# Secularization and Religious Change among Elite Scientists

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*Sociologists of religion have often connected secularization to science, but have rarely examined the role of religion in the lives of scientists or how the sciences have changed religiously over time. Here we address this shortcoming by comparing religiosity between two samples of elite academic natural and social scientists, one in 1969 and one in 2005. Findings show an overall decline in religiosity among university scientists as well as a change in their religious composition. Attendance rates were lower for social scientists in 1969 compared to natural scientists, but in 2005 growing parity in attendance occurred between the two fields. Findings also show a decline in the proportion of Protestant scientists and a growth in Catholic scientists. Demographic factors associated with religiosity in the general population, with the exception of age and having children, had no impact among elite academic scientists. Overall, findings challenge and revise older studies on the role of religion in the lives of scientists. Specific results are connected to theories that pose science as a master identity, which may be mitigated by some institutionalized aspects of religion. They also lead to new directions in the sociology of religion that take seriously the role of religion in the lives of elites and connect societal religious changes to differences between institutional spheres, particularly those, such as the academy, that play a leadership role in society.*

## Introduction

Secularization is the most prominent theory for explaining religious change in the face of modernity (Bruce 2002; Chaves 1994; Yamane 1997). The connection between religion and science is a central aspect of secularization theories, with the academy being one of the first institutions to break free from ecclesial authority because of its relationship to scientific

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rationality (Smith 2003b). Earlier scholarship viewed scientists as prime advocates of secularization because of their intimate connection with modernist worldviews (Leuba 1916). Little recent scholarship, however, has examined the religious views of scientists themselves. And the small body of older scholarship that does examine religion among scientists mainly compares their beliefs and practices to those of the general public without studying variation among scientists in what factors are associated with religiosity or how scientists' religious identities and practices have changed over time. Without such an examination this important aspect of the relationship between religion and science remains to us a black box, with gaps in knowledge about what might be causing differences in religiosity between scientists and the general population. It is important to examine religious shifts among *elite* academic scientists, in particular, because elites generally wield more influence as institutional leaders (Collins 1998; Rado 1987).

Here – by comparing two samples of top university scientists separated by thirty-six years – we ask what kinds of religious changes have happened among scientists. As other theorists have predicted, findings show an overall secularization among scientists, both in religious affiliation and in regular attendance. Different from what other scholars have argued, however, we also see natural and social scientists becoming more religiously similar and an overall increase in sporadic religious attendance. Further, the proportion of elite university scientists who are Catholic has increased, despite earlier research that cast Catholicism as anti-intellectual. Although religious attrition among Catholics is high in some disciplines, the salience of Catholic identity in predicting religious attendance is stronger when compared to other religions.

We further ask here what factors are associated with the absence and presence of religiosity between these two cohorts. By answering this question we delve into the nature of secularization for elite scientists. Even though the academic science population has diversified over the past 40 years through the growing presence of women, racial minorities and immigrants – all factors associated with greater religiosity among the general population – the presence of these groups does not have a significant impact on elite scientists' religiosity. Certain family characteristics, however, such as scientists' own religious socialization and whether scientists have children, are associated with being religious.

These findings suggest that being an elite scientist may form a master identity status. Characteristics such as gender, race and religion appear to have a less significant role in the lives of elite scientists. Findings show, however, that religious socialization, being Catholic, and having children may mitigate the master identity of being a scientist. Further, both natural and social scientists increasingly resemble one another, such that earlier

arguments for the greater irreligiosity of social scientists compared to natural scientists no longer pertain for the newer generation. Findings also suggest new substantive and theoretical directions for the sociology of religion, through focusing on the understudied area of elites. We add an inter-religious and cross-sample comparison between two time periods (1969 and 2005) to the small existing literature on religious elites and contribute insights on how secularization may take place in the particular knowledge field of science and this specific institutional sphere, the elite academy.

## Elite Academic Scientists and the Secularization Narrative

Sociologists of religion who examine higher education have long seen the academy, and the academic sciences in particular, as one of the most secular spheres of society (Leuba 1916, 1934; Stark 1963; Stark and Finke 2000). Some scholars even view higher education, specifically elite universities and the scientific rationalization of *all* knowledge, as one of the main institutional forces responsible for bringing about secularization in other spheres of American public life (Chadwick 1990; Smith 2003a, 2003b). They contend that scientists are carriers of strong rationalization because those with the most scientific training are also the least religious. Their status as representatives of higher education legitimizes the irrelevance of religion as a salient feature of social life and as a competing form of knowledge (Leuba 1916). Early studies revealed that scientists were much less religious than those in the general population (Larson and Witham 1998; Leuba 1916, 1934; Stark 1963). For example, the psychologist James Leuba (1916, 1934) conducted surveys in 1916 and 1934 on the attitudes of American scientists towards Christian belief, which he defined as participation in Christian worship and a Christian theology of life after death. He discovered that scientists were less religious than the general public across these measures.

Because elite academic institutions – like Harvard and Princeton – lead other universities (Schuster and Finkelstein 2006) and because of the connection science has to many formulations of secularization (Chadwick 1990; Lambert 1999; Smith 2003a; Thalheimer 1973), the beliefs and practices of scientists at top universities are particularly important to study in order to gain the broadest understanding of how the connections between science and religion within the academy might influence the rest of society. The academy also plays a central role in Randall Collin's (1998) ideas about the development of worldviews. It is within university settings that elites form the kind of intimate social networks that help them become leaders in the transformation of culture. Elite university scientists then also have an important role in knowledge creation and institutional change because they provide scientific training to future societal leaders.

For example, half of corporate heads and nearly as many governmental leaders graduated from one of 12 highly selective universities, such as Princeton, Harvard and The University of Chicago (Dye 2001).

A study of religion among elite university scientists also holds the potential to point to new directions in the sociology of religion because religion is a key knowledge arena for creating boundaries around what is and is not science (Gieryn 1983), the university is a key societal institution and elites are seen as key knowledge producers (Collins 1998; Rado 1987). Earlier work on religiosity among scientists indeed found that prestige had an influence on religious faith and practice. For example, when Leuba (1934) collected data on the religiosity of scientists during the early 20th century, his study revealed that "elite" scientists were less likely to believe in God when compared to less elite scientists. Mid-century, Rodney Stark (1963) examined religiosity among graduate students and also discovered that those who attended elite institutions were the least likely to have a religious affiliation or regularly participate in worship services (Stark 1963, 2003).[1] And when Larson and Witham (1998) later replicated Leuba's study, using data on members of the National Academy of Sciences in the 1900s, they found that disbelief was most common among these scientists.[2]

The work of earlier researchers was also concerned with examining differences in religiosity between science fields and among science disciplines. Based on the predictions of secularization theories (Bruce 2002), scholars expected that the work of natural scientists (when compared to social scientists) would come into the most direct intellectual conflict with religion, because natural scientists are the most committed to the scientific method and have the most rigorous understanding of the physical world. Through analysis of the 1969 Carnegie Commission National Survey of Higher Education Faculty Study, however, earlier researchers discovered that it was *social* scientists who were less religiously involved than natural scientists (Lehman 1972; Stark and Finke 2000; Wuthnow 1985). They used these findings to argue that liberal ideologies and political views rather than science may exert the most secularizing effect. Some research argued that differences in religiosity between scholars in the natural and social sciences were best explained through "boundary posturing mechanisms." (Wuthnow 1985) Scholars, in general, may want to create distance between themselves and the general public to retain the sense that they are experts. Fields such as physics or chemistry are already distanced from the American public through highly codified, particular languages and ways of operating. Most of those in the general public see natural science as "other." Hence natural scientists do not need to establish uniqueness by being particularly irreligious. In contrast, those in disciplines that study the things of everyday life, such as human persons and relationships – as do psychologists and

sociologists – may have more difficulty being distinctive from the general public. Appearing not to accept religion is one way of accomplishing this task (Wuthnow 1985). Yet while the natural and social science difference in religiosity has been an assumption of work on inter-disciplinary and inter-field religiosity, there has – until recently – been no data that would allow a contemporary testing of such claims.

Researchers in the mid-20th century were also concerned about the role that particular religions would play in the academy and specifically in the sciences. For example, Gerhard Lenski (1961) argued that scholarship and Roman Catholicism were incompatible because of what he saw as a conflict between the Church and modern scientific developments. He thought that Catholicism fostered an attitude of blind obedience to the authority of the Church over and above intellectual autonomy. Andrew Greeley (1967) responded to these accusations by showing that graduates of Catholic schools had aspirations to pursue doctorates in proportions higher than Protestants. Greeley argued in later work that the lack of representation of Catholics among faculty could be blamed on discrimination against them rather than an anti-intellectual Catholicism (Greeley 1973), a theme that has been stressed again recently (Alba 2006).

## Changing Demographics and Institutions Linked with American Religion

Another missing piece in understanding the connections between science, secularity and religiosity among elite scientists is discovering the underlying factors associated with both individual-level secularity and religiosity for scientists.[3] Even if scientists are more secular than other Americans, scholars have not explored whether the factors associated with religiosity for scientists are the same as those among the general population and how these factors may have changed over time. Sociologists of religion have made important theoretical and empirical claims over the past 60 years about how demographics are connected with changes to American religiosity, particularly secularization (Chaves 1994; Edgell 2005; Heelas 2006; Warner 1993; Wuthnow 1988, 2007). Chief among these are gender, family, immigration and shifts in the life course. For example, over the last half century the number of women in the paid labor force has consistently increased. More women have college and graduate degrees, giving them upward mobility in the labor force (Edgell 2005; Kroe 1989). These demographic shifts in women's labor-force participation, however, are not completely uniform. Although the representation of women in the sciences has increased, particularly in the social sciences, their overall participation – especially at elite universities – remains quite low and has become the topic of national debate and inquiry (Fogg 2005; Fox 1995; Schultz 2005; Schuster and Finkelstein 2006).

Scholars have suspected that, as the labor force participation of women increased, their religious attendance rates would decrease, with work providing women the social networks and prestige they previously gained from religious participation. Even as the presence of women in the workforce has grown, however, women still surpass men in religious participation (de Vaus 1984; Freese 2004; Miller and Stark 2002; Miller and Hoffman 1995; Ozorak 1996). Because we know the presence of women has increased more in most of the social sciences (Schuster and Finkelstein 2006) when compared to the natural sciences, we expect that in both samples gender will be positively correlated with religiosity (with women more religious than men). We further expect that for the 2005 sample this impact will be greater in the social sciences (because of their higher proportion of women) than in the natural sciences.

