INTERNATIONAL PERSPECTIVES ON SCIENCE, CULTURE, AND BELIEF

FROM COMPLEXITY TO GLOBALITY

Edited by
Fern Elsdon-Baker, Stephen H. Jones, and
James Riley

International Perspectives on Science, Culture, and Belief

Public understanding of the relationship between science and religion is dominated by US and UK perspectives and research that has been carried out in Western Protestant Anglophone contexts. This has enabled a culturally specific narrative of conflict to dominate public discussions of evolution, science, and religion, obscuring the varied cultural contexts and complexities within which engagement with science takes place and the growing influence of non-religious identities and diverse forms of spirituality.

Representing one of the most wide-ranging and original contributions to the emerging body of research on the relationship between religion, non-religion, and science in society, this innovative and timely collection revisits, challenges, and rethinks longstanding assumptions by decentring positions and perspectives that have until recently dominated discussions of science and belief. Drawing on almost a decade of multidisciplinary research, *International Perspectives on Science, Culture, and Belief: From Complexity to Globality* brings together incisive global perspectives exploring the social and cultural drivers of the relationships between evolutionary science and belief. Highlighting the natures and varieties of the interrelation between science and belief globally, this volume addresses the relationships between science, culture, and belief from multiple disciplines, methodologies, and geographical contexts including South Asia, Latin America, Africa, and Australia as well as Europe and North America.

This work has particular relevance in the increasingly polarised post-pandemic world, shining a light for the first time on the multifaceted interplay between social identities and cultural narratives in debates that are often about far more than the science.

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Routledge
Taylor & Francis Group
LONDON AND NEW YORK

First published 2026
by Routledge
4 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge
605 Third Avenue, New York, NY 10158

Routledge is an imprint of the Taylor & Francis Group, an informa business

This publication was made possible through the support of the 'Science and Religion Exploring the Spectrum: The Relationship between Evolutionary Science and Religious Belief in Global Perspective' project grant from Templeton Religion Trust.

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library

ISBN: 9781032760063 (hbk)
ISBN: 9781032760032 (pbk)
ISBN: 9781003476580 (ebk)

DOI: 10.4324/9781003476580

Typeset in Sabon
by Newgen Publishing UK

Contents

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Acknowledgements

This publication was made possible through the support of the 'Science and Religion Exploring the Spectrum: The Relationship between Evolutionary Science and Religious Belief in Global Perspective' project grant from Templeton Religion Trust. The opinions expressed in this publication are those of the author(s) and do not necessarily reflect the views of Templeton Religion Trust.

In loving memory of our dear friend and colleague Tom Carney whom we sadly lost in 2021. Tom's hard work, dedication, sense of humour and kindness were integral to setting up the projects without which this book would not have been possible. You will always be a deeply missed member of our gang.

1 Introduction

From Complexity to Globality

Fern Elsdon-Baker, Stephen H. Jones, and James Riley

Introduction: The Rising Relevance of Science and Belief

Consider for a moment the vast range of social questions that cannot be answered without some attention to the intersections between science and belief. Take, for example, science communication, especially the branch of it interested in influencing so-called 'hard to reach' sections of society. If you are interested in this as an activity, you will have to grapple with the fact that the people you want to talk to identify with myriad religious and non-religious traditions and communities. This may influence whether and how your interlocutors engage with medical treatments, new technologies, and the natural world – encompassing everything from mental health treatments and organ donation to responses to climate change and vaccination programmes (something that became very apparent, on a global scale, with the COVID pandemic in 2020).

This is one example of many. Similar questions arise in the context of education, where science and belief mix together in varying ways across the world (Asghar et al., 2010; Billingsley et al., 2016; Goldston and Kyzer, 2009; Long, 2011; Taber et al., 2011). Without engaging with the subject of science and belief, one cannot fully understand those conspiratorial movements that reject scientific authority – and any associated technologies and treatments – entirely (see Chapter 14, this volume). Nor can one understand new religious movements or the growth of non-religious identities globally, for many of these make a claim upon science to bolster their authority (Catto et al., 2023; Lee, 2019; Chapter 5 of this volume). Science and belief sit at the heart of social divisions and prejudices (Jones et al., 2019; Unsworth, 2019), in large part because 'science' has been entangled in Western colonialism and its denigration of colonised populations (see Chapter 3). They sit, too, at the centre of some political transformations and conflicts – such as those seen in Turkey since the fall of the Ottoman Empire (Bilgili, 2007).

Given all this, it is genuinely remarkable that the subject of science and belief is usually treated as being of minor relevance by scholars in most academic disciplines. The intersection between science and belief formed a foundational part of the early social sciences and remained central to social

DOI: 10.4324/9781003476580-1

scientific disciplines in the early twentieth century (Evans and Evans, 2008). The subject fell out of favour in the middle twentieth century, however, becoming marginal along with the sociology and psychology of religion as a whole (Catto, 2015). Accordingly, the study of science and belief became restricted mostly to Christian theology, history, and the philosophy of religion (Barbour, 1971, 1990), and it therefore tends now to be viewed as a largely abstract and academic discussion hosted in 'ivory towers'. To talk of 'science and belief' is, in many people's minds, to engage in debates within the sphere of Christian theology and history, which, it is often implied, are not important in modern secular societies.

This situation is largely the result of historical trends peculiar to the West. Discussions of science and belief have been conducted in the shadow of immensely popular late nineteenth-century texts on the supposed 'warfare' between science and religion (see Chapters 2 and 3). Since that time, and up to the present day, the idea that science and religion stand locked in transhistorical conflict has been reiterated again and again in Western – and especially Anglophone – popular culture (Chapter 9). The focus of these polemics tended to fall on established Western Christianity and so have – by necessity – most attempts to rebut the conflict thesis's cruder generalisations. For example, while the discipline of history hosted lively discussions about science and belief across the twentieth century, these often focused on myth busting (Numbers, 2010), with scholars highlighting the level of complexity in interactions between religious and scientific authorities in European history. Such writing has had an impact, with John Hedley Brooke's work, in particular, raising 'serious questions about the validity of the conflict thesis as a guiding master narrative for the field' (Chapter 2, p. 16; Brooke, 1991: 22). Yet remaining tied to a Christian-centric debate about the conflict thesis has meant that it has been hard to generate interest in, and elucidate the relevance of, the field.

This began to change in the twenty-first century (Catto et al., 2019). The emergence of 'New Atheism' in the aftermath of the attacks on New York in 2001, the religious diversification of Europe and America, and an (incomplete) reckoning with Europe's colonial past in the academy all made science and belief more appealing to study, while new funding opportunities in the academy also made it viable (see Chapter 2). Following in history's wake, sociologists and psychologists started to explore the complexity of interactions between scientific and religious authorities and communities (while also showing how the two are far from mutually exclusive [Ecklund et al., 2019; Thomas and Geraci, 2018]). Like the historical research that went before it, this work focused much of its energy on busting conflict myths (Catto et al., 2022). It showed that tensions between science and religion often stem from moral rather than epistemological differences (Evans, 2011, 2018) and that scientific knowledge does not enhance science acceptance in the ways one might expect (Baker, 2013; Ecklund et al., 2008, 2019). Collectively, this research showed that what may, from the outside, look like a familiar

science/religion conflict, on detailed inspection, stems from the interplay of social identities (Hill, 2014a, 2014b, 2019; Jones et al., 2020; Kaden, 2018; Long, 2019).

Importantly, this emerging cross-disciplinary research started to do more than bust myths. Scholars of science and belief began to ask questions about a wide range of significant global social issues – one of the most obvious examples being vaccine hesitancy in the wake of COVID-19 (Aechtner and Farr, 2022). The field has also started to move beyond the West and, in so doing, push back against Eurocentric assumptions, not least the assumption that science and belief is an irrelevant topic. There do remain problems. While science and belief has gained some recognition in mainstream discussions of the public understanding of science (Clément, 2015; Ecklund and Scheitle, 2017; Elsdon-Baker, 2015; Roos, 2014; Taragin-Zeller et al., 2022), public debate about science and belief remains marginal to the wider study of science and technology. Nevertheless, the field is undoubtedly richer than it was 25 years ago.

Science and Religion: Exploring the Spectrum

In 2014, the editors, along with several of the authors in this volume, set up the 'Science and Religion: Exploring the Spectrum' project, a research programme intended to facilitate this expansion of research across history, sociology, and social psychology. It sought to internationalise and diversify research into science and belief, first by moving the focus from the US to other Anglophone nations and then going beyond to look at non-English-speaking contexts in the Global North and South. All the disciplines involved in the project were focused on the question of what sustains the idea of conflict between science and religion and what impact it has in different contexts. The intention was to build a more comprehensive empirical picture of people's lived experiences of, and attitudes towards, the relationship between science and religion and to look at the role played by media and scholarly discourse in perpetuating the perception that there is an inevitable conflict between religious belief and science.

This research started in 2014 and ended in 2023 and was carried out in two phases. The first of these took place between 2014 and 2017 and the second between 2018 and 2023. We refer to the two projects in this volume as 'Science and Religion: Exploring the Spectrum' (SRES) and 'Science and Religion: Exploring the Spectrum of Global Perspectives' (SRES2). In each case, we combined archival, qualitative, quantitative, and experimental methodologies to explore our core research questions. During SRES, the focus was more modest, extending only to the UK and Canada (for more on this research, see Elsdon-Baker and Lightman, 2020). SRES2 expanded this to focus on Argentina, Australia, Germany, Spain, Sri Lanka, and the US.

Reflecting its centrality to public discussions of science and belief, the main topic of focus across both iterations was evolutionary science, and thus this is

the focus of many contributions to this collection. Reflecting the SRES project's ethos and aims, however, the research did not look at just whether people believe in evolution along with the background factors influencing those beliefs. The research also sought to understand the influence of narratives of conflict upon how people think about evolution and religion. Thus the research not only asked for people's views but also investigated what people believe about *other* social groups' beliefs (see Chapter 11). Do people, for example, tend to over- or underestimate religious people's evolution denial? Do we project onto others certain preconceptions rooted in the conflict narrative?

Research Overview

The two SRES projects employed a common approach. In the first iteration, the historians among the research team investigated early science popularisers and the first radio and television discussions of evolution in Britain (Elsdon-Baker and Lightman, 2020; Hall, 2019, 2021). In SRES2, they then began work on the almost impossible task of outlining a 'global history' of science and religion (Chapter 2). In the social psychology strand of the research, the research team developed scales measuring, *inter alia*, perceptions of science/religion conflict and compatibility, which were then utilised in experimental settings, first in the UK and Canada, and then translated, with considerable difficulty, to the SRES2 countries (see Chapter 12). Similarly, the quantitative sociology strand of the two projects developed survey items, which were applied first in the UK, then across five of the remaining six countries (see Chapter 11).

The final strand of research, qualitative sociology, stood out from the others in a way that is very visible in this volume. The quantitative and experimental research involved UK-based research teams travelling to and collecting data across the various countries, with support from partners in each country. The qualitative research, however, was led by small teams based in each of the case study countries. With the exception of the US (see Chapter 10), this research was carried out in a broadly consistent way, with the aim being to carry out in each country 60 interviews and eight focus groups with religiously diverse members of the public and scientists working in the life, biological, and medical sciences (split in a 2:1 ratio). Data gathering and analysis were, with some minor variations for local context, consistent in each country. In part because the research was carried out by semi-independent teams, however, with interviews and analysis in almost every instance completed in the native language, they emerge as distinct narratives – and are written up as such, from Chapter 4 through to Chapter 10.

Although our aim was for the research to be consistent across the two iterations, global events make this impossible. In SRES, we were working in a world that had never heard of COVID and where questions about the

transmission of scientific knowledge were much further down on the global agenda. The COVID-19 pandemic took hold just as the research was being initiated for SRES2, which meant that the environment in which data was gathered was very different. Our research in the UK and Canada did not include questions about the spread of disease or vaccine hesitancy, and these issues were hardly mentioned. The research carried out in Australia, Argentina, Germany, Spain, Sri Lanka, and the US used almost the same scripts, but such subjects could not be avoided, with interviewees bringing up COVID-19 on a regular basis.

The COVID-19 pandemic also caused considerable practical difficulties, with the research teams that made up the project being unable to travel and confined in lockdowns of varying severity. Almost all the SRES2 qualitative research and much of the experimental research were carried out online, with the exception of Sri Lanka, where research was only able to begin in any form once restrictions had started to wane. Carissa A. Sharp et al. give a detailed account of how this impacted the experimental research in Chapter 12. In the case of the qualitative research, the reader will notice slight variations in approach between the case study countries, due to focus group research proving unfeasible in some contexts and being replaced with additional media reviews.

Despite these considerable challenges, this volume presents one of the most wide-ranging accounts of public perceptions of science, religion, and evolution ever developed. This is all the more the case because we have included three additional chapters focused on topics and geographical regions that the SRES research team was not able to include in their research. This includes chapters dedicated to the history of empire and its impact on science/religion interactions (Chapter 3); science and belief in Africa, the continent that is, by some distance, the least well studied (Chapter 13); and emerging conspiratorial anti-science belief systems (Chapter 14).

Volume Structure and Research Findings

The volume is divided into four sections. The first focuses on the historical study of science and belief, explaining and contextualising the field as well as outlining some of the controversies found within it. The second, based entirely on the qualitative SRES research, begins to look in detail at specific present-day country contexts. The third section moves the focus back out again, with the experimental and quantitative research introduced to facilitate comparisons among the countries covered. Then, in the fourth and final section, we look towards 'new horizons' in the study of science and belief, pointing to where the field might move from here.

Across these chapters, some central research themes and findings emerge, which are summarised next.

From Complexity to Globality

While the whole of this volume is dedicated to the global study of science and religion, this subject is an explicit focus in Chapter 2 and Chapter 3. In Chapter 2, Joel Barnes et al. map out the historiography of science and religion over the past few decades and how the discipline of history has related to, and influenced, sociological study. They explain how the historical study of science and religion is starting to move beyond the 'complexity thesis', which posed a challenge to the conflict thesis from the 1990s onwards, and toward a global study in which material culture and the reception of science in local contexts are key points of interest. Today, the historical study of science and religion is increasingly moving past the study of 'great men' – exemplified in the figures of John William Draper and Andrew Dickson White, widely credited as the originators of the conflict thesis – and towards less well recognised science popularisers or cultural contexts. Chapter 3 offers examples of this, with Sarah Qidwai and Nathan Bossoh providing an overview of the ways in which the communication of science has historically been entangled with imperial conquest. One of the clearest examples they provide, drawing on the study of material culture, is the emergence of museums in nineteenth- and twentieth-century Europe. They discuss the case of the Wellcome Historical Medical Museum, which presented its visitors with a sharp contrast between the 'Hall of Primitive Medicine' and its modern, 'civilised' counterpart, named the 'Hall of Statuary'. As Bossoh and Qidwai comment, such 'exhibition spaces could be curated to physically govern the boundaries between science and religion – [and] these so-called boundaries were overwhelmingly centred around Eurocentric hierarchies of empire' (p. 39).

Cultures of Science/Religion Conflict

These chapters allow us to see how social rituals and institutional norms have maintained a *culture of science/religion conflict*, and this remains a focus as we move to the qualitative case study chapters in the middle sections of the volume. These chapters mostly focus on countries, such as Germany, that lack influential public anti-evolution movements and that tend not to be the focus of historical conflict narratives. Indeed, one of the common themes across many of these chapters – including the qualitative research carried out in Argentina (Chapter 4), Germany (Chapter 6), and Spain (Chapter 7) – is that the research participants experience little public debate or contestation about religion and evolution and therefore view it as a matter for *other countries*. Yet despite this, when questioned further about science and religion, participants frequently return to themes of conflict. As Arturo Fitz Herbert et al. observe in Chapter 4, for example, many of the Argentinian interviewees claimed not to view science and religion as in conflict, yet, when talking about the history of science and religion, they often referred to historical myths about conflicts between scientists and the Roman Church.

Conflict in the Global South: An Elite Discourse?

Argentina represents a particularly significant case, as one of two Global South countries discussed in depth in this volume, the other being Sri Lanka (Chapter 8). It is becoming increasingly widely recognised that the idea of transhistorical conflict between science and religion is distinctively Western (Ecklund et al., 2019; Harrison, 2015). These two chapters reinforce this point, while also complicating it. Neither Argentina nor Sri Lanka are 'outsiders' to the West in any simple sense. Sri Lanka, as Siri Hettige et al. discuss in Chapter 8, imported many educational and cultural norms during the period of British colonialism. This included the growth of rationalist societies along with schools where English is a main medium of instruction and where science teaching is more prominent than in rural non-English-speaking contexts. Argentina is even more complicated because, as Fitz Herbert et al. explain, the many Spanish and Italian migrants who migrated to the country brought with them strongly secularist ideas about education, influenced by French secularist (or laicist) political ideas. The country was also, until comparatively recently, among the wealthier nations of the world.

What this means is that we see ideas of conflict in these countries but, in Fitz Herbert et al.'s words, confined to 'niches'. Hettige et al. make clear that conflict is simply not recognised among much of the Sri Lankan public. Science is readily integrated with Buddhist and other religious ideas, and, with almost all members of the public having a strong religious formation in their family and school years, the language of science/religion conflict is rarely used. Likewise in Argentina, the population in the poorer parts of the country do not find any meaning in discussions about tensions between science and religion. However, conflict between science and religion is what one might call an *elite discourse*. It not only is recognised but has significant personal consequences in Argentinian and, to a lesser extent, Sri Lankan scientific institutions, for example (see also Fitz Herbert et al., 2023). Such ideas also find their way into educational settings in Argentina, while they are also, again to a lesser degree, encountered within the English-language educational institutions in Sri Lanka.

Conflict *as* Non-Religious Culture

In these countries, and indeed across all the chapters and strands of the SRES research, the culture of conflict between science and religion emerges as a *non-religious* phenomenon. Conflict is more likely to be affirmed by non-religious people and more likely to be downplayed by religious people, and it is often not recognised at all in social settings that lack significant non-religious populations. Across many contexts and chapters of the volume, we find that conflict forms a constituent and in some cases even essential part of non-religious identity. This is perhaps most striking in the case of Australia. In Chapter 5, Tom Aechtner and Ryan Williams profile research

conducted in Queensland, once a hub of Australian creationism and the place from which many of the country's religiously conservative politicians hail. Despite this, Aechtner and Williams find little evidence of the influence of creationism, outside of a few counter-cultural contexts. The conflict thesis, rather, is affirmed most actively and passionately by Queensland's growing non-religious population.

We see this in the UK too, where Stephen H. Jones looks at the culture of the country in the aftermath of New Atheism (Chapter 9). Jones proposes that the prominence and then decline of New Atheism in the UK can lead one to wrongly assume that conflict is no longer culturally important there. Yet in that country, as in Australia, Spain, or Germany, conflict is often assumed or utilised indirectly: it sits in the background of non-religious culture and identity, with nonreligious people drawing on conflict tropes to bolster their identities against a religious 'other'. So embedded are presumptions about science/religion conflict that they impact on religious people's lives. In the UK, as in other Western European states, religious denial of evolution is limited, but as we see in Chapter 9, religious people are put on the spot and asked to 'prove' their rationalism with questions about evolution. They feel a form of social dislocation that comes from holding a majority view, while being suspected of 'irrational' beliefs.

Projecting Conflict Onto 'Others'

This example touches on a phenomenon explored in much more detail in the quantitative and experimental research carried out across the SRES projects: *social projection*. In the SRES research, we use this term to describe a situation where individuals draw from the conflict narrative and, accordingly, project science rejection onto their own or others' social groups. Although we find this phenomenon across almost all strands of the SRES research, the clearest empirical example is found in Chapter 11, in which James Riley and Fern Elsdon-Baker analyse the key findings of surveys carried out in Argentina, Australia, Canada, Germany, Spain, the UK, and the US. One of the most striking findings in the SRES1 surveys carried out in the UK and Canada was that, among both religious and nonreligious populations, levels of evolution rejection were low, yet despite this, a majority of both religious *and* non-religious people, when asked, stated that a religious member of the public will find it difficult to accept evolution. That is to say, people *expect* to find evolution rejection among religious populations, even in contexts when rejection is a marginal belief among religious people. More strikingly still, Riley and Elsdon-Baker find that this phenomenon extends beyond the Anglophone world; indeed, they find the same pattern across all the countries surveyed for SRES2.

New Directions for the Study of Science and Religion

By the time the collection reaches Chapter 13, and the final section of the volume on 'new horizons' in the study of science and belief, it has already moved a long way past this introduction's point of departure, where discussions of science and belief were overwhelmingly oriented around Western Christian theology and history. But in these final chapters, we move still further past this, to the cutting edge of an emerging global research agenda. In Chapter 13, Bankole Falade highlights how, in central and southern Africa, responses to science and technology are shaped by interweaving Abrahamic and traditional African belief systems. He writes of contexts where religious identification may be across multiple traditions and where Western (clinical) and traditional medicine coexist. Finally, in Chapter 14, Anna Halafoff et al. turn to underexplored new religious movements, specifically looking at 'sciencey' forms of New Age spirituality and how these movements have given birth to 'conspirituality'.

These two case studies reinforce our opening point about the range of social questions that require an engagement with science and belief to answer. Between them, Falade and Halafoff touch upon themes as diverse and significant as belief and medicine, fertility, mental health, social media, celebrity, and the breakdown of trust and political authority. These are subjects that, amidst discussions regrettably but necessarily focused on challenging simplistic conflict myths, have not been given anything like sufficient attention by researchers. But, as we move past such myth busting, we begin to see that, as we emphasise in a closing coda, the field has a bright future.

References

Aechtner T and Farr J (2022) Religion, Trust, and Vaccine Hesitancy in Australia: An Examination of Two Surveys. *Journal for the Academic Study of Religion* 35(2): 218–244.

Asghar A, Wiles JR and Alters B (2010) The Origin and Evolution of Life in Pakistani High School Biology. *Journal of Biological Education (Society of Biology)* 44(2): 65–71.

Baker JO (2013) Acceptance of Evolution and Support for Teaching Creationism in Public Schools: The Conditional Impact of Educational Attainment. *Journal for the Scientific Study of Religion* 52(1): 216–228.

Barbour IG (1971) *Issues in Science and Religion*. New edition. London: Harper Collins.

Barbour IG (1990) *Religion in an Age of Science: The Gifford Lectures, Volume One*. San Francisco: Harper Collins.

Bilgili A (2007) Beating the Turkish Hollow in the Struggle for Existence: Darwin, Social Darwinism and the Turks. *Studies in History and Philosophy of Biological and Biomedical Sciences* 65: 19–25.

Billingsley B, Brock R, Taber KS, et al. (2016) How Students View the Boundaries Between Their Science and Religious Education Concerning the Origins of Life and the Universe. *Science Education* 100(3): 459–482.

Brooke JH (1991) *Science and Religion: Some Historical Perspectives*. Cambridge, MA: Cambridge University Press.

Catto R (2015) Sociology of Religion in Great Britain: Interdisciplinarity and Gradual Diversification. In: Blasi A and Giordan G (eds.) *Sociologies of Religion: National Traditions*. Leiden: Brill, pp. 107–131.

Catto R, Jones S, Kaden T, et al. (2019) Diversification and Internationalization in the Sociological Study of Science and Religion. *Sociology Compass* 13(8): 1–13.

Catto R, Riley J, Elsdon-Baker F, et al. (2022) Science, Religion, and Nonreligion: Engaging Subdisciplines to Move Further Beyond Mythbusting. *Acta Sociologica* 66(1): 96–110. DOI: 10.1177/00016993221116248.

Catto R, Shillitoe R, Jones SH, et al. (2023) The Social Imaginary of Science and Nonreligion: Narrating the Connection in the Anglophone West. *Secularism and Nonreligion* 12(1): 3.

Clément P (2015) Muslim Teachers' Conceptions of Evolution in Several Countries. *Public Understanding of Science* 24(4): 400–421.

Ecklund EH and Scheitle CP (2017) The Influence of Science Popularizers on the Public's View of Religion and Science: An Experimental Assessment. *Public Understanding of Science* 26(1): 25–39.

Ecklund EH, Park JZ and Veliz PT (2008) Secularization and Religious Change among Elite Scientists. *Social Forces* 86(4): 1805–1839.

Ecklund EH, Johnson D, Vaidyanathan B, et al. (2019) *Secularity and Science: What Scientists Around the World Really Think About Religion*. Oxford, NY: Oxford University Press.

Elsdon-Baker F (2015) Creating Creationists: The Influence of 'Issues Framing' on Our Understanding of Public Perceptions of Clash Narratives between Evolutionary Science and Belief. *Public Understanding of Science* 24(4): 422–439.

Elsdon-Baker F and Lightman B (eds) (2020) *Identity in a Secular Age: Science, Religion, and Public Perceptions*. Pittsburgh, PA: University of Pittsburgh Press.

Evans JH (2011) Epistemological and Moral Conflict between Religion and Science. *Journal for the Scientific Study of Religion* 50(4): 707–727.

Evans JH (2018) *Morals Not Knowledge: Recasting the Contemporary U.S. Conflict between Religion and Science*. Oakland, CA: University of California Press.

Evans JH and Evans MS (2008) Religion and Science: Beyond the Epistemological Conflict Narrative. *Annual Review of Sociology* 34(1): 87–105.

Fitz Herbert AL, Rivera R, Ketelhohn F, et al. (2023) Conflict Narrative, Stigmatisation and Strategic Behaviour of Religious Scientists in the Argentinean Scientific Field. *Acta Sociologica* 67(2): 149–163.

Goldston MJD and Kyzer P (2009) Teaching Evolution: Narratives with a View from Three Southern Biology Teachers in the USA. *Journal of Research in Science Teaching* 46(7): 762–790.

Hall A (2019) A Humanist Blockbuster? Jacob Bronowski and the Ascent of Man. In: Lightman B (ed.) *Rethinking History, Science, and Religion: An Exploration of Conflict and the Complexity Principle*. Pittsburgh, PA: University of Pittsburgh Press.

Hall A (2021) *Evolution on British Television and Radio: Transmissions and Transmutations*. 1st ed. Cham: Palgrave Macmillan.

Harrison P (2015) *The Territories of Science and Religion*. Chicago: University of Chicago Press.
Hill JP (2014a) *National Study of Religion and Human Origins*. Grand Rapids, MI: BioLogos Foundation.
Hill JP (2014b) Rejecting Evolution: The Role of Religion, Education, and Social Networks. *Journal for the Scientific Study of Religion* 53(3): 575–594.
Hill JP (2019) Survey-Based Research on Science and Religion: A Review and Critique. In: Jones SH, Kaden T, and Catto R (eds.) *Science, Belief and Society: International Perspectives on Religion, Non-Religion and the Public Understanding of Science*. Bristol: University of Bristol Press, pp. 25–54.
Jones SH, Catto R, Kaden T, et al. (2019) 'That's How Muslims Are Required to View the World': Race, Culture and Belief in Non-Muslims' Descriptions of Islam and Science. *The Sociological Review* 67(1): 161–177.
Jones SH, Elsdon-Baker F, Catto R, et al. (2020) What Science Means to Me: Understanding Personal Identification with (Evolutionary) Science using the Sociology of (Non)Religion. *Public Understanding of Science* 29(6): 579–596. DOI: 10.1177/0963662520923110.
Kaden T (2018) *Creationism and Anti-Creationism in the United States: A Sociology of Conflict*. Cham: Springer.
Lee L (2019) Feeling Rational: Affinity and Affinity Narratives in British Science–Non-Religion Relations. In: Jones SH, Kaden T, and Catto R (eds.) *Science, Belief and Society: International Perspectives on Religion, Non-Religion and the Public Understanding of Science*. Bristol: University of Bristol Press, pp. 173–196.
Long DE (2011) *Evolution and Religion in American Education: An Ethnography*. Dordrecht: Springer.
Long DE (2019) Science and the Unearned Virtues of the 'Really Religious People': Exploring the Association between Perceived Religiosity and Science Rejection among Students in the Midwestern United States. In: Jones SH, Kaden T, and Catto R (eds.) *Science, Belief and Society: International Perspectives on Religion, Non-Religion and the Public Understanding of Science*. Bristol: University of Bristol Press, pp. 241–263.
Numbers RL (2010) *Galileo Goes to Jail and Other Myths about Science and Religion*. Cambridge, MA.; London: Harvard University Press.
Roos JM (2014) Measuring Science or Religion? A Measurement Analysis of the National Science Foundation Sponsored Science Literacy Scale 2006–2010. *Public Understanding of Science* 23(7): 797–813.
Taber K, Billingsley B, Riga F, et al. (2011) To What Extent Do Pupils Perceive Science to be Inconsistent with Religious Faith? An Exploratory Survey of 13-14 Year-Old English Pupils. *Science Education International* 22(2): 99–118.
Taragin-Zeller L, Rozenblum Y and Baram-Tsbari A (2022) "We Think this Way as a Society!": Community-Level Science Literacy Among Ultra-Orthodox Jews. *Public Understanding of Science* 31(8): 1012–1028.
Thomas R and Geraci RM (2018) Religious Rites and Scientific Communities: Ayudha Puja as 'Culture' at the Indian Institute of Science. *Zygon: Journal of Religion & Science* 53(1): 95–122.
Unsworth A (2019) Discourses on Science and Islam: A View from Britain. In: Jones SH, Kaden T, and Catto R (eds.) *Science, Belief and Society: International Perspectives on Religion, Non-Religion and the Public Understanding of Science*. Bristol: University of Bristol Press.

Part I

Context

2 Contending with Complexity

The Challenges of Global Histories of Evolution and Religion

Joel Barnes, Alexander Hall, Bernard Lightman, and Will Mason-Wilkes

Introduction

In this chapter, we introduce recent research on the history of the relationship between evolution and religion in multiple diverse contexts around the world. Building on case studies from the nineteenth and twentieth centuries, the chapter argues that, to better understand these often complex and situated episodes, researchers must not only know their own context in-depth but must also incorporate their analysis into a global framework. We demonstrate that for historians of science and religion, such a global turn does not mean losing local nuances, but rather we contend that more important insight can be gained by encompassing postcolonial, transnational, and subaltern perspectives.

For historians, accessing everyday opinions on and understandings of abstract concepts such as scientific theories and religious beliefs can be challenging. In this chapter we argue that, to overcome this challenge, scholars must draw on a wider range of popular media from periodicals and books to movies and television. In introducing the reader to the challenges for historians interested in the everyday reception of evolution in diverse societies, the authors illustrate how their own research has benefitted from close collaboration with sociologists, social psychologists, media studies researchers, and other scholars examining public perceptions of science and religion.

Finally, we make the case that reciprocally social scientists can and should draw on the work of historians of science and religion to better inform their own study design. For example, knowing that a certain scientific concept was appropriated by a specific imperialist or nationalist cause in a country's recent history, particularly as that relates to specific religious minorities, can significantly improve contemporary research design in that locale.

A Short Historiography of Science and Religion

The modern historiography of science and religion is sometimes divided into two phases. First, there is the period from 1874 to 1990, when the conflict thesis dominated scholarship on the history of science and religion. The

DOI: 10.4324/9781003476580-3

starting point has been seen as 1874 as in that year John William Draper's *History of the Conflict Between Religion and Science* was published. Then there is the period from 1991 onwards, when the complexity thesis began to supplant the conflict thesis. The key text here is John Hedley Brooke's *Science and Religion: Some Historical Perspectives* (1991), which raised serious questions about the validity of the conflict thesis as a guiding master narrative for the field. But there is a third and more recent stage, commencing around 2011, with the publication of Brooke and Ronald Numbers' *Science and Religion Around the World*, when historians of science and religion began to explore the global dimensions of their topic. Global histories of science and religion, we would maintain, are distinct from earlier works on the historical relationship between science and religion that emphasize complexity, though they have built on the turn to complexity. The move from complexity to globality has transformed the study of the history of science and religion. Not only has it moved the scholarship away from its focus on Christianity, it has also forced us to engage with the development of science outside the West. An overview of the historiography makes it clear that adopting an approach focused primarily on Christian religion and Western science was not necessarily intrinsic to the field from the very start.

John William Draper's *History of the Conflict Between Religion and Science* was an international bestseller. Published as part of the International Science Series, which contained over 100 volumes, it outsold every other book in the series. In the United States, it went through 50 printings over 50 years. In the United Kingdom, 21 editions were published in 15 years. There were numerous translations worldwide (Moore 1979: 28). In his book, Draper argued that conflict between science and religion was the central pattern in the history of their relationship from the time of the origins of Christianity. He was among the first to develop the conflict thesis systematically so that it could serve as a historiographical model for future historians. Throughout the book, Draper maintained that the historical relationship between science and religion was best described using terms such as 'antagonistic' or 'conflictual'. In the preface he asserted, '[t]he antagonism we thus witness between Religion and Science is the continuation of a struggle that commenced when Christianity began to attain political power'. Draper believed that conflict structured the relationship between 'two contending powers' right up to the present, when modern civilization had 'come to the brink of a great intellectual change': science had begun to win the war (Draper 1874: vi, ix). In his historiographical survey of the scholarship up to 1979, the historian James Moore (1979: 40) declared that Draper's book captured the imaginations of his contemporaries and went on to captivate writers on the subject for 100 years.

However, an important dimension of Draper's *History of the Conflict Between Religion and Science* is often glossed over. Draper may have been guilty of an obsessive focus on conflict, but he was keenly aware that the

history of science and religion could not be written without dealing with the significant role played by figures from the Middle East, India, and China. Draper begins the book in Chapter One with a discussion of the origins of science before the founding of Christianity. The invasion of the Persian Empire by the Greeks during the Macedonian campaigns brought Asian and European cultures into contact, which stimulated scientific activity and resulted in the establishment of institutions in Alexandria dedicated to the cultivation of knowledge by experiment, observation, and mathematical discussion. After Christianity was founded, its incompatibility with science led to the forcible suppression of the Schools of Alexandria (Draper 1874: xiii). But, according to Draper, the founding of Islam in the early seventh century reinvigorated the development of science. Although the Koran was initially an obstacle to scientific progress, Draper believed that 20 years after Mohammed's death, his followers developed a passion for science and literature. Greek scientific works were translated in this period, which not only extended the influence of the 'ancient sciences' but also led to the development of new sciences (Draper 1874: xiv, xviii, 110, 115).

For Draper, the rise of Islam is so important to the development of modern science that he refers to it as the first or 'Southern Reformation'. For the Protestant Reformation, Draper uses the term 'second' or 'Northern Reformation', though he acknowledges that usually the movement 'known to us as the Reformation' refers to the development in Christianity associated with Martin Luther. The entirety of his fourth chapter, 'The Restoration of Science in the South', analyzes how the Arabs turned to the cultivation of science and in the process laid the 'foundations of modern astronomy, chemistry, and physics'. But Draper (1874: xiii, xv, xix, 118) also points to the progress achieved in biology during the Southern Reformation, as he claims that the modern doctrine of evolution was taught in Arabian schools.[1] In Chapter Five, titled 'Conflict Respecting the Nature of the Soul', Draper discusses the role of India and China in the creation of modern science. 'It was in India that man first recognized the fact that force is indestructible and eternal', Draper declares, implying what is thought of in contemporary physics as 'correlation and conservation'. Draper then links the advanced concepts in physics in India to developments in the Middle East and China. He insists that 'philosophy among the Arabs thus took the same direction that it had taken in China, in India, and indeed throughout the East. Its whole spirit depended on the admission of the indestructibility of matter and force' (Draper 1874: 126, 140). Many of the fundamental assumptions about nature embedded in the energy physics of his time, Draper contended, were to be found in Eastern philosophical traditions. Draper, then, understood that historians needed to adopt a global perspective in order to understand the development of and relationship between science and religion, though his attention to the Middle East, India, and China dropped out of the narrative in the latter part of the book dealing with the period after the seventeenth-century scientific revolution.

Draper's *History of the Conflict Between Religion and Science* is often paired with Andrew Dickson White's *A History of the Warfare of Science with Theology in Christendom* (1896), though there are subtle differences in how they approach the theme of conflict. White himself, in his introduction, notes an important dissimilarity. While Draper regarded the struggle as one between science and religion, White (1896: vol. 1, ix) claimed that the antagonism was really between science and dogmatic theology. However, a more crucial divergence is White's focus on British, European, and American currents of thought. He pays some attention to Jewish and Islamic thought, particularly in the Middle Ages, but there is no discussion of Buddhism or Hinduism, as there is in Draper's work.

