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## Introduction: Science and Religion Around the World

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ELAINE HOWARD ECKLUND MET ravi, a scientist in a US physics lab, a few years back. Ravi lived his early life in India, where he received much of his formative scientific training. When Ecklund asked him how he thought scientists ought to respond to religious individuals showing up at school board hearings to oppose the exclusive teaching of evolution in public school science classrooms, he paused for a moment, then asked, “Why do you Americans talk so much about conflict between religion and science? We Hindus never talk in these terms. Our religion only makes us think more deeply about the ways that science allows us to see the world of the gods.”<sup>1</sup> When we read that interview several years later, we started to wonder what scientists outside the United States think about religion and the relationship between science and religion, and how they might differ from US scientists in their views and attitudes. We have spent the past eight years trying to answer that question.

We know how Richard Dawkins, one of the most famous scientists in the world and the former Professor for the Public Understanding of Science at the University of Oxford, feels about religion. He believes religion and science are never compatible. Millions of people—not just in the United Kingdom, his native land but also around the world—have read his book *The God Delusion*, which asserts belief in God is irrational and religion is harmful. We also know how Francis Collins, director of the US National Institutes of Health, feels about religion. In *The Language of God* he argues that science is completely compatible with his Christian faith and people do not need to choose between science and God. But what about scientists who aren’t famous and don’t have the same public platform as Dawkins and

Collins? How do different ranks of scientists in different countries and different disciplines really think about religion and the relationships among science, faith, and God? Until now, the answer to this question has been: We do not know.

Why should we care what scientists in different national contexts think about the religion–science interface? In most countries, religion influences the transmission and public acceptance of science. In the United States, we see debates between science and religion over issues such as the teaching of evolution in public schools, climate change, and human embryonic stem cell research. Battles over how evolution is taught have also emerged in Asia, and there has been public controversy in India over the proposed introduction of astrology into the science curriculum. The European Union has witnessed a resurgence in religious opposition to scientific research, and public leaders in the United Kingdom worry that a recent influx of Muslim immigrants may pose unique religiously based challenges to science. Debates about the proper relationship between science and religion are under the glare of a global spotlight—and scientists are often at the center of these debates.<sup>2</sup>

As Ecklund and our colleague Elizabeth Long explain in an article they wrote for *Sociology of Religion*:<sup>3</sup>

Scholars and public intellectuals almost uniformly perceive scientists as the carriers of a secularist impulse, 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.<sup>4</sup>

Scientists have long been viewed as strong carriers of the process of secularization,<sup>5</sup> and building on the social thinker Max Weber’s ideas, scholars have assumed a linear relationship between science and secularization regardless of differences in national culture and science infrastructure.<sup>6</sup> But research looking only for secularization (or lack thereof) among scientists has major blind spots. It ignores the religious life histories of scientists and the various ways they might use religion or spirituality, whether or not they are religious in a conventional sense.

There is good reason to believe that the relationship scientists have with religion is more complex than a linear version of secularism would predict. Ecklund’s previous work<sup>7</sup> surveying US natural and social scientists revealed that nearly 50 percent of scientists in the United States who work at top research universities have some form of a religious identity, though it is often very different in character from the religious identities found among the



general public. In addition, she found that more than 20 percent of *atheist* scientists consider themselves spiritual to some extent. (She calls this group “spiritual atheists.”) There have been other studies of what scientists think about religion. Like Ecklund’s earlier work, these studies have largely been based in the West, conducted mainly among US and UK scientists. The psychologist James Leuba, for example, conducted surveys in 1916 and 1934<sup>8</sup> on the attitudes of American scientists toward Christian belief—defined as participation in Christian worship and acceptance of the Christian theology of life after death. He discovered that these scientists were less likely than the general US public to believe in God, and the most successful scientists were the least likely to be religiously involved. But those studies and others like them were conducted years ago.<sup>9</sup> We wanted to look at what modern-day, multicountry research could tell us about the religious beliefs, practices, and attitudes of scientists in different national contexts.

