religion. In the scholarly community, however, there is no commonly accepted definition of religion.

A definition that I am fond of is by the late anthropologist Clifford Geertz (1926–2006). Geertz did extensive fieldwork in Indonesia and North Africa, so he was seeking a definition that would encompass the diversity of beliefs and practices he had encountered. He writes: "Religion is: (1) a system of symbols which acts to (2) establish powerful, pervasive, and long-lasting moods and motivations in people by (3) formulating conceptions of a general order of existence and (4) clothing these conceptions with such an aura of factuality that (5) the moods and motivations seem uniquely realistic" (Geertz 1973, 90).

This is what we would call a phenomenological definition of religion. It talks about "systems of symbols" and "moods and motivations" but does not prejudge the content of the beliefs, practices, and values. Theistic, polytheistic, pantheistic, animistic, and nontheistic religions are all included. Geertz's definition does not use the word *supernatural*, which begs definition and would draw us into metaphysical debates. Geertz's definition includes things that we do not normally think of as religions; for instance, there is an entire chapter in his book on how communism functioned in the Soviet Union as a form of religion.

The weakness in Geertz's definition is that it is not clear what is excluded. Baseball, football, and other sporting obsessions can take on all of the characteristics of a religion, which may not be a surprise to baseball fanatics. Political movements and parties take on some of the characteristics of religions. Western Europe no longer seems so secular if environmentalism can function like a religion for many of its followers. With Geertz's definition, my daughter's Suzuki violin classes look like a strange cult. And, as already noted, when some enthusiasts of science see science as a substitute for religion, science is turned into scientism, another faith among many with its own "systems of symbols" and "moods and motivations." Indeed, scientism can be seen to offer its own secular apocalyptic-prophetic narratives as well as its own secular salvation stories. For instance, one sees this in the fear of climate change or the promises of transhumanism.

It can be illuminating to see "religion" in unexpected places. Indeed, if religion is a human universal, we should expect to see it everywhere. This renders the scientific study of religion all the more difficult but also much more compelling.

Other Caveats

A scientific study of religion presupposes a kind of objective distance from the subject matter. I have labeled this a positive agnosticism, even though I also promote being a participant observer. However, people, scientists included, generally have strong opinions about religions. Indeed, the juxtaposition of the concepts, science and religion, is a kind of Rorschach test for all kinds of deeply held prejudices and beliefs.

I have been critical of Comte and his contemporary successors, but I am equally critical of those advocates of religion and spirituality who want to use the scientific study of religion to support or establish their positive biases. We see this particularly in the field of religion, spirituality, and health. Epidemiological studies suggest that church attendance is good for one's health, perhaps adding as much as seven years to a person's life expectancy (Hufford 2005). Are these positive health outcomes a factor of social support and the promotion of healthier habits or intrinsically and causally linked to the church experience per se? Not all churches are the same, of course. Is it healthier to attend high-church or low-church Anglican services? Is a fire-and-brimstone Southern Baptist sermon better than the academic ponderings of a Unitarian Universalist sermon? Is Orthodox Judaism better than Reform? How do they compare with Christian or Neopagan practices? If frequency of church attendance is the key, do devout Muslims, who pray five times each day, have exponentially better health outcomes than Christians who pray as little as once a week? How would one compare the effect of liturgical music, say Bach versus Gospel versus Gamelan? (Sloan 2005)

A robust science of religion will not simplify and flatten the complex, heterogeneous phenomena. A rigorous science of religion must be free of apologetic biases in favor of a particular faith, faith in general, or no faith at all. To be science, the data must tell the story, not our preconceptions of what the data should say. Further, we must resist the tendency to see religion only in terms of our own culture and confessions or only in terms of our own scientific paradigm. We need multiple methodologies and multiple perspectives—and a great deal of humility.