Researchers also find that religious socialization happens primarily within families (Bao et al. 1999; Myers 1996) and that when individuals have children they are likely to return to the religious communities of their youth to find a place for religious and moral training of their children (Bahr 1970; Bao et al. 1999; Edgell 2005; Stolzenberg et al. 1995). Demographic shifts in family form may both decrease the appeal that religion has for those within non-traditional families and/or change the way religious communities conceive of family (Egell 2005; Marler 1995). Both women and men are also marrying later and starting families later, which may further change how younger Americans relate to religious communities (Wuthnow 2007). We expect then that religiosity and family formation will be connected for elite academic scientists. If childlessness increases between samples, fields or disciplines of scientists, religiosity may also decrease. Further, we expect that scientists who were raised in religious homes will be more likely to be religious than those not raised in religious homes (Wuthnow 1999).

Religion researchers have also examined the shifting composition of immigration to the U.S. and its relationship to religion. Post-1960s' immigrants have brought new religions and changed the racial and ethnic composition of existing religions, with Islam, Buddhism and Hinduism increasing in proportion of U.S. adherents as a result (Haddad et al. 2003). Sociologist R. Stephen Warner (2005) has described this as a simultaneous de-Christianization of American religion and de-Europeanization of American Christianity. And religion offers a functional role in the lives of many immigrants, who live daily with a liminal status (Ebaugh and Chafetz 2000; Smith 1978; Warner 2005). Faith communities provide a space in which immigrants can gather with others who share their ethnic and religious ties. Elite immigrants, therefore, may find benefits in religious participation, especially in the highly competitive world of elite academic science. We might expect that scientists who

are immigrants will have greater rates of religious participation when compared to their peers who are not immigrants.

## Gaps and New Directions

Researchers who posit society-wide secularization have generally done so through the study of changes in the religiosity of the general population (Bruce 2002; Chaves 1994), thereby neglecting examination of the underlying factors associated with the religious character of elite culture-producing institutional actors and groups. Only a handful of studies move beyond examining the individual religiosity and organizations of the general public to studying religion among elites (Lindsay 2006, 2007; Schmalzbauer 2002; Smith 2003b). Yet, the small body of research that does generally makes assertions about one particular group of religious elites, such as evangelicals, without comparing elites among traditions (Lindsay 2006, 2007). Or when scholars do compare religious groups, they do not compare religious and non-religious actors or samples over time (Schmalzbauer 2002). Such absences weaken their claims about secularization or lack thereof.

And while some researchers have argued that scientists are contributing to secularization, there is no understanding of the underlying factors that influence scientists' own religiosity and how such factors are associated with changes in the religious character of the sciences. This is chiefly because the data needed to compare the religiosity of different samples of faculty across time has been unavailable. Without such analyses, while we can say that scientists are not very religious and assume that science made them so, we have no knowledge of the social factors that are correlated with religiosity and how these differ between samples and fields of scientists. Such gaps lead to empirically under-tested theoretical arguments about the changing place of religion among the leaders of America's elite institutions.

Examining how scientists in two different time periods compare in their religiosity brings central insight to why and how the academy as an institution and the science disciplines specifically are changing religiously. Here – building on research that stressed the differences between natural and social scientists – we compare the religious identities and practices of faculty in seven different natural and social science disciplines from elite research universities that were part of a 1969 survey of faculty to a 2005 survey of the religious identities and practices of natural and social scientists. These analyses reveal how individual-level factors associated with secularization and religious retention among scientists appear to have changed over time. Findings have implications for how identities as scientists may relate to other identities, as well as how the academic sciences as fields and disciplines may relate to religion in the future.

## Methods

Our data come from two sources. First, we draw on a survey of religion and spirituality among natural and social scientists at elite universities that was conducted by one of the co-authors during the spring of 2005 (Religion among Academic Scientists) (Ecklund 2008; Ecklund and Scheitle 2007). Some 2,198 professors in the natural and social sciences were randomly selected from among all those in the seven fields of biology, physics, chemistry, sociology, economics, psychology and political science at 21 different elite U.S. research universities.[4] Respondents had the option of completing the survey over the web or phone. Of those who responded, 6.5 percent completed the survey over the phone and 93.5 percent completed the web-based survey. The survey achieved a 75 percent response rate, resulting in 1,646 respondents, ranging from a 68 percent rate for psychologists to a 78 percent rate for biologists.[5]

The second data source is from the 1969 Carnegie Commission National Survey of Higher Education Faculty Study. Information was collected from a mail survey of faculty members who were employed by two- and four-year colleges and universities in the United States. Faculty members were asked questions about various social, political and educational issues, demographic information, as well as several questions on religion. A total of 60,028 respondents completed the survey for a response rate of 58 percent (Ladd and Lipset 1972). Among the 2,300 colleges and universities in the United States at this time, a portion of universities were indicated as elite or high quality (see Appendix A).[6] For the purposes of this study only faculty members who were employed by institutions that the Carnegie Commission indicated as "high quality universities" were used for analysis. To more closely match the academic scientists from the 2005 survey, the sample was further narrowed to include only those from the same natural and social science disciplines. Our working sample sizes were 2,816 for the Carnegie 1969 survey and 1,388 for the RAAS 2005 survey.

The 2005 survey deliberately replicated as much as possible several questions on religious identity and practice from the Carnegie study. Religious identity was measured by responses to one question: "What is your present religion?"[7] Religious practice was measured with one question in the 1969 study: "How often, on average, do you attend a religious service?" The 2005 survey asked a similar question: "In the last 12 months, how often did you attend religious services, not including weddings, baptisms, and funerals?" To achieve comparability between the data sets, we recoded these response categories into three categories with these thresholds: "attend once a month or more," "attend a few times a year," and "attend once a year or less." To simplify interpretation of the findings, in subsequent regression analyses we narrowed our measure

into a dichotomous variable to predict "regular religious attendance," which we defined as "attending once a month or more."[8]

Our demographic measures followed conventional operationalization in order to simplify comparisons between the two datasets. Gender and marital status were measured dichotomously where 1 = "female" and where 1 = "married." Age was divided into three groups (35 years and younger, 36 to 50 years, and 51 years and older).[9] Due to the low number of racial minority faculty in both samples (with some exception for Asian faculty), we categorized respondents under three labels: "white," "Asian" and "other." Presence of children was measured dichotomously where 1 = "at least one child," and citizenship was measured similarly where 1 = "non-US citizen." We used independent samples t-tests to determine whether sample and field differences were present and logistic regression analysis to determine the predictors of regular religious service attendance in 1969 and 2005. We further explored between-group comparisons for natural and social scientists in each sample.

## Belonging without Believing?

The results reported on Table 1 help us answer our first question, which asks whether the overall religiosity of elite scientists has decreased, when comparing the 1969 and 2005 samples of scientists. Since much of the earlier literature on religion among scientists at least implicitly made comparisons with the general population (Leuba 1934; Roe 1952; Stark 1963) we have also added a column comparing the 2004 General Social Survey to these groups of scientists. Table 1 shows that there has been an overall decrease in religious affiliation between the two samples. The proportion reporting that they did not have any religious affiliation rose from about 45 percent in 1969 to about 51 percent in 2005. These levels of non-affiliation are relatively high when compared to the general population. For example, only 15 percent of those in the 2004 general population were not affiliated (GSS, 2004). The picture for religious attendance, however, appears more complicated. The proportion of those who attended regularly decreased between 1969 and 2005, from 24 percent to 19 percent. (Among those in the current general population, nearly 49 percent attend regularly). In comparison, however, those who attended at least a few times a year but not monthly or more actually increased between the 1969 and 2005 samples, from 15 percent to 30 percent. It seems that while more academic scientists are disaffiliating and remain religiously different from the general population, they are as a whole not entirely abandoning their involvement in religious organizations. Further, those who said they attended once a year or less also decreased significantly between the two samples, from 60 percent to 51 percent.

Table 1: Religious Affiliation and Religious Service Attendance among Elite Scientists

| | | | | | Natural Sciences | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | GSS | Physics | | Chemistry | | Biology | | Natural Sciences Overall | |
| % per sample | | 1969 | 2005 | 2004[a] | 1969 | 2005 | 1969 | 2005 | 1969 | 2005 | 1969 | 2005 |
| **Current Religious Affiliation** | Protestant | 29.1 | 17.1 | 55.2 | 28.6 | 19.8 | 39.6 | 19.8 | 31.7 | 13.3 | 32.3 | 17.2 |
| | Catholic | 5.0 | 8.9 | 24.4 | 3.7 | 6.4 | 6.7 | 14.1 | 6.3 | 6.9 | 5.7 | 8.8 |
| | Jewish | 14.7 | 15.8[ns] | 2.0 | 14.6 | 14.9 | 6.7 | 15.3 | 16.1 | 9.3 | 14.1 | 12.8[ns] |
| | Other | 6.3 | 7.3[ns] | 3.4 | 7.9 | 6.4 | 5.1 | 4.5 | 8.2 | 7.3 | 7.6 | 6.2[ns] |
| | Nonaffiliated | 44.9 | 50.9 | 15.0 | 45.2 | 52.5 | 42.0 | 46.3 | 37.7 | 63.3 | 40.3 | 55.0 |
| **Religious Affiliation at Age 16** | Protestant | 55.9 | 39.2 | 57.3 | 54.4 | 39.1 | 65.3 | 36.7 | 53.7 | 37.9 | 55.9 | 38.0 |
| | Catholic | 10.4 | 22.1 | 30.3 | 8.5 | 18.3 | 12.8 | 28.8 | 11.4 | 23.4 | 10.9 | 23.3 |
| | Jewish | 23.6 | 18.4 | 2.2 | 25.6 | 15.8 | 10.6 | 16.4 | 24.4 | 14.5 | 22.3 | 15.5 |
| | Other | 3.5 | 5.9 | 2.0 | 4.6 | 8.9 | 4.9 | 4.0 | 4.5 | 6.5 | 4.6 | 6.5[ns] |
| | Nonaffiliated | 6.7 | 14.3 | 8.3 | 6.9 | 17.8 | 6.4 | 14.1 | 6.1 | 17.7 | 6.4 | 16.7 |
| **Frequency of Religious Attendance** | Once a month or more | 24.3 | 18.8 | 48.7 | 22.7 | 16.8 | 28.1 | 23.4 | 28.5 | 14.9 | 26.9 | 17.9 |
| | A few times a year | 15.3 | 29.9 | 13.2 | 17.3 | 28.7 | 14.2 | 28.6 | 15.9 | 28.6 | 16.0 | 28.6 |
| | Once a year or less | 60.4 | 51.3 | 38.0 | 60.1 | 54.5 | 57.7 | 48.0 | 55.6 | 56.5 | 57.1 | 53.4[ns] |
| **Switch to Nonaffiliated at Age 16*** | Protestant | 43.9 | 51.7 | 10.2 | 43.2 | 44.3 | 35.4 | 49.2 | 36.4 | 60.6 | 37.9 | 52.1 |
| | Catholic | 47.5 | 55.0[ns] | 12.3 | 45.5 | 64.9 | 42.4 | 41.2 | 41.2 | 69.0 | 42.3 | 58.2 |
| | Jewish | 35.9 | 20.7 | 16.7[ns] | 41.2 | 21.9 | 39.3 | 17.2 | 29.3 | 36.1 | 33.6 | 25.8[ns] |
| | Other | 33.3 | 46.3[ns] | 16.4 | 12.5 | 61.1 | 53.8 | 42.9 | 25.6 | 56.3 | 27.9 | 56.1 |
| | Nonaffiliated | 85.2 | 82.9[ns] | 56.5 | 96.2 | 80.6 | 88.2 | 84.0 | 83.0 | 86.4 | 87.5 | 83.8[ns] |
| N | | 2711 | 1388 | 2689 | 378 | 202 | 255 | 177 | 885 | 248 | 1488 | 627 |