Before we conducted our research, it was unknown, for example, how the religious character of a nation—such as whether or not the population is highly religious, the presence or absence of state religions, or varying levels of secularity—influences the country’s scientific enterprise.<sup>10</sup> There was also little knowledge of the factors that influence how scientists think about religion or how their religious views are changing the character of the sciences. Without such analyses, we can only claim that scientists are relatively nonreligious and assume that science made them so. We cannot accurately understand the social variables that influence religiosity and how these differ among scientific disciplines and national contexts.

From a scholarly perspective, we reasoned that our research examining the beliefs of scientists would provide insight into the major theoretical issues related to religious change and the impact of science on religion—and religion on science—in different national contexts. Our goal was to understand how science is related to ideas about secularization, or the decline of religion’s vitality and influence, among scientists and societies. For policy makers and the general public, our research would reveal how national ideologies and policies related to religion affect scientists’ work, and how this in turn might affect the way science is presented and implemented in their nations. We also wanted our research to increase understanding of how the personal religious views of scientists can shape their practice, dissemination, and interpretation of science, as well as how their scientific work can shape their religious views. Ultimately, where there is conflict between science and religion, we wanted our research to illuminate the root of this conflict. Does science destroy religious belief and authority? Does increased commitment to science really lead to decreased commitment to religion? How do views on

religion affect how scientists approach research, teaching, and interactions with their colleagues, students, and the public? How many scientists see conflict between science and faith? Are there ways that scientists and religious communities can work together for the common good?

To answer these questions, we took a distinctively sociological approach. We completed the most comprehensive cross-national study of scientists' attitudes toward religion ever undertaken. We surveyed more than 20,000 scientists in countries representing both Western and Eastern scientific and religious contexts.<sup>11</sup> We traveled to France, Hong Kong, India, Italy, Taiwan, Turkey, and the United Kingdom to study junior and senior biologists and physicists at universities and research institutes. Then we came back to the United States, where we studied U.S. scientists again.

Examining what scientists in different national contexts think about religion is vitally important because it helps us understand both the local and global nature of the relationship between science and religion, and the globalization of science more generally. Do scientists, regardless of where they live and work, all think that science and rationalism will dispel and replace the truth claims of religion and lead to secularism? Or do their ideas about the science and religion relationship depend heavily on their local environment? When it comes to their views on religion, do scientists think like scientists in other countries, or are they more likely to share the beliefs of the general population around them? How does the local religious climate affect how they view the relationship between science and religion? Does science have a personally secularizing effect on scientists? Which background, identity, and cultural factors (things like gender, race, ethnicity, and immigrant status, for example) shape the attitudes scientists have toward religion? What are the conditions under which scientists—even those who consider themselves secular—encounter, respond to, and use religion in the context of their daily lives and work?

Our survey gave us a broad view of how scientists think about religion. Then, to dive more deeply into the beliefs and attitudes of these scientists in their own terms, we conducted in-depth interviews with more than 600 of them. A detailed discussion of how we went about collecting the data is included at the back of the book in a methodological appendix. There, you will also find our survey guide and a version of the in-depth interview guide we used. In addition you will find an appendix of supplementary statistical tables, which correspond to each chapter.

In Chapter 2, we provide a rationale for why we examine scientists in the particular disciplines of biology and physics, as well as why we chose to study what scientists think about religion in the particular national



