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Scientists and Spirituality

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We ask how scientists understand spirituality and its relation to religion and to science. Analyses are based on in-depth interviews with 275 natural and social scientists at 21 top U.S. research universities who were part of the Religion among Academic Scientists survey. We find that this subset of scientists have several distinct conceptual or categorical strategies for framing the connection spirituality has with science. Such distinct framings are instantiated in spiritual beliefs more congruent with science than religion, as manifested in the possibility of "spiritual atheism," those who see themselves as spiritual yet do not believe in God or a god. Scientists stress a pursuit of truth that is individualized (but not characterized by therapeutic aims) as well as voluntary engagement both inside and outside the university. Results add complexity to existing thinking about spirituality in contemporary American life, indicating that conceptions of spirituality may be bundled with characteristics of particular master identity statuses such as occupational groups. Such understandings also enrich and inform existing theories of religious change, particularly those related to secularization.

Key words: atheism; spirituality; science and technology; higher education.

RELIGIOUS CHANGE, SPIRITUALITY, AND SCIENCE

Exploring and explaining the religious changes that have taken place during the twentieth century has been a central task for scholars of religion (Lambert 1999; Warner 1993). There is convincing evidence, for example, that religious authority has declined at both the societal and individual levels, in what has traditionally been understood through various formulations to be part of a broad process of secularization (Bruce 2002; Chaves 1994). Yet, on one end of a continuum, the rise of fundamentalism is evidence against some understandings of secularization (Berger 1999; Emerson and Hartman 2006). And conservative forms of religion, such as American evangelicalism, appear to have entered the most elite ranks of public life (Lindsay 2006, 2007,

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2008). On the other end of the continuum, and of greater concern to us here, are new forms of spirituality that have entered the interstices that exist among the networks of established religion as well as those that exist largely apart from organized religion (Bellah et al. 1985; Dillon and Wink 2007; Heelas et al. 2005; Wuthnow 1998).

In particular, these forms of spirituality—what some scholars see as a “spiritual revolution”—are more multifaceted and harder to interpret than existing models of religious change have anticipated (Heelas et al. 2005; Schmidt 2005). One of these existing models, for example, has been posited by Taylor (2007), as he describes secularism as uniformly advancing while religion retreats in his “subtraction theory” of secularization.¹ Yet, scholarly debates about what the rise in spirituality means in relation to organized religion call into question scholarly formulations like the subtraction theory. Some scholars posit that Americans’ increasing tendency to classify themselves as “spiritual” demonstrates the decline of organized religion (Lambert 1999; Marler and Hadaway 2002). Yet this same development leads other significant groups of scholars to argue that the rise in individualized forms of spirituality among Americans is evidence that religion is simply changing form (Besecke 2001; Heelas 2006; Lambert 1999) or evidence of a *seeker* religious impulse that is uniquely American and may actually provide additional opportunities for other-directed meaning-making outside of traditional forms of religion (Dillon and Wink 2007; Schmidt 2005).

Science and the faith commitments—or lack thereof—of scientists have been an important part of broad discussions about religious change (Bruce 2002; Leuba 1934; Smith 2003). Historically, scientists were understood as a type of *carrier*, to use the Weberian sense of the term in a slightly different way than he did. Weber describes carriers as “types representative of the various classes who were the primary . . . propagators” of ideologies of “the kind of ethical or salvation doctrine, which most readily conformed to their social position” (Weber 1963 [1922]).² Scientists—and especially those who work at elite universities—are the type of individuals most poised to propagate big ideas. Scholars and public intellectuals almost uniformly perceive scientists as the carriers of a secularist impulse (Dawkins 2006; Smith 2003), a group responsible for building the modern research university and undermining religious authority by their success in deciphering the mysteries of the natural order without recourse to supernatural aid or guidance.

¹Space limits do not allow us to provide a lengthy treatment of the historical development of spirituality as a concept. Most scholars, however, argue that the current spiritual impulse is evidence of religious change and markedly different from organized religion. See, for example Wuthnow (1998). For a historical treatment of spirituality, see Schmidt (2005).

²See pp. 131–32, in particular, for a further discussion of Weber’s use of the term “carriers.”

Scholars have measured faith among scientists only in comparison to their adherence to religious traditions common among the general population (Larson and Witham 1998; Leuba 1916), not investigating the spirituality of scientists, particularly the form and content that spirituality might take in their lives. In this paper, we ask how scientists understand spirituality in their own terms. Our results show unexpectedly that the majority of scientists at top research universities consider themselves “spiritual.” We argue that scientists’ understandings of spirituality are, on the one hand, often qualitatively different from what scholars say about the general population (although our findings also reveal the need for re-conceptualization of the way that spirituality is measured in the general population), which some scholars have called diluted (Bellah et al. 1985). In addition, these findings are important, as scientists are often seen as being in conflict with religion, and yet, scholars see spirituality as a substitute for religion, so it is important for us to understand ways that scientists are negotiating their relationship with religion through spirituality.

