

2017

A Catholic Science? Italian Scientists Construct Religious Identity during Religious Shifts

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Recommended Citation

Ecklund, E. H., Di, D. (2017). A Catholic Science? Italian Scientists Construct Religious Identity during Religious Shifts. *Philosophy, Theology and the Sciences (PTSc)*, 4(1), 94–114. <https://doi.org/10.1628/219597717X14884498299169>

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Philosophy, Theology and the Sciences

Volume 4

No. 1

2017

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Mohr Siebeck

Philosophy, Theology and the Sciences

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Publisher: Mohr Siebeck GmbH & Co. KG, Postfach 2040, 72010 Tübingen.

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Typeset by Martin Fischer, Tübingen.

Printed by Gulde-Druck, Tübingen. Printed in Germany.

ISSN 2195-9773

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Elaine Howard Ecklund and Di Di

A Catholic Science?

Italian Scientists Construct Religious Identity during Religious Shifts

Scholars have argued that learning science is linked to a decrease in personal faith among scientists. We do not know much, however, about the so-called secularizing effect of science among scientists outside the US, where such religious processes could operate differently. Because the negotiation between science and religion is more salient when faith is in transition, we examine how scientists in Italy (a predominantly Catholic context) construct religious identity during religious shifts. Drawing from interviews with 81 Italian physicists and biologists, we ask whether scientists have experienced any religious shifts and how they went through these shifts, addressing personal secularization theories by analyzing whether and how scientists reconstruct their religious identities by utilizing science. We uncover four patterns of identity construction: constructing a non-religious identity, forming a spiritual identity, reformulating an existing Catholic identity, and re-achieving a Catholic identity. We show that Italian scientists narratively respond to Catholicism more than science in constructing religious identities during religious shifts. Our findings, thus, problematize the so-called personal secularizing effect of science, providing implications for a more fruitful dialogue between science and religion in Italy and more globally.

1. Introduction

Secularization at an individual level means that people's other identities, such as their professional identities, supersede religious identities. Specifically, as individuals become more 'secular' they appeal less to religious authorities to guide beliefs and behaviors (Chavez 1994). Using this framework of individual-level secularization to explain the low degree of religiosity among scientists, scholars believe that scientists tend to be irreligious because they know more about science (e.g., Leuba 1916, 1934). In this case, their identity as scientists takes on a master status that supersedes other identities (Downey 1988; Knorr-Cetina 1999), including religious identities. In this empirical paper, relying on Italian scientists' own narratives, we found that, contrary to our previous impressions, science does not play a major role in Italian scientists' construction of religious identities.

Most research about the secularizing effect of science on scientists is conducted in the US (and, to a lesser extent, in the UK). Earlier scholars find that scientists tend to be less religious than the general public, although they are by no means wholly irreligious (Leuba 1916, 1934; Stark 1963). This comparatively low religiosity among US scientists (when compared to the US general public) seems to suggest the so-called secularizing effect of science at an individual level, meaning that those who know the most about science – scientists themselves – are necessarily the least religious. By primarily focusing on religiosity among US scientists, however, previous scholars implicitly assumed that the so-called secularizing effect of science can be applied to scientists writ large. This assumption is inaccurate for many US scientists and may be inaccurate more globally. Distinctive characteristics of the US context may mean that US scientists have more possibilities for religious identity and more agency for forming religious identities. For example, the American religious context is uniquely pluralistic (Pew Research Center 2015), and individualism is highly appreciated as a national (and religious) value (O'Brien 2015). Hence, US scientists' navigation of science and religion may be different from the navigation of science and religion among scientists in other national contexts.

The implicit assumption that science makes scientists secular leaves important unresolved questions in our understanding of the science and religion interface, in general, particularly how science and religion might interact in national contexts outside the US. Here we ask: To what extent are the existing theories about US scientists' construction of religious identity applicable to their colleagues outside the US? Is science a dominant social institution that scientists utilize to construct religious identity? How do scientists in other nations – where the religious context is less pluralistic and religious individualism is not as valued – navigate between science and religion to construct their religiosity?

Here, we start to broaden our understanding of the US so-called secularizing effect of science to other contexts through an analysis of Italian scientists' religiosity. Italy is an ideal place to expand our understanding of the potential secularizing effect of science because of the historical and current Catholic influence, the dominant status of Catholicism in Italy, as well as the robust historical value of science in Italy (Damerow et al. 1992; Garelli 2014). Catholicism was and is eminent in Italy (Garelli 2014). Catholic monks, for example, maintained social control by providing ideological and intellectual input to Italian society (Adamson 2013). Indeed, Catholicism still holds a status of "relative monopoly" in Italy (Giordan 2010, 261). The dominance of Catholicism, both historically and today, has implications for religious

identification among the general population of Italians. For example, on the one hand, around 85 percent of Italians in the general population self-identify as Catholic (World Values Survey 2005). On the other hand, Italy is also one of the birth places of modern science, including Galileo's discoveries in physics (Damerow et al. 1992). As a consequence of the central position of Catholicism and the scientific tradition in Italy, myths about the conflict between science and religion hover over Italy (Numbers 2009).

