Religion and Science around the World: Review Articles

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SCIENCE AND RELIGION IN LATIN AMERICA: DEVELOPMENTS AND PROSPECTS

by Ignacio Silva

Abstract. The state of the debate surrounding issues on science and religion in Latin America is mostly unknown, both to regional and extra-regional scholars. This article presents and reviews in some detail the developments since 2000, when the first symposium on science and religion was held in Mexico, up to the present. I briefly introduce some features of Latin American academia and higher education institutions, as well as some trends in the public reception of these debates and atheist engagement with it in Mexico and Argentina. The primary conclusion of this article is that, even though the discussion is new to Latin American academic circles, it is gaining traction and will certainly grow in the coming years.

Keywords: Latin America; liberation theology; science and religion; theology and science

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Latin America is an immense region, which presents a significant promise for the future of the dialogue between science and religion worldwide. Nevertheless, it must be emphasized, Latin America has been a region in which academia and scholarship, with some occasional exceptions, developed in isolation from other regions. Or better said, Latin American scholars, even though being aware of scholarship from elsewhere—mainly the United States and Europe—do not share their own work with their nonregional colleagues. It is even the case that, for the most part, they do not share their work with other Latin American scholars. A sense of remoteness and

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inaccessibility dominates almost any attempt to reach out by Latin American academics. The international conversation around science and religion is not an exception to these circumstances, and in fact one can say that it is a paradigmatic case of the isolation in which scholars in this region of the world do their research and teaching. Nevertheless, new developments brought about by a group of enthusiastic and entrepreneurial academics throughout the region offer a vision for a change. I will attempt to describe these developments in the following pages, presenting some of the most active research in the field, as well as the most promising projects in the region.

The best place to begin, however, seems to be the region itself. Latin America is comprised of the countries in the Americas where Spanish and Portuguese are the main languages, including all mainland countries between Mexico in the north and Chile and Argentina in the south, together with Spanish-speaking countries of the Caribbean. It consists of 20 sovereign states, and has an area of approximately 19,197,000 km^2, roughly double the size of Europe, with a population of around three-quarters of the European population, a third of which lives in Brazil alone.

In terms of higher education, current trends in Latin America are broadly positive, with many new private and state institutions, increasing numbers of students, and a growing international academic profile. However, in the words of an influential report on higher education in Latin America:

> Latin America remains peripheral to the international centers of research and knowledge dissemination. Latin American higher education faces the challenge of positioning itself within these developments and making use of its own strengths and opportunities—doing things the Latin American way. (Hans de Wit et al. 2005, 341)

At first glance, this assessment of Latin America as "peripheral" seems to be confirmed by more recent surveys that place the leading institutions in the region at around the 130 mark in comparative rankings worldwide (QS World University Rankings, 2014). At least part of the explanation for this assessment is due to low investment in research. In quantitative terms, the proportions of gross domestic production (GDP) devoted to research and development (R&D) across all subject areas are typically only a fifth, a quarter, and a third of proportionate levels of expenditure in the United States, Europe, and China, respectively. Although the proportion of GDP devoted to R&D is higher in Brazil, this total is still only four-fifths of the proportion devoted in China, despite Brazil's per capita GDP being 50% higher than China's. In addition, whereas the public sector is responsible for only roughly one-third of R&D spending in Europe, the United States, and even communist China, in Latin America roughly half of R&D spending (two-thirds in Argentina) is publicly funded. External

international funding of research is hard to assess, but where figures are available, such as in Chile, the numbers are very low.

These low levels of funding, together with various other factors, contribute to the following challenges that stand in the way of the development of higher education generally and especially research into fundamental questions at the intersection of science and the humanities: (1) many institutions of higher education are principally or solely oriented toward teaching, with little time or money for research; (2) the expense of much scientific research today means that research institutions are often priced out of competition, limiting career and research opportunities, and hindering the development of regional expertise; (3) less than 5% of university students graduate in natural sciences, bringing the number of world-ranking research scientists in the region to a rather small figure, of which very few are willing and able to engage with issues in the humanities; (4) research priorities, such as rapidly growing research in genetics and agriculture, frequently retain a connection with issues of immediate practical concern, with little investment dedicated to fundamental science and the humanities; and (5) collaborative agreements among universities in Latin America and with institutions elsewhere in the world do not always translate into effective actions.

An additional challenge, which is especially pertinent to understanding the current situation of research into science and religion in Latin American institutions, is that higher education in the region is extremely heterogeneous. Historically, Latin American academia has been rooted in an unusual combination of influences from Catholicism and the French Enlightenment, although North American influences have grown rapidly in recent years. These varied cultural origins have given rise, very approximately, to three loosely defined groups of institutions.

State universities take the first place, including two influential mega-universities of approximately 300,000 students (Universidad Nacional Autónoma de México—UNAM, and Universidad de Buenos Aires—UBA). These institutions are typically the leading universities in each country, are free-access with minimal tuition fees (or even free), and have long traditions of autonomy and self-governance. Culturally, they tend to be secular, politicized, and in many cases actively anticlerical. These state universities embrace extremes of achievement. On the one hand, one finds that many students drop out before completing their degrees, and on the other, the highest ranked researchers are counted within their faculties. Exceptionally, the Universidad de Buenos Aires (UBA), historically the most prestigious university in Argentina, has produced three Nobel Prize laureates, most recently in 1984 (César Milstein, medicine), half the total Nobel Prizes in science and medicine awarded to Latin Americans to date. Second in importance are mid-sized Catholic private universities, some of which also achieve high academic ratings. These Catholic universities, of

up to circa 20,000 students, are more focused on teaching than research, although some, such as the Pontificia Universidad Católica de Chile, which was recently ranked first overall in Latin America (QS University Rankings: Latin America, 2014), show this feature to be more of an assumption than anything else. Other leading institutions in this category are the Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio), the Pontificia Universidad Católica Argentina (UCA), and the Pontifícia Universidade Católica de São Paulo (PUC-SP); the latter is one of the most prestigious universities in Brazil and is a typical example of a mid-rank Catholic university in Latin America. Finally, there is a heterogeneous group of relatively new private universities often modeled on U.S. institutions, which are much smaller and focused almost entirely on teaching within fairly specialized fields of study. These institutions have been responsible for much of the growth of higher education in Latin America in recent years. Although they carry out comparatively little research generally, some of them have built up specialized research groups that have enjoyed disproportionate academic impact, such as the Philosophy Institute at Universidad Austral in Argentina. This diversity of institutions has created many new opportunities. Despite the challenges mentioned above, the overall picture at present is one of strong growth and rapid transformation, encouraged by broader economic, political, and technological changes throughout the region.