Spirituality in the General Population

Our analysis and definitions of spirituality were initially informed by both survey and interview-based data on spirituality among the general population. Scholars find that Americans increasingly have an interest in spirituality (Besecke 2001; Grant O’Neil and Stephens 2004; Heelas 2006; Heelas et al. 2005; Marler and Hadaway 2002; Roof 1999), although one that is difficult to define systematically. On one national survey, in response to the question, “To what extent do you consider yourself a spiritual person?” over 60 percent of Americans chose the categories “moderately” or “very spiritual.”³ While scholars have used a continuum of definitions for the term “spiritual,” they have identified some general themes that seem to characterize spirituality in the general public. For example, Americans seem to link spirituality to interaction with some form of theism (Marler and Hadaway 2002; Underwood and Teresi 2002; Watson and Morris 2005). And most turn to various facets of traditional religions to craft their own sense of spirituality. For example, in an interview-based study, Robert Wuthnow allowed respondents to give their own definitions and found that spirituality is eclectic; some regard everything from near-death experiences, spirit guides, and books about angels, to meditation and prayer fellowships, as types of spirituality (Wuthnow 1998). Americans also seem to pick and choose among religious traditions to develop their sense of spirituality. An example might be the same individual attending Mass on Sunday and following a form of Buddhist meditation during the week (Roof 1998, 1999; Wuthnow and Cadge 2004). And they often use the grammar of traditional

³We use data from the 1998 General Social Survey, which contained an expanded set of questions on religion and spirituality. According to analysis of these data, 22.1 percent of Americans considered themselves to be “very spiritual” and 40.2 percent of Americans considered themselves to be “moderately spiritual.”

religion to describe spirituality. For example, Lynn Underwood and Jeanne Teresi synthesize four studies on spiritual experience to show that being a spiritual person is associated with “awe, joy that lifts one out of the mundane, and a sense of deep inner peace.” They further argue that “the spiritual, for the ordinary person, is most often and most easily described in language that has religious connotations,” (Underwood and Teresi 2002:22–23). And Bender (2010) argues that spirituality is often instantiated in everyday work and experiences outside of organized religious contexts, although such practices rely on the structure and grammar of historic religious impulses.

Scholars are divided, however, about the implications these aspects of spirituality have for American religious life. The traditional view is that new spiritual forms may be an indicator of a declining focus on the kinds of traditions and practices that lead to strong local communities. For example, the subtitle of Robert Bellah and colleagues’ oft-cited volume *Habits of the Heart* is *Individualism and Commitment in American Life*. In this vein, researchers argue that while traditional religious involvement promotes concern for the common good, those who are spiritual-but-not-religious are more concerned with self-fulfillment and in some cases even appear narcissistic. Related to theories of secularization, scholars say that new forms of spirituality may represent a decline in traditional religious authority without abandonment of religious symbols (Bellah et al. 1985; Lambert 1999).

Others hold that new forms of spirituality stand in sharp contrast to traditional religion but in a more benign or even generative way (Wuthnow 1998). Scholars in this tradition argue that spirituality may be a “cultural resource” to retain meaning and a connection with the transcendent (Besecke 2001), providing transformative and at times therapeutic practices (Dillon and Wink 2007) for people who are uncomfortable with traditional religious communities (Wuthnow 1998). Scholars argue that such forms of individualism may have a healing power in people’s lives that allow them to reach out for the betterment of the common good. For example, the “spiritual seekers” Dillon and Wink (2007) studied showed a generative focus on others but unlike the highly religious people in their study those who were spiritual characterized this focus as self-expansive rather than selfless. Schmidt (2005)—drawing on the works of the transcendentalists, such as Ralph Waldo Emerson—argues that a spiritual search does not have to be self-focused at all. Rather, the inward search for wholeness can actually lead to an outward focus. For some, this outward focus is connected to active engagement with society, in particular to progressive social movements, which are often a part of liberal Protestantism (Wuthnow and Evans 2002). In the broadest sense, this way of viewing spirituality sees it as indicative of a continuing religious impulse that challenges the secularization hypothesis (Heelas 2006).

In summary, one set of scholarly work views spirituality as simply a watered down religion that has benefit only to the practitioner, evidence of an overall decline in community, perhaps a rise in negative forms of narcissism, and

indicative of overall individual and societal-level secularization. Another set of scholarly views about spirituality see it as providing a way to connect with the transcendent without the confinement of organized religion and with the possibility to generate concern for others and for the community. All of these perspectives point to spirituality as an important development in contemporary American religious life.

Scientists

While historians of science often interrogate the assumed relationship between secularization and science (Brooke 1991; Ferngren 2002; Numbers 2009), others have seen scientists as leaders in secularization's advance (Smith 2003), with the personal religiosity of scientists a linchpin of debates and theories about secularization. The reigning assumption is that scientists, particularly those in the academy, are carriers of extreme rationality. The thinking goes that if those who have the most scientific training are also the most irreligious, convincing support is provided in favor of science replacing religion (Leuba 1916). And earlier studies revealed that scientists indeed seemed, at least according to traditional indicators, to be much less religious than those in the general population (Larson and Witham 1998; Leuba 1916, 1934; Stark 1963). Because of spirituality's socio-syncretistic tie to traditional religion, scholars may have implicitly assumed that if scientists are not religious, then they are also not spiritual. Hence, no one has empirically examined the connection that scientists may or may not have to spirituality.