In this paper, we ask how Italian scientists construct religious identities through examining their identity narratives. We specifically focus on Italian scientists who have undergone religious shifts, both large and small, given that the 'navigation' and 'construction' process is more salient to this group of scientists. Based on 81 in-depth interviews with Italian scientists in different career stages, we find that – in their own terms – Italian scientists do not substantially engage science in the construction of their religiosity. Our findings also reveal that Italian scientists' construction of religiosity and spirituality shares some similarities with that of their US counterparts, perhaps revealing common characteristics of a global scientist identity, yet there are still distinctive characteristics. We suggest that previous understandings of US scientists' construction of religiosity cannot be directly applied to that of their Italian colleagues, inviting future scholars to conduct more nation-specific examinations of how scientists construct religious identities¹.

2. Review of the Literature

a) Science, Religion, and Scientists' Religiosity

Early scholars believed that scientists' low levels of religiosity came from an inherent conflict between religion and science; scholars argued that scientists' intensive reception of scientific knowledge decreased their religiosity, which is usually measured by a belief in God (e.g. Leuba 1916, 1934)². Yet, a more recent study illustrates that some groups of scientists are religiously similar to the general US population and groups of scientists at top research universities tend to disproportionately self-select from non-religious backgrounds (Ecklund and Scheitle 2007; Ecklund 2010; Ecklund et al. 2016).

1 This work was supported by the Templeton World Charity Foundation (Religion among Scientists in International Context Study TWCF0033/AB14, Elaine Howard Ecklund PI, Kirstin R. W. Matthews and Steven Lewis, Co-PIs).

2 We should acknowledge that a growing set of scholars in different disciplines, such as Numbers (2009) and Wildman (2014), do not perceive that science and religion are in conflict with each other.

Scholars who argue that becoming a scientist necessarily decreases personal religion are implicitly arguing that the scientist identity serves a master status that defines other identities (Downey 1988; Goffman 1963; Knorr-Cetina 1999). Those who propose a conflict framing would implicitly assume that the master status of 'scientist' configures scientists' religious narratives and identifications. The 'self-selection explanation,' in contrast, argues that scientists' religious identification is constructed by their religious background instead of their identities as scientists, meaning that less religious individuals simply self-select into science (Ecklund and Scheitle 2007).

b) Religious Individualism and the Construction of Religious Identity

Identity construction theories provide us with useful tools to access scientists' understandings of faith. Similar to other types of identities, religious and spiritual identities include two components – establishing boundaries (Lamont 1994, 2002) and content construction (Barth 1969; Nagel 1994; Somers 1994). Creating identity boundaries enables individuals to answer the question of who they are by saying who they are not (Lamont 1994, 2002). And the cultural content of a specific identity further enables individuals to answer the question of what they are (Barth 1969; Nagel 1994). For instance, to construct a religious identity as a Catholic, a person identifies his or her affiliation with the Catholic community, perceiving Catholics as part of an in-group while non-Catholics are part of an out-group. At the same time, this individual establishes an understanding of what being a Catholic means. If being a scientist is a kind of master identity that other identities – like religious identities – are in service to, then this scientist identity might control both the boundary and the cultural content of scientists' religious identities.

Few studies look beyond the statistical correlation between scientists' reception of scientific training and their levels of religiosity. Therefore, literature on scientists' religiosity predominantly focuses on how scientists construct the boundaries of their religious identities while neglecting how they formulate the meaning of their religious identities. This focus yields an incomplete understanding of the secularizing effects of science through the lens of scientists' own religiosity.

Most studies about the construction of religious (and spiritual) identities in the US general population reveal an individualistic, agentic framework (in particular for highly educated white Americans) to draw boundaries and form the meaning of religious and spiritual identities (e. g. Bellah et al. 1985; Madsen 2009; Roof 1999; Wuthnow 1998). Americans are increasingly

dissatisfied with ‘dwelling’ in a specific religious tradition (Roof 1999; Wuthnow 1998). When forming the content of their religious and spiritual identities, they actively ‘seek’ different pieces from distinctive cultural repertoires to form a personally cohesive story (Roof 1999; Wuthnow 1998). Religious individualism is a rejection of the ‘dwelling’ in a certain religious tradition and an adoption of the ‘seeking’ of individualistic understanding of religious identity (Bellah et al. 1985; Roof 1999; Wuthnow 1998). It is perceived as a distinctive US framework that stems from the national culture of individualism (Madsen 2009; O’Brien 2015).