Symbolic Systems of Value

We can make an interesting analogy to economics at this stage. All around us, humans use a "system of symbols"—money—that comes with its own "moods and motivations." Money is merely a symbol system of value. It is not real. I cannot literally eat a dollar bill, and it would not be of much use literally in providing shelter or clothing. But this mere symbol system dramatically changes our material and cultural lives in ways that are both intimate and global.

It is well established that the psychology of the market matters. The psychology of the market is a significant factor in how economies perform. Irrational exuberance can lead to economic bubbles bursting and fortunes real and virtual being lost. If the market becomes cynically cautious, this can depress economic exchange and investment and lead to negative outcomes. "Considered optimists" invest wisely in the hopes of a positive return through companies and nations that are well managed with sound finances and wealth-creating innovations. Some days, perhaps the best we can muster is hopeful pessimism. In all of these cases, the psychology of the market is partially a self-fulfilling prophecy.

Religions are minimally also symbolic systems of values. Again, we can bracket for the time being their truth claims, adopting instead a phenomenological, functional, and pragmatic approach. In the marketplace of religious ideas we can invoke these same concepts. Irrational exuberance on the part of religions can result in dangerous and destructive outcomes for societies. Cynical caution also can be toxic for individuals and societies. Considered optimism is hypothetically optimal for religions. In their prophetic roles, religions should minimally promote hopeful pessimism, a hope against the odds carefully and soberly reckoned. As with economics, all of these attitudes are partially self-fulfilling prophecies, both for individuals and for societies. Religions broadly defined are part of the distributed system of values that shape human thought and behavior.

Moral, Believing Animals

Humans are animals—biological creatures having risen to our current state through millions of years of hominid evolution. Humans are peculiar animals in that we always have a normative attitude toward our environment and ourselves. We cannot help but ask if this or that is good or bad, useful or not, healthy or dangerous. We use language to talk about, explore, and promote our values in our social interactions and our private thoughts. These norms are encoded into stories that are transmitted culturally within social groups, so we are also "Moral, Believing Animals," to use the title of a book by sociologist Christian Smith (2003):

> We moderns . . . not only continue to be animals who make stories but also animals who are *made* by our stories. We tell and retell narratives that themselves come fundamentally to constitute and direct our lives. We, every bit as much as the most primitive or traditional of our ancestors, are animals who most fundamentally understand what reality is, who we are, and how we ought to live by locating ourselves within the larger narratives and metanarratives that we hear and tell, and that constitute what is for us real and significant. (p. 64)

Smith goes on to define what a narrative is:

> Narrative is a form of communication that arranges human actions and events into organized wholes in a way that bestows meaning on the actions and events by

specifying their interactive or cause-and-effect relations to the whole. Narratives are much more than chronicles, which merely list discrete events by placing them on timelines. Narratives seek to convey the significance and meaning of events by situating their interaction with or influence on other events and actions in a single, interrelated account. Narratives, thus, always have a point, are always about the explanation and meaning of events and actions in human life, however simple these may be. (p. 65)

Religious stories are one of the ways that we exhibit our species-specific traits as moral, believing animals, but surely not the only way. Stories are part of political movements, the entertainment industry, the news industry, psychotherapy, and business. Humans not only receive stories; we retell stories and transform stories, and in so doing we recreate ourselves.

Science is a form of storytelling. The evidence is assembled into a coherent narrative that structures what data are significant and how causal relations should be understood. These are the factual stories that science tells about the universe, which are nonetheless narrative in structure. Other stories get attached to science that are not really science but are more about the cultures of scientists. There is the Enlightenment story about progress. There is the story of the epistemological break with the past. There are explicit scientific myths the genealogy of which can be traced historically—like the life of Galileo as presented by Bertolt Brecht ([1952] 1966), inventing the myth of the flat earth (Russell 1997), and the reputed *History of the Warfare between Science with Theology in Christendom* (White [1896] 2004). These are not science per se but rather whiggish historiographies that distort our understanding of history and science in order to conform to the dictates of an ideological program. These stories can be profoundly influential in the culture of science even though they have little to do with the actual content of science. Scientists also are moral, believing animals.