But an alternative framework is that to see science as only undermining faith is to adopt a simplistic view of secularization and of science and scientists. Scientists are potentially not simply carriers of secularization but explorers of what Charles Taylor characterizes as a frontier of thought that provides an alternative to a moral order centered on God and traditional religion (Taylor 2007). Scientists may be at the vanguard of what Taylor called the "nova" effect, the idea that after non-belief (a shift from a society where belief in God is taken for granted to one where belief in God is an option among many), there is a proliferation of various kinds of spirituality. Yet this possibility has not been empirically explored, and the nature of what might be a particular spiritual sense among scientists has never been examined. Rather, scientists have been judged mainly according to the a priori categories of religiosity found among the general population. Or to put it in Taylor's framework, they have been understood as those people responsible for removing the "blindness of faith" rather than as those who might provide alternative or new sources of meaning (Taylor 1989).⁴

⁴This is obviously a very short rendition of a much more extended reflection on the complexities of secularism. See Taylor (1989) for a more thorough treatment and especially Taylor (2007).

We began with the working assumption that scientists on the whole would be nonreligious in traditional terms. It was also expected that they would eschew the fuzzier forms of religiously eclectic spirituality which have become common in the general population. Wholly unexpected were findings that emerged from a set of open-ended interviews done with a portion of these scientists. Our findings show a largely a-religious spirituality among scientists. Spirituality among this group of scientists has some areas of overlap and some areas of distinctiveness when compared with what other researchers have found mainly through surveys (Underwood and Teresi 2002) and a sparse number of interview-based studies (Dillon and Wink 2007; Wuthnow 1998) of spirituality in the general population.

We argue here that this substantial and theoretically interesting group of scientists who see themselves as spiritual view religion and spirituality in distinctly different terms. Scientists show a spiritual impulse that is marked by a search for truth compatible with the scientific method, a coherence that unifies various spheres of life, and, for some, engagement with the ethical dimensions of communal life, all of which are part of what we have come to think of as an identity-consistent spirituality, because it fits so well with their identity as scientists, and tends to be a relatively self-consistent set of beliefs and practices. These findings most principally have implications for how different social groups might display particular spiritual characteristics as well as indicating the complexity of connections between modernization, spirituality, and the self.

METHODS

Here we draw on data collected as part of the Religion among Academic Scientists study, which proceeded in two stages. First, a survey was completed in order to outline scientists' basic religious and spiritual beliefs and practices. The survey was conducted in the spring of 2005, and we began with a random selection of 2,198 tenured and tenure-track faculty in the natural and social sciences who work at 21 different elite U.S. research universities in the disciplines of biology, physics, chemistry, sociology, economics, psychology, and political science. The survey achieved a 75 percent response rate, and in addition to demographic information, the survey included questions on religious identity, belief, and practice as well as spiritual practices, ethics, and the intersection of religion and science in the respondent's discipline. Some questions were replicated from the General Social Survey as well as other national surveys of religious attitudes and practices. These questions allowed us to discover only the most basic outline of scientists' relation to religion and to spirituality. Results of the survey have been published elsewhere (Ecklund 2010; Ecklund and Scheitle 2007; Ecklund et al. 2008).

In order to discover a more endemic understanding (Harris 1979) of how scientists categorize religion and spirituality in their own terms, we needed

data that would allow us to apprehend scientists' definitions in their own words rather than imposing categories of religion and spirituality only from surveys used in the general population. (Such survey-based studies may not be able to generate complex and nuanced understandings of this broader group either; see Dillon and Wink [2007] and Wuthnow [1998] for alternative approaches). Five hundred and one of those who completed the survey were randomly selected and asked to participate in a longer in-depth interview. At least 50 individuals were selected from each of the seven fields. Two-hundred and seventy-five interviews were completed either in person or over the phone. A combination of efforts resulted in a 55 percent response rate for the qualitative interviews, which ranged from 20 minutes to 2.5 hours and were all transcribed. In order to discover respondents' understandings of spirituality and religion as well as whether and how these categories overlapped or differed, respondents were asked open-ended questions about their definitions, without having any specific categories or terms provided for them. Then, they were asked if spirituality played any role in their own lives and, if so, how. For this paper, questions related to respondents' understandings of the terms religion and spirituality were coded inductively in combination with theory-driven analysis in order to develop categories about the ways academic scientists understand religion, spirituality, the connection of spirituality to science and its relationship to other practices within and outside the academy. A coding scheme was developed from a selection of the interviews, tested for inter-coder reliability—achieving a reliability statistic of 0.90—and then applied uniformly to all of the interviews. In analyzing transcripts of the qualitative interviews, we categorized scientists as spiritual (1) when they specifically labeled themselves as spiritual without being prompted by the interviewer; (2) articulated a specific set of spiritual beliefs; (3) engaged in practices that they saw as a further instantiation of spirituality; and (4) claimed to have experiences they described as specifically spiritual.

It is important to mention here that nearly all of the respondents—both natural and social scientists—see their research as basic science. Although the study was designed, in part, to examine the differences in spirituality and religiosity between natural and social scientists, we find that both natural and social scientists see themselves as engaged in a search for the truth of scientific fact. Indeed it was surprising how closely the social scientists' conceptions of science mesh with the natural scientists' views. This finding may be indicative of a broader transition in the social sciences toward mirroring a natural science model of doing research (Abbott 1988; Ross 1991).⁵ Because these scientists work at the most elite universities in the United States, we predicted that, as

⁵An extensive discussion of how natural and social scientists approach research and science is outside the scope of this paper. Further tables and analyses to substantiate this claim are available on request, however.

part of their worldview, they would reject most cosmological and totalizing schemata (DiMaggio 1997) that seem ancillary to science and scientific understanding—leading to a rejection of both traditional religion and contemporary forms of spirituality. And indeed, there is in this population a self-conscious group who consider the topic of spirituality as a whole to be utterly unimportant. There was also a group of scientists who considered themselves religious in a traditional sense (Ecklund 2010).