When constructing their religious identity, similar to their counterparts in the general population, US scientists also rely on this individualistic framework. Scientists in the US sometimes reject dwelling in a sacred world that is imposed by a specific religious tradition, and they also combine available cultural repertoires to seek their individualistic religious (and spiritual) identities (Ecklund and Long 2011). In the ‘seeking’ piece of US scientists’ identity construction process, science serves as an important cultural repertoire. For example, some US scientists are ‘spiritual atheists’ who are deeply committed to the scientific enterprise and do not have any particular belief in God. Yet, these atheists still identify as spiritual, perceiving that their spirituality is “about the wonder of the natural world” (Ecklund 2010, 59). Unfortunately, we do not know how scientists in societies outside the US – where the religious context is less diverse and the culture of individualism is not as highly valued – construct their religious and spiritual identities or if the idea of ‘constructing’ a religious identity is even relevant. Our study begins to fill this intellectual vacuum in the science and religion literature.

c) Science and Religion in Italy

The cultural context in Italy is becoming increasingly plural, and, at the same time, Italian people are starting to autonomously choose their own religious identities (Garelli 2014). Yet, Catholicism still holds a “relative monopoly” in Italy (Giordan 2010, 261), reflected in the correlation between Catholicism and Italian national identity and the teaching of Catholicism in state schools.

Not surprisingly, Catholicism also interfaces with science. For example, the Catholic Church advocates for a law that restricts human embryonic stem cell research, which many scientists disagree with; and Italian scientists challenged this law in the 2005 Constitutional Court (Margottini 2009).

The dominance of Catholicism and the public interface between Catholicism and science has implications for how individual Italians construct their religiosity and understand the relationship between science and religion.

Nationally representative surveys in Italy show that many Italians still consider themselves Catholic (e.g., Garelli 2014; Hayes 2000; World Values Survey 2005). One of the most prominent motivators to be affiliated with the Catholic Church is social context – Italians are living in an environment where Catholicism prevails in both families and the society as a whole (Garelli 2014). Some scholars argue that there is a tendency among Italians of “belonging without believing,” meaning that some Italians simply claim a cultural affiliation with the Church (Garelli 2014, 14; Marchisio and Pisati 1999). In terms of the science-religion interface, a recent survey indicates that while around two-thirds of the general population in Italy perceives science and religion as independent realms, one-third of the population thinks that science and religion provide competing knowledge claims (Garelli 2014).

2. Data and Methods

Listening to Italian scientists’ construction of religious identity through their own voices is fruitful for a deeper understanding of the science and faith interface. The interview data on which this paper is based come from the *Religion among Scientists in International Context* (RASIC) study (Ecklund et al. 2016). This broader study investigates how scientists in eight national contexts – the US, the UK, Italy, France, Turkey, India, Hong Kong, and Taiwan – think about social factors, such as religion, ethics, gender, and family; how these factors might influence their scientific research; and what it means to be a scientist. For the sake of this paper, we rely on interviews with scientists in Italy.

Our sampling of Italian scientists involves two distinct stages: selecting organizations and selecting individuals (Ecklund et al. 2016). In the first stage, we created a sampling frame of universities and research institutes through the Thomas Reuter Web of Science (WOS). As a scientific journal database, WOS enables us to identify research intensive universities and institutes. Next, we stratified the organizational sampling frame according to the elite status of each university and research institute. In Italy, elite status was based on an in-country ranking system, productivity of universities and research institutes as well as insider scientist opinions.

In stage two, we generated an individual-level sampling frame through department websites (Ecklund et al. 2016). We stratified the sampling frame according to rank and gender. We eventually included 2,872 scientists in Italy in our sample. Among them, 1,411 completed our survey, yielding a response of 57 percent.

At the end of the survey, we offered each respondent the option of conducting a follow-up interview. We generated a sampling frame with survey respondents who agreed to be contacted for interviews. This sampling frame was stratified on demographic dimensions that were relevant to the study, including gender and discipline. In addition, we were interested in interviewing scientists who approached religion in different ways, as well as those who had no religion at all. In the end, we successfully conducted in-depth interviews with 81 Italian scientists (43 biologists and 38 physicists) who work in Italian universities. These scientists, 27 females and 54 males, were at different career stages, ranging from graduate students to full professors. While we acknowledge that identity narratives from physicists and biologists cannot necessarily be generalized and applied to scientists in other disciplines, physics and biology are important disciplines to expand our understanding about whether science is having a secularizing effect on scientists' religiosity. The controversial topics surrounding science and religion, such as human embryonic cell research and evolution versus creationism, are salient in the biological sciences (e.g., Plantinga 2011). Furthermore, discussions about the moral implications of science are very lively in physics (e.g., Dooley and Kerch 2000). We organized two trips to Italy in order to conduct interviews. As a result, a majority of the interviews were in-person, while the rest were conducted via Skype or phone. Many of the participants were comfortable conducting the interviews in English, though a small number of the interviews (18) were conducted in Italian by a bilingual researcher.