By the 1920s, White's emphasis on Euro-Anglo-American science and religion, rather than Draper's more global perspective, had become the norm. The Anglican churchman John Charlton Hardwick's *Religion and Science: From Galileo to Bergson* (1920) traces the source of the conflict back to the mechanical view of nature produced during the scientific revolution. Although this view was not inherently hostile to religion, it was used in the interests of anti-Christian materialists, who also found evolutionary theory grist for their mill. But the new physics of the early twentieth century, along with new conceptions of matter, life, and mind in biology and psychology, gave Hardwick confidence that a harmonious relationship between science and religion was possible (Hardwick 1920: 7, 27, 83, 125, 136). Again, this book deals almost exclusively with Christian and European figures, as does James Young Simpson's *Landmarks in the Struggle Between Science and Religion* (1925). Simpson, Professor of Natural Science at New College, Edinburgh, asserted that new insights since the publication of Draper and White's books called for 'some softening of the strictness occasionally passed upon the earlier representatives of Christianity'. Although he acknowledges that there had been struggles between representatives of science and Christianity in the past, Simpson was more concerned with reconciling the two using a version of the nonoverlapping magisteria later developed by paleontologist Stephen Jay Gould (1997). Simpson believed that there could be no quarrel between science and religion as long as the former stayed within its limits: a description of nature. Simpson did not attempt to engage in any significant way with Islam. He acknowledged, like Draper, that science and philosophy were 'reverenced in Muhammadan circles' from Baghdad to Cordova during the ninth and tenth centuries but that only when these writings became more fully known could the 'superiority' of 'their leading principles to some of the Christian apologists of the time' be recognised (Simpson, 1920: vii, viii, 83, 88).

Two studies of the historical relationship of science and religion from the late 1920s followed the path established by White. Charles Joseph Singer, the British historian of science and medicine, argued in his *Religion and Science Considered in Their Historical Relations* (1928) that the development of the concept of the reign of law in the scientific theories of Galileo, Descartes, and

Newton was the key to understanding modern science. In Singer's account, Darwin offered nothing really revolutionary since he was just extending the reign of law to the biological realm. The consequence for Western thought was that determinism became the central problem. Singer asserted that he was not concerned with solving this difficulty. Instead, he was offering 'an historical statement' of how the problem had developed. Yet, throughout the book, he is laser focussed on Europe and Christianity, though there is some discussion of Judaism (Singer, 1928: 24, 28, 74–77). A year later the scientist and agriculturist William Cecil Dampier published *A History of Science and Its Relation with Philosophy and Religion* (1929). Professing debts to George Sarton, Alfred North Whitehead, and Arthur Eddington, Dampier affirmed that a holistic view was needed that gave both science and religion a role. Dampier started with science in the ancient world and brought his historical study right up to the early twentieth century. In his chapter on the Middle Ages, he discussed 'Arab learning' and the recovery of 'hidden and forgotten stores of Greek knowledge'. 'Islamic science', Dampier declared, 'grew while that of Christendom was decaying, and by the second half of the eighth century, the lead had definitely passed from Europe to the Near East'. Other than the brief seven-page overview of the Arabian school, Dampier pays no attention to the world outside Europe. There is nothing on the development of science in South or East Asia (Dampier 1929: ix, xxii, 71–77).

Two works from the middle of the twentieth century continued this focus on Christianity and Europe. Charles Raven, Regius Professor of Divinity and Master of Christ's College at Cambridge, believed that 'science can no more dispense with religion than religion can dispense with science'. According to Raven, White and Draper were not impartial and tended to 'read back the struggle of the last century into earlier times', when in fact there had been no conflict between science and religion in Britain until the middle of the nineteenth century. Due to the impact of Darwin's evolutionary theory, a truce separating science and religion had broken down. Raven argued that a 'new Reformation' was needed in the mid-twentieth century to reconcile and integrate the two. Luckily, the new physics, which challenged scientific materialism, made this a real possibility. It is not surprising, given his goal of reconciliation, that Raven's history is primarily concerned with British science and Christianity (Raven 1943: 11, 15, 31, 69, 72). Similarly, John Baillie's *Natural Science and the Spiritual Life* (1951), which is both a philosophical and a historical work originally delivered at a meeting of the British Association for the Advancement of Science, aims to bring together science and religion. Baillie was a theologian and Church of Scotland minister who insisted that modern science 'could not have come into being until the ancient pagan conception of the natural world would have given place to the Christian'. The Christian notion of contingency was essential to modern science, as it swept away the Greek conception of nature as circular. Moreover, the 'founders of modern science' were not denying purpose to nature when they turned aside from the search for final causes. They were

only claiming that divine purpose 'was not open to empirical observation and accordingly had no place in strictly scientific procedure'. Baillie develops this point by again considering only Christian and European figures (Baillie 1951: 10, 25, 37).

Influential books published in the sixties and seventies followed a similar tack. In part one of his *Issues in Science and Religion* (1966), Ian Barbour offered a discussion of 'Religion and the History of Science'. Here he dealt with physics and metaphysics in the seventeenth century, biology and theology in the nineteenth century, and science and religion in the twentieth century. The central figures in his discussion are Galileo, Newton, Hume, Kant, Darwin, and twentieth-century theologians (Barbour 1966). Barbour has been viewed as the person who 'almost single-handedly' gave birth 'to the contemporary dialogue between science and religion' (Russell 2014: 123). Although he was born in Beijing in 1923, in his book Barbour does not deal with Islam, Buddhism, Hinduism, or any other religions besides Christianity. Much the same can be said of the Dutch historian Reijer Hooykaas's *Religion and the Rise of Modern Science* (1973 [1972]). Hooykaas maintains that the 'essential revolution in scientific thought took place in the sixteenth and seventeenth centuries'. To Hooykaas, the concepts at the heart of the scientific revolution were a de-deification of nature, a more modest examination of human reason, and a higher respect for manned labour, all 'latent in neglected aspects of the biblical tradition', which helped to 'overcome the short-comings of the Greek attitude'. In his bid to demonstrate that the worldview found in the Bible had 'a lasting positive influence on science', Hooykaas does not engage with religions outside of the Judeo-Christian tradition (Hooykaas 1973: xi–xiii).

The publication in 1991 of John Hedley Brooke's *Science and Religion: Some Historical Perspectives* marked a turning point in the historiography of this subject. Brooke's book demonstrated that it was possible to present a historical overview of the relationship between science and religion without depending on the conflict thesis to provide a master narrative. Brooke chose to structure his account around what the historian Ronald Numbers (1992: 36) later dubbed the 'complexity thesis'. For Brooke there was no single thesis—whether one of conflict or harmony or integration or separation—that fully encompassed the historical relationship over the centuries. Brooke insisted that there was a diversity of interaction between science and religion throughout history, which included interactions of a conflictual nature. To counter the hold of the conflict thesis, Brooke (1991: 33) discussed how religious beliefs had provided 'presupposition, sanction, even motivation for science', in addition to affecting the formation of method and playing a selective role in the evaluation of rival theories. Brooke's highlighting of complexity has shaped the study of the historical relationship between science and religion for more than 30 years. Brooke was not a lone voice crying in the wilderness in 1991. Earlier studies had adopted a 'complexity thesis' but had tended to focus on one particular

period in history. James Moore's *Post-Darwinian Controversies* (1979) is a good example. Numbers himself, along with David Lindberg, had in a series of influential edited collections since 1986 challenged the validity of the conflict thesis as articulated in the scholarship from the time of Draper (Lindberg and Numbers 1986, 2003). Yet again, the works by Brooke, Moore, Numbers, and Lindberg all focused, more or less, on Christianity and Western science, as did other key historical studies in the field such as Peter Harrison's *The Territories of Science and Religion* (Harrison 2015).[2] Embracing the complexity thesis somehow, ironically, led to the adoption of Andrew Dickson White's focus on Christianity and the West, and the virtual elimination of the global perspective that Draper had incorporated into his *History of Conflict Between Science and Religion*.

However, Numbers and Brooke led the way for historians of science and religion who wished to incorporate the global turn into the field. In their pioneering edited collection, *Science and Religion Around the World* (2011), they attempted to shift the discussion towards non-Western contexts and the non-Abrahamic religions (Brooke and Numbers 2011). Studies of early and modern Judaism and Christianity were joined by chapters on early Chinese religions, Indic religions, Buddhism, African religions, and unbelief. In the opening sentence of the book, Brooke and Numbers (2011: 1) acknowledged that 'all too often the scholars' writing on the history of science 'have focussed their attention almost exclusively on the Christian experience, while sometimes mentioning Jews and Muslims in passing'. Brooke and Numbers helped to chart a way forward towards a more 'global' approach to the study of the history of science and religion, which had previously been consumed by the critique of the conflict thesis and the development of the complexity principle. But the new scholarship seeks not only to move Western scientists and Christianity from the center of the field, it also attempts to analyse how religious and scientific ideas move across national and regional borders.

The Global Turn in the History of Evolution and Religion

In the wake of Brooke and Numbers's edited collection, a number of other historical works incorporating more diverse global perspectives have followed (Fehige 2016; Bagir 2015; Lightman and Qidwai 2023; Sivasundaram 2010). In particular, with regard to the history of evolution and religion, important recent contributions have expanded Anglophone understanding of developments in the Arabic-speaking world, Japan, and Argentina, among other locales (Elshakry 2014; Godart 2018; Asúa 2022). In doing so, scholarship has begun to unpack how the translation and transposition of evolutionary science to new climes was repeatedly part of a contested process that incorporated the science and often its accompanying philosophical ideas into local religious and cultural frameworks. In many settings, such debates were part of wider political machinations, which saw evolution (mis)used to justify the oppressive status quo or further emergent political ideologies.[3]

Where scholarship is now beginning to address significant gaps in the historiography, it is most often centred on the perspectives of prominent scientists, religious figures, and the political classes.[4] The machinations of these elites often focussed on epistemological contestations between science and religion, and thus accounts of historical episodes in this vein often exclude the repercussions of these debates and how their associated political decisions affected the lived experience of the general population. In recent years, new work in this area has attempted to access more popular understandings, perhaps most notably in the volume *Rethinking History, Science, and Religion* (2019) edited by Bernard Lightman, which in reassessing the complexity thesis dedicates a whole section to popular publications and media and their audiences. Yet even recent attempts to narrate the effects of evolutionary philosophies on everyday life in a society often ignore or obfuscate the perspectives of minority groups and occupied peoples. Here, historians of science and religion must follow the lead of scholars in areas such as subaltern and postcolonial studies, Indigenous studies, and science and technology studies who have challenged Western global accounts by centring the displaced, oppressed, and historically marginalised (Chakrabarty 2000; Spivak 1988; Tsosie 2017; Mavhunga 2017). Such approaches do more than just correct historical inaccuracies and imbalances; as we can see in the work of geographers such as Victoria Lawson, incorporating subaltern voices can help us to challenge current hegemonic practices, such as those associated with mainstream international development and aid programs (Lawson with Middle Class Poverty Politics Research Group, 2012).

Where historians of science and religion have made cursory forays into the inclusion of Indigenous perspectives, the results have been fruitful. In a recent chapter, historian John Stenhouse (2023) details a fascinating account of how, in the nineteenth-century Māori context, evolution was used to bolster religious arguments for white settler superiority, which in turn overwrought the older 'bicultural Anglican Establishment'. Ultimately, in this case lay interpretations of both scientific and religious arguments were employed to justify racial science and the defeat and probable extermination of the Māori people from Aotearoa New Zealand. Further, an ambitious and exciting new collection edited by historians Myrna Perez Sheldon, Ahmed Ragab, and Terence Keel (2023) introduces a diverse range of global case studies, analysed through the lens of critical race theory, feminist and queer theory, and postcolonial theory. Such an intersectional approach, which features a wide range of spiritual, subaltern, and Indigenous perspectives helps us better understand how Western scientific and religious ideals have been transmitted, translated, resisted, and enforced as part of colonial occupations. As the editors of this collection highlight, these same expansionist regimes, justified through both scientific and religious arguments, created many of the societal structures within which we, as both scholars and citizens, work today.

One of the major challenges for historians interested in how debates on the relationship between evolution and religion affected the lived experience of

the general population is how to access these often neglected voices. In some contexts, there is a complete lack of documentary and recorded materials, making work on this subject exceedingly difficult, if not impossible. One way that scholars have overcome this limitation is to expand the context and types of source materials that they look to for discussion of evolutionary ideas in society. For example, rather than focussing on elites and their associated debates, by focussing on historical episodes whereby ideological interpretations of evolutionary science have had direct ramifications on marginalised populations, historians have begun to narrate, albeit in a punctuated manner, the story of how scientific, theological and philosophical ideas have shaped everyday life.

With regard to the history of evolution and religion, such an approach has so far been most widely applied to the American context, due in part to the specific relationship between the country's political structures and the institutions of both science and religion. To take just one example, in detailing the history of anti-evolution movements' attempts to police the teaching of evolution in American schools, historian of science Adam Shapiro (2013) demonstrates that, despite international fascination with the 1925 so-called Scopes Monkey Trial, this infamous conflictual episode is not about any universal properties of science and religion. Shapiro argues, rather, that to understand it, we need to know a lot about the specific context: the history of school reform policy, the class and racial tensions in the American South, and competing visions of modern life in America.

As mentioned, most attempts to explore how epistemological debates about evolution and religion have spilled into everyday life, perhaps somewhat inevitably, have focussed on key flashpoints or clashes. However, some notable exceptions have gone beyond this microhistory approach to afford us a more longitudinal understanding of how evolutionary science has been interpreted and put to work. While much of Marwa Elshakry's *Reading Darwin in Arabic* focusses on Arab scholars' interpretations of Darwin's work, the multi-decadal coverage of her research allows the reader to see the ebbs and flows of how these interpretations shaped political and social discourse in the Middle East (Elshakry 2014).

As historians have sought to access previously excluded voices and contexts, the range of source materials they interrogate has expanded to include oral histories, broadcast media, digital media, and other non-print sources (Merchant, 2017; Hall 2021; Sheldon et al. 2023; Hall and Mason-Wilkes 2024). In using broadcast media to access past perspectives on evolution and religion, one of the contributing authors of this chapter – Hall – has advocated for care in situating media artifacts, such as video recordings, in their wider social context (Hall 2021). As scholars interested in popular perspectives of science and religion, we must remember that such cultural records do not just reflect the societal concerns of the day but were often also central in shaping and informing them. In turning the lens of enquiry to broadcast media, Hall concludes that Brooke's complexity thesis, created by

analysing nineteenth-century print media, stands true for twentieth-century television and radio content.

Yet, as a new collection edited by co-authors Hall and Mason-Wilkes (2024) has demonstrated, incorporating analysis drawn from multiple different media formats into comparative work can be extremely challenging. In addition to dealing with the specific peculiarities of different nation states and regional identities as just introduced, work that aims to think about evolutionary themes across multimedia must also account for the different purposes, audiences, and meaning making that diverse media formats encompass.

From the Historical to the Social Scientific

As historical studies of science and religion came to focus first on the complexity of their relations and then to turn to the global and expand the range of sources used, bringing in a more diverse selection of historical actors and perspectives, historians' insights were also adopted by social and behavioural scientists. However, this uptake has happened unevenly, and in some fields only relatively recently. The patchiness of this conceptual transfer may be attributable in part to the secular foundations that underpin mainstream sociological traditions and their various subdisciplinary offshoots (Evans and Evans 2008; Elsdon-Baker and Mason-Wilkes 2019). In 2008, sociologists John Evans and Michael Evans carried out a survey of sociological studies on science and religion and found that the 'warfare narrative' remained the dominant perspective in their field. Evans and Evans (2008) juxtaposed the predominance of the conflict view in sociology against the fact that 'historians no longer accept the warfare narrative', pointing to the work of Numbers and others. Indeed, although Brooke's *Science and Religion* has more recently become a touchstone for complexity-oriented scholarship across the disciplines, it was rarely cited by sociologists prior to Evans and Evans's survey of the field in 2008.[5] One early sociological citer of the 'complexity thesis' was the science and technology studies (STS) scholar Steve Fuller (2006, 2007). Fuller enrolled complexity in defence of advocates of intelligent design and in support of his wider anti-establishment science body of work, a position that was controversial to many STS scholars (e.g. Thicke 2011). This specific deployment of complexity may go some way to explaining the relative lack of purchase the idea gained within the sociological subdiscipline of STS. By contrast, psychologists, theologians, science education scholars, and other historians were drawing inspiration from Brooke's study almost as soon as it was published.[6]

By the start of the 2010s, science and religion was developing as an emergent topic within sociology, even if it was not yet an established and recognised field. Most of the research conducted in the early part of the decade focused on Christianity in the US and was decisively geared to the American political context with its high-profile culture wars over issues

such as evolution, abortion, and constitutional restriction on prayer in public schools (Catto et al. 2023: 100–1). The findings of such research are not necessarily good proxies for social contexts elsewhere, even for other Western, majority Christian, and/or Anglophone countries, as among other differences the US is a global outlier as a wealthy nation exhibiting a high degree of religiosity (Fahmy 2018). Further, some early sociological work in this area also employed the conflict thesis as a baseline assumption against which to frame its theses or as a myth in need of debunking (e.g. Ecklund 2010; Evans 2011).[7] Such approaches were shaped in part against popular culture narratives at the time, including the conflictual arguments of 'New Atheist' public intellectuals, such as Sam Harris and Richard Dawkins in the UK, and anti-Muslim sentiment associated with the 'war on terror'. Similarly, the transdisciplinary scholar, Fern Elsdon-Baker, in reflecting on her role leading the British Council's 2009 'Darwin Year' activities, has argued that the popular prevalence of assumptions about inherent science–religion conflict were in danger of an outsized influence in shaping public science communication activities in the UK and internationally (Elsdon-Baker 2015: 423–4).

The emergence of social scientific studies of science and religion around 2010 is notable when considered in relation to contemporaneous developments in historical scholarship. As already noted, by the start of the second decade of the new millennium, historians were beginning to make a turn to a more global orientation, a shift that reflected the exhaustion of complexity as a research program. By then, the complexity idea had become something of a historiographical orthodoxy, being sufficiently well established for it to underpin introductory texts and teaching resources (Ferngren, Larson, and Amundsen 2000; Ferngren 2002; Dixon 2008).

Such developments in the historiography since about 2010 have been shaped by a developing interdisciplinary dialogue between history and social scientific fields. If the social sciences previously lagged behind history in engaging with the complexity idea, they have more recently taken up complexity and globality in quick succession and have done so as part of a collaborative program of work that speaks across disciplinary and methodological boundaries. As sociological and more generally social scientific studies of science and religion have grown in number, they have become more global in focus and methodologically diversified, making greater use of qualitative and mixed-methods approaches (Ecklund et al. 2019; Jones et al. 2019; Thomas 2021). Work in this emerging field has also begun to feature in sociological subdisciplinary journals of note (e.g. Elsdon-Baker 2015; Jones et al. 2020). The 'Science and Religion: Exploring the Spectrum' (SRES) and 'Science and Religion: Exploring the Spectrum of Global Perspectives' (SRES2) projects, of which this volume is a direct output, have likewise been multidisciplinary initiatives, bringing together work in qualitative and quantitative sociology, social psychology, and history (Elsdon-Baker and Lightman 2020). A combination of circumstances, both intellectual and material, have enabled the development of these projects. The specific intellectual trajectory of Fern

Elsdon-Baker, who has led the SRES suite of work, is worth mentioning in this regard. Elsdon-Baker's work at the British Council overseeing the 2009 'Darwin Year' exposed her to the variety of diverse perspectives on science and religion that existed globally in the early twenty-first century (Elsdon-Baker 2015: 423–4). A background in history and philosophy of science meant that Elsdon-Baker was well positioned to draw on historical theories and concepts to make sense of and contextualise this observed complexity, as well as to collaborate with other well established and influential historians – including one of the authors of this piece, Bernard Lightman – to further develop and cement the multidisciplinary approach to understanding this contemporary social phenomena in the round (Elsdon-Baker and Lightman 2020).

Material support for a multidisciplinary and global approach to understanding science–religion relationships has been provided, in the main, by the John Templeton Foundation (JTF) and Templeton Religion Trust (TRT). In addition, a 'core-set' of experts is beginning to emerge and solidify. A small number of senior figures, Elaine Ecklund and John Evans in the US and in the UK the aforementioned Fern Elsdon-Baker were able to secure the financial means to progress this line of research. In addition to their own large-scale projects (e.g. SRES2), the global proliferation of a multidisciplinary research agenda has come through smaller subgranting schemes, notably the International Research Network for the Study of Science and Belief in Society's (INSBS) Grant Schemes[8] and the Science and Religion: Identity and Belief Formation Grant Initiative.[9]

The core body of work emerging in this new multidisciplinary space studying science and religion in society has numerous commonalities. Perhaps principal among them is a shift from conceptualising the conflict between science and religion as primarily epistemic, towards viewing it as motivated by social, cultural, or identity-based drivers (Evans 2018; Jones et al. 2019; Elsdon-Baker and Lightman 2020). Both in history and in the social sciences, scholarship has begun moving the field beyond elite and institutional debates and discussion of the different 'ways of knowing' that science and religion might represent and how these may be incompatible in order to think instead about how science and religion are experienced and engaged by individuals in their day-to-day lives. This growing body of scholarship forces us to (re)evaluate both science and religion as socio-cultural phenomena, as categories of identity, or as psychological or existential sense-making tools that people use to order their world.

Conclusion

In conclusion, studies of science and religion have benefitted from a conceptual flow of ideas across traditional disciplinary boundaries. Above all, the idea of complexity and contextual nuance, as first expounded in revisionist histories of science and religion in the 1990s, has solidified and gained wider

recognition over the last decade and a half. As highlighted in this chapter, this flow has not always been smooth and certainly not linear – there have been false starts and controversies as the field of study has emerged. The shift to 'globality' identifiable in more traditional history of science and religion can indeed be seen as complementary to the development of social scientific studies of science and religion.

As the relationship between historical and contemporary studies of science and religion is currently configured, the benefits of maintaining cross-disciplinary relationships are evident. Engagement with historical research in specific contexts allows for richer and more contextualised social scientific research design, data collection, and analysis, whether this is social science data collection with publics, professional scientists, popular media, or communications analysis. Equipped with the detailed insights that historians of science and religion are able to provide, contemporary social phenomena can be properly contextualised in broader historical arcs, opening up perspectives on contemporary findings that are otherwise unavailable. Beyond providing a conceptual jumping-off point for the emerging discipline of social studies of science and belief, and despite potential changes in the direction of the relationship between historical and contemporary social scientific studies, there remain clear methodological and analytic benefits of this kind of collaboration between historians and social scientists.

Notes

1 Recently, historians of science and Islam have pointed out that Draper's observations were part of the conversation in the late 19th and early 20th centuries (Yalçinkaya 2018: 216). Other studies have also examined Draper's influence in the Muslim world (Amir 2009: 25–26; Fuyumi 2009; Küçük 2010).
2 Brooke (1991) does discuss Islam and Buddhism, but the emphasis is ultimately on Christianity.
3 For two examples that highlight how evolutionary science was reimagined and cast to suit political purposes in Spain and Turkey, respectively, see Florensa (2024), Yalçinkaya (2011).
4 For just two recent examples from many focussing on elite debates and prominent figures from diverse contexts, see Asúa (2020), Qidwai (2019).
5 Based on a search of Google Scholar citations for Brooke (1991), conducted June 2023. A notable exception is Ellison and Musick (1995).
6 For psychology, see e.g. Dennis (1995).
7 For comparable and contemporaneous 'myth busting' in historical studies, see Numbers (2009).
8 International Research Network for the Study of Science and Belief in Society (2023) *Small Research Grants: International Research Network for the Study of Science & Belief in Society*. Available at: https://scienceandbeliefinsociety.org/projects/ (Accessed: 30 August 2023).
9 *Grant Initiative — Network for the Sociological Study of Science and Religion* (2023). Available at: www.nsssr.org/grant-initiative (Accessed: 30 August 2023).

References

Amir, Z. M. (2009), 'Muhammad Iqbai's Concept of Islam', *Kyoto Bulletin of Islamic Area Studies*, 2 (2): 22–35.

Asúa, M. de (2020), 'Science, Catholicism and Politics in Argentina (1910–1935)', *The British Journal for the History of Science*, 53 (2): 139–58.

Asúa, M. de (2022), *Science and Catholicism in Argentina (1750–1960): A Study on Scientific Culture, Religion, and Secularisation in Latin America*, Berlin: De Gruyter.

Bagir, Z. A. (2015), 'The "Relation" Between Science and Religion in the Pluralistic Landscape of Today's World', *Zygon*, 50 (2): 403–17.

Baillie, J. (1951), *Natural Science and the Spiritual Life*, London, New York, and Toronto: Oxford University Press.

Barbour, I. G. (1966), *Issues in Science and Religion*, Englewood Cliffs, NJ: Prentice-Hall.

Brooke, J. H. (1991), *Science and Religion: Some Historical Perspectives*, Cambridge: Cambridge University Press.

Brooke, J. H., and R. L. Numbers, eds. (2011), *Science and Religion around the World*, New York: Oxford University Press.

Catto, R., J. Riley, F. Elsdon-Baker, S. H. Jones, and C. Leicht (2023), 'Science, Religion, and Nonreligion: Engaging Subdisciplines to Move Further Beyond Mythbusting', *Acta Sociologica*, 66 (1): 96–110.

Chakrabarty, D. (2000), *Provincializing Europe: Postcolonial Thought and Historical Difference*, Princeton, NJ: Princeton University Press.

Dampier, W. C. (1929), *A History of Science and Its Relation with Philosophy and Religion*, Bombay, Calcutta, and Madras: Macmillan.

Dennis, D. (1995), 'Humanistic Neuroscience, Mentality, and Spirituality', *Journal of Humanistic Psychology*, 35 (2): 34–72.

Dixon, T. (2008), *Science and Religion: A Very Short Introduction*, Oxford: Oxford University Press.

Draper, J. W. (1874), *History of the Conflict between Religion and Science*, New York and London: D. Appleton and Company.

Ecklund, E. H. (2010), *Science vs. Religion: What Scientists Really Think*, Oxford: Oxford University Press.

Ecklund, E. H., D. R. Johnson, B. Vaidyanathan, K. R. W. Matthews, S. W. Lewis, R. A. Thomson Jr., and D. Di (2019), *Secularity and Science: What Scientists around the World Really Think about Religion*, New York: Oxford University Press.

Ellison, C. G., and M. A. Musick (1995), 'Conservative Protestantism and Public Opinion toward Science', *Review of Religious Research*, 36 (3): 245–62.

Elsdon-Baker, F. (2015), 'Creating Creationists: The Influence of "Issues Framing" on Our Understanding of Public Perceptions of Clash Narratives between Evolutionary Science and Belief', *Public Understanding of Science*, 24 (4): 422–39.

Elsdon-Baker, F., and B. Lightman, eds. (2020), *Identity in a Secular Age: Science, Religion, and Public Perceptions*, Pittsburgh, PA: University of Pittsburgh Press.

Elsdon-Baker, F., and W. Mason-Wilkes (2019), 'The Sociological Study of Science and Religion in Context', in S. H. Jones, T. Kaden, and R. Catto (eds.), *Science, Belief and Society: International Perspectives on Religion, Non-Religion and the Public Understanding of Science*, 3–23, Bristol: Bristol University Press.

Elshakry, M. (2014), *Reading Darwin in Arabic, 1860–1950*, Chicago, IL: University of Chicago Press.
Evans, J. H. (2011), 'Epistemological and Moral Conflict Between Religion and Science', *Journal for the Scientific Study of Religion*, 50 (4): 707–27.
Evans, J. H. (2018), *Morals Not Knowledge: Recasting the Contemporary U.S. Conflict Between Religion and Science*, Oakland, CA: University of California Press.
Evans, J. H., and M. S. Evans (2008), 'Religion and Science: Beyond the Epistemological Conflict Narrative', *Annual Review of Sociology*, 34 (1): 87–105.
Fahmy, D. (2018), 'Americans Are Far More Religious than Adults in Other Wealthy Nations', *Pew Research Center*, 31 July. www.pewresearch.org/short-reads/2018/07/31/americans-are-far-more-religious-than-adults-in-other-wealthy-nations/.
Fehige, Y., ed. (2016), *Science and Religion: East and West*, London and New York: Routledge.
Ferngren, G. B., ed. (2002), *Science and Religion: A Historical Introduction*, Baltimore, MA: Johns Hopkins University Press.
Ferngren, G. B., E. J. Larson, and D. W. Amundsen, eds. (2000), *The History of Science and Religion in the Western Tradition: An Encyclopedia*, New York: Garland.
Florensa, C. (2024), 'Evolution in the Monastery: Discussions to Build a Catholic Version of Evolution for the General Public in Franco's Spain', in A. Hall and W. Mason-Wilkes (eds.), *Most Adaptable to Change: Evolution and Religion in Global Popular Media*, Pittsburgh, PA: University of Pittsburgh Press.
Fuller, S. (2006), 'Intelligent Design Theory: A Site for Contemporary Sociology of Knowledge', *The Canadian Journal of Sociology / Cahiers canadiens de sociologie*, 31 (3): 277–89.
Fuller, S. (2007), *Science vs Religion? Intelligent Design and the Problem of Evolution*, Cambridge: Polity.
Fuyumi, K. (2009), 'Muhammad 'Abduh and John William Draper', *Annals of Japan Association for Middle East Studies*, 25 (1): 165–85.
Godart, G. C. (2018), *Darwin, Dharma, and the Divine: Evolutionary Theory and Religion in Modern Japan*, Honolulu, HI: University of Hawaii Press.
Gould, S. J. (1997), 'Nonoverlapping Magisteria', *Natural History*, 106 (3): 16–22, 60–2.
Hall, A. (2021), *Evolution on British Television and Radio: Transmissions and Transmutations*, Cham: Palgrave Macmillan.
Hall, A., and W. Mason-Wilkes (eds.) (2024), *Most Adaptable to Change: Evolution and Religion in Global Popular, Media*, Pittsburgh, PA: University of Pittsburgh Press.
Hardwick, J. C. (1920), *Religion and Science: From Galileo to Bergson*, London: Society for Promoting Christian Knowledge.
Harrison, P. (2015), *The Territories of Science and Religion*, Chicago, IL: University of Chicago Press.
Hooykaas, R. (1973), *Religion and the Rise of Modern Science*, Edinburgh and London: Scottish Academic Press.
Jones, S. H., Kaden, T., and Catto, R. (eds.) (2019), *Science, Belief and Society: International Perspectives on Religion, Non-religion and the Public Understanding of Science*, Bristol: Bristol University Press.
Jones, S. H., F. Elsdon-Baker, R. Catto, and T. Kaden (2020), 'What Science Means to Me: Understanding Personal Identification with (Evolutionary) Science Using the Sociology of (Non)Religion', *Public Understanding of Science*, 29 (6): 579–96.

Küçük, B. H. (2010), 'Islam, Christianity, and the Conflict Thesis', in T. Dixon, G. Cantor, and S. Pumfrey (eds.), *Science and Religion: New Historical Perspectives*, 111–30, Cambridge: Cambridge University Press.

Lawson, V., with Middle Class Poverty Politics Research Group (2012), 'Decentring Poverty Studies: Middle Class Alliances and the Social Construction of Poverty', *Singapore Journal of Tropical Geography* 33 (1): 1–19.

Lightman, B. ed. (2019), *Rethinking History, Science, and Religion: An Exploration of Conflict and the Complexity Principle,* Pittsburgh, PA: University of Pittsburgh Press.

Lightman, B., and S. Qidwai (2023), *Evolutionary Theories and Religious Traditions: National, Transnational, and Global Perspectives, 1800–1920*, Pittsburgh, PA: University of Pittsburgh Press.

Lindberg, D. C., and R. L. Numbers, eds. (1986), *God and Nature: Historical Essays on the Encounter between Christianity and Science*, Berkeley, CA: University of California Press.

Lindberg, D. C., and R. L. Numbers, eds. (2003), *When Science and Christianity Meet*, Chicago, IL, and London: University of Chicago Press.

Mavhunga, C. C. (2017), *What Do Science, Technology, and Innovation Mean from Africa?*, Cambridge, MA: MIT Press.

Merchant, P. (2017), 'The Composed Self of the Scientist and Christian', Religious Individuals and Collective Identities: Special Issue on Oral History and Religion', *Oral History Forum d'histoire orale*, 37: 1–21.

Moore, J. R. (1979), *The Post-Darwinian Controversies: A Study of the Protestant Struggle to Come to Terms with Darwin in Great Britain and America 1870–1900*, Cambridge: Cambridge University Press.

Numbers, R. L. (1992), 'Review of Science and Religion, by J. H. Brooke', *Metascience* 1: 35–9.

Numbers, R. L., ed. (2009), *Galileo Goes to Jail, and Other Myths about Science and Religion*, Cambridge, MA: Harvard University Press.

Qidwai, S. A. (2019), 'Darwin or Design? Examining Sayyid Ahmad Khan's Views on Human Evolution', in Y. Saikia and M. R. Rahman (eds.), *The Cambridge Companion to Sayyid Ahmad Khan*, 214–32, Cambridge: Cambridge University Press.

Raven, C. E. (1943), *Science, Religion, and the Future*, Cambridge: Cambridge University Press.

Russell, R. J. (2014), 'Ian G. Barbour (1923–2013): In Memoriam to the Pioneer of Science and Religion', *Theology and Science*, 12 (2): 123–8.

Shapiro, A. R. (2013), *Trying Biology: The Scopes Trial, Textbooks, and the Antievolution Movement in American Schools*, Chicago, IL: University of Chicago Press.

Sheldon, M. P., A. Ragab, and T. Keel, eds. (2023), *Critical Approaches to Science and Religion*, New York: Columbia University Press.

Simpson, J. Y. (1920), *Landmarks in the Struggle between Science and Religion*, London: Hodder and Stoughton.

Singer, C. (1928), *Religion and Science Considered in Their Historical Relations*, London: Ernest Benn.

Sivasundaram, S. (2010), 'A Global History of Science and Religion', in T. Dixon, G. Cantor, and S. Pumfrey (eds.), *Science and Religion: New Historical Perspectives*, 177–97, Cambridge: Cambridge University Press.

Spivak, G. C. (1988), 'Can the Subaltern Speak?', in C. Nelson and L. Grossberg (eds.), *Marxism and the Interpretation of Culture*, 271–313, Basingstoke: Macmillan.

Stenhouse, J. (2023), 'Evolution, Religion and Racial Politics in New Zealand, 1830–1930', in B. Lightman and S. Qidwai (eds.), *Evolutionary Theories and Religious Traditions: National, Transnational, and Global Perspectives, 1800–1920*, 166–92, Pittsburgh, PA: University of Pittsburgh Press.

Thicke, M. (2011), 'Review of *Science*, by Steve Fuller', *Spontaneous Generations: A Journal for the History and Philosophy of Science*, 5 (1): 91–4.

Thomas, R. (2021), *Science and Religion in India: Beyond Disenchantment*, Abingdon: Routledge.

Tsosie, R. (2017), 'Indigenous Peoples, Anthropology, and the Legacy of Epistemic Injustice', in I. J. Kidd, J. Medina, and G. Pohlhaus, Jr. (eds.), *The Routledge Handbook of Epistemic Injustice*, 356–69, London and New York: Routledge.

White, A. D. (1896), *A History of the Warfare of Science with Theology in Christendom*, 2 vols., New York: D. Appleton and Company.

Yalçinkaya, M. A. (2011), 'Science as an Ally of Religion: A Muslim Appropriation of "the Conflict Thesis"', *The British Journal for the History of Science*, 44 (2): 161–81.

Yalçinkaya, M. A. (2018), 'Muslims', in J. Hardin, R. L. Numbers, and R. A. Binzley (eds.), *The Warfare between Science and Religion: The Idea that Wouldn't Die*, 164–76, Baltimore, MD: Johns Hopkins University Press.