An Identity-Consistent Spirituality

However, we found that 72 of the 275 natural and social scientists see themselves as pursuing what they describe in various ways as an identity-consistent spirituality. These scientists are not the majority of those interviewed, but they are a very substantial minority, around 26 percent of those interviewed, and are theoretically interesting as an ideal-type for what they say about the ways spirituality manifests itself for this population and how such characteristics might compare to populations defined around other social locations, including other occupational groups.

As scientists who work at the nation's elite research universities they are obviously deeply informed by their commitment to science and scientific thinking. They are also potentially forced to be more self-conscious about how they think about the big questions, such as "what is the meaning and purpose of life?" On the whole, these scientists seem to see their beliefs as accountable to others and therefore not entirely private, perhaps partially by virtue of their profession.

These scientists do not want spirituality to be intellectually compartmentalized from the rest of their lives, but are seeking a core sense of truth through spirituality, in particular one that is generated by and consistent with the work that they do as scientists, what, sometimes in diverse ways, they call an identity-consistent spirituality. In fact, most of these scientists even see science itself as a type of meaning-making. Having an identity-consistent spirituality does not always link to a sense of theism for this group and over 20 percent of the atheist respondents have developed a sense of themselves as "spiritual atheists." In addition, a small but theoretically important minority of academic scientists who are spiritual but not religious perceive spirituality as consistent with their identities insofar as it engages their everyday lives, and is instantiated in their practices as teachers, as citizens of the university and as researchers. Although some of these individual characteristics of scientists' spirituality have been found through existing studies of spirituality among various groups in the general public, what we have discovered may be distinct among scientists in the ways that it is bundled together in a coherent whole to describe their sense of spirituality.

More Congruent with Science than Religion

For those academic scientists who are spiritual, their sense of how spirituality is defined is congruent with their ideas about science. For example, a

significant proportion sees science as more congruent with spirituality than it is with religion. Evidence from the qualitative interviews reveals that religion and spirituality are not overlapping categories to these scientists. For example, about 40 percent of academic scientists who see themselves as spiritual have not attended religious services in the past year. In their view, spirituality, in contrast to religion, is open to individual inquiry, having more potential than religion to come in line with scientific thinking and reasoning, which they see as the pursuit of truth.

Our results show that scientists hold religion and spirituality as being qualitatively different kinds of constructs. During the interviews, respondents were asked, "Could you provide your working definitions or understandings of the terms religion and spirituality?" From our content analysis of the 275 qualitative interviews, the terms scientists most used to describe religion include "organized, communal, unified, and collective." The set of terms used to describe spirituality include "individual, personal, and personally constructed." Indeed, 100 percent of the respondents, who used either the collective or individual terms to describe religion or spirituality, used the concepts connoting individuality to refer to spirituality and those connoting organization or collective to refer to religion. When asked about his working definitions of religion and spirituality, a biologist explained:

I think of religion as being something more organized that you associate with some particular faith and you're part of some organization. . . . For me, spirituality is something more personal that is not necessarily under the aegis of some kind of organization. And it comes in many—sort of more flavors—because it's very individual.

A chemist similarly said,

Religion to me is a very organized system in which people bring their beliefs that may or may not match the overriding sort of religion pattern. If I were a religious person I think that the thing that I would want out of religion is that sense of community and that sense of common purpose. And when religion works, that's what you get. And I get the feeling that it doesn't really work in that it ends up being a mechanism by which people's thoughts and lives are controlled or meant to be controlled. . . . Spirituality to me is a much more individual, personal thing, which may or may not match a bigger picture kind of community-centered thing. But to me that's much more flexible and personal and a lot less judgmental.

Some in the general population may also find spirituality more attractive than traditional forms of religion because it is less organized. Potentially distinctive from many in the general population, however, the less organized nature of spirituality provides more options for having it come in line with scientific thinking. For example, scientists also attach negative terms to religion and positive terms to spirituality, comparing the two in the following ways. Religion is institutionalized dogma; religion is inherently against individual inquiry (or partisan); religion is organized. In contrast, spirituality is broader and allows the type of individual inquiry that is most compatible with science. Other

groups in the general public may also see spirituality as multifaceted and different than organized religion but have a very different rationale for eschewing organized religion.

Scientists also stressed its congruence with science in their definitions of spirituality. The scientists who see spirituality as important often view spirituality as, at its core, about “meaning-making without faith,” which nicely conforms to their perspective on science. An individual can pursue a spiritual journey much as a researcher pursues scientific knowledge. These respondents perceive that pursuing the truth of science is unconstrained by dogmatism, prejudice, and what they see as outmoded ways of understanding the world put forth by un-thinking collectives.⁶ For many scientists spirituality meshes beautifully with their identities as scientists because they also see spirituality as an individual journey, as a quest for meanings that can never be final, just as is the case for scientific explanations of reality. For this group, there is a discussion of aesthetics and meaning related to science that is similar to the quest for spiritual meaning. For some their sense of spirituality flows very deeply from the work that they do as scientists.