Here, we focus on how Italian scientists responded to the following three questions about their religious history: (1) "In what ways was religion a part of your life as a child?" (2) "Thinking about the arc of your life so far, has there been a time when you experienced a religious shift?" (3) "How about for you personally, how would you describe the place of religion and spirituality in your life now?" Through their responses to these questions, we begin to explore Italian scientists' religious trajectories with a specific focus on whether these respondents have experienced any religious shifts – both large and small – and, according to their perceptions, examination of the influential factors that lead to these religious shifts. Italian scientists' responses to these questions help us understand whether these scientists have changed the boundaries of their religious identity (e.g., from being affiliated with the Catholic community to other religious or non-religious communities) and whether science is involved in this transition of identity boundary. In addition, we also draw on data from questions that interrogate the cultural content of our respondents' newly achieved religious identities.

We concentrate on their descriptions of current religious identity, beliefs, and practices.

After transcription and translation, we analyzed Italian scientists' responses to the questions about religious transitions and their current religious and/or spiritual identification. We adopted a combination of inductive and deductive approaches. First, we relied on an inductive approach, engaging in line-by-line coding of one-third of the total interviews, generating major categories that emerge in respondents' narratives, and creating a coding scheme particular to Italian scientists' narratives. Codes in the coding scheme include but are not limited to Catholicism, becoming a different type of Catholic, becoming spiritual, and becoming non-religious. We then utilized a deductive approach, categorizing the remaining two-thirds into these emergent categories. When coding the remaining interviews deductively, we still paid attention to the newly emerged themes from respondents' narratives (Strauss and Corbin 1998).

3. Experiencing Religious Shifts

Most of our Italian scientist respondents (72 out of 81) experienced a religious shift. We note four clear patterns in these shifts: constructing a newly achieved non-religious identity, forming a newly achieved spiritual identity, reformulating an existing Catholic identity, and re-achieving a Catholic identity.

a) A Newly Achieved Non-Religious Identity

Twenty-three Italian scientists changed their religious identity from Catholic to non-religious. Although these scientists usually mentioned science in their narratives, most do not perceive science as a leading factor that facilitated their religious shift. Some of them specifically noted that their motivation for a shift emerged before they became scientists.

The description from a male researcher³ in biology, for example, represents the role that science plays in the religious shift of these converted non-religious scientists. This biologist explains: "I think it was during my teenage years, I think 15, 16, 17, something like that, but it was probably something that I was brewing from far back, because ... I never really felt like the eternal light when I was in a church."

3 ITA_31, Male, Researcher, Biology, interview conducted September 26, 2014.

This biologist has experienced a sharp religious transformation from Catholicism to no religion at all. But, in his own terms, science did not lead to this change of his identity. To this respondent, being non-religious means being “a materialist.” He explains that “we are here because we happened to be here.” Science may not play an important role in the change of this biologist’s identity boundary, but the materialistic perspective of science more or less constructs the substance of his non-religious identity.

Similar to this biologist, several of our respondents, who moved from identifying as religious to identifying as non-religious, explicitly told us that this transformation process occurred before they became scientists, indicating that science did not push them to experience this radical religious shift. For example, a female graduate student⁴ in biology said:

[The change of my religious identity occurred] even before choosing what to do at university, long before – even before high school – I chose not to be Catholic anymore, to be an atheist. While as a child I was very, at the start I wondered a lot, I went to church every Sunday ... when I believed, I believed it strongly. Then shortly after having doubts ... I decided not to [be] religious anymore.

A critical evaluation of Catholicism was an important factor in this scientist’s change of identity boundary from being a Catholic to being non-religious. Later in the interview, she informed us that religion and spirituality no longer play a role in her life; she does not go to church anymore. The decline of religious authority in her own personal religious history reveals that, from her own perspective, science did not lead to personal secularization.

Yet, for some other scientists, the perceived conflict between science and religion led them to drift away from the Catholic community. The narrative of a physics professor⁵ exemplifies how the perceived lack of logic in religion leads some Italian scientists to drift away from the Catholic community. This professor said: “I think some of it, this matter of logical coherence, is more important. Ethical and logical coherence; religion is lacking. And this is actually something that I think is objective, but we would need to hear from a theologian. Religion is not completely logically coherent, by definition.”