| | | Social Sciences | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sociology | | Economics | | Political Science | | Psychology | | Social Sciences Overall | |
| % per sample | | 1969 | 2005 | 1969 | 2005 | 1969 | 2005 | 1969 | 2005 | 1969 | 2005 |
| **Current Religious Affiliation** | Protestant | 20.7 | 15.1 | 28.0 | 19.2 | 31.6 | 20.4 | 21.5 | 13.7 | 25.3 | 17.1 |
| | Catholic | 3.1 | 7.8 | 5.7 | 9.9 | 4.5 | 8.5 | 3.1 | 10.4 | 4.1 | 9.1 |
| | Jewish | 17.6 | 18.5 | 17.2 | 20.9 | 14.1 | 18.9 | 14.1 | 14.8 | 15.5 | 18.3 ns |
| | Other | 3.6 | 7.3 | 1.3 | 7.0 | 6.7 | 5.5 | 6.5 | 13.1 | 4.7 | 8.1 |
| | Nonaffiliated | 54.9 | 51.2 | 47.8 | 43.0 | 43.1 | 46.8 | 54.8 | 48.1 | 50.4 | 47.4 ns |
| **Religious Affiliation at Age 16** | Protestant | 50.3 | 40.5 | 56.4 | 36.0 | 58.6 | 40.3 | 56.5 | 43.7 | 56.0 | 40.2 |
| | Catholic | 9.8 | 22.4 | 10.0 | 19.2 | 11.1 | 22.9 | 8.8 | 19.7 | 9.8 | 21.2 |
| | Jewish | 29.5 | 19.5 | 24.9 | 22.7 | 21.8 | 20.9 | 25.4 | 20.8 | 25.1 | 20.9 |
| | Other | 3.6 | 3.9 | 1.9 | 6.4 | 1.8 | 5.5 | 2.0 | 6.0 | 2.2 | 5.4 |
| | Nonaffiliated | 6.7 | 13.7 | 6.9 | 15.7 | 6.8 | 10.4 | 7.4 | 9.8 | 7.0 | 12.4 |
| **Frequency of Religious Attendance** | Once a month or more | 16.8 | 19.6 | 25.2 | 20.0 | 23.8 | 21.6 | 18.4 | 16.4 | 21.1 | 19.4 ns |
| | A few times a year | 12.0 | 31.9 | 17.4 | 30.6 | 17.1 | 30.2 | 11.7 | 31.1 | 14.4 | 31.0 |
| | Once a year or less | 71.2 | 48.5 | 57.4 | 49.4 | 59.1 | 48.2 | 69.9 | 52.5 | 64.5 | 49.6 |
| **Switch to Nonaffiliated at Age 16*** | Protestant | 58.8 | 50.6 | 50.6 | 41.9 | 38.7 | 53.1 | 56.7 | 57.5 | 51.3 | 51.3 ns |
| | Catholic | 61.1 | 58.7 | 43.8 | 48.5 | 51.7 | 50.0 | 62.5 | 50.0 | 54.6 | 52.2 ns |
| | Jewish | 36.8 | 20.0 | 30.4 | 12.8 | 36.7 | 11.9 | 45.2 | 26.3 | 38.3 | 17.6 |
| | Other | 57.1 | 50.0 | 66.7 | 36.4 | 25.0 | 45.5 | 37.5 | 19.2 | 48.0 | 36.6 ns |
| | Nonaffiliated | 92.3 | 85.7 | 90.5 | 85.2 | 89.5 | 85.7 | 69.7 | 66.7 | 82.6 | 81.9 ns |
| N | | 193 | 205 | 314 | 172 | 269 | 201 | 447 | 183 | 1223 | 761 |

Notes: Carnegie Commission of Higher Education Faculty Study 1969 and Religion Among Academic Scientists 2005. Significance tests between 1969 and 2005 samples and subsamples. All comparisons are significant at least at the .05 level unless otherwise indicated. Inter-sample differences by discipline were not tested due to low sample sizes. *Figures based on subsample of given religion at age 16 at the time of the survey. "Nonaffiliated switch" refers to switching from Religion to Nonaffiliated and remaining nonaffiliated from age 16 to the time of the survey. [a] Comparisons between GSS 2004 and RAAS 2005 survey respondents only.

While the overall between-sample comparisons are mirrored in the field-specific comparisons, we see a shift in disaffiliation and attendance rates between elite natural and social scientists. The proportion of natural scientists who attended religious services regularly decreased nearly nine percentage points between the two samples, while the proportion of those who attended sporadically actually increased quite substantially, almost doubling from 16 percent to 29 percent. Non-attendance for natural scientists remained fairly stable, 57 percent in 1969 and 53 percent in 2005. Social scientists during this same period saw a similar change from high non-attendance (a 15 percent decrease between 1969 and 2005) to high sporadic attendance (about a 17 percent increase). Unlike natural scientists, the proportion of social scientists who regularly attended remained stable (21 percent in 1969, 19 percent in 2005). In short, social scientists in 1969 were less religiously active than natural scientists but in 2005 natural scientists nearly matched social scientists at every level of attendance. Natural scientists were less religiously active in 2005, while social scientists have moderately increased in levels of religiosity. In a similar fashion, natural scientists saw a 15 percent increase in nonaffiliation (from 40 percent in 1969 to 55 percent in 2005) while social scientists remained roughly the same (50 percent in 1969 to 47 percent in 2005). More social scientists in 1969 were nonaffiliated, but by 2005 natural scientists' nonaffiliation rates caught up and surpassed those of social scientists.[10] This finding differs significantly from the work of other researchers, who have argued that there is a large difference in religiosity between natural and social scientists, with natural scientists being more religious (Gross and Simmons 2007; Stark and Finke 2000; Wuthnow 1985).

A growth in non-affiliation among scientists is indeed apparent, but we also see important shifts in religious identities. There is an increasing presence of Catholics and a steady, significant presence of Jewish and other non-Christian scientists. The Protestant hegemony that once existed in American society (Hollinger 2006) is gradually fading, at least among elite scientists (about a 12 percent drop between 1969 and 2005) and is being replaced by more nonaffiliated and non-Protestant peers. These findings hold steady between samples of natural and social scientists. This means that elite scientists are increasingly religiously different from the general public. For example, the proportion of Protestants in the general public is currently more than double that of Catholics, while among elite scientists the proportion of Catholics is growing towards parity with Protestants. Further, in line with Hollinger's (2006) work, the proportion of elite scientists who are Jewish is much greater than the proportion in the general population who claim a Jewish identity. Part of what may be responsible for these changes is an abandonment of the religious socialization of scientists.

Patterns in current religious affiliation, according to Table 1, mirror those for religious socialization. Fewer elite scientists in 2005 were raised Protestant and more were raised Catholic and nonaffiliated, compared to their 1969 counterparts. Unexpectedly, however, a significantly lower proportion of elite scientists were raised Jewish in 2005 when compared to 1969. And while 14 percent of 2005 elite university scientists were raised in a household with no religion, only 8 percent of those in the 2004 general population were raised in this type of household.

We further explored the changes in affiliation by looking at "religious attrition rates" among these elite scientists. Analyses illustrate the relative differences in religious groups losing elite scientists in their ranks. Generally the religious attrition rates among elite scientists appear to be increasing for all religious groups, except for Judaism. In 1969, 36 percent of those raised Jewish had switched to non-affiliated, but in 2005 only 21 percent of those raised Jewish switched to non-affiliated. This fits well with David Hollinger's (2006) work on Judaism in the academy. Hollinger argues that there is a higher proportion of Jews in the academy (when compared to the general population) because of the migration of Jewish intellectuals to the United States post-WWII. According to Hollinger, it is presently easier to be Jewish in the academy than it was in the post-WWII era, when the academy was populated primarily by Protestants (Hollinger 1996; Hollinger 2006).

While Jewish attrition rates were exceptionally low, Catholic attrition was notably higher than any other religious group. While only 10 percent of the 1969 sample of elite scientists were raised Catholic, over 47 percent of these switched to non-affiliated by the time of the survey. In 2005, fully 22 percent of elite scientists were raised Catholic, but 55 percent switched to non-affiliated. (In the 2004 general population only 12 percent of those raised Catholic switched to non-affiliated). The Catholic attrition rate among scientists did not change substantially between 1969 and 2005, but remains the highest of all religious groups. Of those scientists raised non-affiliated over 80 percent remained non-affiliated in both of the samples. Interestingly, of those in the 2004 general population who were raised non-affiliated only 57 percent remained non-affiliated, meaning that, when compared to scientists, a higher proportion in the general population currently convert from having no religion to some religion. Important as well, we see field differences with respect to religious attrition, the most striking changes being among natural scientists. In 1969 much less than half of those raised Protestant or Catholic switched to no tradition. By 2005, 52 percent of natural scientists who were raised Protestant and 58 percent of natural scientists raised Catholic had switched. Social scientists' attrition rates were either stable or dropped modestly between 1969 and 2005.