In contrast to their views on spirituality, what scientists in this group specifically dislike about religion is the sense of faith that they think often leads religious people to believe without evidence. The nuances of why they find spirituality to be a more palatable category than religion are most clearly delineated through this aspect of their concept of religion. Spiritual scientists think that the kind of faith necessary to sustain religious commitment means necessarily buying into an absolute “absence of empirical evidence.” When asked how he distinguishes between religion and science, a biologist, who labels himself as spiritual, remarked:

Science goes by facts that are verifiable empirically. You will find a large number of people of any cultural, racial, or gender background that will agree on those facts. It goes by evidence. Whereas, religion works by faith, which is the absence of evidence, and in fact, works in the face of evidence many times. One belief system is predicated on what you can see and test and the other is predicated on personal revelation . . . that is not testable . . . or has been tested and shown to fail but you still believe in it anyway.

This respondent is typical of those who distinguish strongly between religion and science as ways of knowing. The bulk of these respondents have a view of science that is completely evidence-based and a view of religion as being completely without evidence.

⁶There is an entire tradition of laboratory studies within the science and technology studies literature that emphasizes just how much scientists are influenced by social groups of their own kind beyond the individual inquiry of the scientific method (see Latour 1987, for one of the more famous leaders in this tradition of thought).

A chemist also linked his sense of spirituality to his science. Notice from this quote that **he too sees spirituality and religion as having different relationships to science:**

Interviewer: Some might say that there is a conflict between religion and science, an irreconcilable conflict. How would you respond to that kind of statement?

*Chemist: [sigh] [pause 9 seconds] **There is surely not any irreconcilable conflict between spirituality and science. You know, I would adopt the views of Einstein on this, who always claimed to be an extremely spiritual person, but he had no use for religion. He was always in awe and wonder at the universe.***

Spirituality specifically links this chemist with science and is even generated from his science—the respondent links his own views with Einstein in this regard—and as such finds his ideas about spirituality, although not religion, to be perfectly reconciled with science. In this way, the use of Einstein becomes a legitimating trope.

And according to a sociologist,

I think the idea of there being some kind of objective reality and that the task of science is to try to understand that reality on the basis of evidence and logic and proof, it seems to me that that basic idea makes it hard to—I mean one embraces that as the role of science and one thinks that that's a good thing, that that's how we should be devoting our intellect and so forth—it's hard to see how you can square that with acceptance of Christian faith or Islamic faith or Jewish faith, which are based on these old books that [are] very basically stories. I think I would agree that they're pretty antagonistic.

This sociologist has a view of science and its connection to traditional religion that closely aligns with the view held by many natural scientists in the sample. This excerpt and the many others like it reveal that, for some scientists, rather than science replacing religion, *spirituality* may be replacing religion, because it is perceived as more compatible with science. For them, the organized nature of religion almost connotes a sense of “group think” that is antithetical to “individual investigation,” which these respondents see as a linchpin of science. This perspective is very much in line with earlier notions sociologists of science had about one of the key characteristics of science being individual inquiry (Merton 1970, 1973; Owen-Smith 2001; Zuckerman 1988).⁷

Disconnected from Theism

We also found a distinctive rhetoric for this kind of spirituality and for contrasting spirituality with religion when listening to the group of respondents who consider themselves “**spiritual atheists,**” **a category that may be nearly**

⁷It should also be noted that a main point of the sociology of science literature is that scientific practice—although often about individual inquiry from the point of view of the scientist—is fundamentally socially constructed in groups (Gieryn, Bevens, and Zehr 1985; Merton 1970; Zuckerman 1988).

exclusive to this population of scientists. In the general population, spirituality is almost inherently linked to some conception of God—although not always a religiously orthodox conception (Armstrong 1996; Neff 2006). These respondents clearly see themselves as spiritual. But—quite different from most other Americans—their spirituality does not always have a connection to a particular belief in God or, in some cases, even to the transcendent. These spiritual atheist scientists see the very act of deciding *not* to believe in God—in the face of an American public seemingly pre-occupied with theism (Edgell et al. 2006)—as an act of strength, which for them makes spirituality more congruent with science than religion.

How academic scientists approach a belief in God is central to how they view the relationships among religion, spirituality, and science. About 34 percent of scientists at elite universities “do not believe in God” and about 30 percent more answer “I do not know if there is a God and there is no way to find out,” the classic agnostic response, meaning that over 60 percent of this population describes themselves as either atheist or agnostic. About 22 percent of the scientists who are atheists still consider themselves spiritual and about 27 percent of the scientists who are agnostic also consider themselves spiritual. There are so few atheists among those captured in surveys of the general population that we could not even do a meaningful comparison between these elite scientists and those in the general population,⁸ although it is important for other researchers to determine if this categorization of spiritual atheist is found among other population groups where atheists are likely to be concentrated.

The qualitative interviews helped us see how the spiritual atheist framework plays out among these respondents. The idea that the existence of God cannot be definitively proven through empirical scientific evidence has radical implications for these scientists. While a large share of scientists do not hold an orthodox belief in God, they do *not* necessarily then give up on spirituality. Instead, for some, the supernatural is often seen as irrelevant to the pursuit of spirituality. According to a psychologist:

My own spirituality might be closer to almost an eastern kind of tradition than a western tradition, even though I was raised a Catholic. I feel a little more comfortable with certain eastern ideas about individuality as an illusion. . . . And so these kinds of ideas give me comfort when I think about mortality, but they're not really ideas about a god or anything. But they are ideas about before and after and meaning of life as it is being lived now.