In order to resolve this perceived conflict between being religious and being a scientist, this physicist changed the boundary of his religious identity, leaving the Catholic community and becoming non-religious. As a non-religious scientist, he intends to construct the logical coherence of the world. He stressed that “a philosophy of science” is an important cultural repertoire that formed the content of his non-religious identity. In his personal

4 ITA_32, Female, Graduate Student, Biology, interview conducted September 26, 2014.

5 ITA_34, Male, Professor, Physics, interview conducted September 26, 2014.

religious history, this scientist became less religious, meaning, in his own sense of things, his previous religious identity as a Catholic does not exert any influence on his life now. And in this process, his identification as a scientist serves as a master identity that controls the construction of his religious identity in terms of both boundary construction and cultural content formulation.

The narrative about the so-called irrationality of religion is also evident in the religious history of another physicist⁶, who said, “I had a kind of rational approach to knowledge and there were many, many things and many, many questions that could not have a rational answer in a religious context.” Reading about the philosophy of science further affirmed his departure from Catholicism. Now, this physicist explicitly identifies as an atheist who holds “a completely historical and materialistic perspective towards life.”

A closer analysis reveals that science may be the leading factor that helps some Italian scientists in this group make a transition in their identity boundary. Their identities as scientists play an important role in their construction of the cultural content of their newly achieved non-religious identities. And for a few of them, their professional identity as scientists even shapes the boundaries of their religious identity. Their identification as scientists seems to have this secularizing effect at an individual level, decreasing the religious authority of respondents in this group.

b) A Newly Achieved Spiritual Identity

In our conversations with Italian scientists, we also talked with 20 respondents who claimed a reconstructed spiritual identity. Similar to their colleagues who became non-religious, Italian scientists who became spiritual both changed the boundaries of their religious identity and reconstructed the cultural substance of their achieved spiritual identity. In contrast to their colleagues who shifted from being Catholic to non-religious, the role of science is muted among the group of scientists who shifted to being spiritual, although it is not entirely absent. An associate professor⁷ in biology, for example, explained how she decided to leave the Catholic community:

I remember how my mom said you don't overeat with Nutella. ... If you eat two spoons, that is a peccato, [meaning] that is a sin. Oh my God, everything was a sin. It's impossible. You read too much, it's a sin because ... girls are not supposed to read. Every spoon was a sin. ... My religious exposure was my family. Let's say my social context, was kind of like religion makes our life not so cheerful. It was awful, so I don't like religion actually.

6 ITA_07, Male, Adjunct Associate Professor, Physics, interview conducted July 23, 2014.

7 ITA_61, Female, Associate Professor, Biology, interview conducted October 22, 2014.

Shortly after distancing herself from Catholicism, this biologist started to identify as a spiritual person. Her spirituality comes from a fusion of “aspects of different religion[s],” especially “Eastern religions like Buddhism and Hinduism.” This biologist has substantially reconstructed her religious identity, leaving the Catholic community to change her identity boundaries and relying on distinctive religious traditions to construct the cultural content of her newly achieved spiritual identity.

Similar to this biologist, a post-doctoral researcher⁸ in physics also said that he changed his religious identification from Catholic to spiritual due to his rejection of the imposed and strict interpretation of Catholicism:

When I was in high school, for some reason, you could call the teenage *Angst*, I developed a very radical view of religion and decided not just that religion was not for me, but it was false. That everything that was in there wasn't true. I think that some people that had a bit of strict view, or strict view in religion, helped me in that regard.

Through this process, he becomes spiritual. Elaborating on his spiritual identity, he explained:

Certainly, religious practices – in that following the tenants of a specific religion has a small place in my life. I would go to the celebration for the Chinese New Year and I can try Buddhist meditation but, at the same time, that I like to go to a church and watch a traditional mass, maybe. One of the first things that happened to me [when I did research in London], was to go to a simple church to watch an Anglican mass and, of course, and they have an amazing chorus, that was choir, that was one of the reasons that I went. It was also an interesting experience on its own.

The switch of his identity boundary is facilitated by a rejection of “the strict view in religion.” After this reconstruction of ‘who he is,’ this respondent recreated the cultural meaning of ‘what he is,’ combining different religious traditions to create a cohesive story of what being a spiritual person means to him.

It is worth noting that some of these spiritual Italian scientists are particularly concerned about the imposed Catholic interpretation of science. A physicist⁹ who “grew up in the Catholic environment,” for example, started to identify herself as spiritual as a rejection of the Catholic interpretation of stem cell research. She contended: “When it comes to kill a stem cell, to use a stem cell, then you're defining whether that's killing or just science that's subtle, right? In that sense, I think that it is – the Catholic religion is too

8 ITA_02, Male, Senior Research Associate (Postdoc), Physics, Non-Religious, interview conducted July 10, 2014.

9 ITA_14, Female, Associate Professor, Physics, interview conducted September 2, 2014.

strict and that is a typical place where religion may interfere and it might and usually it doesn't do it in the right way."