contexts we selected. We also provide a more thorough treatment of how we measure religion. In particular, we see ourselves as studying three aspects of religion: (1) belief and identity, (2) religion in the workplace, and (3) religion in lifestyles and private lives (where we find religion affecting even some atheist scientists). Differences in religion and science infrastructure in each region motivated comparison of these cases. Some countries have established national religions, some have pluralistic contexts that include traditions emphasizing literalism, and some have long-standing histories of conflict between religion and science. Simultaneously, some countries are at the core of the global science infrastructure and attract religious minorities from around the world (in the United States and the United Kingdom, for example, nearly half of the scientists originate from other countries, often bringing their religious traditions with them), while other countries have less developed infrastructures and science workforces that are more or less culturally and religiously homogeneous. The contours of the relationship between science and religion, and how scientists view it, should vary from region to region in distinctive ways. International comparison anticipates such variation and helps us identify *how*, and in some instances *why*, such variation occurs. It is important that we stress the *narrowness* of our comparisons in this work: We see these eight nations and regions as merely a starting point for studying scientists' religious beliefs and attitudes in a global and more complete way. Our study does not examine how scientists from all the world's countries and religions think about science. Rather, the goal of our study was to examine nations and regions that would allow us—in a scholarly space where little international comparative work exists—to begin to expand our understanding of how scientists in different contexts see religion.

In the West, we chose to study scientists in the United States, the United Kingdom, France, and Italy. Europe, on the whole, is more secular than the United States across several measures, including public religion and personal religious beliefs and identities,<sup>12</sup> and many prominent European scholars are quite outspoken when it comes to their views on the conflict between science and religion.<sup>13</sup> Few other studies (and no recent ones) have examined the religious beliefs, identities, and practices of scientists across different European national contexts. In the United States, a nation marked by “freedom of religion,” scientists are more personally religious than scientists in other Western nations tend to be. Yet, as might be expected, they are significantly less religious than the general US population. We also find that the makeup of the scientific community in the United States is different from other nations we studied in that religious minorities, such as Jews, Muslims, and Hindus, are considerably overrepresented relative to their share of the

general US population. Among scientists in the United States, we find what we might call “soft secularism”: For the most part, scientists believe science and religion should be kept separate and government should be secular, but they are not actively hostile to religion. Thus, we were surprised to see more conflict between scientists and religious believers in the United States than we see in other countries. This is likely because the United States has a large religious population—in particular, a large conservative, politically involved, Christian population—and many scientists (whether or not this perspective is completely accurate) see these religious individuals as hostile to science, particularly evolution.

In the United Kingdom, changing demographics have influenced how many scientists talk about the relationship between science and religion. Immigrants, in particular, are changing the religious landscape with their faith traditions. While the United Kingdom is one of the most secular countries we studied, 52 percent of people in the United Kingdom are worried about rising Islamic extremism, according to a 2015 Pew Research Center survey.<sup>14</sup> We found more “outsider” antagonism in the United Kingdom than in countries that are more religiously homogeneous. Yet we also found more atheist scientists who identify with a religion than we did in the other nations we studied, and that a majority of scientists in the United Kingdom think there are basic truths in many religions. Scientists in the United Kingdom seem remarkably friendly to the value of religion—or at least *certain* religions—in society.

The constitution of France defines the country as secular, but the French approach to secularism is different from what we observe in the United Kingdom. Secularism in France is based on the concept of *laïcité*, or freedom from religion. Political scientist Ahmet Kuru describes France’s ideology as “assertive secularism,”<sup>15</sup> in which the state plays an active role in excluding religion from the public sphere, thereby confining it to the private domain. The assertive secularism of France is omnipresent among French scientists, which has a particular impact on how French scientists view religious believers (specifically Muslims). Nearly 76 percent of these scientists consider themselves either agnostic or atheist, and only 33 percent identify with a religion, one of the lowest proportions among the national samples of scientists we studied.