A political scientist linked his view of spirituality to nature but at the same time tried to distance himself from a belief in God:

I have spiritual commitments. . . . It's kind of a view like [the philosopher] Spinoza, without God in the sense that I like being outdoors and I think there's some sort of meaning and

⁸According to data from the 1998 religion module of the General Social Survey less than 2 percent or only 22 individuals who responded to the survey were atheists.

beauty and value to everything around me and what I do and so there's a way in which I feel very spiritual.

When a biologist was asked how she understands the terms religion and spirituality, the difference between the two also seems to hinge largely on difference in a necessity of belief in God.

I guess religion implies that one believes in some kind of God or something like that, and it's often an organized group that sets up writings and moral values and rules. . . . I don't belong to any religion now. I always assume that people who have spirituality believe in God and they think of it that way. Personally I believe in nature, and I get my spirituality, if you want to say that, from being in nature, but I don't really believe there's a God, so I don't consider it's necessary for what I do or how I behave.

A psychologist explained that he does not consider himself religious in any way. He does, however, consider spirituality important, although, for him too, it does not have to do with a sense of believing in God. He said,

I consider myself in one sense a spiritual person, wondering about the complexity and the majesty of existence as I understand it. And I happen to be very influenced by Buddhism as a system of ethics and thought, but I don't consider Buddhism a religion. It's really a philosophy, but it's a philosophy imbued with a lot of spirituality. So that plays a role in my personal life, but not the belief in God or the angels. . . . I do not believe in God at all.

For these scientists spirituality is about the wonder of the natural world, how it all fits together, how it is bigger than oneself—for example, how amazingly evolution works. Some scientists perceive that leaving God out frees them up to admire the complexity of the natural world, contemplate it with awe, and praise it. Spirituality without God helps them keep in tension the mystery they often encounter in their work with the framework of the scientific method, a sense that some of these scientists also link very loosely with what they see as Buddhist ideas (McMahan 2004).

Scientists who are spiritual atheists have an inherent sense that their spirituality is qualitatively different from that practiced by nonscientists. They often even mention this difference directly—as does the biologist quoted above—who assumes that others link spirituality to a belief in God, even though she clearly does not. We should point out that scholars like Dillon and Wink (2007) would argue that this scientist may be stereotyping the rest of the population who have a spirituality that is considerably more complex than this scientist sees.

Connected to Nature

From existing studies it appears that for many spirituality is defined as a sense of awe or feeling of transcendence in relationship to the natural world. For example, according to the Fetzer Institute multidimensional measure of spirituality, one aspect of daily spiritual values is, “I am touched by the beauty of

creation” (Neff 2006:453). The relationship spirituality has with nature for those in the general population, however, is often correlated with—in the broadest sense—a vague sense of the transcendent and more often with a particular notion of God (Neff 2006).

In contrast, scientists, especially the natural scientists in the sample, do work that requires deep and highly technical education about nature and skill in its manipulation (in other words, more than merely appreciating nature, they have an intimate knowledge of it). Their work with the natural world has an impact on their perception of the connection spirituality has to nature. Some scientists see themselves as genuinely unlocking nature’s secrets through their science. And for this group of spiritual scientists their sense of access to the deepest aspects of nature via their science also enlivens a sense of spirituality. According to one biologist, spirituality is related to helping students understand how large the natural world really is:

I’m always trying to remind my students that what they’re trying to understand is how everything fits together. And it’s useful to keep that in mind, in sort of the broader sense of the wonder of things . . . that’s included for me [in my definition of spirituality] but it’s not included in everybody’s definition.

A physicist explained how his own knowledge of spirituality flows directly from his science:

When I travel to observatories . . . and when I have enough time to think of my place in the world and the universe and its vastness, it’s then that I feel the connection to the world more than I do sitting here in my office. And so that for me, that’s the closest I can come to a spiritual experience.

And when the interviewer asked a biologist what the terms “religion” and “spirituality” mean in his own understanding, he quickly related his knowledge of spirituality to his sense of nature:

You know that feeling you get standing by the seashore looking out over the endless expanse of water—or standing in the rainforest listening to the insects and the birds and their huge diversity and incomprehensibility. Or the feeling you get considering the age of all things in existence and how long it could go on. Sort of awe at the totality of things. If that’s what spirituality is, then I get it. But I have the feeling I am missing the point when I say things like that because my Christian friends don’t talk that way.

This biologist, who studies the “evolution of complexity” in his work as a scientist, seemed to get his understanding of spirituality specifically from nature as well. Also notice that in this interview excerpt, he holds in contrast his own sense of spirituality with how he thinks more religious individuals might view spirituality, setting a boundary (Lamont and Molnar 2002) between his knowledge of spirituality and that of a person with a

more traditional faith. Spirituality, of course, may be connected to nature for other groups of people as well, although scientists may be distinctive in the extent to which—for some—they understand the fundamental aspects of nature and are therefore able to appreciate the beauty of its complexity.

Engaged

Studies of the general population reveal that spirituality is likely to spur therapeutic tendencies, a concern with making oneself better, which can have implications for helping others as well (Dillon and Wink 2007). In contrast, we found that scientists who see their spirituality as having positive implications for generative practices emphasize the individual but not therapeutic nature of spirituality. Of the scientists who were spiritual, about one-third specifically linked their spirituality with other-directed actions. For some, they used what we call an “engaged spirituality” to create a boundary between themselves and other scientists who are strict modernists—and whom these respondents think often do not reflect carefully on the implications of their science—as well as a boundary in opposition to the spirituality of the general public, which they think has fewer implications for other-directed practices. That scientists use an engaged spirituality to create a virtual boundary between themselves and other scientists is perhaps distinctive to this group.