In terms of what pertains to science and religion issues in particular, it is worth mentioning from the outset some differences between countries and kinds of universities. While in Mexico, for example, there is an aggressive strand of atheism in some parts of secular academic life, with attitudes that have been hardened by a long-standing cultural war between the Church and the state, in countries such as Argentina, Chile, and Uruguay, even if national public universities are secular, politicized, and with some anticlerical sentiment, the focus of debate is rarely on science and religion, and in Colombia and Brazil some state universities welcome this kind of discussion. Certainly, most Catholic universities throughout the region support some kind of dialogue between the Catholic faith and the natural sciences, although they vary in their approaches and depth. Finally, a very small number of private universities, most of which have one or another kind of religious affiliation, engage in research on, and teaching of, issues pertaining to science and religion.

It is also worth mentioning that in recent years there have been a few events supporting intelligent design, including lectures, workshops, and conferences, most notably in Chile and Brazil, but also in Mexico and Bolivia, although these are usually rapidly criticized by atheist academics. Finally, regarding creationism in academia, even though radical evangelical communities have grown rapidly in the region, coopting some attitudes and materials of their coreligionists in different regions in the world, and thus promoting creationist positions in the broader culture, these positions

have not yet reached Latin America academia, possibly because most higher education institutes are still either Catholic or secular.

The following pages will be structured thus. First, I will present in broad strokes the public perception of the issue (following two surveys produced by the British Council and Datafolha, a Brazilian company). Then, I will refer to a few examples of atheist engagement with science and religion topics (mainly from Argentina and Mexico), which will allow me to portray the situation in most state universities. I will finish offering a review of the work done in the region on science and religion from the early 2000s until today, showing that, even if incipient and small in scale, the discussion is progressing and gaining momentum in the region.

A Short Word on Public Perception

It would be appropriate to consider, even if briefly, the public perception of how science and religion relate across Latin America. Of course, this consideration will only offer some preliminary and quick ideas on the issue. The topic of evolution, which has become one of the principal contexts for debating the relationship of science and religion in many countries, serves as a good indicator of the variety of responses to the problem. In 2009, the British Council's "Darwin Now" project, a large-scale global initiative running in 50 countries worldwide celebrating Charles Darwin and the impact of his ideas about evolution, undertook a survey that examined public attitudes in Mexico and Argentina, among eight other countries around the world. The following data were shared by the "Darwin Now" project leader, Dr. Fern Elsdon-Baker, with whom the Ian Ramsey Centre for Science and Religion, Oxford, has collaborated on its projects in Latin America since 2011.

The position that life on Earth including human life was created by God and has always existed in its present form was held by 19% of 1,000 respondents in Argentina, a total that is comparable to the numbers for Great Britain (16%) and Spain (18%). Of the 1,012 respondents in Mexico, a somewhat higher proportion (25%) held this position, but much lower than the United States, India, and South Africa (all at 43%) and Egypt (33%). At the opposite end of the spectrum, the view that life on Earth, including human life, evolved over time in a process in which God played no part is the most popular single option chosen in the responses from Argentina (37%) and Mexico (42%), very similar to the proportion of responses in Spain (38%) and Great Britain (38%). These proportions are in marked contrast to those found in the United States (13%), South Africa (6%), and Egypt (2%). Finally, the view that life on Earth, including human life, evolved over time in a process guided by a God is a reasonably popular view in Argentina (31%) and Mexico (27%), roughly comparable

to the United States (32%), lower than Egypt (50%), and slightly higher than South Africa (21%), Spain (18%), and Great Britain (25%).

There was a further question, on whether it is possible to believe in God and still hold the view that life on Earth, including human life, evolved over time as a result of natural selection. An affirmative answer could be given by theistic evolutionists, certain kinds of atheists, some supporters of intelligent design, or simply by members of an intellectual milieu in which the whole issue of resolving perceived contradictions is not regarded as a priority. Conversely, a negative response could be given by both extreme creationists and supporters of new atheism. In this respect, the question was useful in identifying the level of perceived conflict between theism and evolution in the broader culture. Responses showed very low levels of disagreement or strong disagreement in Argentina (14%) and Mexico (13%), numbers that were slightly lower than those of Spain (20%), Great Britain (19%), and South Africa (16%), and much lower than that of the United States (28%) and Egypt (42%). Conversely, the numbers expressing agreement or strong agreement in Argentina (63%) and Mexico (66%) were higher than the numbers in Spain (45%), Great Britain (54%), United States (53%), South Africa (54%), and Egypt (45%).

A similar survey of public opinion in Brazil, conducted by the Datafolha Institute (Datafolha–Opinião Pública 2010), found that a majority of respondents (4,158, or 59%) agreed with the claim that human beings evolved over millions of year, but in a process under the guidance of God. A smaller proportion (25%) claimed that God created human beings as they are today at some moment in the last 10 thousand years; and only 8% claimed that human beings evolved without any participation of God in this process. A belief in young earth creationism was significantly higher (30%) among responses received from Evangelical Pentecostals, who were about 20% of the sample.

The countries in Latin America examined in these surveys reveal broadly similar public attitudes toward evolution to those found in the Western European countries surveyed rather than in the United States, although theistic evolution is a more popular view than in Europe, especially in Brazil. Compared to Argentina, creationism is slightly more popular in Brazil, an increase that may be partially attributable to the popularity of Evangelical Pentecostal movements. The comparatively high proportion of creationists in Mexico may also be due, in part, to the proximity of the United States and cross-border influences. Machado Silva and Mortimer (2014), analyzing a different data set, offer some reflections on these issues in Brazil in particular. There is still much to learn on this topic, focusing, for example, on each country in particular, so these lines should be taken with caution and merely as preliminary to new research on the issue.