Italy, on the other hand, appears to be an exception to the idea that Western Europe exemplifies the classical model of secularization. Religious affiliation and belief are still strong and widespread in the country, the home of the Roman Catholic Church. According to sociologist Franco Garelli, Italy exhibits a distinctive “version of religious modernity” that



is for the most part a “flexible, easygoing, selective, ‘made to measure’” Catholicism.<sup>16</sup> While being Italian is generally synonymous with being Catholic, it is, for most Italians, a cultural identity; they do not actively practice their faith and adherence is only nominal. As we heard over and over in different variations: “Everyone’s Catholic. And nobody cares.” There doesn’t seem to be a religious public that antagonizes segments of the scientific community, nor is there a large immigrant population that creates challenges or tensions within the religious sphere or between science and religion. Evolution, which the Church supports, is not a highly controversial issue in Italy.<sup>17</sup> Generally speaking, religion does not seem to be an issue for Italian scientists—religion is even pervasive inside the scientific community—though, interestingly, a number of Italian scientists told us they believe scientists in Italy who are part of certain Catholic groups can more easily gain access to funding, jobs, and other opportunities because of their religious network.

We then moved to Turkey, a nation that hangs between Europe and the Middle East. Turkish scientists are more likely to identify as religious than are scientists in most of the other nations we studied, and by several measures they are nearly as religious as the general Turkish population, yet they may not personally consider themselves religious. Turkey was established as a secular republic modeled after France, but in light of recent developments, including the ascendancy of a religiously conservative government that is trying to insert religious values into education and suppress traditional academic freedoms, scientists in Turkey are deeply concerned about the impact of a certain form of politicized Islam on their developing science infrastructure.

In the Asian countries and regions of India, Hong Kong, and Taiwan, we found a grassroots religiosity and a renewed commitment by scholars to study religion in the midst of a developing—and, in some cases, burgeoning—science infrastructure. India is unique among the nations we studied in that the country’s scientists are more religiously affiliated than the general Indian population: 79 percent of Indian scientists identify as Hindu, compared with 72 percent of the general public, and most of the remaining scientists are committed to another religious tradition, such as Islam or Christianity. Even some atheist Indian scientists consider themselves religious. Yet, the Indian scientists we interviewed were hesitant to make claims about religion or even define religion as a concept, and they had a difficult time articulating their thoughts on religion. We believe this is because religion is so pervasive that it almost goes unnoticed. In fact, Indian scientists often connect religion to their scientific work without seeming to notice. To many Indian

scientists, the idea of inherent conflict between science and religion is a Western invention.

In both Taiwan and Hong Kong, we also found scientists are more religious than the general population, though nonaffiliation is relatively high in Hong Kong, where nearly 70 percent of both scientists and the general population are religiously unaffiliated. (In Taiwan, only 43 percent of scientists are religiously unaffiliated, compared with 22 percent of the general population.) Both regions also have a residual history of Christianity in their education system. In Hong Kong, many scientists talked about attending schools founded by Christians, and several scholars said they believe Christians still control the school boards, science education, and research funding. Scientists we interviewed in Hong Kong also mentioned that in attending Christian churches, they are likely to meet faculty and administrators in the sciences.<sup>18</sup>

We chose to study scientists in the United States, the United Kingdom, France, Italy, Turkey, India, Hong Kong, and Taiwan because each of these countries and regions exhibits distinctive religious characteristics and thus contributes a unique outlook on the relationship between science and religion. From the stories of scientists in these nations, it is apparent that a variety of conditions and conceptions influence how they view religion and its relationship to their work and field. Based on our findings, *Secularity and Science* makes four big claims:

1. *Around the world, there are more religious scientists than we might think.* The scientific community is more religious than many people believe. When we examine the religious characteristics of the scientific community on a global scale, we find that a significant proportion of scientists can be characterized as having religious identities, practices, or beliefs. In India, Italy, Taiwan, and Turkey, a majority of scientists identify with some religious affiliation. In all the other regions we studied, approximately one-third of scientists are religiously affiliated. Of course, religious belonging does not necessarily translate into believing and practicing; in some contexts and under certain conditions, scientists who are religiously affiliated can be seen as simply following a cultural tradition without personal meaning or carrying the residue of religious socialization during adolescence. In India, Italy, Taiwan, and Turkey—the same places where a majority of scientists say they belong to a religion—more than half of scientists identify as at least “slightly religious.” Religious scientists are in the minority in France, Hong Kong, the United States, and the United Kingdom. While religious affiliation tends to be higher than levels of belief and practice, nontrivial proportions of scientists around the world practice their religion and believe in God or a