3 Contending with Empire

Colonial Intersections in the Historiography of Science and Religion

Sarah Qidwai and Nathan Bossoh

Introduction

> New Zealand children will be taught the true wonders of DNA, while being simultaneously confused by the doctrine that all life throbs with a vital force conferred by the Earth Mother and the sky Father.
>
> Richard Dawkins, *The Spectator*, 2023

> Dawkins' comments are [...] a great example of how clearly white supremacy is ingrained in Western sciences globally, and how colonising scientists continue to attempt to undermine the global resurgence of indigenous knowledge.
>
> Tara MacAllister, *New* Zealand *Herald*, 2023

For scholars of science and religion, the comment by Richard Dawkins likely reads as no surprise. Even with little understanding of the underlying context, it is obvious that he is drawing on the nineteenth-century narrative of conflict between science and religion to contend that 'science' trumps any 'religious myths' taught to New Zealand students. But there is an alternative reading to this comment that bears significance beyond the strict domains of the science–religion conflict narrative. The statement following Dawkins' comes from Tara MacAllister, a New Zealand ecologist highly critical of Dawkins' claims. The striking aspect of MacAllister's response is that, whilst certainly implying that his science–religion conflict narrative was flawed, her major concern was mostly centred around dismantling the Western coloniality embedded in Dawkins' statement. The comment by Dawkins – and indeed the entire article, entitled 'Why I'm Sticking Up for Science'– sets up a conflict between 'Western' science and indigenous knowledge (even if Dawkins remains oblivious) proceeding to claim that the former equates to truth whilst the latter equates to myth. The article, published in *The Spectator*, was penned at the close of Dawkins' antipodean speaking tour in March of 2023 in response to the implementation of a New Zealand policy by the Ministry of Education

DOI: 10.4324/9781003476580-4

enabling Māori ways knowing to be taught in science classes. Of significance here is the fact that, although MacAllister's pushback was framed in a contemporary manner, the sub-context is historical. In arguing that colonising scientists *continue* to undermine indigenous knowledge, MacAllister invoked an increasingly familiar historical trend in which Western colonial science has routinely suppressed indigenous forms of scientific knowledge. This specific debate about 'Western' science and Mātauranga Māori (Māori ways of knowing) provides a useful backdrop highlighting how historical relations between science and religion have often been entangled with other historical developments such as colonialism and how these entanglements have continued to influence the present. This overarching theme of entanglement will serve as a focal point for this chapter.

Contemporary scholarship in the field history of science and religion has moved beyond the simplistic conflict model between science and religion, embracing a more nuanced understanding of their complex interactions. The modern categories of 'science' and 'religion' took shape during the eighteenth century and gained traction in the nineteenth century (Harrison, 2015). Throughout much of the nineteenth and early twentieth centuries, these domains were commonly perceived as locked in conflict. However, contemporary scholarship within the realms of science and religion acknowledges the intricate interplay between the two, emphasising a spectrum of interactions ranging from mutual reinforcement to dialogue and tension. Recent trends in the history of science advocate for a broader, more global perspective that encompasses indigenous knowledge systems. (Brooke and Numbers, 2011; Dixon and Shapiro, 2022)

The late eighteenth and early nineteenth centuries also marked a zenith of European imperialism, characterised by extensive colonial expansion, economic dominance, and political influence across vast regions of the globe. While acknowledging the complexities of imperialism's influence on science, recent scholarship in the history of science has also increasingly highlighted the relationship between science and empire, shedding specific light on the interconnectedness of diverse regions and their scientific endeavours. In more recent decades, a shift towards a 'global' perspective among historians of science has significantly advanced scholarly discourse within the field. This shift highlights the importance of exploring non-Western contexts and the intricate relationships forged through imperial encounters. Consequently, there is a growing emphasis on decolonising Western narratives of science history.

As historians of science delve into the intertwined nature of modern science, Western imperial expansion, and globalisation, a parallel evolution has emerged within the realm of science and religion. Despite this convergence, these fields have often operated independently. The historiographical narrative of science and religion is one hammered over and over. As historians, we have moved away from the conflict model, but the open question of what comes next remains.

Scholarship in the history of science and religion has traditionally focused on Western Europe and the United States, centring on Christianity, leading to a demand for broader perspectives. Recent developments have seen an expansion to include other religious traditions and non-Western cultures, as well as an increased focus on social, political, and cultural factors shaping the relationship between science and religion (Sivasundaram, 2010). Thus, while the field has recently recognised the need for a global push, historians of science and religion have argued that this must be done via an examination of various local contexts (Lightman and Qidwai, 2023; Shapiro and Dixon, 2022).

This chapter seeks to explore the evolving discourse, marked by a shift from conflict to complexity in the study of science and religion towards critical studies (Lightman, 2019; Perez Sheldon, Rageb and Keel, 2023). Embracing this transition, we argue for the necessity of integrating insights from discussions about imperialism to move towards a more comprehensive understanding. Through a focus on the British imperial context, we begin with a discussion of Jesuit Missionaries, then we examine geographic, linguistic, and material cultural case studies from British India and Sub-Saharan Africa, shedding light on the colonial intersections prevalent, yet often overlooked, in science–religion dynamics. Finally, we consider the implications of this transition for future historical scholarship, particularly in terms of public engagement and the study of material culture.

Jesuit Missionaries in the Early Modern Period

The activities of Jesuit missionaries challenge the conflict narrative, yet their work also advanced Western ideas in an imperial manner, as they often framed indigenous knowledge through Eurocentric scientific paradigms and used their authority to assert cultural dominance. They began their global expansion in the mid-sixteenth century, following the founding of the Society of Jesus by Ignatius of Loyola in 1540. As one of the earliest examples of the intersection between science, religion, and colonialism, the Jesuits were driven by a dual mission: spreading Catholicism and countering the Protestant Reformation. Operating across regions such as China, South America, and India, they leveraged scientific inquiry to further both religious objectives and European imperial interests.

In China, figures like the Italian priest Matteo Ricci (1552–1610) and Johann Adam Schall von Bell (1591–1666) epitomised this intersection by merging Western scientific knowledge with their evangelistic efforts. They facilitated an exchange of ideas between East and West while aligning themselves with European imperial ambitions in Asia. Through their engagement with Chinese scholars, the Jesuits introduced European developments in astronomy, mathematics, and cartography, contributing to both scientific imperialism and the spread of Christianity. Similarly, in South America, Jesuit priests established missions aimed at converting indigenous peoples

to Christianity while simultaneously conducting scientific studies. Their botanical and zoological explorations not only contributed to European understanding of the New World but also served to legitimise colonial expansion. By documenting the flora, fauna, and indigenous cultures of South America, Jesuit missionaries played a crucial role in shaping European perceptions of the continent and justifying colonial endeavours. In India, missionaries like Roberto de Nobili adopted indigenous customs and languages to integrate into local society.

Michael John Gorman's *The Scientific Counter-Revolution: The Jesuits and the Invention of Modern Science* (Gorman, 2020) sheds light on this unique dynamic, challenging the idea of inherent conflict between religion and science by highlighting the Jesuits' role in promoting empirical observation, experimentation, and the integration of both disciplines. Gorman sheds light on the Jesuits' contributions to various fields of science, including astronomy, cartography, and natural history. Through meticulous research and analysis, Gorman demonstrates how the Jesuits played a significant role in shaping the scientific revolution of the early modern period. Rather than hindering scientific progress, as some narratives suggest, the Catholic Church, through the Jesuits, actively promoted scientific inquiry and exploration. Overall, Gorman's work highlights the intricate relationship between science, religion, and colonialism during the Age of Exploration. By examining the activities of Jesuit missionaries across different regions of the world, Gorman offers valuable insights into the complex interplay of these domains and their impact on shaping the modern world. His book serves as essential reading for scholars and students interested in understanding the historical dynamics of science, religion, and imperialism.

The examination of Jesuit missionaries illuminates the intricate intersection of science, religion, and colonialism during the Age of Exploration. Their endeavours in regions such as China, South America, and India underscore the multifaceted nature of their mission, which combined evangelisation with scientific inquiry. Ultimately, understanding the role of Jesuit missionaries enriches our comprehension of the complex historical dynamics that shaped the early modern world (see Feingold, 2003).

Imperial Boundaries

The previous section demonstrates the imperial dimensions of missionary activities, yet as we transition to the nineteenth century, we encounter local responses. The examples get increasingly complex, with numerous geographic and religious boundaries to account for. For example, we can examine the case of Bishop John Colenso (1814–1883) of Natal, and a controversy that spans Southeastern Africa, British India, and London.

In a letter to Charles Darwin, the British botanist and explorer Joseph Dalton Hooker (1817–1911) wrote the following:

> Yesterday we had one of our 'small club' dinners with Colenso and HB Wilson as guests, and a very pleasant evening it was: though I must confess I cannot go along with Colenso – his incessant talk about his own 'affair' is quite wearisome: he really is in some respects a very weak man. On first coming in, he asked the name of our club – I said it has none – he replied, 'I would call it the Zulu club'. and so on.
>
> (Darwin Correspondence Project, n.d.)

The individual that Hooker is referring to is Colenso. This takes us to a corner of the British Empire: the southeastern African colony of Natal (1910–1994). While the first formal British settlement in Natal was in 1823, it was on 4 May 1843 that the United Kingdom annexed the Boer Republic of Natalia. In 1910, the colonies of the Cape, Natal, Transvaal, and Orange River formed the Union of South Africa (now: KwaZulu-Natal). In 1853, Robert Gray, the Bishop of Cape Town, was looking for a new bishop to run the other half of his diocese, which was just divided into two. In April 1853, Colenso accepted the offer, arriving in 1855. Colenso, who was sympathetic to the locals, quickly produced a dictionary and translations of various biblical texts into Zulu. In 1862, he published a controversial text titled *The Pentateuch and Book of Joshua Critically Examined* (1862).

Colenso was perplexed by some of the questions locals raised and published several works between 1862 to 1879 to discuss the problems with reading the Bible as a divinely inspired document that communicated absolute truth. The Anglican Church in South Africa accused Colenso of heresy, leading to his dismissal from office on 16 December 1863. Colenso, who did not attend the hearing, rejected its authority and was subsequently excommunicated for disregarding the judgment. He contested the decision in civil courts, arguing that only the crown had the power to remove him. By 1865, he had successfully won his case. However, the Church, unhappy with the ruling which challenged its autonomy, appointed a new bishop to replace Colenso, resulting in a split within the Anglican Church in Natal.

In Chapter Ten of *The Muhammadan Commentary on the Holy Bible*, the Indian Muslim religious reformer, Sayyid Ahmad Khan (1817–1898) writes:

> In the infancy of this science [geology], its professors maintained that the deluge had been universal; but now that further research has been made, and additional light thrown upon the science, they deny it to have been a universal one, or such as had overspread the whole of the earth. Doctor Colenso, Bishop of Natal says: While translating the story of the Flood, I have had a simple-minded but intelligent native look up at me and ask, 'Is all that true?'
>
> (Khan, 1865)

This quote covers many developments in the history of nineteenth-century geology, as they relate to controversies over the Bible's infallibility. While maintaining that the deluge was not universal, Sayyid Ahmad goes on to defend that it was a real – but localised – event. Dedicating a large section of the chapter to refuting recent claims by John Colenso, Bishop of Natal, who claimed that the event did not occur as stated in Genesis, Sayyid Ahmad connected the events of the great flood to references in the Qur'an. Sayyid Ahmad was also arguing that the event was not universal, as Genesis states it was. In this respect, he agrees with Colenso, but the major point of contention is that Colenso argues that the great flood is entirely mythical, while Sayyid Ahmad argues that it is not a complete myth: instead, it was a real, localised event.

What we see is a discussion of Colenso's works also taking shape in British India. There are several important points to raise here about geology, the great flood, and Colenso. First, Sayyid Ahmad acknowledges that recent evidence from the field of geology provided evidence that the great flood was not universal. He then introduces readers to Colenso and his argument that this was neither a real nor a universal event. Sayyid Ahmad then cites the sections where Colenso engages with the work of Charles Lyell but does not offer his own views on Lyell's work. Whereas Sayyid Ahmad first dealt with the astronomical revolution involving the move from the geostatic to the heliocentric worldview, this reference in *The Commentary* places Sayyid Ahmad within the discussion of the disciplinary shift in nineteenth-century geology as they are shaped through debates about biblical interpretations. He then provides evidence from the Qur'an, which shows that the flood was not a universal event. In this way, Sayyid Ahmad is reacting to contemporary debates and incorporating recent developments in geology into his argument(s).

In the nineteenth century, the intersection of science, religion, and colonialism took on a global and multireligious character, as exemplified by Bishop John Colenso's controversy spanning Southeastern Africa, British India, and London. Colenso's engagement with biblical interpretation and geology provoked discussions not only within the Anglican Church in Natal but also among scholars in British India, such as Sayyid Ahmad, who incorporated contemporary debates into their religious discourse. This dialogue illustrates the interconnectedness of diverse geographical and religious contexts in shaping understandings of science, religion, and colonialism during this era of global exchange.

The global interconnections of science, religion, and colonialism continued into the twentieth century in a variety of ways. These interconnections were also played out through dialogue engagements and material engagements spanning wide geographical regions. From the early twentieth century onwards, indigenous objects, understood as ethnographic collections, became another focal point around which we see the entanglements of science, religion, and empire.

Material Culture

At present, in comparison to studies of the intellectual and social contexts, little scholarship within the historical study of modern science and religion has sought to integrate studies of the material cultural context. A few scattered works of this nature do exist.

For example, in his 1973 work on the rise of modern science, Reijer Hooykaas spoke of the importance of European artisans and the objects they produced to the emergence of the experimental and mechanical nature of science between the fifteenth and seventeenth centuries (Hooykaas, 1973: 88–96). Just over a decade ago, the influential publication *Science and Religion: Around the World* edited by John H. Brooke and Ronald L. Numbers explicitly recognised the need for a material focus if scholarship wanted to gain an understanding of non-Western scientific and religious systems (Brooke and Numbers, 2011: 293). In the last few years, scholars such as Simon Werrett, Taylor M. Moore, and Efram Sera-Shriar have increasingly turned attention to the material world when looking at histories of science and religion (Werrett, 2019). The latter scholars in particular have demonstrated how the secondary literature might begin to rethink the historiography of science and religion at a global level when indigenous knowledges and material practices are included through focused historical case studies in Africa and British Canada (Sera-Shriar, 2023; Moore, 2023). As such, the following section argues for the importance of material culture within the historiography of science and religion. Crucially, what this section reveals is that, although the relationship between science and religion was routinely mediated by physical objects, this mediation itself was grounded upon European imperial frameworks.

Unlike in eighteenth-century Europe, where most collections were stored in cabinets of curiosities in the homes of middle- and upper-class individuals, by the twentieth century most collections – from artefacts and cultural objects to natural history specimens – were preserved in the museums that had accompanied Western imperial growth (Berkowitz and Lightman, 2017: 1; Hicks, 2021: 203–204). Britain was host to an endless array of objects shipped from imperial colonies and curators at metropole museums, such as the Pitt-Rivers and British Museum, which were the enthusiastic recipients of these objects. Pharmacist and museum owner, Sir Henry Wellcome (1853–1936), immersed himself into this dynamic world of collections establishing a name as a reputable collector. Born in Wisconsin, US, in 1853 and arriving in Britain in 1880 to try his hand at running a pharmacy, Wellcome had already developed an interest in objects – particularly those relating to global medicine and health – from a young age. Aided by the remarkable success of his pharmaceutical business, Burroughs Wellcome and Co, Wellcome established his own museum on Wigmore Street, London, in 1913, which he named the Wellcome Historical Medical Museum (WHMM) (Larson, 2009: 9–10). Wellcome fully exploited the British Empire's global reach as an imperial superpower

to build his global collection of health-related objects. By the time of his death in 1936, Wellcome's collection was estimated at over 1 million objects consisting of books, animal and plant specimens, artefacts, human remains, surgical tools, medicine boxes, amulets, and much more (Walsdorf, 2022).

As the historian of architecture Carla Yanni (2014: 228) has argued, the very design of a museum, as planned by an architect, could serve the function of legitimising science. In addition, museum exhibitions and their associated objects could also legitimate the boundaries between science and religion, often through established imperial hierarchies. Wellcome's first exhibitions provide one such example.

When the WHMM opened in 1913, the first room that visitors entered was called 'Hall of Primitive Medicine'. This room was filled with masks, fetish figures, skulls, wooden figures, costumes, musical instruments, and so on, gathered from parts of Africa, Amazonian jungles, Pacific Islands, and other locations mostly outside of Europe and North America. The room was dimly lit, objects were cramped and clumped together, and information about the objects was often minimal (Figure 3.1). From this room, visitors would follow a guided path which led them to another room called 'Gallery of Pictures'. Gallery of Pictures, in contrast, was better lit, more spacious, and information-rich with large portraits about the individuals (mostly European and North American men) who had – in Wellcome's eyes – shaped modern medicine (Figure 3.2). As Wellcome's biographer Frances Larson has summarised this experience, 'Visitors had moved from the startling anonymity of the Hall of Primitive Medicine, through the measured spaces in the Hall of Statuary, before finding themselves face to face with the select few individuals who were praised for transforming medicine into a modern scientific enterprise' (Larson, 2009: 146–147). During the mid-nineteenth century, the racial evolutionary and anthropological theories produced by scientific figures such as Charles Darwin and E.B. Tylor were greatly shaped by their imperial encounters with indigenous peoples in places such as Mexico, South Africa, and Australia. Similarly, we can say that Wellcome's racial theories were greatly shaped by his imperial encounters with indigenous objects beyond Europe and North America. While Darwin and Tylor published scientific books based on their experiences, Wellcome curated exhibitions based on his. Just as Darwin and Tylor associated non-Western people with the most 'primitive' religious and ritualistic cultures of the past, Wellcome associated non-Western objects with the most 'primitive' religious and spiritual practices of the past (Darwin, 1871: 65; Tylor, 1871: 452; Larson, 2009: 145–153).

As this instance highlights, exhibition spaces could be curated to physically govern the boundaries between science and religion, and these so-called boundaries were overwhelmingly centred around Eurocentric hierarchies of empire. But we can probe beyond this historically Eurocentric view if we shift our focus away from the museum spaces that hosted these objects to the very objects that found themselves in these museum spaces. In their introduction

Figure 3.1 Hall of Primitive Medicine, Wellcome Historical Medical Museum.

to *Writing Material Culture History* (2015), Anne Gerritsen and Giorgio Riello noted that 'Objects have meanings for the people who produce and own, purchase and gift, use and consume them. Material culture therefore consists not merely of 'things', but also of the meanings they hold for people' (Gerritsen and Riello 2015: 2). As such, objects can provide novel means of exploring global trajectories within the history of science and religion. In this

Figure 3.2 Gallery of Pictures, Wellcome Historical Medical Museum.

context, museum colonial collections serve as valuable starting points for this type of investigation.

Within the Hall of Primitive Medicine, a pair of human skulls were put on display just a few months after the exhibition's opening. These two skulls were looted in 1896 as part of the British colonial expedition to the Asante Empire in Kumasi, modern-day Ghana, which ended in the burning down of the Asante Palace and exiling of the Asante king (Manning, 2021: 124–125). Major Robert Baden-Powell, the British Army officer and founder of the Scouts Movement, led a native levy of over 800 people and upon reaching the Asante Kingdom; he, at some point, came across and took the skulls for himself (Baden-Powell, 1896: 24). When the skulls were brought back to England, the British Museum initially attempted to acquire them from Baden-Powell, but for unclear reasons, their attempts between 1896 and 1898 failed (Wellcome Collection, 1913). Baden-Powell held onto the skulls until 1913 when he finally donated them to the WHMM. Upon this donation, the two skulls were placed into the 'Skulls of Anthropological and Surgical Interest' section of the Hall of Primitive Medicine, which was set up to support British anthropological research's entry into the science (or pseudoscience) of racial craniology (Roque, 2018).

Today these two Asante skulls can physically be found at the National Collections Centre (NCC) in Swindon, which is the collections storage facility for the London Science Museum. They also have an online presence on the Science Museum's Collections online website where they are simply labelled as 'Human Skull' with the object numbers A666426 and A666427 (Science Museum, n.d.). Although stored at the Science Museum's NCC, the skulls legally belong to the Wellcome Trust. During the late 1970s, the skulls were transferred from the Wellcome Trust into the Science Museum's care as part of a long-term loan agreement. When, however, the skulls were acquired by the WHMM in 1913 they were initially accessioned in September 1914, where basic details regarding the skulls (when they were acquired, who donated them, where the skulls were believed to have originally come from, etc.) were documented. The majority of information about the two skulls can be found on the collections website of the Wellcome Trust. Wellcome records are not easy to navigate and will require guidance from Wellcome or Science Museum staff. In addition, some crucial bits of documentation can only be accessed with the permission of Wellcome Trust or Science Museum staff. Despite these challenges, by incorporating these methods of research, we can paint a picture of the social life of the skulls as they journeyed across colonial institutional settings. But examining these skulls also reveals that their social journey does not begin in Britain but rather in Africa.

A significant discovery about these particular skulls is that they have Arabic inscriptions written across their cranium. The 1914 accession records state 'Calvaria inscribed in Mugrabi hand of Arabic' (Wellcome Collection, n.d.). This most likely refers to the Maghreb region, an Islamic-majority region in North-western Africa today. This information suggests that the skulls were possibly transported from North Africa to the Gold Coast at some point during the late nineteenth century. Thus, the two skulls were probably a product of inter-African multireligious trade. Following this initial investigation, Mohammed Gamal Abdelnour, a comparative religious studies researcher at Bristol University, was contacted to translate the cranial inscriptions. He confirmed the inscriptions to be Chapter 69 of the Qur'an mixed with an inscribed personal prayer to Prophet Mohammed. From the sixteenth century, a recognisable Islamic presence had already entered the Gold Coast from Northern Africa. By the late eighteenth century, this Islamic presence had penetrated the Asante Empire. This was not a presence dominated by war between the two groups but rather trade. Islamic prayers, medicine, and other Islamic-manufactured objects became important in the Asante Empire during this period. Although the Islamic monotheistic belief in Allah was not compatible with Asante polytheistic beliefs on a theological level, these two religious systems *were* compatible on a material level. For example, according to the scholars Jibrail Bin Yusuf and Victoria Agyare Appiah, 'Muslims in Kumasi were noted for the manufacture of harm-repelling charms and amulets, which allegedly helped Asante emerge victorious in many battles' (Yusuf and Appiah, 2021: 152). As a result, the two

skulls with their Arabic inscriptions and prayers seem to be well grounded in a global history of empire and trade beginning with Islamic expansion into West Africa. It is highly likely that the skulls are not Asante in origins, then, but rather Islamic. In summary, despite the African origins of the two skulls, when the skulls were placed into the Hall of Primitive Medicine in London, their social context shifted from that of Islamic-Asante objects of religious trade to museum specimens that bolstered European racial science.

Conclusion

The comment by Richard Dawkins that began this chapter provides a striking illustration of how Western science has historically been intertwined with notions of white supremacy and colonialism, perpetuating a hierarchy of knowledge systems. His perspective reflects a bias towards Western scientific paradigms while dismissing indigenous knowledge as mere superstition. This mindset is shaped by the historical context of colonialism, whereby European scientists sought to discredit indigenous beliefs and assert the dominance of Western science. Since decolonisation, there has been a tendency to prioritise labelling something as scientific rather than religious or indigenous, leading to the marginalisation of non-Western perspectives. To address this, scholarship in the history of science and religion must critically examine colonial intersections, highlighting the hegemony of European science and its opposition to Global South forms of knowledge. Our chapter contributes to this by exploring missionary activities, colonial interactions, and the role of material culture in shaping perceptions of science and religion. Initiatives like the 'Faith, Hope and Fear' section of the London Science Museum's medical gallery can further engage the public in understanding the complex relationship between science, religion, and colonialism through tangible artefacts and displays, fostering dialogue and critical reflection. Public galleries as such can also serve as starting points for scholars of science and religion wanting to be more public-facing about their work.

References

Baden-Powell, RSS (1896) *The Downfall of Prempeh: A Diary of Life with the Native Levy in Ashanti, 1895–1896*. London: Methuen and Co.

Berkowitz, C and Lightman, B (2017) Introduction. In Berkowitz, C and Lightman, B (eds), *Science Museums in Transition: Cultures of Display in Nineteenth-Century Britain and America*, vol. 1. Pittsburgh: University of Pittsburgh Press.

Brooke, JH and Numbers, RL (eds) (2011) *Science and Religion Around the World*. New York: Oxford University Press.

Darwin, C (1871) *The Descent of Man, and Selection in Relation to Sex*, vol. 1. London: John Murray.

Darwin Correspondence Project (n.d.) 'Letter no. 4807'. [online] Available online: www.darwinproject.ac.uk/letter/?docId=letters/DCP-LETT-4807.xml (accessed 08 February 2024).

Dixon, T and Shapiro, AR (2022) *Science and Religion: A Very Short Introduction*. Oxford: Oxford University Press.
Feingold, M (ed) (2003) *Jesuit Science and the Republic of Letters*. Cambridge, MA: MIT Press (Transformations).
Gerritsen, A and Riello, G (2015) Introduction: Writing Material Culture History. In Gerritsen, A and Riello, G (eds), *Writing Material Culture History*, 1–14. London and New York: Bloomsbury Academic.
Gorman, MJ (2020) *The Scientific Counter-Revolution: The Jesuits and the Invention of Modern Science*. London: Bloomsbury Academic.
Harrison, P (2015) *The Territories of Science and Religion*. Chicago: University of Chicago Press.
Hicks, D (2021) *The Brutish Museum: The Benin Bronzes, Colonial Violence and Cultural Restitution*. London: Pluto Press.
Hooykaas, R (1973) *Religion and the Rise of Modern Science*. Edinburgh and London: Scottish Academic Press.
Khan, SA (1865) *The Mahomedan Commentary on the Holy Bible Genesis I–XI*, Part II. Allygurh: Published by author at his Private Press.
Larson, F (2009) *An Infinity of Things: How Sir Henry Wellcome Collected the World*. Oxford: Oxford University Press.
Lightman, B (2019) *Rethinking History, Science, and Religion: An Exploration of Conflict and the Complexity Principle*. Pittsburgh: University of Pittsburgh Press.
Lightman, B and Qidwai, S (eds) (2023) *Evolutions and Religious Traditions in the Long Nineteenth Century*. Pittsburgh: University of Pittsburgh Press
Manning, S (2021) *Britain at War with the Asante Nation 1823–1900 'The White Man's Grave'*. Yorkshire-Philadelphia: Pen and Sword Military.
Moore, MT (2023) An (Un)Natural History: Tracing the Magical Rhinoceros Horn in Egypt. *ISIS*, 114(3): 469–489.
Perez Sheldon, M, Ragab, A, and Keel T (eds) (2023) *Critical Approaches to Science and Religion*. New York: Columbia University Press.
Roque, R (2018) Authorised Histories: Human Remains and the Economies of Credibility in the Science of Race. *Kronos*, 44(1): 69–85.
Science Museum (n.d.) Human Skull. Available online: https://collection.sciencemuseumgroup.org.uk/objects/co107684/human-skull-human-remains-skulls (accessed 25 July 2024).
Shriar-Sera, E (2023) From Museumization to Decolonization: Fostering Critical Dialogues in the History of Science with a Haida Eagle Mask. *The British Journal for the History of Science*, 56(3), 309–328.
Sivasundaram, S (2010) A Global History of Science and Religion. In Dixon, T, Cantor, GN, and Pumfrey, S (eds), *Science and Religion: New Historical Perspectives*, 177–197. Cambridge: Cambridge University Press.
Tylor, EB (1871) *Primitive Culture: Researches into the Development of Mythology, Philosophy, Religion, Art and Custom*, vol. 1. London: John Murray.
Walsdorf, A (2022) Why Wellcome Closed Its Medicine Man Exhibition–And Others Should Follow Suit, *The Conversation*, 16 December. Available online: https://theconversation.com/why-wellcome-closed-its-medicine-man-exhibition-and-others-should-follow-suit-196171 (accessed 24 July 2024).
Wellcome Collection (1913) Baden Powell, General Sir Robert. Available online: https://wellcomecollection.org/works/sserewkz (accessed 25 July 2024).

Wellcome Collection (n.d.) Wellcome Historical Medical Museum 1914 Accession Register Vol 1: 1–5000. Available online: www.google.co.uk/books/edition/Writing_Material_Culture_History/uR-dBQAAQBAJ?hl=en&gbpv=1 (accessed 25 July 2024).

Werrett, S (2019) *Thrifty Science: Making the Most of Materials in the History of Experiment*. Chicago and London: University of Chicago Press.

Yanni, C (2014) Development and Display. In Lightman, B and Zon, B (eds), *Evolution and Victorian Culture*, 227–260. Cambridge: Cambridge University Press.

Yusuf, JB and Appiah, VA (2021) Why Islam did not Make Significant Impact on Asante During the 18th and the 19th Centuries. In Abaka, E, and Kwarteng, KO (eds), *The Asante World*, 151–166. London: Routledge.

Part II
Country Case Studies

4 Argentina

A Narrative of Conflict Confined to Niches

Arturo Fitz Herbert, Reynaldo Rivera, and Sol Barbera

Introduction

Argentina shares with other Latin American countries the heritage of the Spanish colony: a high level of Catholic religiosity and culture (62% of Argentines are Catholic, and almost every city has a church in its main square); and institutions that were first closely linked to the Catholic Church and then underwent a French-inspired secularisation process with anticlerical components (Blancarte, 2006: 34). It also shares a public agenda focused on social problems such as inequality, poverty, and political polarisation.

In this context, there is little public debate – and little academic research (Silva, 2015) – on science and religion in contemporary Argentina. This chapter is based on what is probably the most extensive study of perceptions of science and religion in the region, carried out for the 'Science and Religion: Exploring the Spectrum of Global Perspectives' (SRES2: see Chapter 1) project. We interviewed 78 people (23 scientists and 55 members of the general public), of whom 22 were Catholics; 19 non-believers; seven Evangelicals; 21 non-religious believers; and nine of other religions; we conducted seven focus groups with believers; non-believers; believers and non-believers; creationists; and religious scientists and non-religious scientists. This analysis is supplemented by the SRES2 survey of Argentina, which put questions to a sample of 2,040 Argentinians.

We found that science and religion is not perceived as a relevant theme in the Argentinian public debate, although some participants were aware of its importance in the US and UK. The relationship between science and religion is not problematic for many Catholics who are familiar with the official position of the Church on the compatibility between its doctrine and the Big Bang and the theory of evolution. Nor are scientific reflections part of the everyday life of large sections of the population who are more concerned with the urgencies of everyday life.

And yet we have found some social and institutional frameworks in which the narrative of conflict is relevant. We found evidence that the conflict narrative is reproduced in the context of natural science education in many public schools and universities, where most Argentines are educated. Likewise, in some social

DOI: 10.4324/9781003476580-6

sectors, especially low-income, Evangelical churches that interpret the Bible literally are growing. Indeed, of the seven nations surveyed for this study, Argentina had the second highest share of creationists, with a proportion (18%) that is close to the percentage of Evangelical population (15%).[1] In individuals who have been exposed to both the conflict narrative and creationism, there is a perception of conflict between science and religion that could become more pronounced in the future if certain events involve the debate on the centre of the public agenda or if the growth trend of Evangelicals continues.

In a country with almost no public debate about science and religion, Argentina shows the relevance of focusing on the institutional and social contexts that may reproduce the conflict narrative.

General Context in Argentina

Argentina is a South American federal democratic republic where 45 million people live with GDP per capita of US $10,729.[2] Argentina become independent in 1810 and between 1880 and 1930 experienced a period of prosperity and massive immigration, mostly from Italy and Spain.

Spain's institutional heritage and the characteristics of the immigration left a strong Catholic imprint: today, 62% of the population is Catholic, and the national constitution states that the federal government supports Catholic worship. Also, during the study pope Francis – who was an Argentinian – was still alive, and this resulted in constant media scrutiny of his decisions and statements.

Some 81% of Argentinians declare themselves religious, but religiosity has decreased from 88% in 2008, with a stronger decline in Catholics (76.5% in 2008). However, in a similar trend as Brazil's, Evangelicals have grown from a 9% in 2008 to 15.3% in 2019 (Mallimaci et al., 2019).

According to the latest data available, the current percentage of non-religious is 18.9%. 51.5% of them claim no religious affiliation (9.7% of the general population); 31.7% are atheists (6%), and 16.7% are agnostics (3.2%). But many of the non-religious hold supernatural beliefs, like God (48.3%), energy (76%), aliens (36.8%), and astrology (33.9%).

There are more religious women than men (85.5% vs. 76.2%); religiosity increases with age (92.3% of those over 65 are religious vs. 75.3% of adults aged 18–29) and decreases with higher educational level (12.2% of those with primary education, 22.7% of those with secondary education, and 27.2% of those with university education are nonreligious). There is also geographical variety: the north-west has 91.7% of religious people, the centre 79.2%, the Buenos Aires Metropolitan Area (the most populated area of the country) 69.7%, and Patagonia 61.5%.

Despite high religious identification, many Argentines do not attach importance to religion or its communal practice. According to the World Values Surveys (WVS) of 2017, for 39.7% of the Argentines, religion was not important in their lives.

Science

Science's development in Argentina depends largely on the state. According to the Ministry of Science, Technology and Innovation, 76% of investment in research and development (R&D) is state funded. According to the latest data, in 2017, there were 65,482 researchers, 33% of whom worked in research institutions that depended directly on the national state. Another 59% worked in universities, and although it is not known how many of them belong to state universities, it can be assumed that they are the vast majority, considering that public institutions have 78% of the students.

According to surveys by the Ministry of Science, Technology and Innovation,[3] 80% of Argentines say they value scientists quite a lot or very much; while the 2017 WVS indicates that Argentines associate science with well-being and progress: 76% said they agree or strongly agree with the statement 'science and technology are making our lives healthier, easier or more comfortable'. In the SRES2 survey of Argentina, 66% of Argentinians thought science was important to the sense of who they were and how they viewed the world (Gosschalk et al., 2023).

Religion and the State

The Argentine state has a complex relationship with Catholicism. While the National Constitution states that 'the Federal Government upholds the Roman Catholic Apostolic worship', in practice many public education and science institutions have a secular culture based on the French concept of *laicité*. Ecklund et al. (2019) point out an important difference between the political concepts of secularisation in the US and France: while in the US, secularism attempted to protect the religious from the state, in France *laicité* sought to give state institutions autonomy from the influence of the Church. Argentina's secularization process was influenced by French thought (De Asúa, 2022), and, although this process was only partially completed, it was profound in the fields of education and science.

In fact, past public discussions about science and religion were associated with the secularization process in education. Some milestones were the public education law of 1884, which removed religious instruction from state schools; law 1597 of 1895, which granted the national public universities the exclusive right to confer professional degrees; the university reform movement that started in 1918 and asked for the autonomy of the universities from the state and from what they saw as a *de facto* dominance of Catholic educators; and the reform of decree 6403/55 in 1958, which allowed private universities (many of them Catholic-inspired) to grant professional degrees.

Many of these public decisions involved conflicts in which spokespersons used the conflict narrative to promote the separation of religious groups from educational or scientific activities (De Asúa, 2022). For example, in 1958 Risieri Frondizi, rector of the University of Buenos Aires, opposed the

reform of decree 6403/55 arguing that religious universities would not be free because dogma would reign in them. Years later, Frondizi would write that 'the Church was a burden that retarded the cultural development of our people, whom it preferred to keep submissive and ignorant' (Micheletti, 2018:34).

Although secularization implies a separation between state and religion but not an opposition between these fields, the conflicts of the secularisation process left a legacy. We found evidence that the narrative of conflict is often reproduced in public educational institutions – especially in universities. Some of the younger participants reported that teachers and school texts explained the theory of evolution as opposed to religious worldviews. In natural sciences, as will be seen later, the conflict narrative coexists with negative stereotypes about religious people and the assumption that most scientists are –and, some think, *must be* – atheists (Fitz Herbert et al., 2023).

Nevertheless, the secularization process in Argentina has not excluded religion from the public sphere. Religious spokespersons have an important presence in the public space and participate in relevant public debates, like the one on poverty. This differentiates Argentina from France, where there is a deeper relegation of religion to the private sphere (Ecklund et al., 2019). In addition, collaboration between the state and the church is intense in areas like social policy.

Regional Diversity

Argentina is a diverse country: federalism and the length of the territory mean that climates, production, development, and even political regimes are varied (Gervasoni, 2010).

Religiosity and religious culture between provinces also vary considerably. Some interviewees expressed the differences they found in the daily life of different regions. Melo (a female, agnostic biologist), who had lived in the north and south of Argentina, said, 'San Juan is a very conservative and religious province, mainly Catholic', where 'on Sundays you go to mass, you don't do anything else in the morning'. In contrast, she described the south as a more liberal and secular culture.