In order to change her religious identification, this respondent switched her identity boundaries and constructed what being spiritual means to her. She tries to "concentrate on what life is as much as possible and to be present," to be in her "own shoes," and "to be conscious of what's happening." In the identity construction process, science motivated her to change her identity boundaries, pushing her away from the Catholic community to some extent. Yet, at the same time, the absence of science in her description of her spiritual identity illustrates that science does not serve as an important cultural repertoire in her conceptualization of spirituality.

In addition to human stem cell research, evolutionary theory is another controversial issue that motivated some of our respondents to pursue a spiritual rather than a religious identity. A female biologist¹⁰, for example, narrated:

I went to three years in the Italian school where actually Catholic religion was compulsory at the time ... and occasionally I was called in by the Priest and we started having, you know, this kind of discussion about why you don't believe in evolutionary theory. He was kind of an extreme Catholic Priest and I hated him, so in the end, we were like having fights, and in the end he decided to let me alone for most of the time.

After this, she became a spiritual person. Later in the interview she tells us that "other religions like Buddhism or like oriental religions" were relevant in her transition. In her identity construction process, distinctive religious traditions serve as building blocks for the cultural meaning of her achieved spiritual identity. It is also worth noting here that the conflict between evolutionary theory and Catholicism comes from this respondent's own perspective. Scholars, however, note that the Catholic Church affirms evolutionary theory (cf. Gould 1997).

Participants who changed their religious identification from being Catholic to being spiritual reconstruct both the boundary and the content of their religious identity. They use a framework of religious individualism to understand this reconstruction process. When changing the boundary of their religious identity, these participants perceive their refusal of the imposed interpretation of Catholicism to be a leading factor that motivated their religious shift, facilitating the transformation of their identity boundaries. Spiritual identity as a product of actions that are agentic is very salient in the narratives of converted spiritual scientists. It is also noticeable that although science may facilitate the boundary transformation of *some* participants who

10 ITA_28, Female, Associate Professor, Biology, interview conducted September 25, 2014.

become spiritual, it does not play an essential role in how these scientists frame the meaning of their newly achieved spiritual identity.

c) A Reconstructed Catholic Identity

Identity boundary change and identity content reconstruction do not necessarily happen simultaneously. Some of the participants (7 out of the 22 scientists who self-identify as Catholics in our sample) maintain their identification with Catholicism. Yet, they reframe the meaning of Catholic identity. This means that almost one-third of our Catholic scientist respondents have changed the content of their Catholic identities.

The narrative of a physics researcher¹¹ illustrates how redefining what it means to be a member of a religion can occur without changing actual religious affiliation. This researcher said: “I don’t know if it has been something. ... When I was a child, I had little doubt in [religion], now I have more doubts. I think more about religious issues than I did in the past.” He further explained that the transformation of the content of his religious identity is reflected not only in his belief in Catholicism but also in his perspective about religious attendance. He described:

When I was a child, I got upset if I could not attend the service this particular Sunday. Now, if I cannot attend, I cannot attend. So it’s more like, if I can go to visit my father every week, I go. If I cannot, I phone him. It’s just more, I think, it’s in a different more adult way of if you cannot do it one way than you do it in other ways.

In this case, the boundary of this respondent’s Catholic identity remained, but he reconstructed the content of his Catholic identity. Previously, being a Catholic meant attending religious services every week and believing without doubt. Now he allows for more doubt about Catholicism and allows for a difference in religious practice, not attending services on a regular basis. The meaning of his Catholic identity becomes less community oriented and more privatized.

Seeking religious individualism, such as privatization, agency, and autonomy, becomes a common theme in the conversion narratives of the Italian scientists who believe that they have become a different type of Catholic. A graduate student in biology¹² told us that he attempted to seek autonomy in his new version of Catholicism. He said, “I reject the religion and not the faith.” Through this subtle restructuring of his Catholic identity, this

11 ITA_04, Male, Researcher, Physics, interview conducted July 17, 2014.

12 ITA_49, Male, PhD Student, Biology, interview conducted September 29, 2014.

respondent came to see Catholicism not as an imposed religion but as an individualistic faith.

Most of our Italian respondents reconstruct their Catholic identity because they do not want to feel stifled by certain aspects of Catholicism. Therefore, they utilize a certain degree of agency to reconstruct the meaning of their Catholic identity, making it more privatized, autonomous, and, in the case of one physicist¹³, more secularized. Describing his faith transition process, he recalled:

When I was between 19 and 20, I started not to go to church and I did not attend [to] the communication. ... It was a sort of turning point so I became less religious in a sense, because I did not feel myself as part of this community anymore. Although, of course, culturally I considered myself as belonging to the Catholic culture in a sense. ... From the point of view of a moral ethic and so the way I behave, I think it has had an influence. [But] I cannot claim I believe that Jesus was the incarnation of God or that he was resurrected, this I cannot see, this I cannot say.