## Selective De-secularization and Elite Social Scientists

To summarize, religious affiliation rates among elite scientists were lower in 2005 than in 1969. While regular attendance has dropped between these two samples, a proportion still attends. Religious socialization rates have declined and attrition has generally increased (except for Jewish scientists), especially for Catholics. These changes suggest that individual-level secularization may be occurring but that it is uneven and complex. There has also been growth among non-Protestant religious groups, further complicating our understanding of religious dynamics among elite university scientists. Turning to differences between the fields, in 1969 a greater proportion of social scientists were nonaffiliated when compared to natural scientists but by 2005 a higher proportion of natural scientists were not affiliated with any tradition. In the 1969 sample, more than 90 percent of elite scientists were affiliated with some religious tradition at age 16. The proportional change in religious composition was also similar for both groups, but the rate and growth of religious attrition between 1969 and 2005 was higher for natural scientists. In short, by 2005 fewer natural scientists than social scientists were raised religiously and, of those natural scientists raised with a religious tradition, a higher proportion switched to no religion. These findings suggest that selection into and professional training of elite scientists may lead to their losing religious affiliation. Other studies should examine whether it is more knowledge about science that leads to a scientist losing her religion or if it is social pressure by colleagues to be irreligious.

Further, a greater proportion of 2005 scientists (14 percent) were raised in non-affiliated homes compared to about 8 percent of the general population (GSS 2004). And when we compare the two samples there is a greater proportion of scientists in 2005 (14 percent) drawn from non-affiliated households when compared to 1969 (7 percent). (A growth in non-affiliated households may be occurring in the broader U.S. population as well (Smith and Kim 2005). Elite scientists are increasingly drawn from nonaffiliated households as well as Catholic and Jewish households. They are drawn less often from Protestant households. These findings appear to shore up Greeley's mid-20$^{th}$ century assessment that Catholics would increasingly enter the academy (Greeley 1967, 1973). Our findings suggest, however, that while there is an increasing Catholic presence, there is also a large exodus among elite scientists raised Catholic, particularly among natural scientists. These results confirm and expand those of other scholars. Stephen Steinberg predicted that because of the Catholic and Jewish immigration in the decades after WWII the proportion of Catholic and Jewish faculty would steadily increase (Steinberg 1974). Our study – among elite academic scientists – shows that, at least for Catholics, Steinberg's predictions were correct.

## Demographic Changes and Religiosity

Having assessed the broad-based changes in religiosity between these two samples of elite natural and social scientists we turned to examine what underlying factors might be associated with religiosity or lack thereof for this population. In determining some of the potential causes for this change, we consider main characteristics that are associated with religiosity in the general population. Researchers have argued that older individuals are more likely to be religious than the younger because they more often consider the existence of an afterlife and existential or otherworldly questions.[11] With respect to age we see an overall decline in the proportion of younger scientists between these two samples of elite academic scientists. Nearly one third of the 1969 group was age 35 or younger, but by 2005 only 16 percent were in this age group. Similarly, 48 percent of the 1969 sample was between the ages of 36 to 50 years, while only 39 percent of the 2005 sample fell into this category. The largest gains then occur among the oldest of the elite scientists. If increasing age is associated with religiosity, we would expect that the larger presence of older faculty in the 2005 sample would encourage religiosity.

The presence of women, racial minorities and immigrants has also increased considerably from 1969 to 2005, a trend happening more broadly among faculty both inside and outside the sciences (Schuster and Finkelstein 2006). In 1969 only 5 percent of elite scientists were women, less than 3 percent were racial minorities, and 18 percent were non-US citizens. These groups grew considerably by 2005 (23 percent of elite scientists were women, 15 percent were racial minorities, and almost 27 percent were immigrants in the 2005 sample). Further, the proportion of non-white scientists increased dramatically. The percent of Asian natural scientists increased from 2 percent to 11 percent. This diversification was particularly pronounced in the social sciences. The proportion of social science faculty who classify as "other" increased from less than 1 percent to almost 10 percent. The percent female growth was greatest in the social sciences, from 6 percent in 1969 to 29 percent in 2005. Greater religiosity is generally associated with being female (Freese 2004), racial minority status, and immigration status (Gordon 1964; Min 1992). The increased presence of these characteristics among elite scientists in 2005 should have led to an increase in religiosity as well, but analyses show that this was not the case.

We also found significant changes in the proportion of married scientists and the proportion that have children. In 1969, 90 percent of elite scientists reported being married and another 74 percent reported having at least one child. These two figures were lower in 2005, where 82 percent of elite scientists were married and only 57 percent had at least

one child. Family status is a strong predictor of religiosity in the general population, where individuals often leave their religious communities as young adults and then return to them when they have children, evidence that religion and family are linked institutions (Edgell 2005; Stolzenberg et al. 1995). The lower proportion of individuals who have children in 2005 when compared to 1969 might be associated with lower religiosity among elite scientists in 2005. We see that the proportion of individuals with children declined quite dramatically in certain disciplines, like physics, for example. Although we can not make conclusive assertions with these data about why the proportion of those with children is dropping considerably, possible explanations may have to do with what scholars who study higher education argue is the growing difficulty of earning tenure, the increasing

Table 2: Demographics of Natural and Social Scientists

| | 1969 | 2005 | Natural Sciences | | | | | | Natural Sciences Overall | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Physics | | Chemistry | | Biology | | | |
| | | | 1969 | 2005 | 1969 | 2005 | 1969 | 2005 | 1969 | 2005 |
| **Age** | | | | | | | | | | |
| 35 and Younger | 32.0 | 15.7 | 34.7 | 10.6 | 35.8 | 15.7 | 20.5 | 9.3 | 26.7 | 11.5 |
| 36-50 | 47.7 | 38.6 | 50.3 | 38.8 | 40.6 | 38 | 56.6 | 46.2 | 52.2 | 41.5 |
| 51 and Older | 20.4 | 45.7 | 15.1 | 50.5 | 23.6 | 46.4 | 22.9 | 44.5 | 21.1 | 46.9 |
| **Number of Children** | | | | | | | | | | |
| At least 1 child | 74.4 | 57.4 | 80.4 | 57.7 | 70.7 | 55.7 | 78.0 | 65.8 | 77.3 | 60.3 |
| **Marital Status** | | | | | | | | | | |
| Married | 90.2 | 82.2 | 93.4 | 86.1 | 91.9 | 85.2 | 91.3 | 83.4 | 91.9 | 84.8 |
| **Race** | | | | | | | | | | |
| White | 97.7 | 85.0 | 95.7 | 85.6 | 98.5 | 85.9 | 97.4 | 83.9 | 97.2 | 85.0 |
| Asian | 1.6 | 8.1 | 3.8 | 11.4 | 1.1 | 9.0 | 1.7 | 12.9 | 2.1 | 11.3 |
| Other | .8 | 6.9 | .5 | 3.0 | .4 | 5.1 | .9 | 3.2 | .7 | 3.7 |
| **Citizenship Status** | | | | | | | | | | |
| Non-U.S. Citizen | 18.1 | 26.8 | 30.3 | 36.6 | 16.1 | 29.1 | 18.7 | 26.3 | 21.2 | 30.4 |
| **Gender** | | | | | | | | | | |
| Female | 5.4 | 23.1 | 1.0 | 7.4 | 3.7 | 12.4 | 6.4 | 26.6 | 4.5 | 16.4 |
| N | 2816 | 1325 | 392 | 188 | 271 | 166 | 885 | 236 | 1548 | 590 |

delay in child rearing until after tenure, and the increased average age of tenure at elite universities (Schuster and Finkelstein 2006). In particular, some of the sciences may now require larger amounts of lab time or fieldwork in order to remain competitive in their disciplines, requirements that may make it difficult to raise a family.

In an effort to see what factors were associated with religiosity for this population, we next conducted logistic regression modeling to find the significant effects of demographic characteristics and religious affiliation on regular religious attendance. We analyzed the merged samples to uncover any general characteristics among elite scientists, and repeated these analyses with each sample separately. We also repeated this process exclusively for natural and social scientists.[12] A central way that scholars

| | Social Sciences | | | | | | | | | | Social Sciences Overall | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sociology | | Economics | | Political Science | | Psychology | | | | | |
| | 1969 | 2005 | 1969 | 2005 | 1969 | 2005 | 1969 | 2005 | | | 1969 | 2005 |
| **Age** | | | | | | | | | | | | |
| 35 and Younger | 32.7 | 16.8 | 43.8 | 28.2 | 37.5 | 16.8 | 37.4 | 15.6 | | | 38.3 | 19.0 |
| 36-50 | 45.9 | 39.1 | 36.4 | 30.7 | 43.1 | 39.3 | 43.9 | 35.2 | | | 42.1 | 36.3 |
| 51 and Older | 21.4 | 44.2 | 19.8 | 41.1 | 19.4 | 43.9 | 18.7 | 49.2 | | | 19.6 | 44.6 |
| **Number of Children** | | | | | | | | | | | | |
| At least 1 child | 70.3 | 57.2 | 69.8 | 51.5 | 72.5 | 56.1 | 71.0 | 54.7 | | | 70.9 | 55.0 |
| **Marital Status** | | | | | | | | | | | | |
| Married | 87.2 | 79.9 | 89.5 | 83.7 | 86.9 | 81.6 | 87.9 | 75.3 | | | 88.0 | 80.1 |
| **Race** | | | | | | | | | | | | |
| White | 97.4 | 82.0 | 97.2 | 87.2 | 98.6 | 84.6 | 99.1 | 86.9 | | | 98.3 | 85.0 |
| Asian | .5 | 2.9 | 2.2 | 8.1 | .4 | 5.0 | .4 | 6.0 | | | .9 | 5.4 |
| Other | 2.1 | 15.1 | .6 | 4.7 | 1.1 | 10.4 | .4 | 7.1 | | | .9 | 9.6 |
| **Citizenship Status** | | | | | | | | | | | | |
| Non-U.S. Citizen | 14.8 | 18.2 | 21.8 | 45.0 | 13.4 | 18.4 | 9.7 | 15.8 | | | 14.4 | 23.7 |
| **Gender** | | | | | | | | | | | | |
| Female | 8.8 | 36.1 | 3.4 | 13.4 | 2.8 | 26.9 | 9.7 | 36.1 | | | 6.4 | 28.5 |
| N | 196 | 197 | 324 | 163 | 283 | 196 | 465 | 179 | | | 1268 | 735 |

Notes: Carnegie Commission of Higher Education Faculty Study 1969 and Religion Among Academic Scientists 2005. Significance tests between 1969 and 2005 samples and subsamples. All comparisons are significant at least at the .05 level unless otherwise indicated. Inter-sample differences by discipline were not tested due to low sample sizes.