god. About 10 percent of scientists in the United States and United Kingdom, one-quarter of scientists in India, and two-thirds of scientists in Turkey have “no doubt” that God exists. A substantial minority of scientists across these national contexts pray and attend religious services regularly. Religious affiliation and belief can seem much less prevalent in the scientific community than they are because few scientists discuss their religious or spiritual views with colleagues. Scientists we met in the eight regions we studied frequently noted they were not aware of any religious colleagues, and when we asked scientists who took our survey to estimate the proportion of scientists in their department or institution who were personally religious, they consistently underestimated.

2. *Scientists—even some atheist scientists—see spirituality in science.* Especially in Western contexts, we found segments of nonreligious or atheist scientists who see spirituality in science. These scientists sometimes describe a “science-consistent spirituality” that they use to approach questions of meaning and purpose. Furthermore, substantial minorities of atheists and agnostics identified as spiritual but not religious in most regions. And nearly one in ten atheist scientists in the United States, India, and France identified this way. This spirituality—sometimes described in their own terms through notions like awe, beauty, and wonder, found in the experience of discovery in science—is seen as wholly different from conventional religion (of course having a sense of awe and wonder does not always equal spirituality for atheist scientists).

3. *The conflict perspective on science and religion is an invention of the West.* We find that the idea that science and religion are inherently in conflict is mainly a Western paradigm. When we talk with scientists around the world, we see most have a different view of the relationship between science and religion that has an impact on how religion interacts with their scientific work. The United States, the United Kingdom, and France are the only nations in our study in which support for the conflict perspective approaches one-third of scientists. In the eight regions we examined, the prevailing view of the relationship between science and religion among scientists is one of independence—the notion that science and religion refer to different aspects of reality. In most regions, approximately half of the scientists we surveyed adhere to the independence perspective. We also found that in each national context, a strong minority of both biologists and physicists think religion and science can collaborate. A substantial majority of scientists in the regions we studied also do not believe there is inherent conflict between being religious and being a scientist. One of the most common justifications we heard for this perspective was having



worked with a religious scientist who has developed a successful career. Respected religious scientists seem to act as *global boundary pioneers*,<sup>19</sup> by bridging the realms of science and religion while maintaining integrity and legitimacy in both domains. Having a religious graduate student can often have a similar effect, despite the fact that a graduate student might not yet have achieved career success.

4. *Religion is not kept out of the scientific workplace.* In some ways, Stephen Jay Gould's ideas about nonoverlapping magisteria, which we discuss in greater detail in the next chapter, may be tenable in abstract matters of belief and ideology, but do *not* gain traction in actual social life. When we follow scientists into their offices, laboratories, and homes, we find that religion often does enter the scientific workplace, sometimes in unexpected ways. In this book, you'll meet scientists who talk about religion, accommodate religion, make arguments in support of religion and its collaboration with science, or strongly and resolutely call for the separation of science and religion. Our interviews reveal numerous ways in which religion comes up in the workplace, both for religious scientists—some of whom try to compartmentalize their faith—and for nonreligious and atheist scientists.

How science and religion interface with one another is undoubtedly tied to epistemologies, cultural traditions, and histories as well as political agendas. But science and religion are also *social* realms, inhabited by scientists you will read about in these pages. It is thus vitally important that we take a social scientific approach to studying the nature of the relationship between science and religion, looking at how scientists themselves experience and navigate the two domains. In our research, we systematically examine the views and stories of scientists in different national contexts, scientific disciplines, and career stages to see how science has an impact on their religious attitudes and how religion influences their scientific work. Together, the eight contexts examined in this book offer a new perspective on the science–religion interface that could not be revealed by studying any one country or region alone. From our data emerges the real story of how scientists approach religion and religious issues, and the true relationship between science and religion in the lived experiences of scientists around the world.