Some Atheist Engagement with Religion

There are two significant positions within atheist groups regarding the academic field of science and religion in Latin America. The first is the well-known opposition flowing from a conflictive view of the history, dynamics, and structure of both science and religion. This position is sometimes made extreme through some localized hostility toward any dialogue or discussion regarding science and religion, hostility which is possibly a proxy for long-standing social and cultural antagonisms—for example, in Mexico due to the persistent hostile clashes between the secular state and the Catholic Church. The second one, supported by many leading nonreligious academics working in state universities, is a variation of Stephen Jay Gould's nonoverlapping magisteria (NOMA) position.

With respects to the first position, it is safe to say that the views of Ruy Pérez Tamayo (2006), a Mexican pathologist and science communicator (perhaps one of the foremost intellectuals in Mexico, who is also a writer and member of the Mexican Academy of Language), represent the opinions of most of the scientific community at UNAM (the largest university in Latin America, and certainly one of the most important). His judgment on this matter follows closely the narratives of the New Atheists in the English-speaking world. From a somewhat partial view of history (probably influenced by Draper's and White's chronicles), and an arguably simplistic epistemological account of faith and science, which constructs them as belief without evidence and rational knowledge, respectively, he argues for the incompatibility and exclusion of science and religion. It is remarkable, however, that he acknowledges, in a quick observation by the end of his 2006 essay, that religion deals with a dimension of human life which lies outside of the scope of science, perhaps allowing for further discussions on NOMA.

In this respect, Alejandro Tomasini Bassols (2006, 2008), also from UNAM, but in this case from the philosophy faculty, supports NOMA, starting from an analysis of religious and scientific languages in a Wittgensteinian perspective. Even though Tomasini Bassols begins with a similar view of the historical relations between science and religion as Pérez Tamayo, he quickly moves to asserting that religion does not have cognitive functions (problems existed when it was thought that it did have them). If this is the case, then, he holds that as long as religion remains in the realm of values and religious language, allowing science to know the world with its methods, there should be no conflict between them. Only if religion is conceived as having cognitive functions, asking questions that really belong to science, can a conflict between science and religion be construed. However, given that religion lacks this knowledge-giving role and that it deals with life as a whole, with its meaning and the meaning of being human, it cannot get into conflict with science. In fact, Tomasini Bassols

encourages science to seek reconciliation with a genuine, noncognitive, religion—reconciliation in which each, science and religion, would respect and value each other in their own grounds.

This is something similar to what Diego Golombek, leading biologist and science communicator in Argentina, expressed in his latest book *Las Neuronas de Dios* (2014), in which he seeks to present a science of religion avoiding the common narratives of conflict between the two approaches. Indeed, in presenting the main idea of his volume he observes that, given the discoveries that neuroscience makes about the brain in relation to religion and religious experiences, both believers and nonbelievers would be content: whereas atheists would take such discoveries as proof of the illusion of God, believers would use the data to argue in favor of God's existence (Golombek 2014, 16). Even if he aligns himself with the nonbelievers, Golombek distances himself from the New Atheists, whose arguments he finds simplistic and not realistic, and supports a form of the NOMA position regarding the relation between science and religion. It is worth quoting his own words after his reflection and dismissal of the new atheist style: "It is clear that it is a good time to start to discuss openly and in a friendly manner" (Golombek 2014, 70, my translation).

These positions among atheists could be explained with some history of the Latin American intellectual life. Most of the leading scholars of the nineteenth century were educated in an Enlightenment France or England, where positivism was the chief program to understand the world. Following this tradition, most scholars based at state universities in Latin America would understand that religion has nothing to do with intellectual (rational) life, leading to a simple indifference about religion or an absolute opposition to it. Thus, debate or research programs in science and religion are almost completely foreign to state universities.

There are certain rare occurrences of discussions on science and religion within secular institutions (state and private universities), which reveal a slow process of realization of the interest and importance of these issues within this type of institution. These discussions are usually linked to efforts on the dissemination of science and debates on the place of science in the broader culture. Thus, Universidad Andrés Bello (Chile) organized within the 2013 "Conferencia Internacional de Cultura Científica" a roundtable on science and religion with five scholars discussing whether science and religion are compatible, and the Universidad de Guadalajara (Mexico) organized a similar event within the 2014 "Coloquio Internacional de Cultura Científica" at the 2014 International Book Fair of Guadalajara, with a discussion panel among three scholars on the similarities and differences of science and religion. Both events, in which I actively participated, attracted audiences of over 100 people, evidencing the interest within the broader public on these issues.

In spite of these rare events, the major intellectual environment of indifference or rejection, in conjunction with the social situation in the region, led the vast majority of theology scholars (based almost exclusively in Catholic universities, with some colleagues based at some smaller Protestant institutions) to elude any engagement with the natural sciences, emphasizing their social commitments and interests in their discourses. There are, however, certain groups and scholars who, since the early 2000s, have been working and promoting engagement between theology and science, and to their work I now turn my attention.

Pioneering Academic Work at the Beginning of the Century

The early 2000s saw some pioneering work on science and religion in Latin America, led mainly by four scholars: Eugenio Urrutia Albisua and Juan José Blázquez Ortega (from Mexico), Lucio Florio (from Argentina), and Eduardo Rodrigues da Cruz (from Brazil). Before their work, the number of individuals and groups in Latin America self-identifying as active in science and religion was small, often focused on just a few rather isolated individuals. Since these academics began to devote efforts to developing the dialogue between science and religion, many new initiatives have emerged in the region, in particular associated with the "Local Society" projects started by the Metanexus Institute and also supported mainly by small grants funded by the John Templeton Foundation. It is fair to say that much of today's regional projects, meetings, and publications are due to this initial, and entrepreneurial, work. As mentioned previously, theology in Latin America was focused on social issues, being extremely fruitful in the development of liberation theology, a major Latin American contribution to theological thinking worldwide. It could be argued convincingly that Latin American theology is still focused on these issues, but it has certainly started to look at other topics by engaging with the natural sciences in more recent years.