**Table 3: Logistic Regression Predicting Regular Religious Attendance for Elite Scientists**

| | Both | | | | 1969 | | | | 2005 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B | S.E. | Exp(B) | Sig. | B | S.E. | Exp(B) | Sig. | B | S.E. | Exp(B) | Sig. |
| **Age** | | | | | | | | | | | | |
| (51+ reference group) | | | | | | | | | | | | |
| 35 and younger | .160 | .139 | 1.174 | | .417 | .168 | 1.517 | * | -.694 | .304 | .500 | * |
| 36 to 50 years | .401 | .124 | 1.493 | *** | .556 | .158 | 1.743 | *** | .224 | .204 | 1.251 | |
| **Race** | | | | | | | | | | | | |
| (White, reference group) | | | | | | | | | | | | |
| Other | -.083 | .296 | .921 | | -.276 | .584 | .759 | | .218 | .347 | 1.244 | |
| Asian | -.044 | .315 | .957 | | .108 | .463 | 1.114 | | -.094 | .449 | .911 | |
| **Female** | -.252 | .180 | .777 | | -.482 | .309 | .618 | | -.032 | .225 | .969 | |
| **Married** | .086 | .183 | 1.090 | | -.064 | .249 | .938 | | .400 | .290 | 1.491 | |
| **One or More Children** | .399 | .126 | 1.490 | ** | .275 | .165 | 1.317 | | .537 | .205 | 1.710 | ** |
| **Immigrant Status** | | | | | | | | | | | | |
| (U.S. born as reference group) | | | | | | | | | | | | |
| Non-Citizen | -.807 | .145 | .446 | *** | -.885 | .185 | .413 | *** | -.596 | .241 | .551 | * |
| **Religious Affiliation (current)** | | | | | | | | | | | | |
| (Non-affiliated reference group) | | | | | | | | | | | | |
| Protestant | 4.574 | .230 | 96.975 | *** | 4.645 | .281 | 104.029 | *** | 4.537 | .406 | 93.396 | *** |
| Catholic | 5.633 | .268 | 279.470 | *** | 6.224 | .365 | 504.509 | *** | 5.052 | .435 | 156.304 | *** |
| Jewish | 2.566 | .250 | 13.012 | *** | 2.441 | .310 | 11.490 | *** | 2.758 | .426 | 15.764 | *** |
| Other | 3.872 | .260 | 48.056 | *** | 4.081 | .317 | 59.204 | *** | 3.437 | .462 | 31.098 | *** |
| **2005 Sample** | | | | | | | | | | | | |
| (1969 reference group) | -.059 | .121 | .943 | | | | | | | | | |
| Constant | -4.871 | .290 | .008 | *** | -4.855 | .366 | .008 | *** | -5.080 | .479 | .006 | *** |
| Nagelkerke $R^2$ | .515 | | | | .532 | | | | .493 | | | |
| N | 3933 | | | | 2636 | | | | 1297 | | | |

Notes: Carnegie Commission of Higher Education Faculty Study 1969 and Religion Among Academic Scientists 2005.
Religious attendance = "less than once a month" is the reference category.

examine how serious an individual is about her faith is by looking at how outward her faith is, whether she is an active part of a religious community (Chavez 1989; Hadaway et al. 1993). An individual's social reality, argues Peter Berger, is produced by her interaction with social structures (Berger 1967; Berger and Luckman 1966).[13] Religion is always at risk, according to Berger, of becoming implausible in the midst of a social world that often appears ordinary, mundane and devoid of the supernatural in the day-to-day experience. Hence, Berger thinks that religion requires a way of upholding its unique symbols and doctrines, what he calls a plausibility structure or an actual alternative social community that is less likely to question than uphold the norms and doctrines of the religion.

When the two samples are merged and a dummy variable is included for sample we find that sample is not significant. That is, being part of the 1969 sample when compared to the 2005 sample does not make a scientist more or less likely to regularly attend religious services. We suspect this is because of a large increase in the proportion of those who attend sporadically when compared to only a modest decline in the proportion who attend regularly. (Table 1 shows a decline between the samples in the proportion who attend regularly, from 24 to 19 percent). When we compare the factors correlated with regular religious attendance between the 1969 and 2005 samples, we find that scientists are largely different from the general public in terms of what demographic factors influence the likelihood of regular religious attendance. For both the 1969 and 2005 samples of scientists, race, gender and marital status have no influence on religiosity. This is surprising given the strong association these factors have with religiosity in the general population (Miller and Hoffman 1995; Musick et al. 2000). It seems then that as some sociologists of science have argued (Latour 1987; Merton 1973) in certain contexts being a scientist forms a coherent identity that trumps other identities (Cetina 1999; Moore 1996).[14] Elite scientists who are women, for example, may be more like other elite scientists than they are like other women in the general population. There is one exception to the above. When the datasets are merged (controlling for sample), age still has an influence on religious attendance, with scientists who are 36 to 50 years of age more likely to attend religious services regularly when compared to those 51 and older. When we examine predictors of religious attendance within each sample specifically, we find that in 1969 elite scientists younger than 50 were more likely to attend religious services than those ages 51 and over. In the 2005 sample, the direction reverses, with elite scientists younger than 35 less likely to regularly attend services. The 2005 finding is comparable to what we find in the general population, where the younger are less likely to attend than the older. The incongruity with what we find in the general population is our results related to age for the 1969 sample.

Part of this may be the historical timing of the 1969 survey. The older scientists in the 1969 sample were coming of age as scientists during the Scopes Monkey Trial (1925), when there may have been a general backlash against religion among scientists, making them less likely to align with institutional religion (Gieryn et al. 1985).

Scholars have often associated family and religion, seeing the two as linked institutions (Edgell 2005; Heimdal and Houseknecht 2003). We see on Table 3 that while both samples of scientists seem different from the general public in terms of the influence that race and gender have on religious attendance, these samples appear similar to one another and to the general public in terms of the influence that having children has on religious attendance. Controlling for sample, having at least one child increased the likelihood of regular religious attendance. Yet when we view samples independently, the influence of having children on religious attendance is significant only for the 2005 sample. One possibility is that, while in 1969 there were voluntary non-religious civic institutions that helped with raising children, such as neighborhood clubs, that we have presently witnessed a decline in civic associations (Putnam 2000). In comparison to other civic associations, religious organizations remain strong. If the direction of causality is such that having children increases the likelihood of attendance, it may be that scientists find religious organizations to be the most effective organizations available for the moral training of their children.

Scholars have recently become concerned again with the connection that religion and immigration have to one another, with researchers arguing that religious communities may play a more important role in a new nation than they did in the nation of origin, in terms of retaining ethnic customs and helping immigrants adapt to the new nation (Cadge and Ecklund 2006; Ebaugh and Chafetz 1999). Surprisingly, we find that in the full model and for both samples independently immigrant status actually decreases the likelihood of regular religious attendance. Either being a scientist makes immigrants less religious or non-religious immigrants consistently self-select into the academic science fields. It is also possible that earlier work on the relationship between religion and immigration did not disaggregate immigrants according to class status. This analysis suggests overall that immigrants who are elite scientists may not need religious organizations for retention of ethnic customs and a sense of community in the same ways that other groups of immigrants do or that retention of ethnic identity is less important to elite scientists.

Unsurprisingly, Table 3 also shows that – for all religious identities – having a religious affiliation consistently increases the likelihood that a scientist will attend worship services.[15]

This positive association between religious affiliation and attendance occurs in every model. We do find, however, that in both samples of scientists

being Catholic had a larger influence on religious attendance than did being Protestant, Jewish or of another religion. For elite scientists, simply having a religious affiliation plays a very strong role in predicting religious behavior, but being Catholic has the most pronounced influence of all.[16]

Scholars who examined the role of religion in academic scientists' lives during the mid-20th century made a great deal of the differences in religiosity between natural and social scientists, generating several theories to explain why social scientists were less religious than natural scientists (Lehman and Shriver 1968; Stark and Finke 2000; Wuthnow 1985). Letting such work guide our analysis, we moved to an inter-field comparison, examining how natural and social scientists across these samples differed in the factors associated with their religiosity. (Results are not shown but are available from authors upon request). Among elite natural scientists, the same characteristics that were significant in the full and sample models remained so. Religious affiliation played the strongest role by far in predicting regular religious attendance, while having at least one child and being middle-aged also increased the likelihood of religious attendance. Immigrant status again significantly reduced the likelihood of attendance. When we split the respondents by sample, we found that age and immigrant status were significant in the 1969 sample only, while having at least one child was significant only in the 2005 sample. We repeated these analyses for social scientists. When controlling for sample only, immigrant status and religious affiliation had an impact on regular religious attendance, with immigrants less likely to regularly attend and religious affiliation having a strong and positive impact on attendance. Disaggregating the scientists by sample we found that, for both groups, religious affiliation was consistently significant in predicting regular attendance while immigrant status significantly decreased the likelihood of attendance. Across all models, religious affiliation robustly predicted attendance while younger age was a significant positive predictor of attendance mainly for the 1969 sample of natural scientists and having children was important largely for the 2005 sample of natural scientists. Contrary to our expectations immigrant status lowered the likelihood of attendance.