To him, the action of reconstructing a Catholic identity is reflected in the removal of some supernatural characteristics of Catholicism. While this physicist is still affiliated with the Catholic community, the meaning of his affiliation becomes less supernatural and more cultural.

In their religious shifts, several participants in our sample retained their identification with Catholicism. Yet, subtle shifts occur as they start to rely on a framework of religious individualism, utilizing their agency to reconstruct the cultural meaning of their Catholic identity. In their identity accounts, science does not have any implications for how they reconstruct the meaning of their Catholic identity. Catholicism, instead of science, serves as an important and dominant cultural repertoire that composes their framework of religious individualism. Most Catholic scientists abandoned some Catholic elements while maintaining others.

d) A Re-Achieved Catholic Identity

While there are fewer Italian scientists who identify as Catholic when compared to the general public, a significant minority of our interview respondents (11 out of 81) became more religious after choosing their careers in science. They identify as religious converts who re-affiliated with Catholicism after an earlier departure. Most, but not all, participants who experienced this religious shift informed us that their Catholic families and friends pulled them back to Catholicism. For instance, a male physicist¹⁴ was born

¹³ ITA_20, Male, Associate Professor, Physics, interview conducted December 08, 2014.

¹⁴ ITA_01, Male, Research Fellow, Physics, interview conducted July 4, 2014.

into a Catholic family and was devoted throughout his childhood. Yet, in his teenage years, this physicist started to drift away from Catholicism. In the interview, he did not recall why he left, but he remembered his shift back to Catholicism. He explained that the shift back to Catholicism “was during the time of studying at university; I met other people who were maybe more involved in religious aspects. And going with [these] people, I changed somehow my consideration about religious individuals.”

The reconstruction of his identity boundary comes from his interactions with religious friends. Now this physicist is a practicing Catholic who is going to church and praying. This respondent does not frame his shift back to Catholicism as an individual choice. Rather, to him, this shift was organically facilitated by his interactions with religious university friends.

Most converted Catholics in our sample perceive their interactions with religious peers as an important associated factor of their re-affiliation with the Catholic community, namely the change of their identity boundaries. Describing her religious history in great detail, a female associate professor¹⁵ of biology attributed both her shift away from and her shift back to Catholicism to her social relationships. This professor was raised in a Catholic family and identified as a Catholic until high school. While interactions with non-religious friends in high school caused a drift away from Catholicism, she re-affiliated with Catholicism after meeting her husband, a devout Catholic. Both sets of interactions contributed to changes of her identity boundary. As she described:

That [my marriage] was the main growing step in life that made the difference in my life and I turned back to religion with my husband because my husband is a very Catholic man and he's from a very, as I told you, Catholic family. ... He's much more tolerant. ... So he didn't force me to the religion, but I had a Catholic wedding in the Catholic style and at that time I was very much involved.

In the case of this biologist, her interactions with her husband, especially ritualistic moments like her wedding, naturally and gradually pulled her back to Catholicism. She experienced a dual-transformation of identity boundaries because of her interactions with both religious and non-religious people. Describing what it means to be a Catholic, this respondent highlighted her involvement in religious rituals. Her understanding of what it means to be a Catholic, therefore, largely relies on the model provided by the Catholic community.

15 ITA_16, Female, Associate Professor, Biology, interview conducted September 3, 2014.

In the case of Italian scientists' shift back to Catholicism, interacting with religious friends¹⁶, families¹⁷, and instructors¹⁸ are important social relationships that pull them back to the Catholic community. In other words, the transformation of their religious identity boundaries does not come from a 'seeking' process. With an emphasis on religious participation, these respondents rely on the guidance provided by the Catholic community to reconstruct their Catholic identity. Agency, however, is not a salient theme in their narratives.

4. Discussion and Conclusion

In this article, we analyze the religious narratives of Italian scientists to understand how they – as scientists who are living in a traditional Catholic context – reconstruct their religious identity within their religious shift processes. Allowing respondents to define the degree of their religious shift and relying on their descriptions, we found four distinctive patterns of religious identity reconstruction: constructing a newly achieved non-religious identity, constructing a newly achieved spiritual identity, reformulating an existing Catholic identity, and re-achieving a Catholic identity.

We found that, similar to their colleagues in the US, Italian scientists also rely on a religious individualism framework to understand the switch of their identity boundaries and to further construct the cultural content of their achieved religious (and spiritual) identities. Yet, different from their US colleagues, when formulating the substance of their achieved religious (and spiritual) identities, science does not serve as an important cultural repertoire that scientists utilize to compose a framework of religious individualism. This finding suggests a re-examination of the master status of a scientist's identity.

Italian scientists' identity narratives further inform our understanding of the so-called 'secularizing effect' of science. Science is usually perceived as having a secularizing effect on an individual's religiosity by offering explanations to the world that are different from those offered by religion; thus, people's exposure to science may decrease their religiosity (Tschannen 1991). This 'secularizing effect' of science is even more salient among scientists.