Eugenio Urrutia Albisua began dialogues with the Center for Theology and Natural Science (CTNS) based in Berkeley, California, at the beginning of the millennium, with the goal of amplifying CTNS's work in Latin America to promote the engagement of scientists, philosophers, and theologians in debate, dialogue, and discussion. The Center's challenge was to find Latin American scholars both able and willing to take part in these activities. With this goal in mind, in 2002 Urrutia Albisua organized the first Symposium on Science and Religion, supported by CTNS, at his home university, the Universidad Popular Autónoma del Estado de Puebla (UPAEP) in Mexico, to encourage research and education in science and religion in Latin America. This symposium, called "Ciencia y Religión: Hacia una nueva cultura de colaboración" [Science and Religion: Toward

a New Culture of Collaboration], attracted around 80 scholars from Latin America, Spain, and Italy, and received the blessing of Pope John Paul II. The event was the primeval atom out of which several meetings, conferences, and other symposia emerged across the region, including to date eight Latin American Conferences on Science and Religion, in countries such as Mexico, Cuba, Brazil, and Argentina.

These initial efforts stimulated the establishment of some organizations based in, or related to, Catholic universities that have connected somewhat isolated scholars throughout the region by means of these conferences, symposia, and colloquia—in the first place, the CECIR Centre (Centro de Estudios en Ciencia y Religión), led in its beginnings by Urrutia Albisua and today by Juan José Blázquez Ortega. This organization, which began in 2000 with the first collaborations between Urrutia Albisua and CTNS, aims at promoting a fruitful and constructive dialogue between faith and culture, in particular the natural sciences, through research, teaching, and dissemination of ideas, with a focus on Latin America. Under the leadership of Urrutia Albisua and Blázquez Ortega, CECIR has published many volumes on science and religion in Mexico, including translations, in 2002, of *Physics, Philosophy, and Theology: A Common Quest for Understanding* (Russell, Stoeger, and Coyne 1997) under the title *Física, Filosofía, y Teología. Una búsqueda común*, and, in 2005, of *Bridging Science and Religion* (Bennett and Peters 2002) with the title *Ciencia y Religión en Diálogo. Un Puente en construcción*. Urrutia and Blázquez have also edited together the volume *Ciencia y Religión Hoy. Diálogos en torno a la Naturaleza* in 2003, which is a visible offspring of the symposium the previous year. This volume collects contributions by Latin American authors such as Luis Fernando Cardona from Bogotá, Colombia; Alejandro González Sánchez from Tabasco, Mexico; Ludmila Gumen from Puebla, Mexico; Rafael Vicuña from Santiago de Chile; and Lucio Florio from La Plata, Argentina. As in most of the cases of activities and publications on these issues in Latin America, the volume also includes articles by nonregional authors, such as Peter Hess and Stacey Ake (United States), Mariano Artigas and Juan Arana (Spain), and Melchor Sánchez de Tocca (Vatican City).

In his prologue to the translation of *Bridging Science and Religion*, Urrutia Albisua reveals both his engineering background and his views about the engagement of science and religion by reflecting on the stages of construction of the bridge. His ideas remark on how this engagement is constantly rebuilding itself, rethinking itself, because the two sides which the dialogue "bridges" are already connected by their very nature because they belong to the same world, even if at some points of its history there was more or less traffic crossing from one to the other.

Lucio Florio, an Argentine Catholic priest and theologian, in collaboration with CECIR, and with the auspices of Fundación Santa Ana in Argentina, organized the second Latin American Conference on Science

and Religion in 2003, which gathered around 400 scholars in La Plata, Argentina, coming from throughout Latin America, the United States, and Europe. Out of this meeting Florio edited the volume *Ciencias, Filosofía y Teología. En búsqueda de una cosmovisión* (Florio 2004). After the success of the 2003 conference, in 2005 Florio brought together a diverse group of academics and formed a permanent interdisciplinary research seminar on science, philosophy, theology, and technology at UCA. Out of this research seminar emerged the idea of creating Fundación DECyR (Diálogo entre Ciencia y Religión), which was created in 2006 in La Plata, Argentina. Its goal is to promote dialogue among researchers, professors, and students about topics pertaining to science, philosophy, and theology, in particular those relating to social, environmental, and spiritual issues. DECyR, in collaboration with CECIR and other local groups and higher education institutions, has organized the fourth and eighth Latin American Conferences on Science and Religion in Argentina in 2009 and 2014, respectively.

One of the focuses of DECyR in the research of its associates and activities is the theology of stewardship and the environment, following a very topical interest in theological circles in Argentina and Brazil. In this respect, the 2014 conference's title was "La Sacralidad de la Vida en una Tierra Habitable para Todos" [The Sacrality of Life in an Inhabitable Earth for All], including plenary discussions about war, sustainable development, eschatology in a nuclear age, globalization, genomics, and resource management. The conference's topic followed the lead of the Argentine Episcopal Commission, which in 2013 published a volume entitled *Una Tierra Habitable para Todos* (although this volume did not engage in any particular depth with the natural sciences) (Comisión Episcopal Argentina 2013). Perhaps one of the most interesting features of this conference was that it was coorganized by DECyR and the Latin American Rabbinic Seminary Marshall T. Meyer of Buenos Aires, and that it was held at the venue of the seminary, portraying the good relations between different religions in Latin America, a legacy of the work of Pope Francis when he was Archbishop of Buenos Aires, in this case in its engagement with the sciences.