## Forces of Secularization?

Our initial research question asked whether the academic sciences are secularizing. On one hand, when measuring affiliation, attendance and attrition, we show an increase in the proportion of those who are not affiliated with any religion as well as a decline in regular religious attendance, potentially indicative of what secularization theorists have called declining religious authority (Chaves 1994). With the exception of

Judaism, we also found an increase in the proportion of scientists who left the religion in which they were raised, switching to non-affiliated. In addition, disaffiliating during the course of a scientist's lifetime is even more evident than the changes we see across samples. When considering all religious traditions, social scientists in 1969 led the way toward disaffiliation from the religious tradition in which they were raised, but natural scientists in 2005 have caught up and in most traditions surpassed their social science peers. This is particularly the case for the 2005 sample of natural scientists who were raised Catholic, where 58 percent are now non-affiliated. Part of this attrition may be because of the historic and present perception (though not actuality necessarily) of the Catholic Church as anti-science (Bendyna et al. 2001; Brooke 1991).

On the other hand, looking at only these initial findings that point to increasing micro-level secularity among elite scientists, does not tell the whole story of how scientists are changing religiously. While regular religious attendance has decreased overall, the proportion of natural and social scientists who attend sporadically has increased dramatically in some of the natural and social science disciplines. Scholars who study secularization have generally not considered the meaning of sporadic religious attendance (potentially seeing such attendance levels as further evidence of declining religious participation) (Chaves 1989; Hout and Greeley 1987). This attendance category may be particularly important when examining religion among elite university scientists, however, and deserves further attention. One possibility is that sporadic attendance – when compared to no attendance – is a sign of openness to religion. The increase in sporadic attendance when comparing the two samples may point the way towards growing tolerance of religious institutions among elite university scientists.

We also see important inter-field differences. While the proportion of religiously affiliated faculty in the natural sciences has decreased significantly, the proportion of religious social science faculty has modestly increased or remained the same in most disciplines, meaning that the social and natural science fields are more religiously similar now than in the past and that some social science disciplines have actually increased over time in the proportion of religious adherents. Earlier generations of scholars argued that natural and social scientists were religiously different – with social scientists less religious than natural scientists – because they were so socially different and because the nature of the work they did was also very different, social scientists more concerned with the lives of people and more influenced by the opinions of the general public and natural scientists more concerned with the physical world (Thalheimer 1973; Wuthnow 1985). Based on our findings, however, it appears that the social and natural sciences as fields are now more religiously similar than they are different.

Another major finding concerns the kinds of demographic factors that influence religiosity among scientists. Gender and race do not have an effect on religiosity among academic scientists for either the 1969 or the 2005 sample of scientists. Although it is difficult to argue a theoretical point based on a non-finding, the lack of association of demographic factors with religiosity among scientists provides some evidence for the salience of science as a master identity (Ecklund 2006) for its practitioners. Earlier sociologists of science argued that being a scientist – especially in an elite environment – provides a pervasive worldview (Merton 1973; Zuckerman 1997) that directs one's life and ways of acting both inside and outside of the laboratory. Contrary to the idea that science is primarily based on the quest for truth resulting from individual inquiry, sociologists of science argue that scientists are often concerned with institutional homophily, being like others within their respective scientific fields, and that these institutional-homophilic associations vary according to different kinds of societal and scientific concerns (Cetina 1999; Fleck [1935] 1979; Gieryn 1999). Based on our finding that the demographic factors of race and gender never appear associated with religiosity for elite academic scientists, we suspect that – with relationship to these particular identities – being a scientist forms a sort of master identity over the identities of gender and race. That is, a non-white scientist or a woman scientist may understand themselves as having more in common with other scientists than with other non-whites or women in the general population, who tend to be more religious. Although sociologists of religion have often studied the relationship of religion to identity formation (Ajrouch 2004; Ammerman 2003; Cadge and Davidman 2006), they have rarely examined how identities form hierarchies in different institutional spheres. Further research based on these findings might examine whether there is something unique about the connection of demographic identities to religion among scientists or if such findings have more to do with the identification that professionals in general have with their work (Abbott 1988). For example, physicians or lawyers might also have a hierarchy of identities such that being a physician has a master identity status that influences religiosity more than being a women or being non-white.

### Institutionalized Factors among a Non-Institutionalized Field

Previous researchers argued that scientists would be less likely to be part of organized religion because the institutionalized aspects of religion (i.e., that practitioners follow a codified way of doing things even in the face of individual dissent) would prevent the individual inquiry and questioning necessary to generate original scholarship (Greeley 1973; Lenski 1961; Leuba 1916). This kind of thinking was behind the assessment that top

scientists would be less religious than non-elites, because elites know the most about science and because the most elite scientists are the ones doing the cutting-edge work that often requires acting against conventional ideas (Leuba 1934). This reasoning was also used to argue that Catholics, in particular, would be less likely to pursue higher education and to go into science because of their propensity to follow religious hierarchy in an unquestioned way. If further research finds that being a scientist is a master identity status over race or gender, our results then lend support to the idea that being Catholic may mitigate that identity hierarchy.

Further, in the 2005 sample having children is positively correlated with regular religious attendance, although our data are not equipped to show whether this is because having children makes a scientist more likely to attend or whether those who attend are more likely to have children. During the mid-60s when religious attendance was higher in general in the United States (Putnam 2000; Wuthnow 1988), it would not have been as surprising that having children was positively associated with religious attendance. It is more surprising that in the 2005 sample of scientists having children and regular religious attendance were positively associated. It appears that the institutions of family and religion remain linked, even for elite scientists. If the direction of causality is such that having children increases the likelihood of attendance, it is possible that although science may be a master identity over some other demographic identities, that it is not – for a proportion of scientists – a master identity over the family sphere. Scientists may find within religious communities what they see as moral upbringing for their children and/or a community of individuals to help with child care in the midst of the rigorous demands necessary to successfully balance family with having a science career. Another possibility is that more secular scientists are simply less likely to have children.

Future research based on the finding about the connection between family and religion for scientists might use interview-based data collection techniques and follow scientists over time to uncover how – even those who are not religious in some ways, such as lack of belief in God – may use religion in their lives in other ways, such as for the moral education of their children. The results we present on religion and family among scientists could be only the tip of the iceberg of a sociology of religion research agenda that would complicate understandings of secularization by unpacking how secularization or religious salience occurs within the same groups of actors in different spheres of their lives (the laboratory when compared to the family, for example), as well as how secularization and religious salience factors bundle together for different groups of actors (attendance when compared to religious affiliation or belief among scientists, for example).

Another finding related to the relevance of institutionalized religion for this population is the increase in proportion of Catholics in some disciplines. As we discussed above, earlier research expected that Catholicism would be the religion *most* likely to prevent education and commitment to a scientific worldview because of its highly institutionalized aspects (Lenski 1961). Yet, we find when comparing these two samples of scientists that Catholicism is the only religion where there has been at least a modest increase between the two samples, in fields, and in most disciplines. Among social scientists – and particularly some social science disciplines – we see a more pronounced increase. In both the 1969 and 2005 samples, having a Catholic affiliation greatly increased the likelihood of attendance, with Catholics in both samples much more likely to attend services when compared to the non-affiliated and than other religious traditions are compared to the non-affiliated. Researchers have stressed the important role of Protestantism in the academy, particularly evangelicalism (Lindsay 2007; Schmalzbauer 2002). This may indeed still be the case. But, even as Protestantism is stressed in the literature, these results point towards the importance of scholars turning their attention to the presence of Catholicism among university scientists. Although Catholics are increasing, these data show that they are still a religious minority in most of the science disciplines and may still face some forms of discrimination (Alba 2006), another possible explanation for why Catholics "defect" at such high rates and potentially why regularly gathering with a community of other Catholics may be more important for them when compared to members of the other religious traditions.

Because elite scientists are important representatives and leaders of the institutions they inhabit, namely their universities, their fields and their disciplines, what happens to their religiosity is potentially a harbinger of changes to the broader institutions of the academy. As such, this research has uncovered potential causal mechanisms for institutional change, which should be analyzed at the macro-levels of universities and disciplines. Changing types of actors in these fields are potentially bringing religious shifts. For example, the discipline of physics decreased in the proportion of faculty with children from 80 percent in 1969 to 58 percent in 2005, more than a 20 percent decrease. We found that having children is associated with religiosity. For this reason, then, institutional-level analysis should study the differences between elite universities in terms of the ways in which they might be inhospitable to those with children and/or the ways in which individual disciplines – because of the increase in publishing and grant-making demands over time – may make it difficult to have children and how such changes are related to religiosity. Part of the decrease in religiosity in the natural sciences is likely due to underlying compositional changes in family demography within the academy, which should be examined further in future research.

The RAAS survey was fielded in 2005 at the same time that there were significant court cases about teaching Intelligent Design alongside evolution in public schools (Behe 2005), events that elicited an outspoken response from some in the scientific community (Editors 2005). These results about changes in the religious identities and practices among elite academic natural and social scientists have implications for resulting public debate about the connection between religion and science. The increase in proportion of sporadic religious attendance shows that there may be growing tolerance for religious institutions in some corners of the academy. And while the public has recently looked to the Protestant traditions for outspoken religious scientists (Collins 2006; Polkinghorne 1998), we might ask what implications the increasing proportion of Catholic scientists at top universities may have for dialogue with an American public that is still more influenced by Protestantism than Catholicism (Balmer and Winner 2002).

Further, there is an increase in the percent of scientists who were raised in no religious tradition. We appear to have an academy with seemingly a larger group than ever before of elite scientists who enter their classrooms with little significant personal exposure to religion. That their only experience with religion may be that which appears on the front page of the *New York Times* has potential implications for the ability of scientists to be in dialogue about the connections between religion and science with the students in their classrooms and with their religious colleagues.

This research could serve as the beginning of a new agenda in the sociology of religion that will take seriously the place of religion in the lives of elites and their link to secularization. It will also take seriously how religiosity and the factors associated with religiosity might differ between institutional spheres and their leaders. Such an agenda is part of moving the sociology of religion forward in contributing to further knowledge about how elite institutions differ from other institutions and consequently how societies change. And such studies are a key part of uncovering the underlying processes of secularization. Here we have shown that the religious identities of scientists cannot be explained by a simple sound bite definition of secularization. By finding that there is religious complexity among scientists, a group that earlier theorists expected to display a thoroughgoing secularization, we have shown that even secularization theory is in continual need of revision.

## Notes

1. Stark's (2003) later work argued that Christianity – particularly monotheism – was part of the rise of modern science.

2. Larson and Witham (1998) defined "elite" by membership in the National Academy of Sciences. The National Academy now includes scientists both

inside and outside the academy making Larson and Witham's population substantially different than that examined in the present analysis.