These interviews expand our understanding of what this group of scientists means by particular spiritual practices and how they link spiritual practices and identities with other kinds of acts. Most significantly, being spiritual and/or engaging in some form of spiritual practice often generates a different approach to research and teaching. For example, a political scientist explained,

I spend a lot of time in my course preparations. I could spend a lot less time and invest more time in my own writing and publications. But I feel an obligation to be responsive to students who are struggling. . . . My part of making the world better is helping those individuals succeed. And so I'm not able to cut myself off from my interactions with those students on a one-to-one basis. I feel a certain kind of spiritual obligation to help in the best way that I can, which in that sense is teaching them, trying to figure out how to reach them so that they understand. [I do this] in ways that I know some of my other colleagues don't.

For this political scientist, spirituality provides a lens, a worldview, for the way that she does her teaching. Spirituality also provides a demarcation, specifically an ideological boundary (Lamont and Molnar 2002), to define her as different from her colleagues. While her colleagues might focus on their own research at the expense of student interactions, her sense of spirituality provides non-negotiable reasons for making sure that she helps struggling students succeed.

For others, the very research that they choose to do has a spiritual component, with some even attributing the choice of a particular research topic to spiritual reasons. According to a sociologist,

I don't practice religion, but I am a spiritual person. I choose to study poverty and inequality because I think it is a good use of my time and my skills. And I would feel like studying something that wasn't going to help society would not be—that would be a hard thing for me to do. So for me, it's more of a philosophy, a spiritual thing and not a religiously-guided thing.

This respondent's sentiment is particularly germane because of what it says about her reasons for choosing a research topic. She chooses to focus on inequality because of the potential her studies will have to help people and this focus is linked very directly to her sense of spirituality.

For still others, spirituality is linked to caring for the world outside the university—whether motivation to help other persons or motivation to care for the environment. For example, listen to a discussion the interviewer had with an economist:

Interviewer: How about spirituality? Is that important to you or different than religion for you?

Economist: I'm going to sound like some flipping New Ager here. . . . I have a very strong commitment toward the outdoors and the environment and I think that can kind of be a spiritual commitment. I've made provisions to give a substantial amount of money in my will to the Nature Conservancy, for example.

This excerpt is particularly reflective of respondents who view spirituality as intimately linked with their practices. This respondent's choice to leave money to an environmental organization is very directly linked to his sense of the spiritual. Also, we see in this respondent's excerpt, that he views spirituality as generally "New Age," which he implies is spurious and which he contrasts with his own spirituality by demonstrating how his sense of spirituality generates a very real concern for the welfare of the environment.

These scientists perceive engaging in some form of spirituality to help them to think outside of themselves and this ethical engagement is a way they distinguish themselves from other scientists at top universities, who they see as overly focused on their research and scientific pursuits at the expense of helping others. We do not know all the ways that this finding could be consequential. But these results do show that the implications of spirituality are not simple for this population. While our data clearly indicate that spirituality is mainly an individual pursuit for academic scientists, it is not *individualistic* in the classic sense of making them more focused on themselves, even in a therapeutic sense. In their sense of things being spiritual motivates them to provide help for those outside the academy through acts of volunteerism and to a greater extent it re-directs the ways in which they think about and do their work as scientists.

DISCUSSION AND CONCLUSION

Through examining spirituality among scientists we have discovered, among a significant minority, what they see as an identity-consistent spirituality. Some aspects of scientists' spirituality may be different from the general population. For example, these scientists intensely emphasize a sense of coherence in their spirituality with the work they do as scientists; that, like their science, emphasizes the search for truth and is engaged with the work they do as researchers and teachers. Interestingly, an identity-consistent spirituality means a spirituality that is more congruent with science than religion, resulting in categories such as *spiritual atheist*. It is also characterized by an *individual but not therapeutic* search for truth.

These findings reveal that scientists may be distinctive in their quest for a spirituality that is embodied by and even flows from their science. Since there are so few atheists (or agnostics for that matter) in the general population, scientists may be somewhat unique in generating a group of spiritual atheists. Although others too find spirituality in nature (Underwood and Teresi 2002), scientists may be distinctive in the pervasiveness with which their spirituality is connected to nature. Further, the fact that they see engaged forms of spirituality as a way of setting boundaries between themselves and their "non-spiritual" scientific colleagues may also be distinctive. Pressing spirituality into the service of this kind of boundary-work may be unique to this professional group. We should acknowledge, however, that there are not enough studies of how spirituality operates among various other professional groups to make adequate comparisons. We encourage such studies.

Interviews with scientists reveal grounded categories of spirituality, lending evidence to the argument that a concept like spirituality may be understood very differently by diverse sets of practitioners. While some traditional forms of religion may be in conflict with science for this population, scientists often do not perceive such conflicts between spirituality and science. Among a group where many have rejected traditional forms of religion, spirituality as distinct from religion may actually provide a framework that stresses generative or other-directed altruistic acts, even replacing religion in its significance. These scientists' accounts challenge conventional understandings of spirituality, particularly the range of ways that spirituality might influence its practitioners' lives. The ways in which spirituality motivates generative behaviors may not just be a matter of volunteering in a soup kitchen, but can also entail conducting the very work that one does in a significantly different way.