As it is with CECIR, DECyR has also encouraged the publication of several volumes in Argentina, including *Evolución y Cristianismo. Un Diálogo Posible* (Florio 2007a), in which Florio invited nine scholars, including scientists, philosophers, and theologians from Latin America and elsewhere to reflect on Darwin's contribution to the understanding of Christian theology. Florio's mind was set, when preparing this volume (and it still is), in accelerating the process by which the natural sciences permeate the theological discourses within the Catholic tradition. Other publications include the translations of John Polkinghorne's *The God of Hope and the End of the World* (2002), published as *El Dios de la esperanza y el fin del mundo* (2005), and Italian zoologist Ludovico Galleni's *Darwin, Teilhard*

de Chardin e gli altri (2009) and *Scienza e Teologia. Proposte per una sintesi feconda* (1992), published as *Darwin, Teilhard de Chardin y los otros* (2010) and *Ciencia y teología. Propuestas para una síntesis fecunda* (2007), respectively. In addition to these translations, Fundación DECyR encouraged the publication of Jorge Papanicolau's *Cristología Cósmica. Fundamentos bíblicos, aproximación histórica y reflexión sistemática* (2005) and Claudio Bollini's *Evolución del Cosmos, ¿aniquilación o plenitud?* (2008). Both these volumes come out of doctoral theses at the Faculty of Theology of the UCA. Finally, Emmanuel Ginestra has published some historical research on an Italian priest in his volume *Francesco Faà di Bruno, científico y creyente* (2011).

It is worth mentioning that the ground-breaking work Florio has promoted and stimulated since 2003 in Argentina was reflected in the 2012 conference of the Sociedad Argentina de Teología, which was primarily devoted to the dialogue between theology and the sciences, with the title "Discursos científicos y discursos teológicos. Creer en el contexto de los nuevos sabers" [Scientific and Theological Discourses. Believing in the Context of New Knowledge], which resulted in the publication of a volume a year later under the same title including the lectures and debates offered during the conference (Sociedad Argentina de Teología 2013). Gabriela Di Renzo (2013), a theologian from the UCA, offered her reflections on the event affirming that, even if the dialogue is in its beginnings in Argentina, theologians are called to rethink why many see a conflict in it, denouncing the little knowledge that theologians have of science (and vice versa), and calling for an openness that allows others (the sciences) to question the very bases and fundamentals of theology, in particular in terms of the doctrines of creation, eschatology, and theological anthropology.

Eduardo Rodrigues da Cruz is certainly one of the leading scholars in science and religion in Brazil, and it is largely due to him that the Brazilian theological milieu devoted (and keeps devoting) some thought to the relation between theology and the natural sciences. Rodrigues da Cruz is based at the Department of Religious Studies of the PUC-SP, where he works in one of the leading Brazilian graduate programs on ciência da religião (similar to programs on religious studies elsewhere) on the engagement of theology and religion with the natural sciences, bioethics, and contemporary culture. In 2007, the prestigious *Revista de Estudos da Religião* (*Rever*) from PUC-SP invited Rodrigues da Cruz and Steven J. Engler (the latter at the time visiting scholar at that university), to edit two volumes of the journal with articles specifically pertaining to science and religion. These volumes are, to my knowledge, the first attempts of a Latin American academic theology journal to engage with issues related to science and religion. Rodrigues da Cruz and Engler included translations of key articles, such as Peter Harrison's "'Science' and 'Religion': Constructing the Boundaries" (2006), Philip Clayton's "The Emergence of Spirit: From

Complexity to Anthropology to Theology" (2000), and Philip Hefner's "Religion in the Context of Culture, Theology, and Global Ethics" (2003), together with other original articles such as Francisco Ayala's "Do Mito do Éden a um Novo Jardim: Genética e Responsabilidade Ética" (2007), James A. Marcum's "Explorando as Fronteiras Racionais entre as Ciências Naturais e a Teologia Cristã" (2007), Lucio Florio's "Las Ciencias en la Teología" (2007b), Juan José Blázquez Ortega's "Verdad Teológica y la Ciencia de Hoy: Confrontación de Saberes y Sentido del Hombre" (2007), and Steven Engler's "Tipos de Criacionismos Cristãos" (2007).

As with Florio and Urrutia Albisua, Rodrigues da Cruz has been active in promoting research and publications on issues related to science and religion. He has published *A Dupla Face: Paul Tillich e a Ciência Moderna, Ambivalência e a Sociedade* (2008) and *A Persistência dos Deuses: Religião, Cultura e Natureza* (2003), and edited *Teologia e Ciências Naturais. Teologia da Criação, Ciências e Tecnologia em Diálogo* (2011), in which scholars treated topics on natural theology, philosophy of religion, cosmology, and evolutionary theory in relation to the doctrine of creation, among other issues. More recently, Rodrigues da Cruz has translated Peter Harrison's *Cambridge Companion to Science and Religion* (2010) into Portuguese (2014), and published a short introduction to these issues under the title *Religião e Ciência* (2014), intended to help Brazilian teachers of religious education in their dealings with these issues in the classrooms.

As is evident from the lines above, these three groups of scholars, besides having collaborated among themselves, have also had some international partnerships since their beginnings, most notably through Metanexus's Local Societies Initiative, but also through relationships with institutions in Europe (such as the European Society for the Study of Science and Theology) and the United States (such as the Center for Theology and the Natural Sciences, Berkeley). It was through these partnerships and collaborations that these groups developed and engaged with the contemporary issues on science and religion being discussed in different academic environments in Europe and the United States.