Here we will focus on the nation as the unit of analysis, so these differences will not be a main point of focus. But it is important to retain that, within the generalisations, multiple and important nuances can be identified.

Science and Religion in the Low-Income Population

From the late nineteenth century until the 1970s, Argentina stood out in Latin America for having produced a vigorous middle class. Since then, the social structure has been transformed, and today inequality has become more pronounced, and poverty has reached a 40% of the population. To overcome potential biases in our recruitment techniques, we deliberately sought

representation from low-income sectors and conducted 13 interviews and one focus group with members of this social class.

Two characteristics stood out in the low-income group: first, participants expressed with more frequency their strangeness or disinterest in questions about science and religion. Some said they did not know how to answer questions about the relationship between both fields. Others, such as Quintero (female, Catholic, unemployed), did not understand why there would be contradictions between these fields: '[T]hey would be different things: religion is one thing and science another. And why not work together? If there was a clash, I wouldn't understand why'.

Some participants made it clear that the issue was alien to them because they had other urgencies. Quintero, for example, said: '[W]e live day to day'. In the focus group, only one participant manifested previous interest in questions related to science and religion.

Second, the reflections about science and religion tended to be focused on a biographical moment: adolescence, when most of them had learned about the theories of evolution and the Big Bang in public schools and compared them with the scriptures.[4] As one focus participant pointed out, recalling her years at school: 'I remember when I was a child and I used to think, who created the can? Who the glass? Then when you grow up you have other things to do and things to think about, and you leave these thoughts'.

Third, and irrespective of their type of belief, these participants shared the perception of a sharp dichotomy between *Genesis* and the theories of the Big Bang and evolution. Metaphorical readings of the Bible tended to be less frequent in these groups, even within Catholics. Jones (female, Catholic, textile worker) expressed difficulty in determining whether she believed one theory or the other. She said that the theory of evolution was 'scientifically proven, you can't argue with it'. But, on the other hand, 'I also have my part of believing in the Church and in the one who created us'. Borja (male, non-religious believer, student) said that as a teenager he studied the theory of evolution, and the teacher explained it by saying 'this is how the human being was formed according to the churches. And on another poster [was] Darwin's evolutionary theory'. Until then, he had been a Catholic, but this explanation 'ruined one part of my life, but I continued with the other part. I was *convinced* of the other part [evolutionary theory]'.

These cases may have theoretical implications: the relationship between science and religion does not seem intuitive if people are not exposed to a discourse explicitly linking them. In Argentina's low-income sectors, this discourse has been present in public schools only in the last decades. In other nations where mass debates on science and religion are also absent, the study of institutional discourses may be a more fruitful method for finding the mechanisms of reproduction of perceptions of science and religion.

They also have practical implications for Catholicism: the lack of a clear narrative about the compatibility between scriptures and scientific theories during Catholic socialization may cause the faithful to perceive

insurmountable conflicts, leading them to choose between their religious and scientific beliefs.

General Trends

In this section we will show some general trends in our sample. First, most interviewees could not identify public debates about science and religion. Many interviewees found the topic relevant on a personal but not a social level, and even those who perceived contradictions between science and religion were cautious about labelling them as conflicts. There was also low awareness about labels like creationism, intelligent design, evolutionism, etc. Interestingly, the minority who knew these labels were familiar with the debates surrounding evolutionary theory in the US, either because they had lived there or because they were interested in related subjects.

Lacking public debates, perceptions of science and religion were more often shaped by institutional narratives or by interactions with people in the immediate social environment. Thus people who were socialized in public institutions in the last decades were more aware of the conflict narrative.

Second, interviewees tended to differentiate between fields in conflict and conflicts between people at the extremes of each field. Ham (male, agnostic, student) said: 'People who are very involved in science tend to deny religion. Similarly, there are extreme religious fanatics who deny certain things in science. [Conflict] is mostly between extremes'.

Third, many thought about religion from a Christian point of view. Some participants even clarified that they referred to Christianity when talking about religion. As a member of the focus group with non-believers said: '[M]aybe we reflected in this way because it is a Catholic country. But if we really talk about religion, it's different. There are many other religions that don't touch issues like Catholicism. ... There are religions that are laxer'. Becoming aware of this bias, some participants speculated that their opinions might be different if they lived in other countries. Stereotypical views tended to emerge in these reflections: two very frequent ones described Islam or Jehovah's Witnesses as dogmatic religions at odds with science and Western ideas, and Buddhism as tolerant and more open to science.

Fourth, people changed their opinions when switching their reflections from science and religion to *the history of science and religion*. Even those who did not perceive conflicts tended to activate elements of the conflict narrative when they talked about historical facts (or myths). A participant in the focus group with Catholics said: '[I]t has happened with historical scientists who proved that the earth is round or that the centre of the Milky Way was not the earth but the sun. And they've been made to recant or killed. Religion has attacked science a lot'. Some of these historical recollections included myths about science and religion (Numbers, 2009), in particular Galileo's supposed death sentence for postulating that the earth moved around the sun.

Often, historical thinking included dialectic reflections in which advances in science produced adjustments in religion. In the focus with non-believers, one participant said that over time science had managed to reduce dogmatism in some religions: 'It seems that religion, which is so strict, is modernizing, is more flexible, so that it does not clash so much with science'. On many other occasions, especially among non-believers, it was suggested that the past conflict between science and religion had been settled after the triumph of science: as one non-believer said, '[R]eligion has lost the battle'.

This perception is related to another common trend: the recognition of the high status of science. Even those who showed little interest in science recognized its value for progress or the improvement of everyday life. One participant in the focus group with non-believers felt that 'there must be more scientists today who deny or are less tolerant of religions than otherwise .... We've reached a point where science is no longer questioned'.

Sixth, there were novel patterns of media use that in the future may shape perceptions of the relationship between science and religion. Social networks, streaming and algorithm-based news show more Western content and many times reproduce the conflict narrative: for example, the historical narrative in Netflix's *Cosmos* (a reworking of Carl Sagan's classic 1980s documentary, presented by American astrophysicist Neil deGrasse Tyson) proposes that religions hinder scientific progress.

But we should not overestimate the power of media effects and assume that these contents will necessarily produce mass belief in the conflict narrative. A heavy user of YouTube, Aranda (male, agnostic, Bachelor's in Education), had seen videos of Richard Dawkins but did not share his opinions: 'I remember a video that said "science should not become a religion". And later I saw this Dawkins, an Englishman who went to different talk shows to promote atheism. And I'd say: "well, I suppose it's a business". But he makes his life a religion for science, and he doesn't even do science'. Aranda's distancing from the conflict narrative can be related to his educational background: he attended a Catholic school where compatibilities between science and religion were discussed. His case shows that people interpret the media through assumptions related to a worldview that is also shaped by institutions and social relations.

Group Trends

Apart from the general trends, there are some differences in the perceptions of science and religion held by each belief group. Here, we analyse the three largest groups based on Evans's (2011) distinctions between epistemological (systemic and propositional) and moral conflicts.

Catholics

Although they form a majority of the population, many Catholics saw themselves as needing to adjust to a scientific society. More liberal Catholics stated that the Church should adapt to scientific facts, while the more conservatives recognised a higher status in science that led them to use scientific arguments to sustain their worldviews. One Catechist, Etchevere (female), explained that although she believed religion to be a superior form of knowledge than science, she used scientific arguments to convince young people about Catholic fundamentals: '[T]he world has become so rationalistic that you have to base on science all you can'. Another focus group participant shared an anecdote that showed the perceived difficulty of sustaining arguments with a religious vs. a scientific positioning:

> My aunt is an atheist and supports abortion. Every time she posted about abortion in the family chat, I spoke against it on scientific and philosophical grounds. And she would say: '[Y]ou've been taught in church, since you were a little girl, that conception is life'. I told her: 'I'm not talking from a religious, but a scientific point of view. Life begins at conception. I don't say that, nor does a priest says it [*sic*], a scientist does'.

Regarding systemic relationships between science and religion, all Catholics (22) sustained complementarity views that varied between non-overlapping magisteria and the subordination of science to religion. Tuñón (male, student, Catholic) stated that science and religion were 'two different things' because 'faith does not replace science and science does not replace faith'. Meanwhile, Ascasubi (female, biochemist, Catholic) subordinated science to religion by saying that science 'discovers what God has created' or is used corroborate some religious propositions. In a similar vein, Muñoz (male, philosopher, Catholic) stated that religion provides a more complete ontology, in contrast to science's materialism: '[S]cience touches very specific topics but it does not have an overall vision. On the other hand, religion, what makes you think is how human[s] live in the face of God and in the face of the world. That is more generic, it allows you to have a holistic knowledge'.

Regarding propositional conflicts, four interviewees stated that Catholicism was opposed to the theory of evolution. None of the cases were conscious rejections of the official position of the Church: rather, the Church's position was ignored. In all cases, educational background was relevant: all four interviewees recalled that they had been taught a literal account of *Genesis* in their religious socialization, and none were aware of the possibility of metaphorical interpretations.

Two of these participants expressed doubts based on reasonable aspects of evolutionary theory. However, both stated that they rejected the theory of evolution and the Big Bang because they perceived them to be anti-religious

and utilized to deny the existence of God, which shows that moral judgments may frame propositional conflicts. Zolezzi (female, administrative assistant, Catholic) said: "[W]hen they say that the origin of the world doesn't come from God, then I'm not interested anymore'. '[M]aybe if I read more about evolutionary theory and Big Bang I would understand and even agree on certain things. But as I'm a bit closed-minded and I think that the creator of the world is God, then I don't give a damn about these things'.

Other Catholics saw no contradiction with scientific theories if the idea of a creator was allowed. These participants thought the Bible should not be interpreted literally. Some had learned metaphorical interpretations of *Genesis* during catechism. Others had perceived contradictions between scriptures and evolutionary theory and sought advice from priests or theologians who pointed to the Church's metaphorical interpretation of *Genesis* and John Paul II's acceptance of Darwinism.

These recollections reinforce our interpretation that institutional discourses and social interactions are relevant mechanisms for moulding perceptions about science and religion, especially in the absence of public debates. In fact, the lack of clear compatibility explanations during religious socialization can be a reason for distancing oneself from religion, as Piatti (male, biologist, agnostic), who grew in a Catholic family, indicates:

> [S]tudying biology and starting to read about evolution in a little more depth. [I thought] 'Where does it all come from?' How did life originate? That's when these two theories start to clash, because it's the story told by the Old Testament and the story told by evolutionists. And I was more convinced of the evolutionists' theory.

Finally, many Catholics accepted evolution but were worried about potential moral interpretations. According to Muñoz:

> I do not agree with the ideological implications evolutionary theory may have. Because in religion we see that the weakest is the one that survives. God takes shelter in the weakest to sanctify him. On the other hand, when we talk about the evolution of the strongest, that may be true at the biological level, but certainly it's not something necessary to progress in faith.

Evangelicals

Evangelicals in our sample were both attached to the literal interpretation of scripture, thus in conflict with evolution and the Big Bang, and open to scientific and scholarly knowledge in general. When speaking in general terms of science, they tended to draw boundaries between Christianity and other religions. In the focus group with Evangelicals, one participant indicated: '[W]e now have a certain flexibility regarding science. But there are other religions that are not based on the Christian faith and have another

perspective on science'. Then another participant mentioned his experience living in Africa and said: '[W]e as Christians are much more open than other religions' and talked about Hinduism, animism, and Islam as the other 'more closed' religions. They also differentiated between the Christianity of today and that of the past, assuming part of the conflict narrative, especially dealing with the supposed Catholic Church's opposition to scientific advances in the Middle Ages.

This drawing of boundaries with other religions may be related both with the Evangelicals' awareness of their minority position on creation and with the experiences of prejudice they suffered in academic settings. A typical situation for Evangelicals was recounted by one participant in the focus group with creationists, 'I confessed my faith at the university and the answer was, "How strange: a person like you in a place like this!" '

Regarding the general relationship between science and religion, Evangelicals tended to postulate NOMA or convergence. In the first case, science and religion were separate spheres, one concerned with the natural world and the other with the supernatural: some even criticized the scientists that confused methodological and ontological naturalism. Pedri (male, notary, Evangelical) stated:

> The world is divided into two important spheres: the natural and the supernatural. The natural we understand because we have reason. But rationalism did so much damage by deifying reason. Everything that doesn't go through the epistemological field, science, and scientific assumptions, is disposable … . There is also the supernatural. And that's where reason is in trouble.

This point was made by other Evangelicals, who said that science tried to explain the inexplicable, which was the existence of God and his actions.

In other cases, the convergence between science and religion was stressed by arguing that science often proved scriptural claims. Even the development of science was presented as a corroboration of the Old Testament. Three of the Evangelicals in the sample mentioned that the scriptures said that 'science will advance'. As one participant in the focus with Evangelicals put it, 'It is not only the New Testament but also the Old Testament that affirms that there is a science, that it exists and that it will advance. But the one who advances is also God'.

Convergence was also argued on a practical level: most of the Evangelicals in the sample had one or more university degrees, which suggested a longstanding commitment towards science. As one focus participant said, 'Today these two worlds [science and religion] have come closer together. As you heard, in our presentations, most of us have a scientific background'.

However, Evangelicals also tended to set clear boundaries for science. First, there were miracles that science could never explain and that Evangelicals

perceived as ordinary and as part of the unproblematic aspects of their everyday world.[5]

Second, science, in their view, could contradict the scriptures (or their reading of the scriptures): all the Evangelicals in the sample rejected both the theory of evolution and the Big Bang. These participants also showed greater awareness and interest in the creation question than did the Catholics. In other words, for Evangelicals it was a central issue; for Catholics, a peripheral one.

In some cases, the arguments for rejection were 'common sense': the ugliness of monkeys as opposed to human beauty, the absurdity of believing in dinosaurs, or the counterintuitiveness of human life having arisen from an explosion.

In other cases, arguments from the philosophy of science were raised. Following Thomas Kuhn (1962), some indicated that the theory of evolution was a paradigm that was going to fall due to its empirical inconsistencies. Pedri compared evolutionism with other theories and said: '[T]here are scientific postulates that were, in fact, irrefutably proven and that, suddenly, nowadays, are in quicksand'. In this sense, the 'missing link' was mentioned as a weak point in the theory.

Likewise, some Evangelicals presented, without naming it, intelligent design arguments, such as the differentiation between macro and micro evolution (Ruse, 2014). According to Jasminoy (male, theologian, Evangelical): '[W]e believe there is a micro evolution, but not a macro evolution of inferior beings towards superior ones. Because we would also be denying our rule of faith, which establishes that the human being was created by God'. This sophisticated approach suggests some kind of influence from the creationist arguments developed in the US.

Another similarity between Argentine and American Evangelicals is the demand that creationism be taught in public institutions. Although we do not know whether this demand has been formalized, it appeared in our interviews. Jasminoy said that 'there are possibilities that are not dealt with at the university. For example, I did not hear the creationist theory. This lack of information does not end up generating the truth. The truth in the sense that you have the possibility of choosing between different concepts'.

Believers Without Religion, Atheists, and Agnostics

The non-religious – whether non-believers or believers in some form of higher spirituality – shared an important characteristic: in a context of Christian majorities, they defined themselves in opposition to Catholicism or Evangelicals. According to surveys (Esquivel, Funes and Prieto, 2020), this group rejects religious institutions and Christian sexual morality to a greater degree than the rest of the Argentine population. Of the non-religious, 89.1% believe that the state should not finance religious denominations, and 66% believe that there should be no religious teaching of any kind in state schools

(29.9% believe that there should be a general subject on religions). Likewise, 85% believe that a gay couple should be able to adopt children, and 65.2% are in favour of the legalisation of abortion. On other social issues, such as the elimination of pensions for the unemployed, the implementation of barriers to immigration, or the death penalty, non-religious people show more similar, although somewhat lower, degrees of adherence than the rest of the Argentine population.

The non-religious were the group with the greater tendency to perceive science and religion in conflict. Among the eight who believed in a higher spiritual force, five perceived propositional conflicts and four moral conflicts. Among the 18 agnostics and atheists, four perceived systemic and 13 propositional conflicts, while 11 perceived moral conflicts.

Non-Religious Believers

Non-religious believers shared the criticism of religious institutions. Except for one person, all members of this group described religious institutions in negative terms: dogmatic; designed to rob the faithful or control them through a system of punishment; and/or opposed to the rights of gays and women. The only exception was a young man from a shanty town (*villa de emergencia*), who thought it was 'good that the churches exist ... because they help the poor people in the neighbourhood ... . Many people go there to ask for clothes or food'. He also said that religion gave order and hope 'to the people'.

This group believed in God or something higher, so they distinguished institutions from spirituality and refrained from criticizing the religious. Moreover, many engaged in religious practices, such as praying or worshipping through symbols (e.g., holy cards).

This critical attitude shaped perceptions about science and religion. They thought that it was not science and religion that were in conflict, but Christian institutions and science. For example, Hassan (female, tourist agent, non-religious believer) held a pseudoscientific version of the conflict narrative by indicating that astrology was the 'mother of all sciences' but that it had been relegated from that place by Christianity, which criticized astrology on religious grounds.

Agnostics and Atheists

Just as non-religious believers defined themselves by their opposition to institutions, non-believers stood on their rejection or lack of faith in God. All were clear about their absence of faith, but many interviewees doubted whether they should be classified as agnostics or atheists, and some even claimed to be atheists but then stated that they were not sure about the existence of God.

This is a subtle difference, but it may have an impact on the rational and emotional bond that agnostics and atheists establish with science. Among the non-believers in the general public – eight in total – there was a greater tendency to perceive conflicts between science and religion: two perceived systemic epistemological conflicts, six propositional, and five moral conflicts. Nevertheless, this did not necessarily imply that non-believers developed a scientific identity as an alternative worldview to religion.

It is possible that both the doubts about self-definitions and the absence of an alternative worldview to religion show the irrelevance of the non-believer label in Argentina. Unlike in the US (Guenther, 2014), non-believers in Argentina are not stereotyped as amoral. Perhaps this is why they do not interact with each other, form groups, or define collective identity there is no discourse against which they must develop a position.

Indeed, the only participant who had developed an identity by reading atheists from Europe was Labruna (male, MBA student, atheist), who explained that he did so motivated by the need to have arguments to sustain his atheism when it began to be questioned at the university, which he attended around the 1970s. And it is within this need that Labruna found a way to, as he saw it, refute religion through science. When asked about the relationship between science and religion, Labruna said that there was a conflict and that 'atheists can't prove the non-existence of God: you can't deny what doesn't exist. But we have arguments: it's not just believing ... . On the other hand, someone who is a theist takes refuge in a matter of faith. 'I believe it and that's it', there's no more discussion there. So, we're always going to have conflicts'. Later in the interview, Labruna quoted Dawkins and his arguments against the existence of God.

In other cases, non-believers perceived contradictions between science and orthodox religious individuals or groups, which were described as a minority. Moreover, some indicated that they perceived more attacks from science towards religion and distanced themselves from aggressive positions. In the focus groups with non-believers from the general public, we presented a sentence from an Argentine scientist, Diego Golombek, who compared religion to viruses and science to vaccines. The participants discussed whether religion fulfilled positive social and/or individual functions and had divided positions, but all were against a phrase they perceived intolerant.

Non-believers, however, were critical of any attempt by religions to limit scientific studies or intervene in moral issues. Despite talking about science and religion, during conversations it was common for interviewees to divert the topic to religion and society, and many nonreligious and nonbelievers made passionate criticisms of the Church's position on issues such as abortion or same-sex marriage.

It should be clarified that, as has been said, in this section we have developed the point of view of the non-believers of the general public. In the case of scientists, there is a social context where there is a greater weight of

the conflict narrative. As will be seen next, in this social group the interactions between believers and non-believers are very different.

The Conflict Narrative in Public Education and the Scientific Field

As we have seen, most of the historical debates on science and religion in Argentina were centred on public education. The idea of *laicité* was taken from the French tradition and proposed to remove the Church from any interference in public education. On many occasions, relevant social actors used the conflict narrative to justify this policy.

Nowadays, despite the absence of prominent debates on science and religion, many participants reported that the conflict narrative is still present in the expressions of teachers and scientists in state institutions. This occurred even among religious teachers. As narrated by Gutiérrez (female, biochemist, Catholic): '[T]he first thing I remember when I entered the university was a professor who told us: "I am Catholic, I am a believer, but when I entered the university, I had to make a distinction between science and religion, because the two things do not go hand in hand" '.

Moreover, among the non-religious scientists in our sample, we found the perceptions most aligned with the conflict narrative. For example, Fernández (male, biologist, agnostic) said that scientific and religious mentalities were incompatible: 'People involved in science are supposed to work applying a lot of reflection, critical thinking. ... I have had some people who held deep religious beliefs, and I have noticed in them a special inability to have critical thoughts'.

This type of expression is not universal, and even some religious scientists stated never having felt discrimination in their work settings. However, many religious participants reported feeling stigmatized in educational settings in higher education and science. One participant in the focus group with Evangelicals recalled: 'I presented myself in a class in Systems. One was a grocer, the other was a project manager. ... I said: "Evangelical pastor". You should see how he [the professor] got. "You're going to have to leave that someday! If you don't want to practice, what are you doing here?" '.

Likewise, religious scientists showed a tendency not to challenge these statements when they occurred because they felt they were a minority within the field. Thus the narrative of conflict in these fields tends to be reproduced without opposition.

Conclusions

Argentina has a high level of religiosity and a colonial heritage that has shapes relations between the state and the Catholic Church; it is a country where secularization was only partially completed through conflicts in which anti-clerical discourses were relevant. Education and science were two fields where

secularization was intense and where the conflict narrative is still reproduced. Many participants recalled instances of teachers pitting science against religion in public schools and universities. Likewise, some of the non-religious scientists in our sample made clear expressions of the conflict narrative, with negative stereotypes about religious people or suspicions of incompatibility between scientific thought and religious beliefs.

Outside these fields, we found perceptions of propositional conflict with the theory of evolution and the Big Bang among Evangelicals and a minority of Catholics. Evangelical participants were open to scientific knowledge in general but opposed to theories of creation and human evolution that contradicted the scriptures. Propositional conflict was also present in Catholics who were unaware of the Church's acceptance of evolution and the Big Bang and who perceived that these theories attempted to deny the existence of God. However, these issues were less relevant to Catholics than to Evangelicals.

Apart from these niches, perceptions tended to point to separation or compatibility between fields. Catholics tended to perceive a peaceful coexistence of science and religion, although many expressed concerns about potential practices or interpretations of science that could lead to moral conflicts with the Catholic doctrine. Meanwhile, many non-religious perceived religious acceptance of scientific advances but remained alert about the intervention of institutions – especially the Church – in the public sphere.

It is worth noting that these perceptions occur in a social context in which there are no relevant public debates pitting science against religion. Many people may not perceive conflicts between science and religion because they do not have immediate experiences of groups from each field clashing over science-related policies. However, many non-Christian participants were critical of religious institutions and of adherents for their positions on the legalisation of abortion, which was debated at the national level during the interviews and focus groups. What if there were a similar debate around science issues, as there has been in the past about universities?

The narrative of conflict is latent, and just as it was present in public debates in the past, it could resurface in the face of new conflicts. Indeed, even among the majority who think that there are no relevant oppositions between science and religion today, a historical narrative is present that links religion – and especially the Catholic Church – to the scientific stagnation of the past.

Apart from these speculations, there is still much research to be done on science, religion, and society in Argentina and Latin America. There is little quantitative data measuring the weight of different perceptions at the national level. Likewise, the absence of mass media public debates does not imply that science and religion is not discussed on streaming and social networks. These new, global cultural consumptions may revitalise the conflict narrative in the region.

Notes

1 Data available at scienceandbeliefinsociety.org/wp-content/uploads/2023/12/UoB-YouGov.-Science-and-Religion-Survey-Report.-8-Dec-2023-.pdf
2 Data from the World Bank, which places Argentina´s economy as 67th in the world.
3 www.argentina.gob.ar/ciencia/indicadorescti/percepcion-publica-de-la-cyt
4 School becomes relevant again when the individual´s children begin to study evolutionary theory and bring reflections on the origins of the universe and life into their homes.
5 This was a very important difference between Evangelicals and Catholics (especially middle- and upper-class Catholics): the Evangelical world appears much more "enchanted" than that of Catholics, where miracles tend to be perceived as theoretically possible but empirically rare.

References

Blancarte, R. (2006). Laicidad: la construcción de un concepto de validez universal. In: N. Da Costa (ed.) *Laicidad en América Latina y Europa.* Montevideo: Instituto Universitario CLAHE.

De Asúa, M. (2022). *Science and Catholicism in Argentina (1750–1960): A Study on Scientific Culture, Religion, and Secularisation in Latin America*. Berlin: De Gruyter.

Ecklund, E. H., Johnson, D. R., Vaidyanathan, B., Matthews, K. R., Lewis, S. W., Thomson, R. A., & Di, D. (2019). *Secularity and Science: What Scientists Around the World Really Think About Religion.* Oxford: Oxford University Press.

Esquivel, J., Funes, M., & Prieto, S. (2020). Ateos, agnósticos y creyentes sin religión. Análisis cuantitativo de los sin filiación religiosa en la Argentina. *Sociedad y religión*, 30(55), 109–109.

Evans, J. H. (2011). Epistemological and moral conflict between religion and science. *Journal for the Scientific Study of Religion*, 50(4), 707–727.

Fitz Herbert, A. L., Rivera, R., Ketelhohn, F., & Elsdon-Baker, F. (2023). Conflict narrative, stigmatisation and strategic behaviour of religious scientists in the Argentinean scientific field. *Acta Sociologica* 67(2): 149–163.

Gervasoni, C. (2010). A rentier theory of subnational regimes: Fiscal federalism, democracy, and authoritarianism in the Argentine provinces. *World Politics*, 62(2), 302–340.

Gosschalk K., Piggott L., Gray H., et al. (2023). *Science and Religion: Exploring the Spectrum: A Multi-Country Study on Public Perceptions of Evolution, Religion and Science*. Birmingham, UK: The University of Birmingham. Available at: https://scienceandbeliefinsociety.org/wp-content/uploads/2023/12/UoB-YouGov.-Science-and-Religion-Survey-Report.-8-Dec-2023-.pdf (accessed 1 May 2024).

Guenther, K. (2014). Bounded by disbelief: How atheists in the United States differentiate themselves from religious believers. *Journal of Contemporary Religion*, 29(1), 1–16.

Mallimaci, F., Giménez Béliveau, V., Esquivel, J. C., & Irrazábal, G. (2019). Sociedad y Religión en Movimiento. Segunda Encuesta Nacional sobre Creencias y Actitudes Religiosas en la Argentina. *Informe de Investigación, nº 25*. Buenos Aires: CEIL-CONICET. ISSN 1515-7466.

Micheletti, M. (2018). *Laica o libre: las disputas por la creación de las universidades privadas 1955–1959*. Buenos Aires: Ediciones Logos.

Numbers, R. L. (2009). *Galileo Goes to Jail. And Other Myths about Science and Religion*. Cambridge: Harvard University Press.

Ruse, M. (2014). Creationism. In: *Stanford Encyclopedia of Philosophy*. Available at: https://onlinelibrary.wiley.com/doi/abs/10.1002/9780470015902.a0005867.pub3 (accessed 1 May 2024).

Silva, I. (2015). Science and religion in Latin America: Developments and prospects. *Zygon*, 50(2), 480–502.

Kuhn, T. S. (1962). *The structure of scientific revolutions* (1st ed.). University of Chicago Press.

5 Religion and Science in Australia's Creationist Heartland

Thomas Aechtner and Ryan Williams

Introduction

Australia sits at the crossroads of two significant trends that may be influencing public perceptions of religion and science relationships. The first involves Australia's conspicuous role in nurturing and promoting Christian young earth creationism (YEC), both at home and abroad. While creationism is often presumed to be a markedly American phenomenon, Australia represents one of the movement's most influential global centres (Aechtner 2021; Numbers 2002). Though modern creationism may have originated in the US, American anti-evolutionism has undoubtedly been affected by Australian influences. Accordingly, the US's largest anti-evolutionist organisation, Answers in Genesis (AiG), is an offshoot of an Australian creationist association founded in Brisbane. Its founder CEO, Ken Ham, is originally from the state of Queensland, and AiG's current executive CEO, Martyn Iles, was the former managing director of the Australian Christian Lobby, Australia's leading conservative Christian advocacy group. Furthermore, Christian anti-evolutionism has been, at times, supported by Australian politicians, while private and state schools across the country have taught, and continue to teach, creationism (Aechtner 2021).

Along with Australia's ongoing links to global creationism is another noteworthy trend. This involves steady declines in Christianity, as well as a countervailing rise in Australians who characterise themselves as being non-religious. In the 2021 census, for example, 38.9% of Australians self-identified as having no religion, up from 30.1% in 2016 census numbers (Australian Bureau of Statistics 2022a). By contrast, affiliation with Christianity has been in consistent decline since 1971, falling to 43.9% in 2021. As a result, non-religious Australians represent the nation's second largest population group. Such non-religion growth has taken place amid widespread negative reporting and media exposés about religion. This has included a highly publicised royal commission into institutional responses to child sex abuse, which identified several cases of abuse perpetrated in churches and religious institutions (Royal Commission into Institutional Responses to Child Sexual

DOI: 10.4324/9781003476580-7

Abuse 2017). It has also involved more recent scandals linked to Australia's globally recognised Hill Song megachurch brand (Davies 2022). Surveys have likewise revealed that significant proportions of the population express negative attitudes towards religion, especially Christianity and Islam (Roach 2022; O'Donnell 2023).

Together, these trends present a country that has been a historical hub of Christian anti-evolutionism, while also experiencing a steady decrease in religious self-identification. Questions then remain about how Australians today conceive of religion–science interactions within these distinctive national contexts. Do religious citizens maintain views about evolutionary science that reflect the country's historical lineage as an epicentre of global creationism? What might Australia's ever-growing non-religious population make of science–religion interactions? Is religion thought to be in conflict with science, and, if so, by whom? How do the opinions of professional scientists compare with those held by members of the public? Furthermore, how do the views of scientists reflect what the public assumes about the beliefs that scientists hold? To help answer such questions, this chapter examines interviews conducted with members of the general population and Australia's scientific community in the state of Queensland. Collectively, the interviews revealed several key themes. These include the tendency for most religious participants to convey that religion and science are compatible, that evolution is not of particular concern, while noting that creationism is both problematic and increasingly irrelevant. Conversely, non-religious individuals, especially atheists, tend to articulate that science–religion conflict is inevitable. They also acknowledged that being both religious and a scientist is possible, while assuming it was psychologically challenging.

These findings were identified by conducting 60 in-depth life history interviews with 40 members of the general public and 20 professional scientists in Southeast Queensland, where the majority of the state's population resides. This study's focus on Southeast Queensland is notable due to the state's and southeast region's status as being Australia's young earth creationist nerve centre (Aechtner 2021). In fact, the local FM Christian radio station, which purportedly reaches nearly 400,000 listeners per month, regularly features creationist messages (96Five 2024). Many of the nation's most prominent creationist leaders, such as Ken Ham, Martyn Iles, and John Mackay, hail from Queensland. All three individuals also received postsecondary education from the state's most prestigious university, the University of Queensland, while Answers in Genesis was originally founded as the Creation Science Foundation in Brisbane, Queensland's capital city. Furthermore, Creation Ministries International, one of the country's largest anti-evolutionist organisations, continues to be headquartered in Southeast Queensland.

Though accurate data on the acceptance of creationism in Australia is not readily available, survey findings report that between 9 and 23% of the

population reject evolution and that the acceptance of creationism seems to be decreasing (Wilson 2011, 16; Wyatt and Stolper 2013; Nielsen 2009; Gosschalk et al. 2023). A long-term project at the University of New South Wales, for instance, surveyed every first-year biology student over a consecutive 32-year period. It reported that the percentage of undergraduates who endorsed creationism dropped from 10.4% in 1986 to 3.6% in 2017 (Archer et al. 2018). Statistics on Queensland are lacking, though the state maintains a national reputation as being culturally, politically, and religiously conservative (Guy 2014; Bulbeck 1987; Bleakley 2022; Waters 2010). Its population of self-identifying Christians is slightly higher than the Australian average, with 45.7% of citizens affiliating with a specific Protestant denomination (23.9%), Roman Catholicism (18.6%), or with other/unidentified forms of Christianity (3.2%) (Australian Bureau of Statistics 2022b). Nonetheless, the proportion of Queenslanders who report having no religious affiliation is increasing steadily. In 2021, at the last census, the percentage of Queenslanders who identified as having no religion was higher than the Australian average at 41.2%, which also represents a marked five-year shift from having been 29.7% in 2016. Consequently, Queensland sits squarely within Australia's two national trends, previously discussed, having historically fostered creationism locally and internationally, while also experiencing a pronounced increase in the number of individuals claiming non-religious identification. Therefore, the state is, in many ways, emblematic of key historical and sociological movements occurring throughout the rest of the country, wherein Queensland offers a snapshot of wider Australian statistics. To gain a glimpse into these Australian developments, and associated religion–science perceptions, we endeavoured to interview subsets of the general public as well as practicing scientists in Southeast Queensland's population, whose demographics reflected the state's religious and non-religious citizenry.

Members of the public were recruited by way of an online pre-screening survey, while scientists were recruited through both the prescreening survey as well with snowball sampling. The prescreening survey was utilised in a purposive sampling strategy to ensure that interviewees reflected a wider representation of Queensland's population, and to ensure heterogeneous representation in terms of gender, age groups, education levels, and religious or non-religious affiliations (see Chapter 1 of this volume for more details about methodology). Snowball sampling with scientists further supplemented prescreening recruitment numbers, to gain sufficient participant numbers in response to initially lower response rates from Queensland's scientific community. The prescreening survey gathered basic demographic information, as well as more detailed data regarding beliefs, including current religious or non-religious self-identification and backgrounds, as well as religiosity. The survey was advertised through social media, email circulars, and emails to a diverse scope of organisations, such as religious and non-religious groups, as well as universities to recruit scientists.

A potential shortcoming of these sampling techniques was the self-selection of participants who exhibited greater interest in science–religion topics. Consequently, the sample likely reflects an over-representation of individuals with preexisting knowledge about creationism, evolutionary theory, and/or atheist discourses relative to Queensland's overall population. Despite this limitation, the purposive sampling involved selecting roughly the same number of female and male participants from members of the public, with 21 female and 19 male interviewees, ranging in age from 23 to 75 years of age. This approximates Queensland's sex ratio of 98.2 males for every 100 females and also represents the state's age range distributions (Queensland Government 2023). Of the cohort of 20 scientists, 13 participants were male and seven were female. This division maps onto male:female ratios identified in Australia's scientific workforce, including academics with science, technology, engineering, and mathematics qualifications (Department of Industry, Science and Resources 2022). An equal number of religious and non-religious members of the public were interviewed (20:20), and approximately the same number of religious (9) and non-religious (11) scientists participated. Altogether, we interviewed 20 atheists, 17 Christians, 6 agnostics, 5 participants who identified as spiritual but not religious, 3 Buddhists, 2 Baha'i, 2 Pagan/Pantheists, and 5 people who identified one each with Hinduism, Islam, Jainism, Judaism, and Sikhism. This variety of affiliations corresponds with population data on religion and non-religion reported by Australian Bureau of Statistics for both Queensland and Australia more generally (2022a; 2022b). With that in mind, the remainder of this chapter considers the variety of opinions expressed by this diverse sample on religion–science topics, including evolutionary theory and religious beliefs.

Creationism, Evolution, and Queensland's Religious Public

It is evident that, historically, Queensland has stood out as Australia's creationist heartland. In view of that background, it is of interest to know what today's Queenslanders think about creationism, evolution, religion, and science. Among interviewed members of the public, it appears as though the influences of creationism persist, as four of the 40 participants expressed some doubts about biological evolution. However, of these four individuals, all of whom are male Protestant Christians, only two, Cal and Leif, conveyed explicitly YEC views. Regarding the remaining two, one articulated a blend of both young and old earth creationist views, while the other individual, Reuben, labelled himself as an 'ancient creationist.' This perspective was described as the acceptance of both the universe's age and the theory of biological evolution, with the caveat that there was a requirement for non-natural, divine intervention to kindle single-cell life in the first place. As Reuben clarified, though biological evolution was surely a scientific fact, he did not accept *abiogenesis*, the scientific premise that life arose through natural processes from non-living matter. 'I do not believe', he explained,

'that non-life can give rise to life by naturalistic means'. He also contended that purely naturalistic evolutionary explanations cannot explain the 'really miraculous complexity' of the biological world on their own.