Of particular theoretical interest is the significant minority of scientists who have this engaged sense of spirituality. One possibility is that scientists may share this kind of orientation with other groups of professionals. This option could be explored by comparing this group of scientists with other collectives of professionals (Abbott 1988, 1991). Although he worked with

traditionally religious people, this study links with [Schmalzbauer's \(2002\)](#) work on how religious sociologists and journalists understand religion, finding that appropriations of religious categories flow from their professional identities. An engaged spirituality may simply flow from doing work that is an all-encompassing or what others have called an identity with master status ([Bartkowski 2004](#); [Lamont 2001](#)) in ways that are similar to other professionals (doctors and lawyers, for example). **Because of this aspect of professionalism, scientists may be moved to integrate their spirituality with an already coherent sense of self that is organized around their work.** For them spirituality cannot be a compartmentalized thing—since work overlaps with self to such a large degree. The most natural way to incorporate spirituality into their lives must not only flow from their work but be expressed through their work.

Scholars who wish to build on our work ought then to ask what particular group contours lead to what kind of spirituality? Would a different occupational group (lawyers, for example) be more or less likely to embrace spirituality when compared with traditional forms of religion? And what kind of spirituality would be generated from what kind of occupational group? It is possible that certain occupations are more likely to generate an identity that directs other aspects of one's life. But other groups of individuals may have master identities generated from other social locations (racial or gender groups, for example), identities that provide more important group contours for defining their spirituality. Work on religiosity among the professoriate finds that politically conservative professors are more religious, for example ([Gross and Simmons 2009](#)). Politics then may be a master status that is bundled with particular forms of spirituality, if indeed spirituality operates the same way as religion does in this regard. Related to other work on spirituality, individuals may also become spiritual but not religious at a central point during the life course. It seems to take people making a real step away from the experience of most Americans to come up with an a-religious spirituality. Building on [Dillon and Wink's \(2007\)](#) work, this understanding of spirituality is accomplished by a lifetime of experience and reflection, culminating in late adulthood (or middle-aged) transitions into this kind of outlook. Among the scientists we studied, it has to do with a vocation that is both demanding and relatively all-encompassing, and in many ways challenges conventional religiosity (e.g., evolution, cosmology). So maybe the takeaway from both populations is that it takes a social push to achieve an a-religious spirituality.

Related to macro-level theories of secularization, our findings reveal that scientists may not have experienced the pervasive rationalization that most theories of religious change would have us believe. Alternately—or in addition—to ideas about social groups spawning particular forms of spirituality, it may be that an ethically engaged spirituality flows from science itself as a unique worldview, one that compels these scientists to explore a different kind

of spirituality than that found among the professions as a whole. This possibility brings us back to scientists' idea of spirituality. Their desire to understand what others see as the mysteries of the universe leads scientists into awe and a perceived understanding that there may be something beyond the reach of reason through science alone. That impulse may lead them to spiritual practices that feed back into the work they do as scientists, whether research or the practice of teaching. That scientists see such a need to define their spirituality in terms of their science may be particularly unique to scientists (other population groups are probably not as likely to be committed to the scientific worldview—and developing a spirituality that is congruent with it—as are those who are practicing scientists at top universities).

Even if we assume that religious change in the form of secularization has taken place—and these data are not equipped to comment with certainty on this issue—these results do imply that what may be unique about scientists is their dedication to the pursuit of scientific knowledge. This pursuit would not be motivated only by self-interest—how to make more money or achieve personal success—but also by a desire to understand the vastness and complexity of the natural order, which both flows initially from their science and ends in an awe and wonder that is wholly beyond it. If this implication is realized empirically, then what we have discovered is a unique form of spirituality particular to those who most acquiesce to the scientific worldview. It may not spread widely among other populations, except through the authority that scientists have as elite carriers of a particular *Weltanschauung* (Weber 1963) or dominant world view.

If, over time, research continues to reveal that modernity has not completely taken hold even among scientists at elite research universities, inasmuch as scientists as individuals are part of a broader growing societal-level scientific mindset, this research may provide evidence against some forms of secularization theory that assumes science leads only to secularization. Although sometimes not marked by traditional theism, spiritual experience within this population connects their deepest self to awe at the intricate complexity and vastness of the universe of which they are a part and to a concern for other human beings. That their spirituality sometimes has moral and ethical authority over their actions also challenges some notions of individual-level secularism. Of central significance, their spirituality is not compartmentalized but integrated into core aspects of their lives and identities as teachers and scholars—as scientists, in other words. This phenomenon is different from those previously conceptualized by traditional ideas about religiosity, or by earlier theories that posit the nature of contemporary spirituality as hyper-individualized. Rather, these findings clearly demonstrate that the spiritual impulse, as it is manifested in this population at the nexus of science, may challenge us to a reformulation of existing theories about religious change.

In the broadest way then, these findings have implications for understanding modernity and secularism, signaling that both may be more complex (and

not just among scientists) than many current conceptions would hold. Within this broad context, scientists may be “carriers”—in the Weberian sense—of a new model of postsecularist spiritual developments. Although they are not numerically significant, they are endowed with prestige and power, making them important thought leaders by virtue of their position as scientists (Collins 1998).

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