Out of these collaborations, probably the most important output has been the creation of the first academic journal edited in Latin America (at the institute CECIR, in Puebla, Mexico) entirely dedicated to issues on science and theology: *Quaerentibus. Teología y Ciencias*. Under the direction of Lucio Florio, with Rodrigues da Cruz, Urrutia Albisua, Blázquez Ortega, and Ludovico Galleni (from Italy) on its advisory board, and Silvana Procacci (from Italy), João J. Vila-Chã (from Portugal), François Euvé (from France), Javier Leach and Lluis Oviedo (from Spain) on its editorial board, *Quaerentibus* was launched in September 2012, and it is currently in its fourth volume. One of the key features of *Quaerentibus* is that it accepts academic papers on topics related to science and theology as long as they are written in neo-Latin languages, that is, Spanish,

Portuguese, Italian, French, and Catalan, with the goal of stimulating discussion in the local languages of the authors, following the idea that there are some culturally idiosyncratic issues which can be better expressed in the local language. In its opening editorial Florio asks: "Which relation could someone from Paris or Madrid have with a Brazilian and Andean peasant?" to which he somewhat poetically answers: "We believe that the Latin substrate acts as a linguistic geological stratum working as a kind of background comprehension in certain issues" (Florio 2012, 8, my translation). A quick analysis of the four volumes published so far shows that the "hot topics" for Latin American authors are the issue of how to relate science with theology (for example, Rodrigues da Cruz 2012 and Moreira dos Santos 2012, from Brazil; Bollini 2012, Pérez Ramírez 2012, and Zanotti 2013, from Argentina), questions arising from the theory of evolution (for example, Celli 2012, Asla and Carman 2013, and Gudiño, Oviedo, and Florio 2013, from Argentina), topics related to the environment (Bugallo 2013 and Zuloaga 2013, from Argentina), and to education on science and religion (Bagdonas and Silva 2014 and Campos 2013, from Brazil). Besides these topics one can find issues related to cosmology, atheism, aesthetics, and mind–body problems, among many more. It must also be mentioned that in its four volumes to date *Quaerentibus* has included pieces by European and African authors.

Further Regional Work on Religion and Science

In 2011, the Ian Ramsey Centre for Science and Religion at the University of Oxford began a 3-year project funded by the John Templeton Foundation to develop, promote, and stimulate work, partnerships, and collaborations within Latin America on science and religion. This project, by means of two international conferences and essay competitions, identified several other groups and institutions working on this field of research across the region, so it seems worth relating the experience of organizing these events.

The first event was the Sixth Latin American Conference on Science and Religion, October 19–21, 2011, which served as an important event for evaluating current interest and expertise in science and religion in Latin America. The conference was coorganized by the Ian Ramsey Centre for Science and Religion and the Universidad Panamericana, Mexico City, in association with the British Council "Belief in Dialogue" project, and with the sponsorship of Fundación DECyR (Argentina), Instituto CECIR (México), and Instituto CECREI (Brazil). The Seventh Conference was coorganized by the Ian Ramsey Centre for Science and Religion and the Pontificia Universidade de Rio de Janeiro, with the sponsorship of Fundación DECyR (Argentina), Instituto CECIR (México), and the Postgraduate Program on Science of Religion at PUC-SP (Brazil).

There were over 150 participants during the sixth conference and over 300 in the seventh, including plenary and guest speakers from the United Kingdom, the United States, Australia, Canada, Italy, Mexico, Brazil, Argentina, and Chile, and contributed papers from over 50 universities and higher education institutions in Argentina, Brazil, Chile, Colombia, Cuba, Guatemala, Mexico, Peru, and Uruguay. The most discussed topics in the contributed papers were issues on the foundations for the possibility of a dialogue between science and religion, issues on Darwinism and evolutionary theory, the physical sciences and religion, psychology and religion, education on science and religion, and certain historical questions. An analysis of the conferences' presentations, however, highlighted the fact that, although the standard of scholarship of the vast majority of papers was high, the latest research done internationally on science and religion does not reach Latin American scholars in general.

Perhaps the most important outcome of these conferences was the awareness among scholars of not being connected with each other. Afterwards, participants claimed repeatedly that they had made several new contacts and plans for collaborative projects. In this respect, the conferences helped identify institutions, research groups, and scholars, as well as existing and emerging collaborations across Latin America. Groups in Mexico include scholars from the already mentioned UPAEP, where the CECIR institute is based under the direction of Eugenio Urrutia Albisua and Juan José Blázquez Ortega; the Universidad Panamericana, where Héctor Velázquez, author of *¿Qué es la Naturaleza?* (2007), leads research ranging from historical issues on science and religion to topics on transhumanism and the modification of nature; and the Universidad Anáhuac, where Adolfo Orozco holds one of the few chairs in the region on faith and science. These three institution, led by the Pontificia Universidad Católica de México (UPM), organize regular interinstitutional colloquia and seminars on a variety of topics on science and religion, most notable the one on 2009 devoted to the evolution of the dialogue between theology and the sciences from Galileo to Darwin and today. This colloquium was documented in the publication in 2010 of the volume *La Evolución del diálogo Teología-Ciencia a los 400 Años del Galileo y 200 de Darwin* edited by Juan Carlos Casas García and Alberto Anguiano García (2010), both from UPM.

It is worth mentioning separately the work carried out by the online journal *Razón y Pensamiento Cristiano* (RYPC), led by Manuel David Morales in Mexico. RYPC is devoted to disseminating research and educational articles on topics intersecting theology, science, and philosophy from a Protestant perspective open to an ecumenical and interreligious dialogue. RYPC is arguably the most important and serious venture from a Protestant starting point to engage with issues pertaining to science and faith in Spanish Latin America. As such, the journal has recently begun a strong partnership with the Spanish Centro Ciencia y Fe led by Pablo de Felipe, which will aim at

bridging the evangelical Protestant worlds in Spain and Latin America with a focus on science. Together with RYPC, several other institutions work within the Protestant environment in Spanish Latin America, including, remarkably, Federico Melendez and César Navarro, both from Guatemala. Melendez created and leads what to my knowledge is the only graduate degree in the region on science and religion at the Universidad Mariano Gálvez, while Navarro directs the Sociedad Educativa Latinoamericana para Fe y Ciencia (SELFYC), based in Guatemala, aiming at the promotion and education of science from a Christian perspective. All these institutions work closely together and in collaboration also with other institutions of the region, in particular from Mexico and Chile. SELFYC partnered with the Faraday Institute, University of Cambridge, in 2013 to offer a course in Guatemala with local and English speakers, attended by over seventy scientists and theologians.