3. We follow Chaves' (1989;1994) understanding of secularization, which specifies the concept according to level of analysis: societal, organizational and individual. Our analyses primarily refer to individual secularization among elite academic scientists. We also argue, however, that elite academic scientists are leading figures in academia and as such represent the direction and character of the institution of higher education as well as their specific fields and disciplines.

4. Although faculty were randomly selected, oversampling occurred in the smaller fields and undersampling in the larger fields. For example, a little more than 62 percent of all sociologists in the sampling frame were selected, while only 29 percent of physicists and biologists were selected. When reviewing the interpretation of the weighted data, we found that the Carnegie study weights create representativeness for faculty as a whole, while the 2005 RAAS study weights according to representativeness by discipline. As such we did not use the survey weights when drawing our comparisons.

5. Although the response rate is high, at 75 percent, for the 2005 Religion among Academic Scientists study, if there is a significant non-response bias in either or both of the surveys this could influence the results. If the non-response bias was systematic along the lines of less religious respondents being less likely to respond, then our findings about the proportion of scientists who are religious could be over-estimating the religiosity of scientists.

6. The Carnegie data set used the Gourman Report to indicate quality of universities. Since this study was specifically interested in faculty at elite universities the sample was restricted to faculty members at universities termed "high quality," using factors such as faculty publication records. Although the publicly available report about the data includes the names of these universities, the publically available data set does not indicate which particular institution faculty members are associated with, limiting the possibility of matching specific institutions from the 1969 Carnegie data set with the 2005 RAAS data set. All the 21 universities included in the 2005 survey, with the exception of two, are also included on the list of 43 institutions that the Carnegie study defines as high quality research universities. We recognize that this is a weakness of the comparison between the two data sets, but the unparalleled ability to compare elite institutions across these time periods far outweighs the limitations of our data.

7. Respondents to the RAAS survey had the option of choosing more categories than did those who responded to the Carnegie survey. For example, the Carnegie survey allowed for "Protestant, Catholic, Jewish, other, or none" whereas the RAAS study allowed respondents the option of – after choosing Protestant – to choose from among a broader list of Protestant categories. A similar format was followed with the "Other Religions" category. For the sake of comparability in these analyses, the expanded choices were collapsed into "Protestant" and "Other Religion" categories.

8. The 1969 dataset lowest religious attendance category is "once a year or less" while the 2005 dataset equivalent is "no attendance in the past year."

9. Using age as a continuous variable was not possible because the Carnegie study gave respondents four-year increments as response categories to report their date of birth.

10. Other research has reported an overall decline in religious affiliation among university faculty more broadly, but uses data comparing 1969 and 1984 samples of the Carnegie Study, at least a 20-year difference from our analysis (Schuster and Finkelstein 2006).

11. In the 2004 GSS, 49 percent of respondents 65 or older said they had a "strong religious preference" compared to only 29 percent of 18-30 years olds, 39 percent of 31-44 year olds, and 41 percent of 45-64 year olds.

12. We also ran analyses using both ordinal and multinomial logistic regression techniques employing the three-level religious attendance measure, but encountered a variety of problems with the overall modeling for both of these methods. In ordinal regression, the test of parallel lines assumption was violated and in both OLR and MLR the Chi-square goodness-of-fit tests were significant, thus indicating a poor model fit. In addition, analyses reported more than 40 percent of associations between the dependent and independent variables were empty cells.

13. In both of these seminal works Berger (1967), and Berger and Luckmann (1966), discuss the importance of the individual interacting in community with social structures – religious communities are a form of social structure – as a way of figuring out his or her conception of reality.

14. More recent sociologists of science have argued that scientists' identities are much less coherent, that scientists act in and outside their laboratories on a range of different interests and values (Cetina 1999; Moore 1996).

15. Correlation matrices indicate that regular religious attendance was most strongly associated with Protestant affiliation (.425 for both samples, .440 for 1969, .370 for 2005) and no religious affiliation (-.487 in 1969, -.494 for 1969, -.465 for 2005).

16. In subsequent analyses, we also regressed religious socialization on regular religious attendance and found very similar results (that being raised with any religious affiliation increased the likelihood of current religious attendance). Figures available upon request.

## References

Abbott, Andrew. 1988. *The System of Professions*. University of Chicago Press.

Ajrouch, Kristine J. 2004. "Gender, Race, and Symbolic Boundaries: Contested Spaces of Identity Among Arabic American Adolescents." *Sociological Perspective* 47(4):371-91.

Alba, Richard. 2006. "Diversity's Blind Spot: Catholic Ethnics on the Faculties of Elite American Universities." *Ethnicities* 6(4):518-54.

Ammerman, Nancy Tatom. 2003. "Religious Identities and Religious Institutions." Pp. 207-24. *Handbook of the Sociology of Religion*. Michele Dillon, editor. Cambridge University Press.

Bahr, Howard M. 1970. "Aging and Religious Disaffiliation." *Social Forces* 49(1):59-71.

Balmer, Randall, and Lauren Winner. 2002. *Protestantism in America*. Columbia University Press.

Bao, Wan Ning, Les B. Whitebeck, Danny R. Hoyt and Rand D. Conger. 1999. "Perceived Parental Acceptance as a Moderator of Religious Transmission among Adolescent Boys and Girls." *Journal of Marriage and the Family* 61(May):362-74.

Behe, Michael J. 2005. "Design for Living." *The New York Times*, Feb. 7, 2005, A21.

Bendyna, Mary E., John C. Green, Mark, J. Rozell and Clyde Wilcox. 2001. "Uneasy Alliance: Conservative Catholics and the Christian Right." *Sociology of Religion* 62(1):51-61.

Berger, Peter L. 1967. *The Sacred Canopy: Elements of a Sociological Theory of Religion*. Doubleday.

Berger, Peter L., and Thomas Luckmann. 1966. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. Anchor Books.

Brooke, John Hedley. 1991. *Science and Religion: Some Historical Perspectives*. Cambridge University Press.

Bruce, Steve. 2002. *God is Dead: Secularization in the West*. Blackwell Publishing.

Cadge, Wendy, and Lynn Davidman. 2006. "Ascription, Choice, and the Construction of Religious Identities in the Contemporary United States." *Journal for the Scientific Study of Religion* 45(1):23-38.

Cadge, Wendy, and Elaine Howard Ecklund. 2006. "Religious Service Attendance among Immigrants: Evidence from the New Immigrant Survey-Pilot." *American Behavioral Scientist* 49(11):1-22.

Cetina, Karin Knorr. 1999. *Epistemic Cultures: How the Sciences Make Knowledge*. Harvard University Press.

Chadwick, Owen. 1990. *The Secularization of the European Mind in the Nineteenth Century*. Cambridge University Press.

Chaves, Mark, 1989. "Secularization and Religious Revival: Evidence from U.S. Church Attendance Rates, 1972-1986." *Journal for the Scientific Study of Religion* 28(4):464-77.

_____. 1994. "Secularization as Declining Religious Authority." *Social Forces* 72(3):749-74.

Collins, Francis. 2006. *The Language of God: A Scientist Presents Evidence for Belief*. Free Press.

Collins, Randall. 1998. *The Sociology of Philosophies: A Global Theory of Intellectual Change*. Belknap Press of Harvard University Press.

de Vaus, David. 1984. "Workforce Participation and Sex Differences in Church Attendance." *Review of Religious Research* 25(3):247-56.

Dye, Thomas. 2001. *Who's Running America? 7th Edition*. Prentice Hall.

Ebaugh, Helen Rose, and Janet Saltzman Chafetz. 1999. "Agents for Cultural Reproduction and Structural Change: The Ironic Role of Women in Immigrant Religious Institutions." *Social Forces* 78(2):585-613.

_____. 2000. *Religion and the New Immigrants: Continuities and Adaptations in Immigrant Congregations*. Alta Mira Press.

Ecklund, Elaine Howard.2006. *Korean American Evangelicals: New Models for Civic Life*. Oxford University Press.

Ecklund, Elaine Howard. 2008. "Religion and Spirituality among Scientists." *Contexts: Understanding People in Their Social Worlds* 7(1):12-15.

Ecklund, Elaine Howard, and Christopher Scheitle. 2007 "Religion among Academic Scientists: Distinctions, Disciplines, and Demographics" *Social Problems* 54 (2):289-307.

Edgell, Penny. 2005. *Religion and Family in a Changing Society*. Princeton University Press.

Editors, The. 2005. "Okay, We Give Up – We Feel So Ashamed." *Scientific American* 292(4):10.

Fleck, Ludwig. [1935] 1979. *Genesis and Development of a Scientific Fact*. Thaddeus J. Trenn and Robert K. Merton, editors. University of Chicago Press.

Fogg, Piper. 2005. "Harvard's President Wonders Aloud about Women in Science and Math." *The Chronicle of Higher Education* 51(21):A12

Fox, Mary Frank. 1995. "Women and Scientific Careers." Pp. 205-24. *Handbook for Science and Technology Studies*. Sheila Jasanoff, Gerald E. Markle, James C. Petersen and Trevor Pinch, editors. Sage Publications.

Freese, Jeremy. 2004. "Risk Preferences and Gender Differences in Religiousness: Evidence from the World Values Survey." *Review of Religious Research* 46(1):88-91.

Gieryn, Thomas F. 1983. "Boundary-Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists." *American Sociological Review* 48(6):781-95.

_____.1999. *Cultural Boundaries of Science: Credibility on the Line*. University of Chicago Press.

Gieryn, Thomas F., George M. Bevins and Stephen C. Zehr. 1985. "Professionalization of American Scientists. Public Science in the Creation/Evolution Trials." *American Sociological Review* 50(3):392-409.

Gordon, Milton. 1964. *Assimilation in American Life: The Role of Race, Religion, and National Origins*. Oxford University Press.

Greeley, Andrew M. 1967. "Religion and Academic Career Plans: A Note on Progress." *American Journal of Sociology* 72(2):668-72.

_____. 1973. "'The Religious Factor' and Academic Careers: Another Communication." *American Journal of Sociology* 78(5):1247-55.

Gross, Neil, and Solon Simmons. 2007. "How Religious Are America's College and University Professors?" *Social Science Research Council Web Forum*, Feb. 6, 2007, Accessed March 2, 2008 at: http://religion.ssrc.org/reforum/Gross_Simmons.pdf.