While Reuben personally identified as an ancient creationist, he maintained that young earth creationism, which he referred to as 'recent creationism', is ill-conceived. It is representative of a Christian fear of the truth, which is ultimately dangerous to religious faith. '[I]n actual fact', he stated, with respect to the sort of creationism promoted by Ken Ham, 'it does huge damage'. This is because the evidence against it is 'too strong', while young earth creationism also equates genuine Christianity with the YEC position. It asserts that 'unless you believe this, you can't have confidence in the rest of the Scripture as revealed'. This forces Christians, especially younger adherents, to decide between an unscientific creationist-informed Christianity on one hand and the reality of evolutionary science on the other. Thus, when Christians go on to learn about the science undergirding evolution, perhaps while at university, they will 'realise in actual fact they were wrong about the beginning of the Bible', and so 'they must be wrong about everything else'. In this way, Ken Ham's YEC 'does huge harm' by compelling Christians to reject the faith.

Reuben's views demonstrate that, while he considers himself to be a type of creationist, his position is fundamentally different to, and at odds with the specific variety of young earth creationism Australia has become most known for. To a lesser extent, Dustin also did not unambiguously endorse a young earth position. He mentioned Brisbane's own YEC-promoting Creation Ministries International and how it had influenced his assessments of evolution. However, he had also been swayed by the Canadian old earth creationist, Hugh Ross, whom Dustin heard speak at a local Pentecostal church. As a result, Dustin explained that he was 'open to, generally speaking', ideas lying 'behind evolution', while expressing a combination of conventional YEC perspectives alongside old earth creationist ideas. What resulted is a fusion of creationist ideas that are not simply young earth in nature.

Nevertheless, unlike Reuben and Dustin, Cal and Leif described themselves as committed young earth creationists. Cal, a former Christian youth pastor in his twenties, who self-identified as 'Baptist Pentecostal', stated that he disagreed 'with the overall theory of evolution, 'cos I think it contradicts the story of creation'. Cal explained, however, that evolution is not discussed within his church community, and people in his congregation, which includes scientifically trained Christians, 'didn't seem to see any contradiction' between evolutionary science and scripture. 'As far as I can tell', he concluded about evolution, 'I don't think anyone at church really cares'. Cal further admitted that he kept his creationism private, because 'young earth creationists are viewed as dumb, anti-science'. Somewhat similarly, Leif described being impacted by Creation Ministries International's teaching and maintained that he believed the universe has only been in existence for roughly 6,000 years. In

fact, Leif came prepared for his interview with a list of prevalent creationist arguments against biological evolution, while he indicated that evolutionary theory is more consistent with atheism than it is with Christian theism. Yet, while communicating numerous archetypical YEC claims, Leif also admitted that he was likely the only young earth creationist at his church. Creationism is not discussed by church leaders nor congregants, and evolution is not a topic of interest. Leif reasoned that if he were to invite a creationist to speak in the church, 'I'm pretty sure it would not be accepted'. Consequently, by his own account, fellow churchgoers are untroubled by evolutionary theory and unreceptive to YEC.

Expanding upon Cal and Leif's reports of Christians being uninterested in, or even ill-disposed towards young earth creationism, the remaining religious interviewees insisted that evolutionary theory is certainly not a live issue of concern for themselves or their religious communities. Xavier, a Unitarian, speculated that creationism is 'these days a very, very minority view'. Indeed, the bulk of Christian participants explained that creationism is not taught in their places of worship, and, on the contrary, they have experienced church-based opposition to creationism. These interviewees *did* acknowledge that evolution has and continues to be a contentious issue for some believers, especially Evangelicals. Several stated that they had even been, in previous years, young earth creationists themselves. Christian interviewees had also heard of Ken Ham and prominent young earth groups. Nonetheless, they insisted YEC is a waning stance. Alternatively, they affirmed that evolutionary science and religious faith can happily coexist, wherein accepting both in tandem is psychologically satisfying and intellectually fulfilling. In discussing evolutionary theory and Christian faith, Edward thus explained, 'I can actually have both of those things in my brain and be a happy person'. Edward also related an instance wherein a creationist spoke at his Evangelical church, resulting in backlash from congregants. People 'actually started getting up and walking out after a while' during the creationist's message. He concluded, this was 'an indication of the fact that people just don't want to hear "evolution bad, creation good" ' and that this is 'a pretty good indicator that in the church, there's just not that appetite' for creationism.

Other Protestant Christians further expressed anxiety about the negative impacts that YEC may be generating. Kent, a former young earth creationist and university student, who is now a self-professed 'theistic evolutionist,' said that he did not mind if other Christians held young earth views. His primary worry, however, was when creationists likened YEC with fundamentals of the Christian message. These comments echoed qualms expressed by the ancient creationist, Reuben. 'What's important to me more than anything', explained Kent, 'is that people who are young earth creationists don't conflate creationism with the Gospel'. When Christianity is equated with YEC by creationists, it makes Christianity less attractive to non-believers and becomes 'something that puts up walls in front of being a Christian'. Since YEC can be perceived to be a theologically and scientifically myopic position,

it may lead both Christians and non-Christians away from the wider truths of the religion's faith.

Catholic Christian participants expressed no misgivings about evolutionary theory and referred to the non-literal nature of biblical text, including the Genesis creation narrative. As Catholic school teacher Nicole explained, the bible is 'not a science textbook', and 'we teach that the Genesis stories are myths' based on 'very ancient Jewish understandings of what the universe was'. As she further noted about her own experiences teaching in a Catholic school, 'students always seem a little bit surprised when I say, "Well, you know, the Pope does say the evolution is a real thing" '. Accordingly, Catholic interviewees voiced that evolution and science more generally are entirely compatible with Catholic faith. Interviewee Harry, for instance, explained that there is 'ultimately no conflict' between evolution and Catholic theology, 'just as there's no conflict with the Big Bang' because Catholicism has an 'intellectual positive' culture. Another Catholic school teacher, Jason, reported that he believed Christian biblical literalists, who deny evolution, are 'fairly narrow-minded'. He further disapproved of creationism being taught in the science classrooms of Australia's religious private schools. As another Catholic participant, Isabelle, disclosed, 'It still amazes me how in the Christian schools around here, how science teachers actually teach science around creationism. I don't understand how they can balance that'.

Aside from the three creationist participants, Cal, Leif, and Dustin, all other religious interviewees denied that necessary conflict exists between evolutionary science and religion, as well as with religion and science more generally. Furthermore, even Cal, Leif, and Dustin still insisted that the vast majority of science does not clash with their religious beliefs, despite doubts about evolutionary science and affiliated fields. As creationist Leif maintained, 'probably 90% of science' has no bearing on religion, and 'there's only a few fields where there is potential for conflict'. Overall, religious interviewees from a gamut of traditions conceptualised religion and science as being primarily distinct domains, whereby a portion of each domain inevitably overlaps with the other. As Edward put it, 'We're talking about two not completely disconnected, but separate things'. Where they do overlap, discord can result, perhaps if scientific findings seem to contravene literal readings of creation narratives. However, conflict is not necessarily an inevitable outcome. This is partly because conflict is usually unnecessary or simply non-existent when scripture or religious doctrines are understood in non-literal terms, and when science is not deciphered in rigid atheistic ways. Buddhist Jude commented that religious creation narratives like the Genesis account should be appreciated as ways 'of telling the story of creation in the language of the time or the language that enables it to be expressed'. The potential for religion–science conflict collapses if 'we acknowledge the sponginess of scientific theories' and the interpretations of such theories, while acknowledging 'the communicative requirement of [creation] legends or myths to be transferred appropriately in terms of spirituality'.

Religious participants also observed that a sense of wonder arising from scientific discoveries can frequently intersect with religious ideas and nourish religious faith. Reciprocally, religious convictions can motivate the pursuit of science. Moreover, the limits of science, including being restricted to naturalistic observations and explanations, and an inability to speak to all dimensions of the human experience still require religious perspectives. Catholic participant Martin explained that there are 'limits of logical or rational thinking' in science, where science is not always best for 'explaining real-life practical issues'. In speaking positively about science, Buddhist Ani observed that it still has its limitations, and religion can extend human knowledge and experience beyond these boundaries. Hence, she explained that 'science can describe things', but 'Buddhism also goes further on top of that, I find'. Baha'i participant Karen noted that, while science and religion may both decode the world around us, religion provides 'the moral things and the ethics stuff' that can work in 'synergy' with science. Another Baha'i interviewee, Nick, remarked that this admittance of the limits of science is itself part of good scientific practice, 'Because all the good scientists agree that science doesn't know everything, and that scientific knowledge is developing'. Nick affirmed that religion and science needed one another, 'Because science without religion is just materialism, and religion without science is just superstition'.

Several religious interviewees also referred to the historical development of science in the Islamic world and throughout the Scientific Revolution to support the potential for religion–science compatibility. Accordingly, they pointed out that religion–science conflict is not inevitable because the founders of modern science were frequently deeply religious individuals. Jewish interviewee Odis noted that Isaac Newton 'was a very religious man' and that 'Back in the day when science was developing, nobody questioned the idea of a creator'. Likewise, Nick recalled the flourishing of science throughout the Islamic world, especially during 'the Golden Age of Islam, where they were opening up all the new areas of scientific endeavour and discovery'.

The picture that emerges from interviews with religious Queenslanders, from a range of religious affiliations, is one in which evolutionary theory is predominately not a topic of concern for participants or their religious communities. In this vein, Nikki, who identifies as Pagan, noted that evolution 'doesn't come up because everybody in my community thinks evolution happens'. It is also cognitively satisfying to accept biological evolution, science, and religion together. Participants further maintained that in Queensland, Australia's young earth creationist heartland, YEC is a waning position. Notably, however, while evolution was perceived to be a non-issue by most religious interviewees, some participants referenced other matters around science as being potentially problematic. These included bioethical dilemmas. For instance, Catholic Martin related that while evolution and creationism are not topics of concern, there can sometimes be 'shallow' public religion–science debates around abortion and euthanasia. Nevertheless, these discussions are not necessarily associated with science itself but with

philosophies of science. Additionally, Baha'i participant Karen mentioned religiously affiliated resistance to COVID-19 vaccines. She clarified, however, that this was not a religion–science debate but the result of politicising vaccinations. Opposition to the science of vaccines resulted because vaccination has become a 'very political thing' that got 'a bit mired maybe with the politics'.

Conspicuously, aside from negative statements about young earth creationism, religious participants expressed accommodative attitudes towards different religions and alternative views on religion–science interactions. 'I do my thing, you do yours', explained Odis of other perspectives. 'If by chance we meet, it's beautiful'. However, religious interviewees did articulate negative sentiments about vocally anti-religious atheists, known as New Atheists (see Chapter 9), who weaponize evolution, and science more generally, in order to attack religious belief. Odis characterised such individuals as 'really rabid evolutionists', for whom, ironically, evolution 'is a religion'. Correspondingly, participants from an array of religious beliefs conveyed distaste for Richard Dawkins. As Pantheist Lucy put it, 'Oh, I think Dawkins is an asshole'. Lucy went on to say, 'I mean, incredible scientist, but so utterly biased against people who believe in any kind of God, right?' She surmised that if she were to 'sit in a room and have a conversation with Richard Dawkins, he would be like, "You're stupid. It doesn't matter how smart you are, you're stupid because you still have any concept of God" '. Similarly, religious interviewees complained that the ways in which Dawkins equated religious belief with irrationality was unfair, rude, and based on misunderstandings about religion. Nicole thereby described Dawkins' outlook as being 'pretty insulting', while Nick contended that Dawkins' comprehension of religion was woefully incomplete. For Nick and other religious interviewees, Dawkins and fellow New Atheists presented a far too simplistic dichotomy between religion and science.

By contrast, many of Southeast Queensland's non-religious members of the public relayed inverse opinions about Richard Dawkins. Instead, they credited Dawkins and other vocal atheists with helping them to crystallise their views on religion and science. Predictably, these religion–science views frequently diverged from those specified by religious adherents.

Religion–Science Views of the Non-Religious Public

Phillip, a non-religious participant who identified as atheist, once served as a Seventh Day Adventist minister. Notably, Seventh Day Adventism (SDA) strictly espouses young earth creationism, and the church remains resolute in its creationist beliefs (Seventh-Day Adventist Church 2024; Cole 2015). In view of these doctrines, Phillip described leaving the church after decades of involvement. It was a move catalysed by exposure to the works of Richard Dawkins. 'Yeah, so I read *The God Delusion*, and I read *Unweaving the Rainbow*, and I basically thought, "Well, I think this guy is right" '. Phillip

further outlined that when the creationist notion that 'the earth's only 6000-years-old' is demonstrated to be factually incorrect, the entirety of Christianity bound to YEC crumbles. 'If the earth is as old as scientists tell us, then all the theories around evolution are quite feasible', and as a result, the Bible is revealed to be just a 'human document' and 'none of the stuff in it is binding on you'.

In many respects, Phillip's story exemplifies worries of Christian interviewees who vented about the dangers of creationism, and it reflects the avowed opposition to religion expressed by the majority of atheist members of the public. When faced with scientific data supporting the universe's ancient age and biological evolution, individuals can jettison the entirety of Christian faith alongside the young earth creationism it is tied to. Phillip's comments resembled analogous statements made by other atheists, who likewise acknowledged esteem for Dawkins and pronounced religion to be an absurd human construct. Hence, 'firmly atheist' April referred to both Dawkins and Christopher Hitchens as trustworthy sources on religion and science topics. She defined religion as 'a grouping of fairytales that have been used as a social mechanism to control people'. Related claims were consistently paired by atheists with the view that conflict between science and religion is, as April insisted, '[d]efinitely inevitable'. Dale went so far as to say that 'science doesn't believe in God', while declaring it laughable when religious people claim that religion and science can agree. He mentioned listening to radio programs in which 'religious people are saying, "Oh no, science and religion are compatible" '. Dale recalled thinking in reply that 'it wasn't that long ago you were burning scientists'. Despite such scorn, some atheists, like April, still accepted that religion's effects are not entirely deleterious because 'one value that religion can offer our society now is community cohesion, giving people a purpose to be able to do things beyond themselves'. Accordingly, religion has provided a 'purpose for previous times and eras', though religion's role is no longer relevant in modern scientific contexts.

Ideas about religion being a human fabrication used for social control were wedded by atheist interviewees to a strict division between religion and science. The two do not overlap because religion is fiction while science is fact-based. Casandra, who disclosed that she had an 'ingrained hatred for the Catholic Church' due to its horrific child sex abuse scandals, asserted that she 'cannot understand why any decent human being would worship a religion that condones paedophilia and such horrid atrocities as they have perpetrated over the centuries'. She further stated, 'Science is factual, religion was conjured up by men over many years as a means of control'. Religion is merely 'fairy tales', while science 'is factual and evidence based'. In similar fashion, atheist Ray commented that, while science is grounded upon 'facts and evidence and things like that', religion is the 'exact opposite in that it's faith based'.

There is, therefore, an unbridgeable divide between science and religion. According to Ray, this divide demands that religious scientists mentally

bifurcate scientific practice from their religious beliefs because science inescapably controverts religion and religious modes of thought. Accordingly, if 'a scientist is involved in work where he has to reject everything that can't be factually established, he would not apply that to his religious beliefs, would he? So, he has to partition them off in his brain'. Relatedly, atheist Keith, who described religion as a 'fantasy', conceded that 'I'm sure there are plenty of people that go to church who also do science'. However, he ventured that this is incredibly difficult, since 'humans don't hold to ideas that work against each other in their head very well and continue to function'. This axiomatic incompatibility of religion and science led April to be baffled by the efforts of 'really clever' religious people who try to reconcile science and religion. In the end, they are foolishly 'clutching to a sinking ship', scuttled by the actuality of science.

Agnostic interviewee Diane maintained similar ideas. Science must conflict with religion, and, in particular, 'I don't see a way that I could reconcile believing in evolutionary theory and being religious'. This is because critical thinking is part and parcel of science, whereas it is not well-suited to religious belief. Aside from Diane, however, other agnostic participants assumed that religion and science were not at odds with one another. Roslyn described her own agnosticism as a scepticism towards religion, accompanied by the feeling that 'there is something bigger than myself out there'. She was confused, as someone who studied both biological sciences and religious studies at university, by the idea that evolution necessarily contradicts religion. 'I've never really understood the whole idea that evolution is not compatible with religion', she mused, while also stating that religion and science were largely separate, nonconflicting pursuits that are 'maybe trying to answer the same questions, but just in different ways'. Unlike atheist interviewees, she disliked Richard Dawkins and considered him to be an untrustworthy, 'very negative', and 'very militant' source.

Correspondingly, agnostic Natalia Barker communicated a distaste for Dawkins and other New Atheists, comparing them to religious fundamentalists: 'I really don't like some of those well-known atheists like Richard Dawkins or Sam Harris. They're all frightfully rigid and they have atrocious other things I don't like. Their attitude to women and things like that. I find they're just as bad as the hyper-religious ones'. At the same time, she identified that religion and science can overlap in positive ways, while there are limits to scientific knowledge that religion may supply answers to. In closing, she postulated, 'I think science and religion can coexist quite well' because 'I know of scientists who are religious'.

Remaining non-religious participants fell into the broad category of 'spiritual but not religious' (SBNR), which constitutes a small but growing segment of Australia's population (Bouma and Halafoff 2017; Singleton et al. 2021; Singleton 2023, 338; Pepper and Powell 2018; Powell and Jacka 2021; Weng and Halafoff 2020). This cluster of Australians does not adhere to or practice a religion, often characterising themselves as agnostic while being

interested in spirituality and spiritual experiences. SBNR participant Zhu Li explained that while she was not religious, 'I am spiritual in the sense that I do believe there is a higher power, but I'm not exactly sure what it is'. Such interviewees described religion and science as being largely disconnected endeavours, which can intersect in various ways. As Zhu Li delineated of religion and science relationships, 'I do think they intertwine, but I think they are two separate entities' that can 'occasionally overlap'. When they do coincide, the interactions can result in an assortment of outcomes, from conflict to cooperation. Sabrina described being non-religious and leaving Christianity after several negative experiences in a Pentecostal megachurch. In terms of religion–science relationships, she explained that 'humans have questions', where religion and science are 'just different modes of answering these questions'. Though she is inclined to 'trust science before I would trust religion when it comes to answering certain questions', overall 'I think they're both just trying to answer questions that humans always ask but using different approaches to do so'.

Unsurprisingly, non-religious interviewees represent a diverse cohort. Stretching from atheists to agnostics and non-religious but spiritual individuals, respondents conveyed a variety of religion–science perspectives. However, this varied group all agreed on several points. This included accord that religion is on the decline in Australia and that it has lost cultural relevance. Also, non-religious participants together observed that religion is a taboo subject for conversation. Agnostics described the unease Australians often feel when discussing religion in public, stating they are 'nervous about talking about it'. Lillian likewise said that she had always been told, '[D]on't talk about religion and politics', and atheist Dale concluded of religious people, 'Everyone's entitled to their beliefs, just keep it to yourself'. Correspondingly, atheist James explained that namely, 'Deep religious enthusiasm is a bit suspicious in Australia', as it 'tends to rub people the wrong way'. Religious zeal, evangelism, and public displays of religiosity were seen as markedly unpleasant. Non-religious interviewees aimed critiques at the exuberance of Pentecostal Christianity in particular, whom Gwen referred to as 'the hallelujah lot'. Additionally, as Casandra's comments reveal, Catholicism was also targeted, while atheist Terry singled out religious fundamentalists in general, along with Islam in particular. 'I've got very strong anti-Islam views', she divulged, due to how she perceived the religion treated women. 'So, as a woman', Terry stated, 'I do not support Islam in any shape or form'.

Furthermore, both religious and non-religious members of the public tended to agree that biological evolution was accepted by most Australians, regardless of their backgrounds. Only creationist Dustin suggested that evolutionary acceptance was a minority position; guessing that merely 15% of Australians were evolutionists. Every other interviewee assumed that accepting evolutionary theory was simply the *de facto* position. As Isabelle Grant reflected about Australians, 'I think we are pretty much evolutionists'. Ruben speculated that 'at least 90 percent of the population' accepted

evolution as scientific fact. Even young earth creationist Leif surmised of evolutionary biology, 'I think it is widespread, probably the majority'. Atheist Ray even conceded that biological evolution was accepted by most Christian communities, such that in 'all mainstream churches—Catholics and Protestants, there's no major conflict with evolution'. As a result, nearly all members of the public indicated that only a small number of Australians rejected biological evolution, and that number was falling across the country. An ensuing question is how do these opinions, as well as others voiced by the sample of Queensland's public, compare with those maintained by practicing scientists. It is to such queries that this chapter now turns.

Religion, Science, and Professional Scientists

In shifting focus to the scientific community, it is worthwhile to first assess what the public stated about scientists as they discussed religion–science matters. For example, two interviewees with creationist views, Dustin and Leif, articulated relatively negative opinions about scientists. While mentioning archaeologists and palaeontologists, who explore the distant past, Dustin expressed that they are susceptible to biases like everyone else, including 'confirmation bias, anchoring bias'. As a result, they approach their work with evolutionary preconceptions and motivated reasoning, such that 'they will find the data to support that belief'. For that reason, he was sceptical about apparent leaps in logic that scientists made when unearthing fossilised bones. Scientists might discover a tiny fossil and then decide 'that it was a Tyrannosaurus Rex that ate leaves and had feathers, and whatever, but that's the only bone that they found'. Dustin went so far as to claim some of these scientists were manufacturing fake claims to mislead people regarding biological evolution.

By the same token, while reflecting on scientific fields that back evolutionary theory, Leif suggested that there has been a historical 'core of anti-Christian ideologues who are pushing these ideas' to weaken Christianity. It is atheist ideology 'that drives them to be evolutionists' rather than an objective commitment to science. For Leif, Richard Dawkins typifies this anti-Christian faction. Leif surmised that a significant remainder of scientists simply go along with the theory of evolution because 'that's what they're taught, so they follow it'. Though not a creationist, fellow Christian Kent agreed that anti-Christian bias and ideologies influences modern researchers. 'From what I've seen', he remarked, 'there seems to be quite an academic bias against Christians in academia, particularly in the sciences'. Atheist members of the public presumed that the bulk of scientists are opposed to religion, partly because, as was discussed previously, it is thought to be psychologically onerous for religious people to practice science.

In many ways, these opinions diverge from the views frequently articulated by Queensland scientists. Nearly half of the interviewed scientists were

themselves religious, while non-religious participants often expressed greater degrees of agnosticism and openness to religious ideas than the public seemed to assume. The interviewed professional scientists included four Christians, a Buddhist, a Hindu scientist, one Jain participant, a Muslim, and one Sikh interviewee, representing religious traditions from across the globe. These participants indicated that they did not experience any cognitive difficulties in being both religious and professional scientists. On the contrary, they explained that their scientific work coincided with or was energised by their religious persuasions. Christian Elliot, for instance, detailed how his Christian faith has always motivated him to scientifically study the natural world. It has also given him resilience and practical guidance on how to positively interact with other researchers. He noted, 'Christian principles about caring for other people and integrity have really stood me very well, and that, in a sense, does relate back to the scientific research because you're working in teams, and you're trying to help other people and train the next generation of scientists. So, it all fits together very well'.

Sikh Naina recalled reading religious scripture as a young child, which spoke of 'millions and millions of galaxies and millions and millions of universes'. She emphasised, 'that's where my fascination of science started', from religious scripture rather than in opposition to it. Epidemiologist Christina, who recounted moving from atheism to Buddhism, explained that Buddhism 'goes well with science', and 'it agrees with everything I learned'. For example, she stated that karma is essentially a religious principle of cause and effect, which she understood to be a spiritual parallel of physical laws of causality found in the material world. Along these lines, Jain scientist Jacqueline thus concluded, 'So, yeah, I feel there's no conflict with Jainism and what I do'.

However, such affirmations were accompanied by a recognition that some religion–science conflict can exist and that friction may occur between scientific practice and certain religious beliefs. For example, Jacqueline noted that her field of research relies upon animal testing, though Jain teaching prohibits the use of animals for food or other purposes. 'That's probably the only thing that I can see that there is a conflict', Jacqueline guessed. 'We would see that as sort of a violent act, experiments on animals', though she acknowledged 'I accept that we have to do it sometimes, but if I can, I avoid doing it'. Even with such areas of potential conflict, these scientists consistently stated that suitably interpreting religious scripture dissolves prospective religion–science tensions. Hence, while discussing purported conflicts between evolutionary theory and the Bible, participant Victor explained that the Genesis creation narrative was never intended to be historical record. Reading the text non-literally easily diffused potential religion–science tensions. In like manner, Markus understood that Genesis 'was never intended to be a work of objective natural history'. Non-literal interpretations are consistent with the true aim of the text and make accepting evolutionary biology unproblematic. Sikh participant Naina likewise noted that prospective religion–science

conflict is completely avoidable through appropriate hermeneutics, involving figurative and metaphorical interpretations of religious scriptures.

Religious scientists did reference cases of resistance to science in their own religious communities. Christina remarked that a few members of her Buddhist temple questioned biological evolution, and Naina commented on antivaccination views amongst some fellow Sikhs who adhered to homeopathy. Jacqueline mentioned potential conflicts arising for vegetarian Jains who require blood transfusions from potentially meat-eating donors. Hindu scientist Das observed that Hindu fundamentalists in his community expressed suspicion about modern science, though he related that this was more strongly affiliated with political ideology than Hinduism itself. Jack reported that because he was a scientist who supported evolution, there 'were a few individuals who, you know, viewed me with suspicion' at a church he used to attend.

Despite encounters with anti-evolutionists, Christian scientists still considered creationism to be a fading influence in Australian churches. Victor indicated that evolution is not a matter of debate in his own church, and he gathered that, despite Queensland's creationist legacy, anti-evolutionism still 'seems to be more of an American phenomenon than elsewhere'. Elliot contended that for Christians in Queensland, 'I think it's not as live an issue as it might have been 10, 20 years ago'. Instead, Elliot indicated that bioethical questions related to abortion are much more contentious than is evolutionary theory. Connectedly, both religious and non-religious scientists who taught undergraduates noted that they rarely encountered students opposed to evolution in their classrooms. While an occasional student may express creationist ideas in lectures or tutorials, teaching professors stated that such cases are in decline, and they have not occurred in recent memory. Hence, atheist Derick recalled that he has had creationist undergraduates in the past, 'but not many and decreasingly so'.

What was more commonly experienced by some religious scientists was mild prejudice or tacit discrimination from atheist colleagues. Though infrequent, several religious scientists mentioned unfriendly behaviour resulting from co-workers hearing about their religious activities or affiliations. Aaliyah, a Muslim scientist, recounted a salient example of this, involving having to leave a lecture 15 minutes early during Ramadan so that she could pray and break her fast. Though the teaching sessions frequently ended early for all lecturers, she still reported her intended departure time to her supervisor. The supervisor responded by subtracting 15 minutes of pay from her salary, despite Aaliyah observing how non-Muslims who regularly finished their sessions early did not receive a same wage cut. Of her supervisor, she concluded, 'It's only because he knows that I'm Muslim, I need the break, and he took it as a specific cause to cut 15 minutes'. Christian Jack also described his own run-in with an academic supervisor. Jack explained that years previously he was featured in a Christian advertising campaign on why prominent individuals, including leading scientists such as himself, are

Christians. Posters featuring his name stated that he was a researcher at his university. When Jack's department head found out about the posters, she demanded that they be removed because the marketing was associated with a religious message. It 'was all pretty silly and overreach', stated Jack, but indicative of the aversion some atheist scientists have for religion. Due to such occurrences, some religious scientists suggested that, while they did not go to great lengths to hide their religious affiliations, it was often easier to simply not mention it.

Non-religious scientists also commented on anti-religious atheist colleagues. Aiden, who described himself as agnostic, related what it was like teaching an evolutionary biology course with one such workfellow. The atheist 'had very, very strong views of religion, and negative, and to a point that it was very critical'. This workmate openly critiqued religion while teaching students about biological evolution. In contrast with his colleague, Aiden clarified that, even though he is not religious and has had negative experiences with religion growing up, 'I'm not anti-religious and I can respect, I guess, the positive effect that religion might have for some people'. He also did not believe that religion and science necessarily conflict. To support this, he mentioned working with religious scientists, students, and science teachers, who all function 'completely from a science perspective' and who are 'supportive of evolution'. Another agnostic, Emma, specified that while she was not in any way religious, 'I'm not an atheist in that I like to believe that there is something more and there is more meaning to life'. She also maintained that religion and science can certainly coexist amiably, referencing as proof religious scientists with whom she had previously worked. Likewise, agnostic Henry did not think religion–science conflict was inevitable, stating that they are both valid but 'different approaches to trying to understand the hugeness of the world outside our individual self'. As with Aiden and Emma, Henry mentioned religious colleagues, who demonstrated how people can be both religious and scientists at the same time.

The atheist scientists Gail, Derick, and Joseph made similar points and exhibited a form of atheism that was not avidly opposed to religion. Gail explained that, while she was not religious, 'I don't see the problem with believing God or a greater being' while also holding to scientific facts. She also affirmed, 'I have quite a lot of religious friends who are also in the field of science, so I definitely know they can coexist'. Derick grew up in a Baptist church before leaving Christianity behind in his early twenties. He conveyed a potent dislike for the aggressiveness of New Atheism and described Richard Dawkins as 'a grumpy old man'. While being sceptical of religion, he still commented on its positive elements. This includes that religion was evolutionarily necessary for social cohesion and ethical guidance. While this role is diminishing in the face of scientific progress, there remains a place for it as it can meet emotional and explanatory needs. As he concluded, 'I think for most of us there's still plenty of unknowns in the world beyond what our science can tell us, and some people choose to fill that gap with religion, and

some others of us are just treading water'. Furthermore, Derick provided an assessment of scientists' views on religion that coincides with international data, as he insisted that most scientists, including atheists, were not hostile to religion (Ecklund and Johnson 2021). 'You could get the impression that there's a hatred of religion in science, but I think that's not generally the case'. Certainly, there are some scientists 'who are very frustrated with religion and religion's role in society, but I do feel like the majority don't have that antagonism as much is sometimes put out there'. Fellow atheist Joseph communicated analogous thoughts, stating that he could appreciate 'that science and religion can go hand-in-hand'.

However, aside from Gail, Derick and Joseph, other atheist scientists voiced relatively unfavourable views about religion and assumed that religion–science combat was unavoidable. Devin, a former Seventh Day Adventist, related his rejection of the church and the whole 'realm' of religion, which was affixed to SDA's young earth creationism. The works of Dawkins and other New Atheists tipped the scales against religion, towards evolutionary science. For Devin, the 'two realms are so far apart that I've got to stick with the one'. He also mentioned reading the works of creationist Ken Ham and coming to the realisation that, 'In the end it wasn't logical'. Religion, as demonstrated by Ham and the SDA church, is effectively 'blind belief' that is resistant to new information. This makes it fundamentally at odds with science. 'In science you believe what you believe, but you are always open to the possibility pending new evidence', Devin explained. 'In religion you believe what you believe, and it doesn't matter what anybody else tells you or shows you, you still believe what you believe'. For these reasons, 'I do see that there is a fundamental clash there'.

Amy, who identified as an atheist with agnostic leanings, related that her grandfather had been a Christian pastor, along with two of her uncles. She acknowledged the positive elements of religious moral codes and its ability to foster community. Yet these positives are counterbalanced by religion's harmful qualities, including its exclusionary, fundamentalist tendencies. As Amy concluded, 'there's a lot to blame religion for', including wars and financial corruption. Plus, though many religious people accept science, religion can underpin science denial. 'I don't think I've ever met anybody', she noted, 'who didn't believe in evolution and didn't have a God'. There is also a fundamental incompatibility between science and religion because religions ultimately rely on faith, while science is built on facts. Such religious faith, she gathered, is blind, and it does not allow practitioners to ask difficult questions, such as, 'Why did you give my child cancer?' Amy also mentioned that, while she knows of religious scientists, she could not grasp how such individuals function without experiencing cognitive dissonance. Parallel ideas were raised by fellow atheist Aaron, who contrary to the historical record, claimed that the Catholic church 'did actually execute' Galileo. Of religious scientists, Aaron indicated, 'I think it would be very difficult to be a scientist and believe in the supernatural' and that, 'I

suppose from an atheist point of view, I think that's basically people just compartmentalising intellectually'.

Such opinions echoed sentiments of atheist members of the public, who similarly equated religion with blind faith and deemed religion–science conflict to be inescapable. Atheist scientists and members of the public also surmised that religious scientists must bifurcate their religious and scientific modes of thought. In other respects, these views seemed to confirm the impression, maintained by some members of the public, that scientists have anti-religious biases. Accounts of discrimination from atheist colleagues against religious scientists perhaps further substantiate such biases. Yet the sample also presented a range of views that problematise simple categories. Hence, several atheist scientists shared rather charitable assessments of religion, along with agnostic interviewees, who together concluded that religion–science combat is not inevitable. Religious scientists also defied the hypothesis that they struggle with psychological dissonance. Instead, they affirmed that religion frequently motivated their scientific pursuits, and that science–religion harmony is practicable even if some friction exists. Additionally, it should be emphasised that, regardless of their academic fields or whether they were religious or non-religious, scientists indicated that evolutionary theory is central to modern science. Scientists also unanimously presumed that the vast majority of Australians accepted biological evolution as scientific fact.

Conclusion

Over the past decade, Australian newscasters have commented on what Australian creationists like Ken Ham have been doing overseas. This has included reporting on how Ham's Answers in Genesis opened Ark Encounter in 2016, a Noah's-Ark-inspired theme park. Journalists relished detailing the attraction's lower-than-predicted ticket sales and reported sardonically on an Ark Encounter insurance claim for flood damage (Mitchell-Whittington 2016; Pennells 2016; The Australian 2014; Hall 2019; Schipp 2017; Rosenberg 2019; McFadyen 2019). Such media have frequently included jabs at the state of Queensland, from where Ham and other Australian creationists hail (Birmingham 2014). These assessments are not entirely inaccurate because Queensland has served as a wellspring of Australian creationism. At the same time, Queenslanders are becoming less religious at rates exceeding the national average. Consequently, the state is representative of key Australian trends associated with religiously motivated anti-evolutionism and persistent declines in religious self-identification. This makes Queensland an ideal setting to examine religion–science questions in Australia.

Within this study's sample, some members of the public identified as creationists. At first glance, this subset may be interpreted as being part of the ongoing legacy of the likes of Ken Ham and Australia's internationally prominent young earth creationist influences. Nonetheless, interviewed creationists and other religious participants indicated that creationism is in decline and

that it is often not considered a suitable or relevant topic of discussion within church communities. In fact, though Queensland represents Australia's historical young earth creationist epicentre, numerous Christians characterised YEC as a worrying movement. This is because it equates Christianity with creationism itself, which can turn both believers and non-Christians away from the faith. Notably, some atheist accounts appeared to confirm these qualms, as they described leaving Christianity after learning the facts about evolutionary science.

Religious interviewees also contended that religion and science are compatible. Accepting both at the same time is possible, intellectually fulfilling, and achievable through non-literal approaches to religious scripture and doctrine. Science and religion were primarily conceived of as separate pursuits, with small overlaps that may result in a variety of outcomes. Religion can also provide answers to life's questions, which science's limited purview is unable to suitably address. Additionally, the historical development of science in concert with religion, as well as the existence of religious scientists, were offered as evidence for religion–science concord. Religious scientists agreed, as did most agnostic scientists and members of the public, together with some atheist scientists. The latter validated the observation that just as there exist different kinds of atheism, and there are also 'varieties of atheism among scientists *and that not all atheist scientists see conflict between science and religion*' (Ecklund and Johnson 2021, 5; italics in original).