In addition to the work that Eduardo Rodrigues da Cruz is doing in Brazil, Agnaldo Cuoco Portugal, a philosopher from the Universidade de Brasília and founder of the Associação Brasileira de Filosofia da Religião, is leading two Templeton-funded projects aiming at supporting Brazilian philosophy of religion, and promoting engagement both with the analytic tradition of philosophy of religion and with the field of science and religion. Alexander Moreira-Almeida, a physician and psychiatrist, leads a research group at the Universidade Federal de Juiz de Fora on spirituality and medicine, Núcleo de Pesquisa em Espiritualidade e Saúde. Among many other activities, the group organizes the International Lectures in Science and Spirituality, where speakers like Ronald L. Numbers (United States), Andrew Pinsent (United Kingdom), Ute Habel (Germany), Miguel Farias (United Kingdom), Robert Cloninger (United States), James Lomax (United States), and myself have lectured. In an unusual effort in Latin America, Moreira-Almeida published in 2012 together with Franklin Santana Santos in English the edited volume *Exploring Frontiers of the Mind-Brain Relationship*.

Brazil holds one of the largest theological annual meetings in the region, bringing together not only Brazilian scholars but also academics from other countries of the region, organized by the Sociedade de Teologia e Ciências da Religião (Soter). Its 2009 conference was devoted to the topic of religion, science, and technology. The three plenary speakers, Ivone Gebara, Eva Aparecida Rezende de Moraes, and Luiz Carlos Susin, presented their reflections on this issue. Nevertheless, the 13 symposia within the conference focused on different topics, with one dedicated to science, religion, and pluralism which included five articles discussing the question of modernity in relation to science and theology. On the contrary, the symposium on religion, science, and technology concentrated more on issues on technology and religion from the perspective of religious studies than on the philosophical and theological implications of contemporary science. This

is certainly not surprising given that, at least since 2009, there had not been one symposium in the annual conferences including topics on the relation between science and theology, a clear sign of the underdevelopment of this kind of discussion in Brazil, which contrasts with the distinctive conversation within "science of religion" circles. It has to be mentioned, however, that there are certain exceptions to this rule. The edited volume that came out of the 2009 Soter conference is solely devoted to issues of theology and science (Sociedade de Teologia e Ciências da Religião 2009), including eight chapters reflecting on the relations between science, technology, religion, and theology; and at least two other scholars were engaged in these issues the previous annual conference, namely Leomar Antônio Brustolin ("Darwin e a Teologia: Paradigmas de diálogo entre Ciência e religião") and Pedro Alberto Kunrath ("Crer depois da 'morte de Deus' Teologia da Criação (Fé) e Ciência (Razão): caminhos para o diálogo"), both from the Pontifícia Universidade Católica do Rio Grande do Sul.

Even if this is the case in the major theological conference of the region, it is also true that there is some discussion on science and religion within the Brazilian theological academic environment beyond the work of the abovementioned scholars—in the first place, the Círculo de Estudos Bandeirantes at the Pontifícia Universidade Católica do Paraná, which published the volume *Ensaios sobre Ciência e Fé* (De Oliveira and Tescarolo 2012), including mostly essays from a sociological perspective on science and religion. In addition, two academic associations have also devoted some of their meetings to these topics: the Associação Nacional de Pós-graduação e Pesquisa em Teologia e Ciências da Religião (Anptecre) and the Associação Brasileira de História das Religiões, both included in 2011 thematic groups on science and religion, the former led by Eduardo Rodrigues da Cruz, and the latter by Leila Marrach Basto de Albuquerque from the Universidade Estadual Paulista Júlio de Mesquita Filho, discussing creationism, the problem of evil, religiosity and chemistry, education, and cosmology. Finally, the academic journal *Atualidade Teológica*, from the PUC-Rio, has published several articles in the past few years on issues relating science and theology, mostly discussing the possibility of a dialogue or relation. For example, in 2011 Lindomar Rocha Mota published "Teologia, Ciência e Hermenêutica" and Alfonso García Rubio published "A Visão Científica Evolucionista Interpela a Fé em Deus Criador," in an issue in which three other articles were devoted to theology and the environment: Haroldo Reimer's "Criação e Cuidado: Perspectivas bíblicas," Leonardo Agostini Fernandes's "Teologia, Antropologia e Ecologia em Gn 1,1–2,4a", and Lúcio Flávio Ribeiro Cirne's "O Espaço da Biodiversidade: uma leitura teológica da criação na perspectiva da sustentabilidade ambiental." Finally, in 2013, Wilmar do Valle Barbosa and Roney de Seixas Andrade published "Ciência moderna, religião e os novos ateístas," which

had been previously discussed at the Seventh Latin American Conference for Science and Religion in Rio.

Scholars in Colombia have gathered around these topics mainly at three colloquia on science and religion in 2009, 2011, and 2014. These events were organized at the Universidad del Valle de Cali, one of the leading Colombian state universities, by a research group led by Luz Marina Duque Martínez, with the participation of scholars from several other universities, in particular the Pontificia Universidad Javeriana, the Universidad del Rosario, and the Universidad San Buenaventura. Following the evident interest in scholarship on these issues, some scholars gathered for the publication of two important collective volumes: *Ciencia y Religión. Reflexiones en torno a una Racionalidad Incluyente* (Duque Martínez and Leidy Marcela Estrada Orozco 2013) and *Ciencia y Religión. Horizontes de relación desde el contexto latinoamericano* (Bonilla Morales 2012). The first of these brings together 18 Colombian academics writing on issues ranging from historical subjects (on readings of the book of Nature, the Galileo affair, Newton on God and providence), philosophy of religion (mainly on religious belief), the meaning of rationality (on atheism, narratives, emotions, dialogue, and knowledge), and the gnostic and esoteric arts. The second of these volumes is one of the first truly Latin American books fully devoted to science and religion, bringing together 12 authors from Argentina, Brazil, Chile, Colombia, and Mexico, discussing many different topics from different perspectives, all present in the diversity of Latin American philosophical and theological thought, such as liberation theology, philosophy of science, phenomenology, complexity theory, and Thomism, among others.