16 ITA_01, Male, Research Fellow, Physics, interview conducted July 4, 2014; ITA_16, Female, Associate Professor, Biology, interview conducted September 3, 2014.

17 ITA_16, Female, Associate Professor, Biology, interview conducted September 3, 2014.

18 ITA_80, Male, Senior Applied Scientist, Physics, interview conducted November 3, 2012.

This is because once people become scientists, their identity as a scientist will have a master status that shapes other types of identities (Downey 1988; Knorr-Cetina 1999) and decreases the authority of their religious identity (Chavez 1994). Our conversations with Italian scientists, however, indicate that the so-called ‘secularizing effect’ of science is a misimpression.

Situating Italian scientists’ narratives about religious shifts in a framework of identity construction, our systematic analysis of in depth conversations with scientists reveal that being a scientist does not have the level of master status in shaping scientists’ religiosity that we might have expected. As we can see, being a scientist is the most salient for those Italian scientists who became non-religious. Science motivated *some of them* to change the boundary of their religious identities, and serves as a repertoire that informs the meaning of non-religious identities. Their identity narratives indicate that for Italian scientists who shifted from Catholicism to no religion at all, science shapes the construction of their religious identities. For these converted non-religious scientists, science has this secularizing effect at an individual level, diminishing their religious identity and decreasing the religious authority in their lives.

For Italian scientists who went through other paths of religious shifts, the master status of being a scientist is not as salient. Regarding the scientists who construct a newly achieved spiritual identity, science may lead *some of them* to adjust their identity boundaries, from Catholic to spiritual, but it does not exert any influence on *how* they formulate the cultural content of their achieved spiritual identity. For scientists who adjust the meaning of their Catholic identity, science does not seem to exert influence on how they reconstruct the meaning of their Catholic identity. Finally, for Italian scientists who transitioned back to Catholicism, social contextual factors, such as having religious friends and family, facilitated a return to Catholicism. Our nuanced analysis of Italian scientists’ construction of religious identity illustrates that science plays different roles depending on scientists’ distinctive religious histories.

Our examination of Italian scientists’ identity narratives further allows us to conduct an implicit comparison with that of their US colleagues. Although Italian scientists are living in a society where the religious context is less diverse and individualism is less highly valued, we found that, similar to their US counterparts, our Italian respondents adopt a framework of religious individualism to reconstruct religious identities. Most Italian scientists in our sample are not satisfied with the religion they were born into. In their faith transition processes, they seek an individualistic spiritual, if not religious, framework; the seeking process reflects their agentic orientation.

They use and fuse their available cultural repertoires to construct an individualistic understanding of their newly achieved spiritual, if not religious, identity. This individualistic understanding does not entirely depend on the models provided by any particular religious tradition.

Similar to the individualistic religious framework adopted by their US counterparts, Italian scientists' frameworks of religious individualism does not occur in a vacuum (Roof 1999). It is a combination of distinctive and available cultural repertoires, and, in most cases, science is not one of these essential cultural repertoires. Italian scientists' combination of available cultural repertoires, therefore, is different from their US colleagues for whom science may be more essential in their construction of this individualistic religious identity. Given this knowledge, if we intend to have a more robust understanding of scientists' construction of religious identity and if we intend to use scientists' religious identity as an indicator of the individual-level secularizing effects of science, we need to identify the institutional spheres that provide scientists with the available cultural repertoires to formulate their individualistic understandings of religious identity.

Despite our scholarly contributions, we also acknowledge the limitations of this paper. Here we focus only on the construction of religious identity among a sub-set of Italian scientists. The distinct social and religious context in Italy (cf., e. g., Garelli 2014; Margottini 2009) may have profound implications for the individual-level, religious identity construction of Italian scientists. Individuals' religious views and their views of the interface between science and religion are contingent on the social context within which they are situated (cf. Evers 2015). Furthermore, we do not examine the identity narratives of the general population in Italy. Thus, we are not able to conclude whether this use of religious individualism to question Catholicism – a religion that most Italians are born into – is a distinctive characteristic of Italian scientists or is shared by the general population in Italy, particularly among those who are highly educated.

Catholicism in Italy has long attempted to be in dialogue with science (cf. Oviedo and Garre 2015). But, at the same time, the historical myth of science and religion tension remains in Italy (cf., e. g., Finocchiaro 2009). Our study suggests that hearing the narratives of Italian scientists and examining the role that science plays in personal religious history and the construction of their religious identity in particular may be an important step to make these dialogues more fruitful.

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Philosophy, Theology and the Sciences

Volume 4 (2017), No. 1

Edited by

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2195-9773(201705)4:1;1-F

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