Conversely, atheist members of the public, as well as certain atheist scientists, maintained that religion and science, by virtue of what they are, must disagree. Religion is a ridiculous fantasy, often used for social control, constructed upon blind faith and irrationality. While it can offer social benefits and may have been of historical importance, religion fundamentally contrasts with science's rationality, commitment to critical thinking, and its fact-based nature. Accordingly, being both religious and a professional scientist was thought to be possible but psychologically taxing. Such views are consistent with those articulated by Richard Dawkins and other New Atheists, whom several atheist interviewees acknowledged as being important influences. Atheist interviewees tended to be scornful of religion and its adherents, which may have also been reflected in narratives about atheist scientists discriminating against religious colleagues. Conspicuously, every participant who contended that science and religion necessarily conflict also defined them as substantially dissimilar things. As atheist Ray put it, one is 'facts' while the other is 'bullshit'.

Altogether, this study's participants report that in Queensland, Australia's creationist heartland, creationism is in decline. Moreover, belief in perpetual and necessary religion–science conflict is most commonly articulated by non-religious, and primarily atheist Australians. These findings correspond with similar observations detailed elsewhere, which indicate that atheists are most likely to assume that science–religion warfare is inexorable (Leicht et al. 2022). In Australia, such assumptions lie at odds with the personal accounts

of a majority of religious individuals, who perceive religion and science as being largely compatible. Consequently, it is atheists and some agnostics who contend that both religion and religious adherents are opposed to science, though religious Australians do not, by and large, express such opposition themselves. Instead, religious individuals distinguish science and religion as mostly separate pursuits, which occasionally overlap and can be harmonised through suitable hermeneutics. Religion can provide motivation to do science and extend knowledge beyond the limits of science. History and religious scientists also demonstrate cases of religion–science compatibility. Hence, Christian scientist Jack noted that the Scientific Revolution was affixed to religious theology, and in the end, the sciences necessarily still leave room for religious types of questions, such as, 'Why is the world this way? Why can we understand it?' Rather than necessary religion–science conflict, he concluded, 'science begins with theology and science ends with theology'.

References

96Five (2024) Hope for Tomorrow with Others Across Brisbane and Beyond. Available at: www.96five.com/faqs-96five/ (accessed February 16, 2024).

Aechtner T (2021) Creationism with an Australian Accent: Politics, Schools, and Global Exportation. *Almagest* 12:124–148. doi: 10.1484/j.Almagest.5.125388.

Archer M, Poore A, Horn A et al. (2018) Thirty Two Years of Continuous Assessment Reveal First Year University Biology Students in Australia are Rapidly Abandoning Beliefs in Theistic Involvement in Human Origins. *Evolution: Education and Outreach* 11 (1):1–8. doi: 10.1186/s12052-018-0083-9.

Australian Bureau of Statistics (2022a) Religious Affiliation in Australia. Australian Bureau of Statistics. Available at: www.abs.gov.au/articles/religious-affiliation-australia (accessed July 6, 2024).

Australian Bureau of Statistics (2022b) Snapshot of Queensland. Australian Bureau of Statistics. Available at: www.abs.gov.au/articles/snapshot-qld-2021#religion (accessed August 1, 2023).

Birmingham J (2014) For God's Sake, How Did He Get Out? *Brisbane Times*. Available at: www.brisbanetimes.com.au/national/queensland/for-gods-sake-how-did-he-get-out-20140205-321yi.html (accessed July 20, 2024).

Bleakley P (2022) Queensland Exceptionalism and the Construction of 'Southern Folk Devils' in Twentieth Century Public Rhetoric. *The Australian Journal of Politics and History* 68 (1):36–53. doi: 10.1111/ajph.12722.

Bouma GD and Halafoff A (2017) Australia's Changing Religious Profile—Rising Nones and Pentecostals, Declining British Protestants in Superdiversity: Views from the 2016 Census. *Journal for the Academic Study of Religion* 30 (2):129–143.

Bulbeck, C (1987) The Hegemony of Queensland's Difference. *Journal of Australian Studies* 11 (21):19–28. doi: 10.1080/14443058709386955.

Cole HR (2015) Trouble in Paradise: One Christian Denomination's Contemporary Struggle Reconciling Science and Belief. *Christian Spirituality and Science* 10 (1):23–32.

Davies A (2022) Hillsong's Brian Houston Resigns from Megachurch. *The Guardian*. Available at: www.theguardian.com/world/2022/mar/23/hillsongs-brian-houston-resigns-from-megachurch (accessed March 24, 2024).

Department of Industry, Science and Resources (2022) The State of STEM Gender Equity in 2022. Department of Industry, Science and Resources. Available at: www.industry.gov.au/news/state-stem-gender-equity-2022 (accessed March 19, 2024).

Ecklund EH, and Johnson DR (2021) *Varieties of Atheism in Science*. New York: Oxford University Press.

Gosschalk K, Piggott L, Gray H et al. (2023) Science and Religion: Exploring the Spectrum: A Multi-Country Study on Public Perceptions of Evolution, Religion and Science. Birmingham: University of Birmingham. Available at: https://scienceandbeliefinsociety.org/wp-content/uploads/2023/12/UoB-YouGov.-Science-and-Religion-Survey-Report.-8-Dec-2023-.pdf (accessed May 1, 2024).

Guy R (2014) Clivosaurus: The Politics of Clive Palmer. *Quarterly Essay* 56:1–72.

Hall J (2019) *Theme Park Sues Insurance Company after Rain Damages Noah's Ark Exhibit*. News Corp Australia. Available at: www.news.com.au/finance/work/at-work/theme-park-sues-insurance-company-after-rain-damages-noahs-ark-exhibit/news-story/db268469f0f7317f44d2182885b0a5f7 (accessed July 20, 2024).

Leicht C, Sharp CA, LaBouff JP, et al. (2022) Content Matters: Perceptions of the Science-Religion Relationship. *The International Journal for the Psychology of Religion* 32 (3):232–255. doi: 10.1080/10508619.2021.2003111.

McFadyen W (2019) Two By Two They Entered the Ark ... with Lawyers Close Behind. *The Age*. Available at: www.theage.com.au/national/victoria/two-by-two-they-entered-the-ark-with-lawyers-close-behind-20190606-p51v04.html (accessed July 20 2024).

Mitchell-Whittington A (2016) *Noah's Ark Replica Built by Former Brisbane Science Teacher*. The Sydney Morning Herald. Available at: www.smh.com.au/world/noahs-ark-replica-built-by-former-brisbane-science-teacher-20160707-gq0b38.html (accessed July 20, 2024).

Nielsen (2009) *Special Nielsen Poll: Faith in Australia 2009*. Sydney: Nielsen.

Numbers RL (2002) Creationists and Their Critics in Australia: An Autonomous Culture or 'the USA with Kangaroos'? *Historical Records of Australian Science* 14 (1):1–12. doi: 10.1071/HR02002.

O'Donnell J (2023) *Mapping Social Cohesion 2023*. Melbourne: Scanlon Foundation Research Institute.

Pennells S (2016) $100m 'Noah's Ark' Being Built by Aussie Teacher. *Yahoo News*. Available at: https://au.news.yahoo.com/100m-noahs-ark-being-built-by-aussie-teacher-31665046.html (accessed 20 July 2024).

Pepper M and Powell R (2018) Religious, Spiritual, Neither or Both? 4 Groups of Australians. NCLS. Available at: www.ncls.org.au/articles/religious-spiritual-neither-or-both/#sbnr (accessed March 6, 2024).

Powell R and Jacka K (2021) *The Spiritual Identity of Australians in 2021*. NCLS. Available at: www.ncls.org.au/articles/the-spiritual-identity-of-australians-in-2021/ (accessed March 6, 2024).

Queensland Government (2023) *Population by Age and Sex, Regions of Queensland, 2022*. Queensland Government Statistician's Office. Available at: www.qgso.qld.gov.au/issues/3111/population-age-sex-regions-qld-2022.pdf (accessed March 19, 2024).

Roach D (2022) Christians Remain a Minority Down Under, but Gen Z Aussies Are Open. *Christianity Today*. Available at: www.christianitytoday.com/news/2022/november/australia-christian-survey-gen-z-belief-views-faith-abuse.html (accessed December 11, 2024).

Rosenberg E (2019) *Lawyers for Noah's Ark theme park are suing its insurance company for rain damage*. The Sydney Morning Herald. Available at: www.smh.com.au/world/north-america/lawyers-for-noahs-ark-theme-park-are-suing-its-insurance-company-for-rain-damage-20190526-p51r9z.html (accessed July 20, 2024).

Royal Commission into Institutional Responses to Child Sexual Abuse (2017) *Royal Commission into Institutional Responses to Child Sexual Abuse: Final Report*. Available at: www.childabuseroyalcommission.gov.au/ (accessed March 11, 2024).

Schipp D (2017) *Is Ken Ham's Life-Size Noah's Ark Theme Park a Sinking Ship?*. News Corp Australia. Available at: www.news.com.au/world/north-america/is-ken-hams-lifesize-noahs-ark-theme-park-a-sinking-ship/news-story/315bd1d074b8ca74b3340d1115599a9e (accessed July 20, 2024).

Seventh-Day Adventist Church (2024) *What Adventists Believe About Creation*. Seventh-Day Adventist Church. Available at: www.adventist.org/creation/ (accessed March 7, 2024).

Singleton A (2023) *Public Sociology*. London: Routledge.

Singleton A, Rasmussen ML, Halafoff A et al. (2021) *Freedoms, Faiths and Futures*. London: Bloomsbury.

The Australian (2014) Australian Creationist's 'Ark' Plan Resurfaces in Kentucky. *The Australian*. Available at: www.theaustralian.com.au/news/world/australian-creationists-ark-plan-resurfaces-in-kentucky/news-story/54c72e85ec57d2af163bfb9916c10bfc (accessed 20 July 2024).

Waters G (2010) Face It Queensland, We're Conservative. *Brisbane Times*. Available at: www.brisbanetimes.com.au/politics/federal/face-it-queensland-were-conservative-20100823-13ftu.html (accessed April 3, 2024).

Weng E, and Halafoff A (2020) Media Representations of Religion, Spirituality and Non-Religion in Australia. *Religions* 11 (7):1–15. doi: 10.3390/rel11070332.

Wilson D (2011) A Nation of Creationists. *Australasian Science* 32 (3):14–16.

Wyatt N and Stolper D (2013) *Science Literacy Report*. Australian Academy of Science. Available at: www.science.org.au/supporting-science/science-sector-analysis/reports-and-publications/science-literacy-report (accessed 20 July 2024).

6 Conflict on the Margins of a Secular Public

Science and Religion in Germany

Tom Kaden and Amrei Sander

Introduction

This chapter presents an overview of science, religion, and the relationships between the two in Germany with a special focus on qualitative interview data, which is supplemented with statistical background information from a variety of different contexts. The main point the essay makes is that, in Germany, 'science and religion' as a personal and public issue is layered in a peculiar way: on the one hand, statistics and interview data show a widespread absence of conflict positions or assumptions of conflict, as well as displays of reduced or absent relevance in various areas of everyday life, thus justifying the view that the issue is largely irrelevant, particularly when compared with countries such as the United States. This finding corresponds with a broad consensus among respondents about general rules of discourse, the value of science, and the non-political nature of religion. On the other hand, however, we will present a number of quotes and statistics that explicate the particular conditions under which this assessment holds true, namely, the limitation of religious expression in a way that is deemed compatible with a general secular mode of public and personal communication. We contend that both layers interact in that the opposition to religion observed at times is directly linked to a perceived violation by religion or particular religious groups or individuals of the broad consensus and latent secularism that lays claim to overall normativity.

We base our observations on a broad qualitative interview sample. Perspectives held by a diverse group of 64 participants feed into this research. Of this cohort, 22 were life scientists, and the remainder consisted of individuals from both religious and non-religious backgrounds in the general public. Through a series of semi-structured interviews and surveys that were conducted as part of the 'Science and Religion: Exploring the Spectrum' (SRES) project, this study sought to unravel the multifaceted relationship between science, religion, and personal worldviews in the German context. A central goal was to shed light on the compatibility, conflicts, and coexistence of science and religion as perceived by a broad cross-section of society, from life scientists as well as members of the general public.

DOI: 10.4324/9781003476580-8

To set the stage for our exploration, we begin with a brief overview of religion in Germany since 1945. We continue with an overview of the current legal framework governing religious communities in Germany. Additionally, we provide a presentation of religious affiliation statistics. This foundational information serves as the backdrop against which the dynamics of science and religion in Germany unfold. In the subsequent section, we delve into the perspectives of members of the general public, both religious and non-religious, with a particular emphasis on their views regarding the coexistence of science and religion. Though our sampling was limited due to a number of constraining factors, not the least of which was the COVID-19 pandemic as it unfolded during our data collection phase, these participants related a variety of different orientations and attitudes, providing insights into the broader public discourse on this relationship.

Our findings reveal a spectrum of perspectives among religious individuals within the general public. Many express the belief that science and religion can coexist harmoniously, often highlighting the moral and ethical guidance that religious belief provides. In contrast, some non-religious participants emphasize the role of science as a means of comprehending the natural world, asserting its superiority in answering questions about our existence. Turning our attention to life scientists, we explore the worldviews and beliefs held by life scientists, examining their perspectives on the relationship between science and religion. This subchapter sheds light on how individuals deeply engaged in scientific inquiry perceive the interplay between their profession and their personal faith or secular beliefs. Among non-religious life scientists, empirical evidence takes precedence, as the scientific method reportedly guides their understanding of the world. For many in this group, the pursuit of scientific knowledge supersedes traditional religious convictions. However, it is noteworthy that a minority of religious life scientists advocate for the coexistence of their faith with the pursuit of scientific knowledge.

This chapter sheds light on Germany as a unique case within the field of 'science and religion' research. While much of the existing research has primarily focused on English-speaking countries, such as the United States, Germany offers a distinct perspective. Germany is characterized by a combination of religious diversity but also a significant level of secularization. This secularization is particularly pronounced in the eastern regions, which were part of the former German Democratic Republic (GDR) (see also Pickel 2018). These eastern regions have experienced a distinctive history of state atheism and the suppression of religion in the public sphere during a four-decades period. Consequently, this region is, by some measures, one of the most secularized in the world. This is why this chapter contributes to a more comprehensive understanding of the interplay between science, religion, and secularity in diverse global settings. The German case thus varies from prior research in Western, English-speaking, and mainly Protestant countries in many relevant religious, scientific and discursive aspects, thus promising to enrich our overall understanding.

Religion in East and West Germany Since the Second World War

In the decades following World War II, Germany experienced some major shifts in its religious landscape. Initially, the two major Christian churches held significant cultural influence. However, by the late 1960s, things began to change. People's values shifted, partly because they were enjoying better living standards. This led to fewer people affiliating with churches and practicing religion. While private faith also weakened during this time, it was not as dramatic as the decline in church involvement. At the same time, Germany became more religiously diverse in the 1970s and 1980s. Islam became the third-largest religious group due to immigration, and alternative religious ideas gained popularity. This diversity led to more individualized beliefs within society. In East Germany, however, the story was quite different. Although it was mainly Protestant after the Second World War, it transformed into one of the most secularized places in the world during its 40 years as the German Democratic Republic (GDR). This was mainly due to the government's anti-religious policies, especially in the 1950s, which greatly reduced religious influence on the younger generation.

When Germany reunified, roughly a third of the population belonged to the Protestant and Catholic Churches each, while less than a third identified as non-religious. However, hopes of a religious revival in the East were not met. Instead, there was a significant increase in people leaving the churches after the reunification, affecting both the former GDR and the old Federal Republic. This trend has continued, and today the non-religious or unaffiliated group is the largest, making up about 35% of Germany's population. Meanwhile, membership in the two major Christian churches declined to 27% (for the Catholic Church) and 25% (for the Protestant mainline Church, Evangelische Kirche in Deutschland [EKD]). Muslims became the third-largest religious group, with other religions making up about 6% of the population. In Western Germany, despite declining church memberships, personal religiosity remained relatively stable in the years following reunification. Belief in God, religious self-assessment, and the importance of religion in personal life did not change much. However, in the East, these indicators saw a significant decline. Alternative spiritual ideas gained some popularity in the West, but they did not catch on in the East to the same extent. (Müller & Pollack 2022: 671–673)

Religious Landscape and Constitutional Framework

Today, there exists a diverse array of religious affiliations in Germany, underscored by a constitutional commitment to freedom of religion. Article 4 of the *Grundgesetz*, or the Basic Law of the Constitution, unequivocally safeguards 'Freedom of faith and of conscience' as well as the 'undisturbed practice of religion' (Bundestag 2023). This constitutional backdrop, however, is intertwined with a distinctive relationship between the state and

religious institutions, primarily the Roman Catholic and Protestant mainline church (EKD).

These two major religious entities still wield significant influence in Germany, exemplified by contracts (*Staatskirchenverträge*) forged between them and the *Länder* governments, regulating matters such as theological faculties and 'the training of religious teachers in public schools' (Kinzig 2009). The role of religion in German public life extends to manifestations of 'civic religion,' including references to God in the preamble of the Basic Law, religiously inflected oaths, such as the solemn pledge 'so help me God' for government department heads (*Minister*) and military personnel, and religious symbols like crosses in Bavarian classrooms. Additionally, religious customs permeate various facets of public life, as seen in 'the musical prayer during the army's last post [and] the President's Christmas address set against an adorned Christmas tree backdrop' (Kinzig 2009).

Moreover, the *Länder* collect church taxes (*Kirchensteuer*) for the Roman Catholic and Protestant churches, reaffirming their entrenched relationship. These religious institutions also loom large as key employers within Germany's nonprofit sector, wield substantial influence in public broadcasting, and oversee a wide array of social services, including 'kindergartens, schools, hospitals, and facilities for the disabled' (Kinzig 2009). Nevertheless, Germany's religious landscape is not monolithic. Some German states, most notably Berlin, have sought to limit or eliminate religious symbols and affiliations in the public service sector, mandating that employees refrain from displaying 'visible religious or ideological symbols and garments', in stark contrast to Bavaria's acceptance of crosses in schoolrooms (Seitz 2020).

Religious Affiliation: A Statistical Overview

Based on statistics from 2023, there are approximately 20.4 million Roman Catholics, 18.6 million members of the Protestant mainline Church, 3.9 million Orthodox Christians, 0.9 million Evangelicals, approximately 5.5 million Muslims, and 90,000 Jews in Germany (Statista 2022a).

The historical division between Catholicism and Protestantism persists today, with certain states exhibiting clear majorities of one faith. Bavaria and the Saarland, for instance, have absolute majorities of Catholic residents, with percentages of 55% and 63%, respectively. *Länder* where Protestants constitute a relative majority among religious adherents include Baden-Wuerttemberg (37%), North Rhine-Westphalia (42%), and Rhineland-Palatinate (45%). While no state in Germany holds an absolute Protestant majority, they represent the largest religious group in Lower Saxony (50%) and several other states, among them some in the east: Bremen (41%), Hessen (40%), Berlin (19%), Brandenburg (17%), Hamburg (30%), Mecklenburg-Vorpommern (18%), and Saxony (21%) (Statista 2011).

Of course, formal religious affiliation does not necessarily align with individual belief or non-belief. For instance, individuals may maintain formal

membership in religious communities for strategic or familial reasons, despite a lack of personal religiosity. Conversely, some individuals who do not officially belong to registered religious groups may still hold deep religious beliefs. As a result, the statistics on religious affiliation may not offer an accurate reflection of religious belief or practice. A survey on belief in God, for example, revealed that only 75% of Catholics and 67% of mainstream Protestants professed belief in God (Pieper 2019). Reported church attendance paints a similar picture. While in the former West in 2017, 18% of respondents stated that they attend a church service, a temple or the Friday prayer or participate in other spiritual rituals or religious activities at least once a month, in East Germany, the figure was only 7%. When considering the data across all three survey waves of the Religion Monitor, a declining trend can be observed in both parts of the country regarding this indicator (Müller & Pollack 2022: 674).

To gain a more nuanced understanding of religiosity, one must consider lived religiosity, which unveils intriguing disparities. These differences are not only regional but also contingent on how religiosity is framed. In a survey that did not differentiate between regions, 55% of Germans professed belief in God (Pieper 2019). When queried about their spirituality, however, only 13% in the West and 6% in the East identified as 'rather' or 'very' spiritual (Pollack & Müller 2013: 12).

Science in German Society: Budget Allocation and Public Perception

The Role of Science in German Society

This section provides insights into the role of science in Germany, encompassing its influence on industry, education, media, and government policy. An understanding of this role requires an exploration of financial allocations for education, research, and development, as well as an examination of major scientific associations operating outside of academic institutions.

Budget Allocation

In Germany, significant financial resources are allocated to education, research, and development. In 2020, a staggering 241.1 billion euros were dedicated to education, with an additional 105.9 billion euros allocated to research and development. In 2021, this number had risen by another 5.6% to over 112 billion Euros (Destatis 2023). Moreover, 6.4 billion euros were earmarked for 'educational and scientific infrastructure', contributing to a total expenditure of 334.1 billion euros on 'education, research, development ... and science' (Statista 2022b). Importantly, these expenditures originate not only from the state but also from industry and commerce. While precise figures for 2020 are unavailable, in 2019, companies accounted for 75.8 billion euros of the 110 billion euros spent on research and

development, with the state contributing 18.7 billion euros (BMBF n.d.). Generally, and owing to the German word *Wissenschaft* encompassing natural science and humanities together, statistics on science funding seldom differentiate between them, thus making it hard to gauge science funding in relation to all research funding. An exception to this is the statistical overview of public research funding for 2021 where it is reported that federal research funding to public institutions such as universities predominantly encompasses research in the fields of natural science and mathematics (6.2 billion Euro, see Destatis 2023).

Prominent Scientific Associations

Prominent scientific associations outside of university settings play a pivotal role in shaping Germany's scientific landscape. Notable entities include the Fraunhofer-Gesellschaft, the Helmholtz-Gemeinschaft, the Wissensgemeinschaft Gottfried Wilhelm Leibniz, and the Max-Planck-Gesellschaft (BMBF 2022). The Fraunhofer Gesellschaft, with its focus on practice-oriented research, comprises 76 research institutions exclusively in the natural sciences. Similarly, the Helmholtz-Gemeinschaft, with over 45,000 employees, centres its efforts on the natural sciences. In contrast, the Leibniz-Gemeinschaft encompasses social sciences, humanities, and natural sciences within its purview. The Max-Planck-Gesellschaft extends its reach across the spectrum of natural, social sciences, and humanities.

Public Trust in Science and Acceptance of Evolution

Public trust in science and scientific research is generally robust in Germany. A 2018 survey revealed that 54% of respondents expressed trust in science and research, with only 7% displaying scepticism. The primary reasons for scepticism revolved around concerns regarding financial dependency on sponsors (Wissenschaft im Dialog/Kantar Emnid 2018). Furthermore, approximately 52% of Germans reported a high level of interest in science, which exceeds interest in politics, sports, and other categories (ibid).

Examining attitudes toward evolution, a 2019/2020 survey conducted by the Pew Research Center reported that 81% of German participants, including Christians and the unaffiliated, concurred with the statement that 'humans and other living beings have evolved over time'. Only 17% adhered to the belief that 'humans and other living beings existed in their present form since the beginning of time'. The study further revealed that among those holding the latter belief, 45% deemed scientific and religious explanations for the origins of life to be incompatible, while 52% viewed them as compatible (Funk/Tyson/Kennedy/Johnson 2020).

Approximately 45% of German participants acknowledged the existence of a conflict between science and religion. Among Christians and the

unaffiliated, 40% perceived a general conflict between science and religion (Funk/Tyson/Kennedy/Johnson 2020). In a 2012 study, participants were asked about the compatibility of religion and science, with 49.7% expressing varying degrees of agreement, while 44.5% indicated disagreement (Statista 2013). These findings indicate that a substantial portion of the German population perceives a tension or lack of compatibility between religion and science.

A recent representative multi-country study conducted by YouGov for the SRES project (Gosschalk et al. 2023), which included Germany, provides further valuable data concerning conflict positions. The study revealed that only 7% of participants agree with the 'creationist' statement that God created humans in their current form. In contrast, the 'naturalistic' response, indicating that humans evolved through a natural process without God's intervention, was chosen by 60%, the largest share among all countries investigated. A comparable percentage (56%) of German respondents find it easy to reconcile their personal beliefs with evolutionary science. The second largest response, with 29%, indicates that it is neither difficult nor hard for respondents, which may signify relatively widespread irrelevance of the topic for people's worldviews. These results occur against the backdrop of Germans displaying the lowest percentage of importance of religious position for their identity, with 46% finding it not important and 25% considering it neither important nor unimportant (ibid). This trend indicates a pattern of religious irrelevance that informs various positions investigated throughout the project.

Sensitive Scientific Issues

Among the issues where scientific progress is closely linked with ethical and religious sentiment, genetic engineering stands out. Some 68% of Germans believed that scientific research on gene editing was misusing technology, with only 28% deeming it appropriate. When considering genetic engineering to treat serious diseases or conditions present at birth, 70% regarded it as appropriate, but this approval diminished to 49% when addressing the reduction of risks during an individual's lifetime. Notably, 89% of participants considered it inappropriate to alter a baby's genetic characteristics to enhance intelligence. The unaffiliated demographic displayed slightly higher levels of acceptance regarding gene editing research compared to Christians (Funk, Tyson, Kennedy, & Johnson 2020).

While there exists some opposition to scientific practices, particularly in the context of vaccines, this scepticism remains a minority perspective, encompassing only 2–4% of the population (Tagesschau 2017). The extent of such scepticism during COVID-19 apparently sharply increased, with a 2022 Europe-wide study reporting 22% of respondents in Germany expressing little trust in vaccinations (Brandt 2023).

Religion and Science in the German Context

Religion and Science in the Public Sphere

In the realm of public discourse in Germany, discussions concerning the intersection of religion and science are relatively subdued. Conversations on this topic predominantly revolve around the ethical and risk-related dimensions of emerging scientific technologies and developments. For instance, notable figures within both the Protestant mainline Church and the Catholic Church, such as Karl Kardinal Lehmann, then President of the German Bishops' Conference and Präses Manfred Kock, then president of the EKD Council, have issued joint declarations addressing the ethical considerations of scientific research, particularly in the context of stem cell research. This initiative sought to advocate for the 'protection of the life of the early embryo' in the face of scientific advancements (Lehmann and Kock 2002). Subsequent compromises, such as the proposal to extend the deadline for importing embryonal stem cells by Wolfgang Huber, another former president of the EKD, sparked contentious debates, both internally and with the Catholic Church (Woratschka 2008). Notably, these debates played a role in shaping Germany's stringent laws regarding embryonal stem cell research, a development often attributed to the influence of the German Commission of Ethics, which included a Muslim scientist in its ranks in 2012 in addition to the Catholics and Protestants already represented (Gülker 2015).

The issue of genetically modified organisms has also garnered attention, with critical stances emanating from the EKD (Arbeitsgemeinschaft der Umweltbeauftragten der Gliedkirchen der Evangelischen Kirchen Deutschlands, n.d.). Regarding the theory of evolution, discussions have arisen when certain religious schools proposed integrating biblical creation narratives alongside evolutionary theory in their curricula. However, regulations stipulate that even Christian denominational schools must adhere to established guidelines and curricula, including the teaching of evolutionary theory (Kamann 2013).

In Germany, entities, such as the *Institut für Glauben und Wissenschaft* (Institute for Belief and Science) and the *Studiengemeinschaft Wort und Wissen* (Research Community Word and Knowledge), represent Christian perspectives that engage with issues related to creationism and Intelligent Design. Nonetheless, it remains prevalent for individuals, regardless of their religious beliefs, to view religion and science as distinct realms. This consensus is so ingrained that public discourse on the subject is infrequent, distinguishing it from more frequent discussions in Anglo-Saxon countries (Gülker 2015). Debates in Germany tend to focus on the relationship between religion and the state, encompassing issues such as the display of religious symbols in public institutions, discussions about Muslim veiling, and the state's 'duty of neutrality' concerning religion (Seitz 2020).

Sampling and Participants

Before delving into the analysis of how individuals view the relationship between science and religion against the backdrop described thus far, it is pertinent to provide insights into our sampling process. Our study comprised interviews with 64 individuals. These participants, categorized as either 'scientists' or 'members of the public', were recruited through various channels, including direct mailing, mailing lists, and Facebook advertisements. The age range spanned from 20 to 80 years, with 24 female, 38 male, one non-binary, and one individual who preferred not to disclose their gender identity. Religious and ideological orientations within the sample varied, with 30 participants identifying as religious – 22 Christian, two Muslim, two Jewish-agnostic, one neo-Tengristic (originating in ancient Central Asia), one Buddhist, one believer in God without further specification, and one adherent of Paganism. Additionally, two individuals primarily identified as 'spiritual'. Among the non-religious participants, 24 were atheists, and seven were agnostic. In addition to individual interviews, one focus group was conducted via Zoom, bringing together four male members of the public, three Christians and one atheist.

Our semi-structured interview guide covered topics ranging from participants' biographies and their interest in science to their worldviews, perspectives on the relationship between religion and science, and their views on evolution theory. In response to the pandemic, questions regarding the ongoing health crisis were also included. All interviews and focus groups were recorded, transcribed, and analysed using the qualitative data analysis program NVivo, with a coding framework that was common across the SRES project, although a limited number of themes were developed that related specifically to the German context.

It is essential to emphasize, as mentioned earlier, that in Germany, the term 'science' (*Wissenschaft*) encompasses both natural sciences and humanities. During interviews, we refrained from specifying the type of science, using the umbrella term 'science' when discussing participants' interests and the relationship between science and religion. This meant that, while the questions were the same as those asked in other case study countries, they may have been read somewhat differently. Regardless of religious affiliation, the vast majority of respondents expressed a strong interest in science, with 61 out of 64 participants indicating their enthusiasm for this subject. While the potential influence of higher education levels on this interest cannot be discounted, even participants with lower levels of education displayed a genuine interest in science. Nevertheless, it is worth acknowledging that some participants may have felt a degree of social pressure to affirm their interest in science, given the explicit focus of the study on science and religion. This is corroborated by recent research in comparable settings, such as Jones et al.'s study of UK and Canadian publics and scientists about science and religion, which included pervasive displays of science awareness and admiration.

The authors interpreted these displays as instances of social desirability (Jones et al. 2020, p. 8). Likewise, the previously mentioned YouGov report (Gosschalk et al. 2023) includes findings about the relevance of science for respondents' subjective identity and worldview, with percentages ranging from 47% (Germany) to 71% (Spain), indicating social desirability of science awareness and appreciation here as well.

Research Findings

Diverse Perceptions of the Science–Religion Relationship Among the Public

As previously highlighted, within the German public sphere, discussions concerning the truth claims of science and religion, including the truth of evolution, are relatively scarce, with moral debates surrounding religion and certain scientific techniques being more prominent. Nevertheless, some participants offered explicit perspectives on the apparent tension between religion and science. It is essential to bear in mind that our research inquiries, which probed interviewees' views on this relationship, may have prompted participants to contemplate and articulate their opinions more than they typically would.

While none of our participants explicitly expressed a positive (e.g. mutually reinforcing) view of science and religion, many individuals exhibited a 'non-overlapping magisteria' (Gould 1997) perspective, viewing science and religion as occupying distinct domains. For instance, Verena,[1] a Jewish agnostic biologist working outside academia, emphasized the separation between science and religion, characterizing science as an exploration of the external world and religion as an exploration of the internal universe. Vanessa, a Catholic student of social and cultural sciences, concurred, perceiving no conflict between these domains and emphasizing their separation.

Heinrich-Wilhelm, a retired individual who believed in God but did not affiliate with any specific religion, strongly advocated for the separation of science and religion: 'I do not ask for [the separation of science and religion], nor do I hope for it, but everything that is different [i.e., that links science and religion], I'm really angry about, is wrong for me'. Similarly, Natalie, a Protestant with theological training, acknowledged a potential for conflict but stressed that, as long as one recognized the distinct phenomenological realms addressed by science and religion, harmony was possible. Karl, a Protestant chemist who had reservations about evolutionary theory, contended that conflicts between science and religion were artificially constructed, emphasizing their historical interconnections rooted in clerical developments:

> There are topics that don't fit together, as we see it today, as far as we know today. There are clear tensions. But for me, for example, it is not understandable why a whole series of popular authors today construct a conflict here. Because if you look into society, into the history of our

> culture, then universities, the natural sciences in the European cultural space, have emerged from church developments and have actually arisen from a motivation to better understand creation, to understand orders. And therefore, I believe that this contradiction, which is often posed today, is constructed.

For those who asserted a conflict between religion and science, the divergence in their approaches to acquiring knowledge was often cited. Monika, an atheist, highlighted that religion made unverifiable claims, contrasting it with science's reliance on proven theses. Timur, also an atheist, echoed this sentiment, emphasizing that science formulated hypotheses as potential facts through rigorous examination, while religion asserted unchallenged facts. Franz, a Christian who studied biology but became increasingly critical of it to the point of adopting a creationist outlook, took a similar stance when he shared his views on the absence of an open, equitable, and empathetic exchange of ideas about science and religion. This absence contributed to his conviction of an underlying social conflict between these domains. 'People first somewhat distort or misquote things initially, only to subsequently dwell on this distorted image'.

Bilge, a neo-Tengrist philosophy student, voiced scepticism toward those attempting to reconcile evolution theory with belief, asserting that God had no place in natural science. Werner, an atheist, asserted the existence of a conflict, attributing it to the dogmatism inherent in religion and its eventual clash with scientific insights. Some participants went further, asserting that embracing a scientific approach necessitated abandoning many religious beliefs. Marco, an atheist, argued that scientific reasoning should lead to the abandonment of most religious notions: '[A] scientific approach should actually lead to most belief notions being dropped'.

Additionally, some interviewees criticized what they perceived as the inappropriate influence of religious institutions on science and questioned the full engagement of religious groups or individuals in scientific endeavours. Robert, an atheist, believed that religious groups exerted an excessive influence on science in Germany, with their involvement in various committees and media outlets, leading to what he saw as an over-Christianization of the country.

> Every mountain is Christianized with a cross. You can't get around it. The bells ringing on Sundays, well, that's something [laughs]. They really push themselves forward. So, you can't get around it. ... And how much money they also get from the state. Well, Napoleon expropriated them, but they still get compensation for it to this day. So, that's quite a thing. Bishop salaries are paid by the state and so on and so forth.

Stances such as Robert's show that while there is not much of an open debate or antagonism about science and religion in Germany, the conflict over

religion's influence in the public sphere still features as part of non-religious identity in some of our respondents.

Perspectives of Respondents on How Scientists View Science and Religion

Our interview schedule included a question concerning participants' perceptions of the belief systems held by natural scientists, particularly those engaged in evolutionary biology. Both religious and non-religious individuals offered nuanced views, with some asserting that no inherent conflict exists between scientific and religious identities.

Martin, a Jewish agnostic, highlighted the coexistence of diverse perspectives, noting that individuals often blend different worldviews. However, he also stated that the tendency of science to produce consensus has an effect on the diversity of worldviews over time: 'I believe that natural science isn't something that, in the long run, harbours a great diversity of opinions or very different approaches, which might persist over time in other sciences. I think it converges relatively quickly'.

Atheist Sabine believed that scientists could maintain religious beliefs, a perspective she suggested was more prevalent in earlier eras, and she links this to a different social role and power status of the churches back then:

> I also believe that scientists can definitely be religious. Especially in earlier times before industrialization, scientific work was sometimes only possible under the auspices of the church. The people who learned to read and write, who had access to libraries, that was not separate from faith, and that was not separate from religion.

Marco, a humanist affiliated with a secularist civil society organization, acknowledged that, while strict adherence might preclude both identities, scientists could still practice their faith while maintaining scholarly integrity within their specialized fields. However, citing a statistic, he also stated that, in actuality, the vast majority of elite scientists are atheistic, which confirms his general outlook:

> Of course, scientists can still be religious and proceed scientifically in their field of expertise. That's certainly possible. What I've read is that there are also studies on how religious scientists are. And I mean, there are a few numbers from the British scientific association. A *very* small percentage of top scientists are religious. And a large percentage, close to 98 percent if I recall correctly, identify as explicitly atheist. And I can understand that.

Religious Diversity and Degrees

Participants also recognized variations in religious beliefs and degrees of religiosity when evaluating the compatibility of religion and science. Bilge

cautioned against a Eurocentric focus, emphasizing that compatibility depended on the specific religion in question. Matthias, a chemist and prominent humanist association member, acknowledged the presence of religious scientists, especially in the natural sciences, but suggested that a deeply fundamental religiosity might pose challenges:

> So science and religiosity are not necessarily in conflict. There are religious scientists too. So that's not really unusual. Also, in the field of natural sciences. The question is how religiosity is defined or how the orientation within this religious spectrum is to the individual. So, I could imagine that at least someone who thinks rationally and critically cannot be very religious in a very fundamental sense. That is, not really strongly oriented towards any scriptures and guidelines, but also, yes, maybe more in a metaphorical sense or in a figurative sense feels addressed by it.