Argentine scholars have been very active in recent years, following the lead of the Philosophy Institute at Universidad Austral, one of the top private institutions in the country. Claudia Vanney, the director of the institute, with the aid of Juan Francisco Franck, has managed to attract funding from the John Templeton Foundation for two three-year projects: *Determinism and Indeterminism: From Science to Philosophy* and *Diccionario Interdisciplinar Austral*. The former, a project which began in 2013, brings physicists, biologists, neuroscientists, philosophers, and theologians into dialogue at thematic workshops and seminars in order to revisit new scientific findings in physics, biology, and neuroscience and to assess their impact on philosophical issues of determinism and indeterminism in nature. Within this project Claudia Vanney organized an interreligious panel, which included members from different faith traditions (Judaism, Catholicism, Protestantism, and Islam), to discuss the particular approaches to issues on science and religion in Argentina. The latter project, which began in mid-2014, will produce a web-based interdisciplinary dictionary in Spanish addressing key issues at the intersection of science, philosophy,

and theology, hoping to offer Spanish-speaking scholars with an up-to-date resource to engage in science and religion topics.

Austral has also recently partnered with the Faraday Institute, University of Cambridge, to offer a two-day seminar on science and religion, gathering around 50 high-profile scholars from throughout Argentina, including physicists, cosmologists, biologists, neurologists, philosophers, and theologians, to discuss the latest discoveries in contemporary science affecting philosophical and theological thought. These projects at Austral University are slowly attracting participants from different universities within the country, such as UCA, the Universidad de Buenos Aires, Universidad Nacional del Litoral, and Universidad Nacional del Centro de la Provincia de Buenos Aires, as well as other countries in the region and beyond.

In addition to the groups and scholars in Mexico, Brazil, Colombia, and Argentina, some academics in Chile and Uruguay are starting to gather, forming incipient research groups on different topics in science and theology. In Chile, Rafael Vicuña, a biochemist from the Pontificia Universidad Católica de Chile and member of the Pontifical Academy of Sciences, specialist in the origin of life on Earth, is assembling philosophers and theologians to engage in discussions surrounding this issue. Parallel to these developments in Chile, Francisco O'Reilly, at the Universidad de Montevideo, is leading the discussion in Uruguay, perhaps the most secular country in Latin America, by holding regular seminars and introductory lectures on science and religion.

I would like to conclude this section by mentioning a volume recently published, *Latin American Perspectives on Science and Religion* (Silva 2014). As one of the visible outcomes of the IRC project on Latin America, the volume's goal was to be an initial reflection of what some of the Latin American scholars are currently thinking and discussing on science and religion. The volume, written entirely in English by Latin American authors, has a twofold "Latin American" character: first, it is written by Latin American authors presenting their views on different problems raised by the interaction of religious and scientific narratives, thus having a "Latin American mind" behind it; and second, there are many Latin American problems that are discussed in its pages, even though the goal of the volume was not to study the current, or historical, relations between science and religion in Latin America, as if the region was to be taken as a subject of study. (Of course, there are some chapters that deal with some issues from this perspective, and hence, this second character).

As can be expected, much of the discussion within the volume is dominated by Catholic thinking. Latin America is predominantly a Catholic region after all. However, even within this tradition different perspectives are represented: Thomism (Oscar Beltrán, from Argentina), liberation theology (Juan Navarrete Cano, from Chile), arguments motivated by the thought of Paul Tillich (Jaime Laurence Bonilla Morales, from Colombia),

and even the Spanish philosopher Leonardo Polo (Claudia Vanney, also from Argentina). Nevertheless, other traditions are represented as well, as the Argentinian Juan Francisco Franck's chapter on a phenomenological take on the philosophy of the person evidence. The volume also includes methodological chapters (such as the Brazilian Luís Corrêa Lima's chapter on history and faith); historical chapters (such as Jesús Galindo's, from Mexico, on Pre-Hispanic views on the heavens; Miguel de Asúa's, from Argentina, on the Jesuit missions and science; or Héctor Velázquez's, from Mexico, on the reception of Darwinism in Latin America); and sociological chapters (such as Rodrigues da Cruz's, and Heslley Machado Silva and Eduardo Mortimer's on the creation/evolution debates in Brazil).

Conclusion

Science and religion in Latin America is a relatively new but growing enterprise involving a wide range of developments. Groups and scholars can be found throughout the region collaborating on new projects. Nevertheless, it is also true that Latin American scholars are still somewhat isolated from the international discussion on science and religion, while being at the same time isolated from each other, given the vastness of the region and the lack of dynamic and efficient channels of information exchange. In addition to this isolation, it is also true that publications to date in Spanish and Portuguese on academic topics related to science and religion have been small in number and limited in scope. In particular, there is no comprehensive scholarly introduction to the field in Spanish or Portuguese (besides Rodriguez da Cruz's translation of Peter Harrison's *Cambridge Companion to Science and Religion*). Finally, it cannot be said that Latin American scholarship in this field has yet had a significant international impact.

Catholic and secular institutions are trying to engage in a two-way dialogue, instead of continuing with the current insularity. However, even though there are some exceptions, like the Colombian state university Del Valle working with Catholic institutions within the country, or Universidad Austral reaching out to state university scholars in Argentina, it is still the case that this kind of dialogue is rare. In addition to this institutional divide, it is also true that there is a great division among disciplines. Theologians rarely speak with scientists, or scientists with theologians. There are some exceptional cases in which this dialogue occurs, such as the workshops and seminars at Austral University (Argentina) or UPAEP (Mexico). If these interinstitutional and interdisciplinary dialogues are to continue, many conflictive barriers will need crossing.

The future, however, certainly looks promising. Numerous new projects are seeing the light, out of which much may be expected. Many of these projects are not isolated efforts, but rather collaborative ventures among

regional and extra-regional universities and scholars, in particular with Spain and Italy. The enthusiasm shown in the different regional events, together with the seemingly underdeveloped potential, suggests that the global science and religion academy should look forward to receiving new insights from the Latin American scholarly community in the not too distant future. The coming decade should welcome new voices in the global science and religion dialogue, and Latin America promises to provide some of them.

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