Hadaway, C. Kirk, Penny Long Marler and Mark Chaves. 1993. "What the Polls Don't Show: A Closer Look at U.S. Church Attendance." *American Sociological Review* 58(December):741-52.

Haddad, Yvonne Yazbeck, Jane I. Smith and John L. Esposito, editors. 2003. *Religion and Immigration: Christian, Jewish, and Muslim Experiences in the United States.* Alta Mira Press.

Heelas, Paul. 2006. "Challenging Secularization Theory: The Growth of 'New Age' Spiritualities of Life." *Hedgehog Review* 8(1-2):46-58.

Heimdal, Kristen R., and Sharon K. Houseknecht. 2003. "Does a Strong Institution of Religion Require a Strong Family Institution?" *Comparative Sociology* 2(4):631-66.

Hollinger, David. 1996. *Science, Jews and Secular Culture: Studies in Mid-Twentieth Century American Intellectual History*. Princeton University Press.

_____. 2006. *Cosmopolitanism and Solidarity: Studies in Ethnoracial, Religious, and Professional Affiliation in the United States.* University of Wisconsin Press.

Hout, Michael, and Andrew M. Greeley. 1987. "The Center Doesn't Hold: Church Attendance in the United States, 1940-1984." *American Sociological Review* 52(3):325-45.

Kroe, Elaine 1989. *National Higher Education Statistics: Fall, 1989*. Pp. 11-13. Washington, DC: U.S Department of Education.

Ladd, Everett Carll, Jr., and Seymour Martin Lipset. 1972. "The Politics of Academic Natural Scientists and Engineers." *Science* 176(4039):1091-1100.

Lambert, Yves. 1999. "Religion in Modernity as a New Axial Age: Secularization or New Religious Forms?" *Sociology of Religion* 60(3):303-34.

Larson, Edward J., and Larry Witham. 1998. "Leading Scientists Still Reject God." *Nature* 394(6691):313.

Latour, Bruno. 1987. *Science in Action: How to Follow Scientists and Engineers through Society.* Harvard University Press.

Lehman, Edward C., Jr. 1972. "The Scholarly Perspective and Religious Commitment." *Sociological Analysis* 33(4):199-213.

Lehman, Edward C., and Donald W. Shriver. 1968. "Academic Discipline as Predictive of Faculty Religiosity." *Social Forces* 47(2):171-82.

Lenski, Gerhard. 1961. *The Religious Factor: A Sociological Study of Religion's Impact on Politics, Economics, and Family Life.* Doubleday.

Leuba, James Henry. 1916. *The Belief in God and Immortality: A Psychological, Anthropological, and Statistical Study.* Sherman, French & Company.

_____. 1934. "Religious Beliefs of American Scientists." *Harper's Magazine* 169(August):291-300.

Lindsay, D. Michael. 2006. "Elite Power: Social Networks Within American Evangelicalism." *Sociology of Religion* 67(3):207-27.

_____. 2007. *Faith in the Halls of Power: How Evangelicals Joined the American Elite*. Oxford University Press.

Marler, Penny Long. 1995. "Lost in the Fifties: The Changing Family and the Nostalgic Church." Pp. 23-6. *Work, Family, and Religion in Contemporary Society*. Nancy Tatom Ammerman and Wade Clark Roof, editors. Routledge.

Merton, Robert K. 1973. *The Sociology of Science: Theoretical and Empirical Investigations.* University of Chicago Press.

Miller, Alan S., and Rodney Stark.2002. "Gender and Religiousness: Can Socialization Explanations Be Saved?" *American Journal of Sociology* 107(6):1399-1423.

Miller, Alan S., and John P. Hoffman. 1995. "Risk and Religion: An Explanation on Gender Differences in Religiosity." *Journal for the Scientific Study of Religion* 34(1):63-75.

Min, Pyong Gap. 1992. "The Structure of Social Functions of Korean Immigrant Churches in the United States." *International Migration Review* 26(4):1370-94.

Moore, Kelly. 1996. "Organizing Integrity: American Science and the Creation of Public Interest Organizations, 1955-1975." *American Journal of Sociology* 101(6):1592-1627.

Musick, Marc, John Wilson and William B. Bynum Jr. 2000. "Race and Formal Volunteering: The Differential Effects of Class and Religion." *Social Forces* 78(4):1539-70.

Myers, Scott M. 1996. "An Interactive Model of Religiosity Inheritance: The Importance of Family Context." *American Sociological Review* 61(5):858-66.

Ozorak, Elizabeth Weiss. 1996. "The Power, But Not the Glory: How Women Empower Themselves Through Religion." *Journal for the Scientific Study of Religion* 35(1):17-29.

Polkinghorne, John. 1998. *Belief in God in an Age of Science*. Yale University Press.

Putnam, Robert. 2000. *Bowling Alone: The Collapse and Revival of American Community*. Simon & Schuster.

Rado, Leslie. 1987. "Cultural Elites and the Institutionalization of Ideas." *Sociological Forum* 2(1):42-66.

Roe, Anne. 1952. *The Making of a Scientist*. Dodd, Mead.

Schmalzbauer, John. 2002. *People of Faith: Religious Conviction in American Journalism and Higher Education.* Cornell University Press.

Schultz, Steven. 2005. "Tilghman, Faculty Call for Efforts to Support Women in Science." *Princeton Weekly Bulletin*, 94(16):1.

Schuster, Jack H., and Marin J. Finkelstein. 2006. *The American Faculty: The Restructuring of Academic Work and Careers.* Johns Hopkins University Press.

Smith, Christian, editor. 2003a. *The Secular Revolution: Power, Interests, and Conflicts in the Secularization of American Public Life.* University of California Press.

_____. 2003b. "Secularizing American Higher Education." Pp. 97-159. *The Secular Revolution: Power, Interest, and Conflict in the Secularization of American Public Life*. Christian Smith. University of California Press.

Smith, Timothy. 1978. "Religion and Ethnicity in America." *American Historical Review* 83(5):1155-85.

Smith, Tom W., and Seokho Kim. 2005. "The Vanishing Protestant Majority." *Journal for the Scientific Study of Religion* 44(2):211-23.

Stark, Rodney. 1963. "On the Incompatibility of Religion and Science." *Journal for the Scientific Study of Religion* 3(1):3-20.

_____. 2003. *For the Glory of God: How Monotheism Led to Reformations, Science, Witch-Hunts, and the End of Slavery*. Princeton University Press.

Stark, Rodney, and Roger Finke. 2000. *Acts of Faith: Explaining the Human Side of Religion*. University of California Press.

Steinberg, Stephen. 1974. *The Academic Melting Pot: Catholics and Jews in American Higher Education*. McGraw Hill.

Stolzenberg, Ross M., Mary Blair-Loy and Linda J. Waite. 1995. "Religious Participation Over the Early Life Course: Age and Family Cycle Effects on Church Membership." *American Sociological Review* 60(1):84-103.

Thalheimer, Fred. 1973. "Religiosity and Secularization in the Academic Profession." *Sociology of Education* 46(Spring):183-202.

Warner, R. Stephen. 1993. "Work in Progress Toward a New Paradigm for the Sociological Study of Religion in the United States." *American Journal of Sociology* 98(5):1044-94.

_____.2005. "The De-Europeanization of American Christianity," Pp. 233-55. *A Nation of Religions: The Politics of Pluralism in Multireligious America*. Stephen Prothero, editor. University of North Carolina Press.

Wuthnow, Robert. 1985. "Science and the Sacred." Pp 187-203. *The Sacred in a Secular Age*. Phillip E. Hammond. University of California Press.

_____. 1988. *The Restructuring of American Religion*. Princeton University Press.

_____. 1999. *Growing Up Religious: Christians and Jews and Their Journeys of Faith*. Beacon Press.

_____. 2007. *After the Baby Boomers: How Twenty- and Thirty-Somethings are Shaping the Future of American Religion.* Princeton University Press.

## Appendix A. List of Surveyed Universities

| 1969 Sampling Universe (High Quality Universities) | 2005 RAAS University Sample (Elite Universities) |
|---|---|
| Columbia University | Columbia University |
| Cornell University | Cornell University |
| Duke University | Duke University |
| Harvard University | Harvard University |
| Johns Hopkins University | Johns Hopkins University |
| Massachusetts Institute of Technology | Massachusetts Institute of Technology |
| Princeton University | Princeton University |
| Stanford University | Stanford University |
| University of Pennsylvania | University of Pennsylvania |
| University of California at Berkeley | University of California at Berkeley |
| University of California, Los Angeles | University of California, Los Angeles |
| University of Chicago | University of Chicago |
| University of Illinois, Urbana Champaign | University of Illinois, Urbana Champaign |
| University of Michigan, Ann Arbor | University of Michigan, Ann Arbor |
| University of Minnesota, Twin Cities | University of Minnesota, Twin Cities |
| University of North Carolina, Chapel Hill | University of North Carolina, Chapel Hill |
| University of Washington, Seattle | University of Washington, Seattle |
| University of Wisconsin, Madison | University of Wisconsin, Madison |
| Yale University | University of Southern California* |
| Brandeis University | Washington University* |
| Carnegie-Mellon University | Yale University |
| Clemson University, all campuses | |
| Clemson University, Greenville Branch | |
| Clemson University, Sumter Branch | |
| Columbia University TCHRS College | |
| Cornell University Medical College | |
| Cornell University Nursing | |
| John Hopkins University, INST. STU | |
| Northwestern University | |
| Rice University | |
| Tulane University of Louisiana | |
| University of Illinois Medical Center, Chicago | |
| University of Wisconsin all Campuses | |
| University of Wisconsin, two-year campus | |
| University of Wisconsin, U. EXTEN | |
| University of Wisconsin, Green Bay | |
| University of Wisconsin, Parkside | |
| University of Norte Dame | |
| University of Rochester | |
| V ILL, all campuses | |
| Vanderbilt University | |
| Yeshiva University | |

Notes: We have information only on the sampling strategy for the "High Quality Universities" part of the Carnegie Survey. For information consult the Ladd and Lipset Technical Report available at ICPSR (Study #7501), entitled, "Carnegie Commission National Survey of Higher Education: Technical Report." Of the schools included in the 2005 RAAS study, only two – Washington University and University of Southern California – were not included in the 1969 Carnegie sampling frame.