Instead, he proposed that some individuals might engage with religion metaphorically or within a value-based framework. Werner, a non-believer, echoed the sentiment that compatibility hinged on the nature of one's religion and level of religiosity.

Given the perspective held by some participants that science and religion inherently conflicted, it is unsurprising that some saw incompatibility between scientific and religious identities. Atheist Timur argued that combining the two was challenging, with scientists who did so perceived as having distanced themselves significantly from their faith or having altered what he views as their authentic message, particularly in the context of monotheistic religions: 'I do believe that [scientists can combine science and religion, but] that would practically deviate very far from the actual religion, or from the actual texts, and because these texts are considered divine in the religion, I would already argue that it's a contradiction'. Asked whether he would say this is true regarding all religions or just particular ones, Timur responded: 'Yes, definitely all monotheistic ones. Buddhism less so, as far as I've looked into it'. Giuseppe, whose religious beliefs remained ambiguous, suggested that many scientists had either abandoned religion or lost their connection to a divine presence. These findings are in line with the results of the previously mentioned YouGov study that was carried out as part of the SRES project. Only 31% of respondents from Germany thought it would be 'easy' for someone who believed in God to accept evolution (Gosschalk et al. 2023).

Religious Perspectives

Interestingly, religious participants also expressed scepticism about the compatibility of science and faith. Vanessa, a Catholic believer in Theistic Evolution, emphasized the necessity of separating belief and science,

cautioning against a literal interpretation of the Bible due to potential contradictions with scientific findings:

> So, I believe that there are indeed religious scientists, but I think that when you work scientifically, or at least in the natural sciences, you have to draw a separation between faith and science itself. At least you can't take the Bible literally, because then everything, or much of what you would discover in science, would contradict or conflict with your own faith. That's why I believe, well, you can be religious and at the same time a scientist, but probably with a clear separation then.

Asked how she conceptualizes this differentiation, she locates the adaptation clearly on the religious side:

> I believe that maybe one can believe in a divine entity and that one can be religious in that regard. So that there is, well, another power, I would say, still exists, but still, that one can work scientifically and that one can explore science. Yes, that one doesn't bring God into it, into science, into the topic.

Frank, who self-identified as a 'biblical creationist', believed that evolutionary biology predominantly attracted atheists or self-identified agnostics. He argued that the evolutionary doctrine had largely been shaped by individuals who rejected biblical revelation, suggesting that even those who professed Christian beliefs often questioned aspects of religious doctrine.

Religion in the Workplace of German Scientists

This section examines the stances adopted by religious and non-religious scientists towards religiosity within the scientific community, particularly among natural scientists in Germany. Furthermore, it explores the experiences of religious natural scientists within German research institutions, examining their choices regarding the disclosure of their religious beliefs and the motivations underlying these decisions. Notably, atheist or agnostic scientists generally did not report encountering discrimination, prejudice, or apprehension about openly expressing their non-religious worldviews, contrasting with the experiences of religious scientists working in natural science. While there were some hints of self-censorship, the majority of religious scientists who did not report discussing the issue with colleagues did so out of lack of interest or opportunity.

Perspectives on Compatibility of Religion and Science

Opinions on the compatibility of religious faith and scientific inquiry varied significantly among our interviewees. Religious scientists commonly perceived

no inherent conflict between science and religious belief, often advocating for the aforementioned non-overlapping magisteria (NOMA) theory. Stefan, a Christian scientist, mentioned that he tried to keep his religious identity 'separated' from his work area. He stated that although he did not 'actively keep it secret', he normally did not mention it, which he attributed to two factors: the critical stance of other scientists toward religion and the frequent changes of workplaces. He further explained, 'But there is naturally this connotation, that in the environment of science there are many people who cannot deal with religion and belief and who think it refuted and outdated, that there could be something which one could believe in'. He said that he felt that, in the scientific landscape, there was a dominant opinion that religion and science do not fit well together and that someone who takes science seriously could not earnestly believe in something not scientifically proven, as it causes a conflict of interests. Regarding his own belief, he said that his studies never brought him into a conflict of conscience, but it would have been different had he been socialized more in the charismatic or free church Christian tradition.

Greta, a natural scientist and Pagan believer, noted an increasing openness among religious communities towards science. She also acknowledged the growing permeability of the 'atheist front' within biological sciences, where even agnostics found acceptance. Greta, however, attempted to keep her belief system separate from her professional environment, though she had garnered an 'esoteric reputation'. Colleagues had warned her to exercise caution due to her reputation. Maximilian, a Christian scientist, highlighted the prevailing trend among evolutionary biologists, wherein atheism was often considered the norm. Ludwig, a researcher in the life sciences and one of the few scientists in our sample who professed an inclination towards Intelligent Design, went a step further, suggesting that 'New Atheists' had actively sought to undermine his career: 'I have had the experience that from this area, colleagues tried to ruin my career. But that's not the average of my colleagues. That is a certain trend, the actively proselytizing New Atheists'.

Some scientists reported being more open to discussing their faith with colleagues. Harald, a Christian scientist, never concealed his religious beliefs and frequently discussed them with colleagues. Similarly, Gabriel, a Baptist scientist who later emigrated to the US, openly practiced his faith in Germany and seldom faced prejudices or misconceptions.

Challenges in Balancing Faith and Science

There were cases where scientists lost their faith working on evolutionary theory or, conversely, started doubting evolutionary theory during their professional training. Ludwig, raised as a Protestant, lost his faith, influenced by a biology teacher in school, and found his way back to Christianity during his studies of biology, inspired by questions like "Why does life even exist?" and "Why is life so ingenious?" But there were also scientists having a hard time

combining their religious beliefs and their training. Theodor, a practicing Catholic, answered that his career as an academic had led him into conflicts with his belief, especially in evolutionary biology, where questions to religiosity were not easy to answer. He overcame his doubts by reading books and realizing that the essential part of religion was not actually touched by those natural scientific insights.

Overall, a greater number of religious scientists tended to keep their beliefs private within their professional environments, primarily out of concern for potential negative reactions. The prevailing perception among both religious and non-religious scientists suggested that German scientific workplaces might not be conducive to religious expression. This climate might be attributed, in part, to the popular conviction in Germany that religion and science should be kept separate and regarded as private affairs. Discussing results of her research on stem cell laboratories, Silke Gülker aptly summarized this sentiment, noting that 'the agreement about these separated worlds [religion and science] in Germany is so strong that it is seldom publicly discussed – other than in Anglo-Saxon countries' (Gülker 2015, authors' translation). Moreover, the concerns expressed by religious scientists were exacerbated by occasional hostile comments from non-religious colleagues; a subset of religious scientists reported direct experiences of jibes or contemptuous remarks. Among the 22 scientists interviewed, 11 identified as religious, one as spiritual, and seven grappled with their religiosity or feared others' reactions, either due to direct confrontations or a sense of apprehension. While few encountered actual discrimination, it remains challenging to gauge whether those who concealed their beliefs would have faced discrimination had they chosen to be more open. Recent research supports the notion that self-censorship out of fear of stigmatisation may be more prominent than hitherto thought. For instance, research carried out as part of the SRES project in Argentina found support for the idea that 'religious people adapt their public behaviour to the practices they perceive to be acceptable in the field and keep their disagreements private. This silence leaves the conflict narrative as the sole public expression of scientists' views about science–religion relations, which builds the perception that it is also the consensus of the field' (Fitz Herbert et al. 2023, p. 11; see also Chapter 4).

Secular Perceptions: Religion and Science

Non-religious scientists expressed various views on the compatibility of religion and science. Martin, a biologist who remained spiritually open, refrained from adopting an arrogant stance towards religious individuals, acknowledging their capacity for critical thinking. Michael, who identified as agnostic leaning towards atheism, recognized that many scientists were religious and perceived no intrinsic conflict between the two domains. Matthias, although acknowledging a potential conflict, believed that religious scientists

could navigate the distinction between their private beliefs and their professional roles effectively.

Conversely, some atheist scientists questioned whether religious individuals could genuinely reconcile their beliefs with natural scientific research. Simone, a former Catholic turned atheist and a biologist, expressed scepticism about religion's relevance, particularly in contemporary times, where she deemed religion and science to be fundamentally incompatible. She struggled to understand how individuals with a natural scientific background could subscribe to religious belief systems. Hans, another atheist scientist, shared this view, characterizing the compatibility of religion and science as implausible.

Perceptions of the Religious Scientist Minority

A prevailing belief, shared by both religious and non-religious scientists, was that religious individuals constituted a minority among scientists working in biology, particularly evolutionary biology. The hypothesis suggests that the fears of religious scientists encountering prejudices lead many of them to remain discreet about their beliefs. Precise quantitative data on the percentage of religious scientists working in natural sciences in Germany, as well as their experiences of discrimination, would be valuable to ascertain whether there exists a significant discrepancy between the perception and the reality.

Conclusion

Our analysis encompassed a wide range of data: macro data on religious composition and specific beliefs as well as the denominational distribution and its evolution over time; specific survey data on science and religion; and semi-structured interviews of a diverse sample of scientists and laypeople from various parts of the country, with consideration given to the division between East and West at all levels.

Building on the diagnosis at the beginning of the chapter, one can speak of a multilayered constellation regarding the relationship between science and religion in Germany. Dominant is a secular basic attitude that assigns religion a specific functional area, which is considered relevant depending on individual belief orientation. Additionally, it can be considered more or less consensual that any religious encroachment into other areas of society is viewed critically or acknowledged only in a very limited manner. This includes religion, as supported by the various references and quasi-references to 'NOMA' in our analyses. More the focus of our respondents is politics, which can be attributed not least to the special interconnections between church(es) and politics in Germany.

Nevertheless, at the margins of this secular consensus, various conflict potentials can be found. The delineation against religion is part of the

secular identity for some respondents and is often formulated in the mode of exceeding the secular consensus. Conversely, some religious respondents lament an unduly critical attitude towards all religious identities that do not conform to the secular consensus and, for example, remain silent about religion in the (scientific) workplace.

One pertinent fact that stands out in the German case is the strong interest in science among the German population, which is mirrored in our interview sample, where participants, both religious and non-religious, expressed interest in science independent of their relative level of educational attainment.

Another noteworthy aspect of the German situation is the enduring presence of church religion in terms of total numbers. Germany continues to have a significant number of churchgoers and individuals affiliated with Christian denominations. However, our research also echoed the general finding in the sociology of religion of a significant disconnection between personal belief and religious practice and the official teachings of the church.

Furthermore, our investigation has illuminated the limited discourse on the intersection of science and religion within the German public sphere. When discussions do occur, they are often entwined with political or ethical considerations, rather than the veracity of specific religious beliefs, or with summary statements of endorsement or condemnation. Issues like biotechnology, climate change, and medical ethics are more likely to feature in debates that touch upon science and religion, but these debates seldom focus on the core tenets of faith themselves or on many of the issues known from the US context.

Our respondents frequently alluded to the United States as a counterexample to Germany. They cited the US as a place where conflicts between science and religion, religious fundamentalism, and attacks on scientific principles were more prevalent. This perception of the US as a contrasting case highlights the relatively harmonious coexistence of science and religion in Germany. It also underscores the reduced relevance of potential points of contention between the two domains within the German context.

In conclusion, our exploration of science, religion, and secularism in Germany has uncovered a multifaceted landscape. While science enjoys widespread interest and engagement, it coexists with a relatively strong but often a culturally rather than a spiritually rooted church presence. The public discourse on the intersection of science and religion remains relatively muted, with political and ethical concerns taking precedence. Moreover, the perception of the US as a contrasting example underscores the relative harmony and minimal conflict between science and religion in Germany.

Note

1 All names used are pseudonyms.

References

BMBF (n.d.) Forschung und Innovation. Available at: www.datenportal.bmbf.de/portal/de/research.html

BMBF (2022):Wissenschaftseinrichtungen. Available at: www.bundesbericht-forschung-innovation.de/de/Ubersichtskarte-1791.html?

Brandt, M (2023) Wie impfskeptisch ist Europa? Available at: https://de.statista.com/infografik/31377/befragten-die-wenig-vertrauen-in-die-sicherheit-von-impfungen-haben/

Bundestag (2023) Die Grundrechte. Available at: www.bundestag.de/gg/grundrechte

Destatis (2023) Ausgaben für Forschung und Entwicklung im Jahr 2021 auf neuem Höchststand. *Pressemitteilung Nr. 089 vom 8*. März. Available at: www.destatis.de/DE/Presse/Pressemitteilungen/2023/03/PD23_089_218.html.

Fitz Herbert, A. L., Rivera, R., Ketelhohn, F., & Elsdon-Baker, F. (2023) 'Conflict Narrative, Stigmatisation and Strategic Behaviour of Religious Scientists in the Argentinean Scientific Field'. *Acta Sociologica* 67 (2): 149-163. Available at: https://doi.org/10.1177/00016993231173292

Funk, C., Tyson, A., Kennedy, B., & Johnson, C. (2020) *Biotechnology Research Viewed With Caution Globally, but Most Support Gene Editing for Babies to Treat Disease*. Pew Research Center. Available at: www.pewresearch.org/science/2020/12/10/biotechnology-research-viewed-with-caution-globally-but-most-support-gene-editing-for-babies-to-treat-disease/

Gosschalk, K., Piggott, L., Gray, H., Riley, J., & Elsdon-Baker, F. (2023) *Science and Religion Exploring the Spectrum: A Multi-Country Study on Public Perceptions of Evolution, Religion and Science*. YouGov. Available at: https://scienceandbeliefinsociety.org/wp-content/uploads/2023/12/UoB-YouGov.-Science-and-Religion-Survey-Report.-8-Dec-2023-.pdf

Gould, S. J. (1997) 'Nonoverlapping Magisteria'. *Natural History*, 106 (March), 16–22.

Gülker, S. (2015) *Wissenschaft und Religion: Getrennte Welten?* Bundeszentrale für politische Bildung. Available at: www.bpb.de/apuz/212823/wissenschaft-und-religion-getrennte-welten?p=all

Jones, S. H., Elsdon-Baker, F., Catto, R., & Kaden, T. (2020) 'What science means to me: Understanding personal identification with (evolutionary) science using the sociology of (non)religion'. *Public Understanding of Science*, 29(6), 579–596. Available at: https://doi.org/10.1177/0963662520923110

Lehmann, K., & Kock, M. (2002) *Kirchen bitten um klares Votum für Schutz des Menschen von Anfang an*. Deutsche Bischofskonferenz. Available at: www.dbk.de/presse/aktuelles/meldung/kirchen-bitten-um-klares-votum-fuer-schutz-des-menschen-von-anfang-an

Kamann, M. (2013) *Debatte um Kreationismus an Bekenntnisschulen*. Welt. Available at: www.welt.de/politik/deutschland/article115215588/Debatte-um-Kreationismus-an-Bekenntnisschulen.html

Kinzig, W. (2009) *Kirche in Deutschland. Stellung in der modernen Gesellschaft*. Bundeszentrale für politische Bildung. Available at: www.bpb.de/izpb/25173/stellung-in-der-modernen-gesellschaft?p=all

Müller, O., & Pollack, D. (2022) 'Religiosität, gesellschaftliche Einstellungen und politische Orientierungen in Deutschland'. *Zeitschrift für Religion, Gesellschaft und Politik/Journal for Religion, Society and Politics*, 6(2), 669–695.

Pickel, G. (2018) *Säkularisierung, Pluralisierung, Individualisierung: Entwicklung der Religiosität in Deutschland und ihre politischen Implikationen*. Bundeszentrale für politische Bildung. Available at: www.bpb.de/apuz/272103/entwicklung-der-religiositaet-in-deutschland-und-ihre-politischen-implikationen

Pieper, D. (2019) *Immer weniger Deutsche glauben an Gott*. Spiegel. Available at: www.spiegel.de/panorama/gesellschaft/christen-an-ostern-immer-weniger-deutsche-glauben-an-gott-a-1263630.html

Pollack, D., & Müller, O. (2013) *Religionsmonitor. Verstehen, was verbindet. Religiosität und Zusammenhalt in Deutschland*. Bertelsmann Stiftung.

Seitz, N. (2020) *Wenn der Staat Religion und Freiheit vereinbaren muss*. Deutschlandfunk. Available at: www.deutschlandfunk.de/das-kruzifix-urteil-wenn-der-staat-religion-und-freiheit.724.de.html?dram:article_id=476828

Statista (2011) *Religionszugehörigkeit der Deutschen nach Bundesländern*. Statista. Available at: https://de.statista.com/statistik/daten/studie/201622/umfrage/religionszugehoerigkeit-der-deutschen-nach-bundeslaendern/

Statista (2013) *Umfrage in Deutschland zur Vereinbarkeit von Religion und Wissenschaft 2012*. Statista. Available at: https://de.statista.com/statistik/daten/studie/277451/umfrage/meinung-in-deutschland-vereinbarkeit-von-religion-und-wissenschaft/

Statista (2025) *Religion in Deutschland und weltweit*. Statista. Available at: https://de.statista.com/themen/125/religion/#topicOverview

Statista (2022b) *Ausgaben für Bildung, Forschung und Wissenschaft in Deutschland bis 2020*. Statista. Available at: https://de.statista.com/statistik/daten/studie/157733/umfrage/ausgaben-fuer-bildung-forschung-und-wissenschaft-in-deutschland

Tagesschau (2017) *Braucht Deutschland eine Impfpflicht?* Tagesschau. Available at: www.tagesschau.de/faktenfinder/inland/impfgegner-103.html

Wissenschaft im Dialog (2018) *Wissenschaftsbarometer 2018*. Wissenschaft im Dialog. Available at: www.wissenschaft-im-dialog.de/projekte/wissenschaftsbarometer/wissenschaftsbarometer-2018/

Woratschka, R. (2008) *Kirchen streiten um Stammzellen*. Tagesspiegel. Available at: www.tagesspiegel.de/politik/kirchen-streiten-um-stammzellen/1163834.html

7 When Evolution Is Not a Problem

Exploring Religion and Science Debates in Contemporary Spain

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Introduction

The debate surrounding the relationship between religion and science represents a crucial and enduring theme in our contemporary world. However, it is essential to recognize that this debate takes on distinctive forms in various global contexts. Understanding the intricate dynamics of complementarity, conflict, or indifference between science and religion necessitates thoroughly examining the specific cultural, political, and social conditions that shape the contours of this relationship. Likewise, it requires adopting a grounded approach capable of disentangling the multiple dimensions of both science and religion, elucidating how these two constructs operate within concrete settings.

This chapter embarks on an exploration of the evolution debate in modern Spain, positioning it within a comprehensive framework that examines the multifaceted interaction between religion and science. The chapter unravels the complex interplay between ideological and religious legacies, prevailing notions of secularization, and ingrained preconceptions about diverse social groups such as particular religious traditions, ethnic or national minorities, and professional categories. Methodologically, the chapter adopts a multidimensional approach, weaving together insights from interviews, focus groups, and analyses of media and parliamentary discourse. This multifaceted methodology yields a richer and more nuanced interpretation of the data gathered.

At its core, this chapter advances the argument that, in Spain, the theory of evolution is not a contentious issue. Unlike certain global contexts, the scientific theory of evolution enjoys widespread acceptance and endorsement by the majority of the population. In a recent study conducted by YouGov (2023) for the 'Science and Religion: Exploring the Spectrum' (SRES) project, 77% of respondents in Spain report the greatest level of ease with accepting evolutionary science, and only 6% admit to creationist views. Furthermore, it resonates within the media landscape and holds a prominent place in parliamentary discussions. Additionally, concepts associated with evolution

DOI: 10.4324/9781003476580-9

have infiltrated popular culture, becoming entrenched in the collective consciousness of the country.

This does not, however, necessarily mean that the relationship between 'religion' and 'science' is universally perceived as nonconfrontational in the Spanish context. Our interviewees suggest that this is a potentially contentious issue and assert that, under specific conditions and with the participation of certain actors, a controversy might arise. Generally, the potential upsurge of a conflict is considered to be relegated to the domain of the 'others'. These 'others' are frequently stereotyped as less educated or less inclined towards secularism, which is often associated with the potential for discord between these two realms. Minorities and individuals in societies with lower levels of secularisation are commonly depicted as being 'backward' in this context. Intriguingly, although perceived conflict is absent, individuals tend to avoid discussing these topics with colleagues or peers, reserving such conversations for intimate settings to sidestep potential confrontation. In other words, the analysis of the interviewees' discourses reveals that, despite the absence of issues with the theory of evolution, there is the perception of an underlying tension between 'science' and 'religion', which the interviewees perceive as potentially 'dangerous'.

Likewise, within the realm of media discourse, discussions about religion and science remain serene when focused on evolution. However, contentious dynamics emerge when addressing specific subjects that serve as symbolic markers, acting as catalysts for broader ideological struggles (Cornejo-Valle and Griera, 2022). Notably, gender and reproductive issues, such as abortion more recently, gender reassignment procedures (Cazarin et al., 2025), and euthanasia, have emerged as central themes shaping the public debate about science and religion. Far-right moral entrepreneurs actively engage the public and bring these topics to the fore, framing them within the dichotomy of 'life culture' and 'death culture' (García Martín et al., 2023) and amalgamating scientific, religious, and cultural discourses to advance their political agenda. This chapter delves into these intricate dynamics, illuminating the pervasive biases and their substantial impact on the perception of the religion–science debate in Spain.

Context: Science, Religion, and Secularization in Spain

Spanning 505,990 square kilometres, with a population of 47.4 million, Spain ranks as the fourth-largest European nation, albeit one with an average population density of 94 people per square kilometre. Historically, Spain's influence extended globally as a prominent Catholic empire from the sixteenth to the early nineteenth centuries. In 1812, Spain established its first constitution under a monarchic government, transitioning through two brief republican periods. While remaining neutral during World Wars I and II, Spain was later marked by a devastating civil war (1936–1939) and the ascendancy of General Francisco Franco's dictatorial regime (1939–1975). During this

period, peripheral nationalisms, communism, and atheism were identified as significant threats to the governing system. Operating within a structure of 'national Catholicism', the Catholic faith became deeply embedded in education and social life, while regional languages and cultural identities faced suppression.

The dictator, Franco, died in 1975, and, amidst a strong political and social mobilization, the country started a democratic transition. Spain has evolved into a parliamentary constitutional monarchy, home to a bicameral parliament called the General Courts, consisting of the Senate (265 seats) and the Congress of Deputies (350 seats). This political landscape has often alternated between two main parties—the Popular Party on the right and the Spanish Socialist Party on the left. Spain's journey to democracy ushered in rapid economic modernization and EU membership in 1986. The country's modernization, paired with a strong secularization and the rapid decline of membership and participation in the Catholic Church (Pérez-Agote, 2010). In addition, the Church's involvement in the dictatorship accentuated the discrediting of the institution within Spanish society (Díaz-Salazar, 2009). Likewise, as Linz (1980) stated, Spanish elites committed to not raising the religious flag and keeping the religious–secular cleavage low profile to protect the Spanish democracy and attain political stability. Furthermore, as scientific progress was made in the fields of medicine and biology, the church typically refrained from openly opposing medical innovations (Herrero Sáenz, 2023) and evolutionary science, in keeping with the Vatican's position on the issue since 1950 (Blancke, 2013).

In the mid-2000s, the election of José Luis Zapatero from the Spanish Socialist Party catalyzed social movements addressing gender, particularly LGBTIQ+ and women's rights. The election of Zapatero became a turning point since he and his administration ushered in a series of more socially progressive policies. These included regulations pertaining to abortion and same-sex marriage, as well as advancements in medical procedures such as assisted reproductive technologies and stem cell research (Chaqués Bonafont and Palau Roqué, 2012). These policy changes not only widened the divide between religious and secular groups but also laid the groundwork for the political activation of far-right religious figures. Notably, in 2004, the Catholic hierarchy and associated organizations and movements took a prominent role in leading a conservative demonstration, marking the first time such a mobilization had occurred since the end of the dictatorship in the late 1970s (Griera, Martínez-Ariño and Clot-Garell, 2021).

From that point forward, a new mobilization cycle was set into motion. A notable instance was the 15-M Movement in 2011, which articulated calls for profound political reforms, expressed opposition to austerity measures, and advocated for increased prospects for the younger generation, all transpiring during a severe economic downturn. In recent years, the push for Catalonia's independence has gained momentum, leading to societal tensions and clashes with the Spanish central government in 2017. Furthermore,

far-right ideologies have secured political representation through the emergence of the VOX party, which espouses highly conservative stances on moral issues.

Regarding the state–church regime, the Spanish Constitution of 1978 safeguards the right to ideological and religious freedom and prohibits discrimination based on beliefs or convictions (Articles 14 and 16). While religion does not possess a state character, the Constitution allows for agreements with religious confessions, notably the 1979 bilateral agreement with the Holy See, providing the Catholic Church with specific rights and benefits.

In terms of the religious landscape, Spain has transformed significantly in recent decades. The historical dominance of the Catholic Church, spanning over five centuries, has given way to a more intricate religious scenario marked by secularization and the rise of religious diversity, accelerated by immigration flows. Statistics from the last two decades indicate that Catholicism declined by over 20%, with approximately 60% of the Spanish population identifying as Catholics in 2021. A significant portion (40%) considered themselves non-practicing Catholics, and non-believers and atheists accounted for 33% of the population. The experience of religion has also shifted, with 73% of Spaniards declaring themselves as believers and more than 70% identifying as Catholic. Nevertheless, 53.4% of Spaniards consider religion as of little or no importance in their lives (Bescansa and Jerez, 2013: 9).

Existing data highlights a significantly low reputation for the Spanish Catholic Church, with 47% of Spaniards expressing a lack of trust in the institution. In contrast, Spain currently holds a favourable public view of science. The 2020 Survey of Social Perception of Science and Technology (PSCT) reveiled that only 12.9% of respondents believed that the detriments of science and technology outweighed the benefits. Professions linked to science, such as medical professionals, scientists, educators, and engineers, received high levels of trust and esteem, scoring above 4 on a scale of 1 to 5. Likewise, our 2023 YouGov study in Spain showed 90% of respondents placed greater trust in established scientific or applied research disciplines, while only 10% of Spanish think that science has a negative impact on society, which is lower than in the UK, US, Germany, and all other countries we studied. Nevertheless, challenges persist, particularly concerning the impact of science on the environment, freedom, and solidarity, as highlighted by Torres-Albero and Lobera (2017). While the Spanish population widely acknowledges the contributions of science in enhancing quality of life, health, and economic progress, apprehensions persist regarding its implications for other societal aspects.

The most recent research on the acceptance and knowledge of evolutionary theory, conducted by Gefaell et al. in 2020, examines the levels of acceptance among third-year undergraduate students. Participants involved – 978 participants for acceptance (nMATE) and 981 participants for knowledge (nKEE) – were drawn from students across four academic degree programs: Chemistry, English, History, and Biology, representing ten different

universities. The study's findings reveal that the overall acceptance of evolution is relatively high, with 87.2% of participants expressing acceptance. However, the knowledge of evolutionary theory is moderate, with an average score of 5.4 out of 10. Notably, there are significant variations in knowledge levels across different academic programs, with Biology students exhibiting the highest knowledge, followed by Chemistry, History, and English students. Additionally, knowledge levels also differed among the participating universities, ranging from a score of 4.71 to 5.81, thus showing that the coexistence of different academic cultures gives different weight to knowledge of evolution.

Setting the Case: Exploring Science–Religious Debates in Spain

As part of the SRES2 project, our research embarked on a methodological endeavour with the primary aim of firmly situating our investigation within the complex sociological context of Spain. The interview participants were drawn from two key demographics – scientists (n = 20) and the general population (n = 40) – providing us with diverse insights into the multifaceted relationship between evolutionary theory and the broader intersection of religion and science. Our initial outreach to interviewees was executed through two distinct channels: (1) the deployment of an online survey and (2) direct email communication with scientific associations. These combined strategies enabled us to establish contact with our initial cohort of interviewees, with subsequent participants recruited through snowball sampling.

In parallel, we organized two focus groups, each catering to a distinct population subset. The first focus group brought together educators, while the second assembled members of religious minorities. These two focus groups were instrumental in affording us a more comprehensive and nuanced understanding of the pertinent issues under examination. After both interviews and focus groups were transcribed, researchers used NVivo software for a thorough thematic analysis. This ensured a systematic and reliable approach to interpreting and synthesizing the data.

To further ensure consistent coding and reliable findings, researchers independently coded the data in NVivo before coming together to discuss their findings. This collaborative discussion allowed them to compare their coding decisions, address any discrepancies, and ultimately refine the coding framework. This process strengthened the research methodology and led to a more nuanced understanding of the participants' experiences.

Alongside this interview research, we carried out a media and parliamentary review. This review involved the collection and analysis of parliamentary debates held in the Chamber of Deputies (Lower House) and press articles sourced from the ten most widely read news platforms in Spain, spanning the period from 2004 to 2020.

Specifically, for the media and parliamentary review, we curated the parliamentary debate records available on the Spanish Parliament's website and

press articles from the top ten news platforms in Spain, utilizing a specialized news database and search engine. In the case of parliamentary debates, we focused exclusively on those that took place within the Chamber of Deputies, as it consistently serves as the originating chamber for legislative initiatives. Our analysis honed in on debates pertaining to the legislative function of the Parliament, including considerations of laws, discussions on voting for amendments, and the introduction of new legislation. Debates in which the parliament exercised its oversight and impetus functions were excluded from our analysis.

Regarding press articles, our scrutiny was confined to those published and produced within Spain from 2004 to 2020, ensuring a manageable sample size. Our literature review utilized a two-step approach to ensure a comprehensive yet focused selection of relevant articles. In the first stage, researchers prioritized articles that addressed the core themes of our research question. These themes included (1) implicit or explicit assumptions about the compatibility (or incompatibility) between science and religion in general; (2) the specific compatibility (or incompatibility) between evolutionary science and religion; and (3) discussions surrounding social, cultural, political, or medical events that sparked broader discourse on the relationship between religion and science. The combination of search parameters yielded a total of 770 articles, encompassing some duplicates and a small number of unrelated articles, which were manually removed, ultimately resulting in a refined sample of $N = 323$. Within this sample, a subsample (A) was then derived, comprising 62 articles that explored debates and discussions concerning the compatibility of science and religion in Spain based on contemporary events.

Discussion: Understanding the Science–Religion Relationship Beyond Evolutionary Science

Why Is Evolution Not a Problem in Spain?

Our research reveals a distinct absence of public discourse about evolution within public discussions of the science–religion relationship. Interviewees from the general public emphasize that the theory of evolution constitutes an integral component of the mandatory school curriculum and has never incited conflict. Moreover, in numerous instances, researchers' inquiries about evolution have been met with puzzlement by interviewees, appearing incongruous within the Spanish context. Frequently, our interviewees have expressed astonishment at the nature of our research. The following quotations exemplify the prevailing tone and content of the majority of the responses collected:

> Darwinism is consolidated [...]. Darwinism is consolidated because there is no strong stance on the part of the church to fight against it. The Spanish

> church, as a result of the dictatorship, has been losing its capacity to influence.
>
> (Josep Rodas, Male, 53 years old, agnostic, science teacher in a Christian school)

> I think that, at least to date, I don't perceive that there is any rejection or resistance, but I don't think it is an issue that is part of people's thinking in general. It is taken for granted that it is there, but as a label, I don't think it generates rejection, but I don't think there are supporters or detractors either. It is an issue that is not part of the debate.
>
> (Fabrizio Andre, Male, 57 years old, atheist, university teacher and researcher in social sciences)

Almost none of our interviewees identified as creationists or denied the theory of evolution entirely. However, it is important to acknowledge that we found doubts about evolution among some evangelicals and Jehovah Witnesses followers, such as the following: 'Well, we do not come directly from the monkeys'. At the same time, doubts were frequently qualified or partial, as in the following cases:

> I mean, I don't believe that we come from animals or cells, I don't consider myself an evolutionist, but [...] I've never said what term I am, either. I say again that I believe what the Bible says, and that's it.
>
> (Gemma, female, 30 years old, Jehovah's Witness, graphic designer)

> Perhaps I would identify more with a Darwinian view. What I just said about I don't agree with Darwin on certain things, but I do think that perhaps it is the most accurate theory.
>
> (Fernando, male, 21 years old, agnostic, student in sociology)

However, although there is a lack of a public debate on evolution, this does not mean that this is an absent topic. Alongside school textbooks and academic curricula, biological evolution has been the object of examination in TV shows, cartoons (Domínguez and Mateu, 2013), and documentaries, as well as used in advertising. In the case of Figure 7.1, the public transport company of Catalonia signals civic values as good manners or appropriate behaviour in public transport as a result of human evolution.

Therefore, there is some presence of ideas emerging from the evolutionary science in the public sphere but mostly found as a 'cultural trope' expressed through taken-for-granted representations of the origins of humanity. Consistent with this, most interviewees have a simplified idea about biological evolution, as illustrated by Josep, a 21-year-old male medical student adept of Buddhism: 'If I hear the word evolution, on the one hand, I think

Figure 7.1 Ferrocarrils de la Generalitat de Catalunya public notice.

about the typical little monkey becoming human. That's the first thing that comes to my mind'.

It is important to note that the general public's knowledge of Darwin's theory of evolution by natural selection was often limited to the ape–human connection, in some cases mixed up with Lamarck's theory of inheritance of acquired characteristics. The lack of personal interest in the matter is a crucial aspect raised by our general public as they see evolution as something that doesn't affect their day-to-day lives. Furthermore, the integration of evolution into the public sphere does not seem to be entwined with religion.

Three key factors emerge when examining the reasons behind why the theory of evolution remains unproblematic in Spain. Firstly, the delayed process of secularization and the advocacy for modernization are notable influences. Spain's belated secularization stands out as a significant feature within its cultural and political landscape. The contentious discussions between religion and science were central to public, media, and parliamentary deliberations between progressive and conservative factions during the initial decades of Spain's twentieth century. However, the emergence of the dictatorship in the late thirties, supported by the Catholic Church, quelled these debates and imposed a religious perspective on public life.

The transition to democracy in the late seventies changed this scenario, and public debates over these issues were made possible again. However,

according to current literature, the intense secularization process experienced by the Spanish society from the seventies, coupled with the growing public legitimacy of science, reduced the emergence, relevance, and scope of debates between religion and science. This late secularization laid the foundation for the subsequent positive perception of science and evolutionary theory. In the post-Franco era, Spain made significant strides in embracing modernization. Modernizing institutions, such as science, healthcare, and education, were deemed key agents for the consolidation of democracy and the facilitation of social mobility. This drive towards modernization brought a deep appreciation for scientific progress, particularly in evolutionary biology.

Second is the existence and dissemination of a strong archaeological culture. Spain's rich archaeological heritage has been a cornerstone of its cultural identity. Notably, the Atapuerca archaeological site, UNESCO's World Heritage Site, and the Museum of Human Evolution, one of the most important paleontological museums in the world, have captured the nation's imagination. These findings have provided insights into human evolution and contributed significantly to the credibility of scientific theories. As these discoveries captivated the public's attention, they bolstered trust in the scientific community and its endeavours.

Third, there is a lack of prominent creationist movements. Spain distinguishes itself from certain other Western countries, notably the US and Australia (see Chapter 5 and Chapter 10), by the relative absence of influential religious groups actively promoting creationism. While there is an awareness of creationist beliefs, especially those fostered by recent political landscapes in the United States or Brazil, these individuals are often described as 'fundamentalist' and 'backward' by Spanish publics who consider themselves more rational. It is also worth noting that anti-evolution movements within the Catholic Church are weak and hold little sway against papal authority in what has been echoed in other national contexts such as England (Riley 2019).

Science–Religious Divide Beyond Evolution Science

While most of the interviewees assert that the religion–science debate is not problematic for them, they acknowledge that 'others' deemed to be more religious or anti-religion might find it contentious. In this way, there's a recognition that the debate has the potential to be problematic, primarily for minorities (migrants, LGBTIQ+ people, Roma people, and racialized groups), far-right voters, and those living in less secularized countries.