Let us hope that the new sciences of religion will tell many different stories by generating lots of new observations that surprise and humble us before these complex and important human phenomena.

Outside In / Inside Out

I have used the metaphors of inside and outside, bottom-up and top-down, to explore what the new sciences of religion may entail. We ought to be humbled in the face of the complexity of the phenomena we propose to study from the *outside*. We are all participant observers in the sense that we cannot avoid certain existential, ethical, and metaphysical questions that traditionally are part of the domain of religion. We study religion from the outside in such disciplines as sociology, psychology, and anthropology. These are the obvious candidates. Today, we also have the disciplines of behavioral genomics, evolutionary psychology, economics, game theory, computer simulations, linguistics, and philosophy. We also need to pay close attention to all of the stuff *inside* the circle of religious studies. It is not

enough to theorize from outside; one also needs to check the validity of the theories with the data from inside.

Many who purport to offer a new science of religion are still encumbered with the old Enlightenment animosity toward religion. They seek to explain religion away and enthrone science as sacred. They detest that which they claim to scientifically study. The normal course of a scientific career begins by falling in love with the phenomena that one then studies in excruciating detail for years, if not decades. How could one devote so much effort to something that one detests? True science might better be characterized as altruistic fidelity to the phenomena. If the phenomena are religion and spirituality, the science thereof needs to begin with deep empathy and engaged fascination. And now comes the rub: In order to be a science, a science of religion, this empathy and fascination also needs to maintain a certain distance, rigor, and objectivity. At every stage we must resist the seduction of filtering our sciences of religion through ideological and apologetic filters, which invariably predetermine the results of our studies.

E. O. Wilson writes in his book *Consilience* that "science faces in ethics and religion its most interesting and possibly humbling challenge, while religion must somehow find the way to incorporate the discoveries of science in order to retain credibility" (1998, 265). This is a sage observation and sound advice on both sides. Wilson continues, "the eventual result of the competition between the two world views, I believe, will be the secularization of the human epic and of religion itself." This is a statement of Wilson's faith and not a necessary or even obvious conclusion. Indeed, with the collapse of secularization theory, Wilson's hope appears counterfactual. Wilson concludes: "However the process plays out, it demands open discussion and unwavering intellectual rigor in an atmosphere of mutual respect." The new sciences of religion still have a long way to go in fostering an atmosphere of mutual respect, open discussion, and unwavering intellectual rigor.

The late Pope John Paul II weighed in: "Science can purify religion from error and superstition; religion can purify science from idolatry and false absolutes. Each can draw the other into a wider world, a world in which both can flourish" (1988).

I would add that error, superstition, idolatry, and false absolutes seem to be shared in different measures on both sides of the science-and-religion ledger. The corrective is certainly to be found in more and better science and in more and better religion, but especially in vigorous, open-ended exploration between these domains. What is thought to be on the inside of religion and what is thought to be outside is something we should continually question. We need to be pushing on these boundaries, testing assumptions and prejudices.

Religious people should be the first to erase boundaries. There is no reason to fear any of the sciences of religion, which just enlarge the rel-

evant curriculum and can be helpmates in the hermeneutics of authenticity that every religion confronts from the inside. Nor can the scientifically minded atheist or the secular society avoid existential, ethical, and metaphysical questions, which are normally thought to be of the domain of religions. Indeed, in encountering these questions, scientists should expect to learn much from thousands of years of human experimentation in these domains at different times and in different cultures. To my colleagues in the sciences: Please do push the scientific envelope as far as possible, but be humble and self-critical, as religious people must also be. And whether we are working from the top down or the bottom up, from the inside out or the outside in, we can hope to meet some day in the middle with many beautiful, good, and true stories to tell each other.

NOTE

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