As the following quotations demonstrate, most interviewees tend to highlight that the contemporary debate often occurs in abstract terms, with individuals perceiving religion and science as distinct and uniform entities that are inevitably in opposition. However, intriguingly, most interviewees distance themselves from this stance, emphasizing that, although a significant portion of the population views religion and science as opposites, they do

not share this perspective. In this regard, for instance, Pere, a 67-year-old Catholic, states:

> Science and religion have always been at loggerheads, they have been contradictory, it seems to religion that the more science advances, the more the church's business is being ruined as an institution. ... . Personally, I think they can be complementary... .
>
> (Pere, 67 years old, practicing Catholic, retired)

In a similar vein, Omar, a Muslim engineer, relates that this is a recurrent stereotype that good scientists might not be religious:

> [A]lthough the most common trend that I see, at least in my environment and on TV and what I read, seems that no, that they are always trying to oppose them and that a good scientist cannot be a believer because that is contradictory and it doesn't seem contradictory to me.
>
> (Omar, male, 32 years old, Muslim, engineer)

Scientists express that in daily life, debates with peers, family members, or friends involving science and religion run the risk of ending up in arguments. The testimony of Pedro, a Catholic doctor, is very illustrative of this issue. He stated:

> [I]n the scientific field, when they find out that you are religious, it is very funny because some people say, 'that's impossible'.
>
> (Pedro, male, 46 years old, practicing Catholic, medical supplies sales representative)

In some cases, these stereotypes turn out to be perceived as a form of discrimination or disqualification from the scientific debate. In this regard, Juan, a biologist and evangelical pastor, states:

> Yes, sometimes the fact of being religious automatically disqualifies you, 'He is a biologist who speaks against evolution, ah!, but he has been an evangelical pastor or is a member of an evangelical church; therefore, if he is religious, he has nothing to say about science', this tendency exists, unfortunately.
>
> (Juan, male, 69 years old, evangelical pastor/retired secondary school teacher)

In this interview Juan, who supports the theory of intelligent design, explained the importance of looking at the relationship between science and religion as complementary fields. His views echo a prevalent observation in the analysis of the interviews reflecting the staunch defence of this complementary relationship and emphasizing their distinct domains of truth. Consequently,

a noticeable pattern emerges: the compartmentalization between these two realms:

> Although there is often an attempt to superimpose these two aspects, science, and spirituality, I don't think they are things that necessarily clash because each has its own field.
>
> (David, male, 52 years old, Anglican, administrative officer/Deacon of the Spanish Reformed Episcopal Church)

Science–Religious Debate in the Private Sphere

The analysis of interviews and focus groups indicated that, while the theory of evolution is perceived as non-problematic, the broader relationship between religion and science is viewed as potentially contentious. This area is believed to have the potential to lead to conflict and controversy under specific circumstances, yet the interlocutors portray it more as an anticipation of potential conflicts rather than citing actual examples.

Scientists, for instance, were unable to point out moments of confrontation or conflict they faced publicly or in their personal lives that involved opposing religious and scientific arguments. They justified such lack of conflict due to the cultivation of key values of respect and trust. In other words, most interviewees agree that to talk or discuss science and religion is a conversation that belongs to the private sphere, with people close enough to know their positions in advance. In general terms and due to the strong and late secularization, religion is considered a private matter in Spain and not of a public domain (Pérez-Agote, 2012).

In our sample of scientist interviewees, religion is often referred to as a matter of practicing one's 'intuition', a 'religious sentiment', or 'the sentiment of being religious' as emotive experiences. This affective dimension emerges from their religious rituals in the past, such as singing Christian songs during Christmas and other religious celebrations of a 'lived religion' (Ammerman, 2021). In other words, most of our interviewees recalled having some degree of engagement with religion at school or in their families. These experiences were deeply connected to childhood memories and the quality of affective bonds they established with their parents, siblings, and grandparents. At the same time, they framed religious practices and rituals like bible reading, bible school, or going to the masses as not remarkable or relevant to their relationship with religion. For them, these experiences were deprived of feelings or purpose and existed as a form of social practice to comply with cultural expectations. As stated by Jaime and Manuel, both postdoctoral researchers:

> Not to hide, but if they know your point of view and if you tell me that God exists and I tell you, 'For me science is this …' then why are we going

> to talk about this if we know that we are not going to reach an agreement [...], we'd better talk about something else.
>
> (Jaime, male, 38-years-old, non-religion, veterinarian)

> I have always tried to avoid these kinds of conversations. Maybe it is a failure or a defect to try to avoid those conversations, but I start from the idea that I am not going to convince the other person and the other person is not going to convince me, so I try to avoid those kinds of topics of conversation.
>
> (Manuel, male, 43-year-old, agnostic, biologist)

The conversation of religion and science is perceived as potentially conflict-ridden, and the confrontation is actively avoided. However, when asked about the specifics, and as we already said, the interviewers do not report any incidents in this area, but they 'anticipate' that this might happen if they were not cautious. Therefore, when interacting, they have a preventive attitude based on a future coordination, a protection (Tavory and Eliasoph, 2013) based on imagination and preconceptions about what might happen:

> So maybe in that sense, people keep to themselves so as not to be stereotyped, and that is a possibility. It's also that people tend to be reserved about these more personal matters ..., here it is always said that if you want to get along, the best thing to do is not to talk about politics, religion or football, because that is where differences and arguments always arise.
>
> (Isabel, female, 48-years-old, Atheist, neurobiologist)

Yet some of our scientific interviewees who have lived in other countries such as the UK, Cape Verde, or Peru mentioned having had a different experience in which colleagues would talk openly about their religious beliefs. These contexts are also framed as more religiously diverse and therefore allowing opportunities to talk more about religion.

Religion and Science Debates in the Public Sphere

In media analysis, discussing the relationship between religion and science in the context of evolution is generally straightforward. However, they get complicated when these discussions touch on broader ideological conflicts, especially regarding issues like abortion, assisted reproductive technologies (Cornejo-Valle and Griera, 2022) and transgender rights (Cazarin et al., 2025). The introduction of the 'law of abortion' has led to a series of media articles exploring the concept of life from both scientific and religious viewpoints. In these discussions, religious figures often use natural laws and scientific evidence to support their stance against the law. This trend is

increasingly noticeable among far-right moral entrepreneurs who label these issues as the 'life culture' and the 'death culture' (García Martín et al., 2023).

The media's interest in these topics varies based on the actions of right-wing political parties that consistently threaten to overturn recently passed abortion laws. Each time such a move is made, it leads to more active involvement of religious leaders, especially from the Catholic Church, who support the political efforts to repeal the law. Conversely, some articles portray politicians and religious figures as stirring up socially harmful ideological threats that endanger Christian values, particularly in relation to feminist movements.

When it comes to regulating scientific matters, such as parliamentary discussions on the Draft Law on Assisted Human Reproduction Techniques or the Biomedical Research Law, there has been limited participation. The debate has mainly focused on announcing proposed changes. This lack of enthusiasm is also reflected in the minimal coverage by the press, which rarely mentions these topics over the years.

In this way, debates on contentious issues, especially those related to gender and sexuality, arise as side effects of disputes over political influence at local and national levels. Various scientific and religious elements are used as symbolic resources to connect and convey broader political discussions, goals, and moral projects. It's not just a regular debate between science and religion; instead, science and religion serve as symbolic battlegrounds that influence media and political discourse.

This perspective is also evoked in the interviews with scientists and the general public. Overall, they point out that the relationship between science and religion is mostly 'stable' or understood separately as a general rule but is disturbed by politicians or political debates over the legislation of specific issues such as gender, sexuality, and regulations concerning life or death.

> I don't think it is a recurring debate, I think it is a debate that has peaks. For example, when the transphobic 'Hazte Oír'[1] bus came out, there were debates on gender issues and also with the issue of abortion and its regulation ..., but I think it is not a debate that is constantly present in society, but when issues are legislated ... , the debate arises and it is cyclical because it always comes back and is always in conflict
>
> (Jordi Olivan, male, 26-years-old, atheist, master's student)

> [E]very time a law is made that seeks to regulate life, both at the beginning, i.e. abortion, or extreme neo-natalism, and at the end, i.e. the death penalty, capital punishment, euthanasia, that is where the real debates take place and where there is a kind of lively dialectic.
>
> (Jon Robles, male, 29-years-old, non-practicing Catholic, doctoral student)

These struggles are powered by a tendency among ultra-conservative Catholic world to organize themselves as non-governmental organizations and use these issues as Trojan horses to influence their moral projects (Griera, Martínez-Ariño and Clot-Garell, 2021), taking a direct confrontational approach and presenting science as an ally.

In parliament, science and medicine often feature in discussions related to socially impactful and media-attractive issues, such as the legislation on same-sex marriage or abortion. Notably, there's a clear absence of religious arguments or reasoning in parliamentary debates. This avoidance of religious matters in parliament might align with the constitutional principle of secularism. However, upon observing their activities in the media, it's evident that some politicians actively engage in religious events and articulate religious values in public speeches and across diverse media platforms.

> I still think that if your religion does not allow you to perform abortions, maybe you should not be a doctor who performs abortions and you should dedicate yourself to something else ... specifically medicine ... . [Y]ou are a doctor and you have a Hippocratic oath, which for me goes above your individual beliefs and if your individual beliefs go above this, in my opinion, you should stop being a doctor, for me, or a pharmacist, there are pharmacists who do not want to sell condoms because of moral issues... .
>
> (Alvaro Lopez, male, 40-years-old, atheist, communication professor)

Moreover, the use of 'science' as an argument to validate one's own arguments is frequently used in the legislative debate. However, no explicit mention or reference is made to the type of science or the institution that it represents. 'Science' and 'medicine' appear as authority figures that validate biologist positions, which are found with the arguments of 'nature' and 'natural law'. Also, we find the use of concepts such as cultural Marxism, communism, or the loss of the essence of Spanish culture, referring to Christianity without naming it.

> Let's see, I would separate one thing from the other. Let's see, religion is a question of faith, and we can't get into that. That is the truth that is part of your personal, individual life. I don't go there. I believe that the truth that affects us all as a society advances towards a fairer society, a more egalitarian society, is the truth that comes fundamentally from science. I separate these two planes.
>
> (Catalina, female, 58-years-old, atheist, social science professor)

Another example in the field of education policies is the political concern with the content of school textbooks. This theme has been largely covered by media articles either when related to the teaching of religion (the Bible, the history of Christianity, Catholic symbols) or gender-related content

(sexuality, LGBTIQ+, gender equality). Both subjects have been the object of discussion in the media through statements, interviews, or special issues framing representatives of different ruling parties and among religious leaders, experts in education, and social movements. While controversies as such frequently centre on the science and religion debate, a deeper examination reveals a more intricate element where morality is key element, as evidenced by John Evans (2018). In his work *Morals Not Knowledge*, Evans posits that public clashes often stem from anxieties surrounding the ethical implications of scientific advancements rather than a fundamental rejection of the factual content itself. Translated to the domain of education policy, debates regarding religious content or LGBTIQ+ inclusion may be rooted not in a denial of scientific knowledge but rather in concerns about which kind of moral values are being transmitted in a given context.

Conclusion

In conclusion, the Spanish context reveals that the perception of science and religion tends toward complementarity or nuanced negotiation, even if the spectre of conflict sits in the background as a problem in other times or geographical contexts. While normative perspectives may depict a dichotomy between the two realms, sociological observations highlight a more nuanced reality. In their daily lives, people tend to navigate the intersections of science and religion with subtlety and pragmatism. Scientists, in particular, recognize that these belief systems address distinct and compartmentalized domains of truth, coexisting harmoniously as long as they maintain their respective boundaries.

It is essential to underscore that the demarcations between science and religion are not rigid or permanent; they are contingent and continually under negotiation. The boundary separating these domains represents a space of tension and conflict, evolving over time and giving rise to complex and polarized debates, especially in an era of secularization (Gülker, 2019). Notably, various elements from both the scientific and religious realms serve as symbolic resources, contributing to broader ideological and political agendas in the public sphere. These debates are not abstract discussions of religion and science but revolve around specific issues, becoming focal points for social tensions, political aspirations, and moral projects. Science, politics, and morality intersect in these controversies, encompassing cultural and emotional dimensions, often with significant gender-related implications.

Looking ahead, future research could explore topics such as gender and queer perspectives in these debates; the utilization of science in the public domain, including pseudoscience and spirituality; and the transnational dynamics and exchanges between neoconservative religious movements engaged in these discussions.

Note

1 HazteOír (Spanish for "Make Yourself Heard") is a right-wing Catholic group that has garnered media attention in the past decade for its contentious anti-trans campaigns. Perhaps the most controversial campaign involved deploying buses and banners emblazoned with messages that challenge gender identity, specifically targeting transgender individuals and the issue of gender-based violence. The group's buses and banners have appeared in major cities throughout the country. HazteOír also has an international branch called Citizens Go, which has spearheaded similar campaigns in the United States, Mexico, and the United Kingdom.

References

Ammerman, N. (2021). *Studying Lived Religion. Contexts and Practices*. New York: NYU Press.

Blancke, S. (2013). Catholic responses to evolution. *Journal of Religion History*, 37, 353–368. https://doi.org/10.1111/1467-9809.12054

Bescansa, C.; Jerez, A. (2013). *II Encuesta sobre opiniones y actitudes de los españoles ante la dimensión cotidiana de la religiosidad y su gestión pública*. Madrid: Observatorio del Pluralismo Religioso.

Chaqués Bonafont, L.; Palau Roqué, Anna M. (2012). From prohibition to permissiveness: A two-wave change on morality issues in Spain. In *Morality Politics in Western Europe*. Edited by Isabelle Engeli, Christoffer Green-Pedersen and Lars Thorup Larsen. London: Palgrave Macmillan, pp. 62–87.

Cazarin, R., Warren, J. E., Catto, R., & Griera, M. (2025). Transgender bodies as battlefields in science and religion: A cross-cultural media analysis. Current Sociology, 0(0). https://doi.org/10.1177/00113921251331227

Cornejo-Valle, M.; Griera, M. (2022). «Proyectos morales y nuevas subjetividades religiosas en el espacio público. A modo de presentación». *Papeles del CEIC*, vol. 2022/1, presentación, pp. 1–13.

Díaz-Salazar, R. (2009). *El factor católico en la política española: del nacionalcatolicismo al laicismo*. Madrid: PPC Editorial.

Domínguez, M.; Mateu, A. (2013). Spanish Darwinian iconography: Darwin and evolutionism portrayed in Spanish press cartoons. *Public Understanding of Science*, 22(8), 999–1010. https://doi.org/10.1177/0963662512442050

Evans J. H. (2018) *Morals Not Knowledge: Recasting the Contemporary U.S. Conflict between Religion and Science*. Oakland, California: University of California Press.

García Martín, J; Delgado-Molina, C.; Griera, M. (2023). "I'm going to do battle… I'm going to do some good". Biographical trajectories, moral politics, and public engagement among highly religious young Catholics in Spain and Mexico. *Sociology Compass*, 17(7), e13091. https://doi.org/10.1111/soc4.13091

Gefaell, J; Prieto, T; Abdelaziz, M; Álvarez, I; Antón, J; et al. (2020). Acceptance and knowledge of evolutionary theory among third-year university students in Spain. *PLOS ONE*, 15(9), e0238345. https://doi.org/10.1371/journal.pone.0238345

Griera, M.; Martínez-Ariño, J; Clot-Garrell, A. (2021). Banal catholicism, morality policies and the politics of belonging in Spain. *Religions*, 12(5), 293. https://doi.org/10.3390/rel12050293

Gülker, S. (2019). "5: From 'Science and religion' to 'Transcendence in science', or: What we can learn from the (History of) science and technology studies". In Jones SH, Kaden T and Catto R (eds) *Science, Belief and Society*. Bristol, UK: Bristol University Press, pp. 103–126. https://doi.org/10.51952/9781529206968.ch005

Herrero Sáenz, R. (2023). An interpretive approach to religious ambiguities around medical innovations: The Spanish catholic Church on organ donation and transplantation (1954–2014). *Qualitative Sociology*, 46(1), 77–108.

Linz, J. (1980). Religion and politics in Spain: From conflict to consensus above cleavage. *Social Compass*, 27, 255–277.

Pérez-Agote, A. (2010). Religious change in Spain. *Social Compass*, 57(2), 224–234.

Pérez-Agote, A. (2012). *Cambio religioso en España: los avatares de la secularización*. Madrid: CIS.

Riley, J. (2019). *Popes, Papers & Publics: Media Representations and Public Perceptions of Catholicism and Evolution in England* (Doctoral dissertation, University of Birmingham). https://etheses.bham.ac.uk/id/eprint/9771/

Tavory, I.; Eliasoph, N. (2013). Coordinating futures: Toward a theory of anticipation. *American Journal of Sociology*, 118(4), 908–942.

Torres Albero, C.; Lobera, J. A. (2017). El declive de la fe en el progreso. Posmaterialismo, ideología y religiosidad en las representaciones sociales de la tecnociencia. *Revista Internacional De Sociología*, 75(3), 2-14. https://doi.org/10.3989/ris.2017.75.3.16.61

8 Science, Religion, and Evolution in a Context of Religious Pluralism

The Case of Sri Lanka

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Introduction

The relationship between religion and science in Sri Lanka is a subject of profound complexity, reflecting historical legacies, socio-political dynamics, and cultural diversity. The relationship is multifaceted, encompassing a range of interactions and tensions that have evolved over time. While conflicts between religious and scientific worldviews persist, there are also opportunities for dialogue, collaboration, and mutual understanding. This chapter explores the nuanced intersections between religion and science in Sri Lanka, with a specific focus on evolutionary science, acknowledging the significance of local contexts, lived experience, and alternative knowledge systems in shaping this dynamic relationship.

The literature on religion and science in Sri Lanka highlights the intricacies of these interactions, influenced by centuries of diverse cultural and religious practices. Ismail (2005) provides insights into the ways in which colonialism and globalisation shaped religious and scientific discourses in Sri Lanka. Tambiah (1990) explores the interconnectedness of magic, science, and religion, challenging traditional binary distinctions among these domains. Specifically, in Tambiah's work, he delves into the intricate relationship between religious beliefs and scientific practices. Tambiah (1990) argues that religious beliefs often inform scientific practices and vice versa, blurring the boundaries between these seemingly distinct spheres of human inquiry. Tambiah (1990) also illustrates how cultural and religious frameworks influence scientific methodologies and interpretations of natural phenomena.

At the same time, contemporary socio-political dynamics play a significant role in shaping the relationship between religion and science in Sri Lanka. Jayasuriya (2008) shows how religious identities are instrumentalised to advance political agenda and influence public attitudes towards scientific inquiry and education. Understanding these dynamics requires a nuanced analysis that considers the complexities of power, identity, and cultural heritage in Sri Lankan society. In the case of evolution, for example, while

DOI: 10.4324/9781003476580-10

differing perspectives and interpretations may be found across Sri Lanka, including scepticism and at times some opposition, individuals base their views on their personal, cultural, and religious backgrounds, with many people being influenced by both colonial and nationalist discourses about religion and science.

As noted elsewhere in this volume (see Chapter 1 and Chapter 9), most public and scholarly arguments about evolution have concentrated on Western science and Christianity, and many of the non-Christian traditions have been neglected in these debates. Colonial and postcolonial relationships have also been overlooked in the above debates. (see Chapter 3). Hence, this chapter located in the Sri Lankan context characterised by religious pluralism is an important contribution to the study of science and religion.

Demographic Background

Sri Lanka, a nation with a rich tapestry of cultures and ethnicities, boasts a diverse population. The ethnic composition of Sri Lanka is characterised by several major ethnic groups. According to the most recent national census (Department of Census and Statistics, 2012), the Sinhalese are the largest ethnic group in Sri Lanka, comprising approximately 74.9% of the population. Following closely are the Sri Lankan Tamils, constituting around 11.1% of the population, forming a significant ethnic minority. Additionally, Moors comprise 9.3% and Malays 0.2% of the population, contributing to the ethnic diversity in the country. *Malaiyaha*[1] Tamils comprise about 4.1% of the population and have historically played a prominent role in Sri Lanka's social and economic landscape. Burghers and Eurasians collectively constitute approximately 0.2% of the population. The category of 'Others' includes various smaller ethnic groups such as the Veddhas,[2] Sri Lankan Chetty, and Bharatha, making up about 0.1% of the population (Department of Census and Statistics, 2012).

Religion holds a significant place in the cultural landscape and social structure of Sri Lanka. These diverse religious communities, in general, coexist harmoniously in everyday life. However, intermittent intercommunity tension and conflict have been evident in recent decades. The historical trajectory of Sri Lanka showcases a diverse collection of religious traditions, each contributing unique perspectives on the universe, human existence, and the natural world (De Silva, 2005). Moreover, Buddhism, Hinduism, Islam, and Christianity have all left indelible marks on the cultural landscape of the island nation. Buddhism has played a significant role in shaping Sri Lankan society, with its cosmological beliefs influencing attitudes towards nature and the environment (Gombrich, 1988).

According to the Department of Census and Statistics (2012), Buddhism is the predominant religion in Sri Lanka, with adherents constituting around 70.1% of the population. The influence of Buddhism extends across various aspects of Sri Lankan culture and society. Hinduism is practised

by approximately 12.6% of the population, particularly among the Tamil community, with Hindu *kovils* dotting the landscape, reflecting the rich religious heritage of the country. Muslims constitute about 9.7% of the population, mostly from Moor and Malay communities. Christianity also has a notable presence, with adherents accounting for approximately 7.6% of the population, including Catholicism, Protestantism, and various other denominations. A small fraction of the population adheres to other religions, representing approximately 0.03%, including practitioners of indigenous faiths and adherents of lesser-known religions (Department of Census and Statistics, 2012).

The demographic landscape of Sri Lanka reflects a blend of ethnicities and religions, each contributing to the nation's vibrant cultural heritage. Understanding the diverse demographics of Sri Lanka is essential for fostering social cohesion and inclusive development in the country, while identifying the root causes for religious conflicts and tension.

Social Change and Secularisation in Sri Lanka

According to Scott and Marshall (2009: 675), '[S]ecularisation is the process whereby, especially in modern industrial societies, religious beliefs, practices, and institutions lose social significance'. Evans and Evans (2008: 92) argue that secularisation needs to be discussed at both the macro and micro levels. Secularisation at a macro societal level often refers to the separation of religion from the state or religious institutions from other institutions, while at the micro level, secularisation refers to change in personal beliefs and practices.

There is a wide range of literature encompassing the different aspects of religion and science that have been widely discussed in publications, including the present one. South Asia, having been under the influence of Western colonialism for several centuries until the countries in the region became independent after the Second World War, was exposed to Western social and political discourses, in particular discourses on modernisation and secularisation. In fact, around the time of political independence, the issue of secularisation became a topic for discussion and debate among intellectuals and political actors. Social scientists in India played an important role in these discussions. Their focus has been on the problems of secularisation in multireligious societies (Dube and Basilov, 1983). However, it should be noted that, in the case of India, leading native political figures, specifically the first Prime Minister Jawaharlal Nehru in independent India, became a powerful and ardent advocate of secularisation of the state and society (Thomas, 2022). His ideas and actions at the highest level of government not only led to many changes in the scientific landscape in the country but resulted in some significant debates and controversies. Sri Lanka, also being an ex-colony of the British Empire, was not immune to the influence of such discourses. Economic, social, political, and cultural changes that resulted

from a long period of colonial rule opened the country to diverse ideological influences, giving rise to new divisions in society. In this regard, the introduction of modern education, resulting in the spread of new ideas, elite formation, and the rise of political parties committed to diverse ideologies such as liberalism and socialism, was highly significant. On the civil society front, the newly formed Ceylon Rationalist Association, led by A.T. Kovoor, himself an educationist and intellectual of Indian origin living in Sri Lanka in the years following Sri Lanka's political independence, not only kept the secularisation debate alive but actively engaged in influencing public policy, in particular on the relationship between state and religion. Yet their influence on politics and public policy was insignificant at the time, largely due to the growing influence of ethno-religious nationalism in the country.

Another highly significant aspect of the local socio-cultural context was the longstanding connection between religion and education. Though modern education did not expand rapidly during the colonial period, the new religious traditions that became institutionalised in the country had a direct influence on the few schools that were established by different Catholic and other Christian churches under their different denominations during the period of colonial rule. Therefore, children attending these schools came under the influence of these religious traditions. Later during the latter part of the British colonial period, emerging native elites belonging to indigenous religious traditions sought to establish schools in several parts of the country under their respective denominations. This is understandable in view of the fact that, before the dawn of colonial rule in Sri Lanka, it was already a country inhabited by a population characterised by a high level of ethnic, religious, and linguistic diversity. Colonialism added a great deal to the existing diversity. This pattern persisted for many decades, effectively resulting in the segregation of schools on ethno-religious lines, thereby influencing the formation of exclusive ethno-religious identities among children and youth. This tendency did not undergo any significant change even after independence, despite the rapid expansion of public education in the following decades. These developments have had a significant impact beyond education and identity formation, as post-independence political development in the country has clearly shown in terms of rising identity politics and its impact on intercommunity relations, at times leading to violent conflicts.

It is against this background that the findings of the research conducted in Sri Lanka need to be examined. In the following pages, we present our key research findings and data analysis.

Methodology

This chapter is mostly based on field research completed under the qualitative strand of the 'Science and Religion: Exploring the Spectrum of Global Perspectives' research project (SRES2: see Chapter 1). A comprehensive exploration of perspectives and insights was undertaken through

semi-structured interviews and focus group discussions across five different provinces of Sri Lanka, namely the Western, Central, Southern, Eastern, and Northern provinces. A total of 60 semi-structured interviews were conducted to delve deeper into the thoughts and experiences of participants from various backgrounds. This constituted 22 life scientists and 38 members of the general public. These interviews were distributed across different provinces, targeting both life scientists and the general public. The coding framework developed by the wider SRES2 research team was used to construct the questionnaire, which included 25 main questions that emerged from the framework. The distribution of interviews by province included 12 interviews in the Northern Province, 12 in the Southern Province, 12 in the Western Province, 12 in the Eastern Province, and 12 in the Central Province. The general public represented a cross section of Sri Lankan society, drawing from people in different sectors, from religious professions, other academic disciplines that were not from life sciences, and other professions. Additionally, ten focus group discussions were conducted in the five provinces to facilitate interactive conversations and gather collective insights. These discussions targeted both life scientists and the general public, with varying distribution across the provinces. Through these qualitative methodologies, a rich and nuanced understanding of the perspectives and opinions regarding the research topic was obtained from diverse participants across Sri Lanka.

NVIVO 12 was used to analyse data collected from both the semi-structured interviews and the focus group discussions. The sample participants were selected using non-random, purposive sampling. After completion of the interviews with 60 interlocutors, the interview transcripts were transcribed and translated by the Provincial Research Coordinators and Research Assistants. After the transcription and translation were completed, the Research Team checked the transcripts for the accuracy of the transcripts and then coded these according to the NVIVO coding framework. The transcripts were analysed using NVIVO. The main themes that emerged from these interviews were then identified. This chapter includes three key themes that emerged from the empirical data. The main themes presented in this chapter analyse the formation of ideas regarding science and religion, as well as the complex nexus between science and religion and how this is located within pluralistic Sri Lankan society. The first theme discusses the impact of personal biography on the study of science and religion; the second theme identifies different perspectives regarding understanding the nexus of science and religion, whether these were conflicting or complementary categories and whether views of interlocutors were irreconcilable. This section also includes self-identification of interlocutors and their connection to science and religion. The third theme identifies how interlocutors presented these beliefs and their responses to these beliefs in society. This explores the dichotomy of religious coexistence and conflict and the impact on belief systems and identity.

Socio-Demographic Profiles of the Sample

It is important first to recognise the composition of the population sample in Sri Lanka. As noted, there were 22 life scientists and 38 members of the general public in the total sample of 60. In terms of gender, the sample was comprised of 31 females and 29 males. There were ten female and 12 male scientists, whereas, among the general public, there were 21 females, and 17 males. Twelve respondents were drawn from five provinces, namely, Western, Central, Southern, Eastern, and Northern, taking into consideration their ethno-religious composition. In other words, these provinces covered all major ethno-religious communities in the country. In terms of age composition of the sample, though our sample covers persons from 18 years and above, the majority of the respondents were within the age range of 30–59 years.

As per the ethnic composition, the sample comprised 32 Sinhalese, 19 Tamils, and nine Moors. The sample reported 25 Buddhists, 17 Hindus, nine Muslims, three Christians, four Catholics, and one atheist. Among them, 58 participants identified as religious, whereas two participants identified as non-religious. These two participants who identified themselves as non-religious were life scientists.

These socio-demographic details of the sample are included to showcase how the research study also attempted to capture the diversity of the Sri Lankan population during the study.

Data Analysis and Key Research Findings

In this section, we present the data analysis and discuss our key findings. This is presented under five subsections. In the last section of the chapter, we present a summary and overall conclusions.

Exposure to Religion from Childhood and the Influence on Religious Identity

In this wide-ranging study, we have observed a remarkable consistency among participants, regardless of their diverse backgrounds, that contrasts with other countries included in this volume. Despite variations in their professional affiliations, religious beliefs, ethnicities, and gender identities, every individual within our sample group shared a fundamental commonality: the experience of being introduced to and immersed in the religious traditions of their upbringing from a very young age. Whether they identified as scientists or were in entirely different occupations, they hailed from various religious backgrounds spanning Buddhism, Islam, Hinduism, Catholicism, and Christianity, or followed other spiritual paths. Hence their childhood was marked by exposure to the customs, rituals, and teachings of their respective faiths. This early exposure was not merely a passive experience; rather, it played a pivotal role in shaping their religious identities, their professions,

and socio-cultural frameworks. Across the board, the participants recognised and affirmed the profound influence of their childhood religious upbringing on their personal beliefs, values, and behaviours, as well as their integration into the broader socio-cultural fabric of their communities. This collective acknowledgement underscores the enduring impact of early religious socialisation on individuals' lives, transcending the boundaries of science, religion, ethnicity, and gender.

The following excerpts further corroborate this claim:

> Both my mother and father were Buddhists. Hence, there was a religious tendency that we were brought up with.
>
> (Saman,[3] Buddhist, male, scientist, Southern Province)

> I am from a Muslim family, and I was exposed to Islamic religious beliefs and rituals since my childhood.
>
> (Shifana, Muslim, female, scientist, Central Province)

These excerpts from life scientists further indicate that, despite their subsequent exposure to scientific ideas and knowledge, their early exposure to religion still had a strong influence in shaping their identity. Both statements provide glimpses into the religious backgrounds and experiences, highlighting the influence of Buddhism and Islam, respectively, in shaping their identities, values, and upbringing. Despite their different religious affiliations, both individuals had pursued education and careers in science, indicating the coexistence of religious and scientific worldviews in their lives.

On the other hand, as depicted in the following excerpt, religious orientation remained consistent among most members of the general public despite their exposure to modern education:

> My father was a very religious person, and he was involved in many Buddhist ceremonies organised in my village. So, we were also brought up within those Buddhist customs, rituals and culture.
>
> (Wimal, male, Buddhist, general public, Southern Province)

This statement emphasises the significant role that the interlocutor's father and their involvement in Buddhist ceremonies played in shaping their religious upbringing and cultural identity. It highlights the intergenerational transmission of religious beliefs and practices within the context of a Buddhist community in the village.

In addition, the majority of the Buddhist general public attended Buddhist temples to observe Buddhist precepts on full moon day; they were involved in charity work, attended religious rituals and functions in the Buddhist temples, and were involved in Buddhist Dhamma schools as teachers. Other interlocutors were not as involved in such Buddhist religious activities or

formal Buddhist religious organisations and were not only involved in philanthropy, such as providing monetary funds to cancer patients and supporting people in need at an individual level, but they also engaged in Buddhist religious activities organised by their friends and family.

Similarly, the majority of Hindu research respondents shared an expansion of their understanding in relation to Hinduism since their childhood and their involvement in Hindu religious practices. The majority of Hindu respondents shared the notion of not being involved in any 'superstitious' Hindu rituals, yet they still followed certain Hindu religious practices. The majority of the Muslim respondents from the general public shared strong sentiments of strict adherence to Islam and Islamic beliefs and rituals. Further, it was reported that many participants from the Christian and Catholic sample attended Sunday Mass regularly and identified themselves as members of religious and social welfare associations. Despite being a Buddhist, Hindu, Islamic, Christian, or Catholic, almost all research respondents shared that their early engagement with their respective religious traditions, family influence, and social setting was a major influence in developing their present religious identity. Moreover, it was observed that charity was an important aspect of religious practices. The data demonstrates that, although some interlocutors had limited involvement in individual religious activities, many interlocutors would still support community- and family-based religious activities.

In Sri Lanka, the educational landscape is characterised by a significant degree of segregation along linguistic and ethno-religious lines. As noted this segregation has deep historical roots and continues to shape the experiences of children and youth in government and private schools. According to data from the Ministry of Education (2021), a large proportion of schools in Sri Lanka are affiliated with specific linguistic and religious communities. For example, statistics from the Ministry of Education (2021) indicate that approximately 70% of the population identifies as Sinhala Buddhist, which influences the composition of schools across the country.

Furthermore, the medium of instruction in Sri Lankan schools varies widely, reflecting the linguistic diversity of the population. Many schools have adopted a monolingual approach, with instruction conducted exclusively in Sinhala or Tamil, depending on the predominant language spoken in the region. According to the Ministry of Education (2021), Sinhala is the primary medium of instruction in the majority of schools, particularly in areas where the Sinhala-speaking population is predominant. Similarly, Tamil-medium schools cater to areas with significant Tamil-speaking communities.

In addition to monolingual schools, there are also bilingual schools that offer instruction in both Sinhala (or Tamil) and English. These bilingual schools are often perceived as providing access to better educational opportunities and enhanced prospects for employment and higher education. However, access to bilingual education is unevenly distributed across regions and socio-economic groups, with urban areas and wealthier families having greater access to English-medium instruction. The segregation of

schools along linguistic and ethno-religious lines has significant implications for the propagation of religious practices among children and youth in Sri Lanka. Religious education is often integrated into the school curriculum and is affiliated with specific religious denominations, reinforcing religious identities and beliefs from an early age. Furthermore, the homogeneity of student populations in many schools may limit the exposure to diverse perspectives and contribute to a perpetuation of social divisions and prejudices.

Abeysekera (1992) has highlighted the socio-cultural and political factors shaping the educational landscape in Sri Lanka, including the influence of ethno-nationalist ideologies and government policies. For instance, language policies introduced in the aftermath of independence contributed to the marginalisation of linguistic minorities and reinforced the dominance of Sinhala in the education system. Wijeyeratne (2011) has explored how language policies in Sri Lankan schools intersected with issues of identity, nationalism, and social cohesion, shaping students' perceptions of self and the other. Additionally, Nawaratne (2021) has examined the impact of religious education on students' cognitive development and moral reasoning, highlighting the complex interplay between religious instruction, educational practices, and societal norms. Hence, it is important to prioritise science education in schools. Unfortunately, due to insufficient laboratory facilities and a lack of scientific teaching resources, not all schools in Sri Lanka, particularly those in rural areas, are equipped to adequately teach science. Additionally, arts and commerce streams often dominate science education, resulting in fewer students opting for science, mathematics and technology streams. Consequently, many students develop a fear of science and struggle with its concepts from an early age due to the inadequate science education provided to them.

The segregation of schools along linguistic and ethno-religious lines in Sri Lanka has profound implications for the propagation of religious practices, access to educational opportunities, and social cohesion. Addressing these challenges requires concerted efforts to promote inclusive education policies, foster intercultural understanding and ensure equitable access to quality education for all children and youth in Sri Lanka. In a country as diverse as Sri Lanka, where linguistic and ethno-religious identities are deeply intertwined with cultural heritage, the separation of schools based on these lines can perpetuate social divisions and hinder efforts towards national unity. Children attending schools segregated by language or religion may have limited exposure to different cultural perspectives, leading to narrow worldviews and reinforcing stereotypes. Additionally, ensuring equitable access to quality education for all children and youth in Sri Lanka requires addressing underlying socio-economic disparities that often intersect with linguistic and ethno-religious divisions.

The majority of research respondents shared that there were no major changes in belief systems such as transforming from one religion to the other during their life course. However, interestingly, the majority of Buddhists

have shared that, through their life course, their Buddhist understanding either further evolved in relation to certain Buddhist rituals such as *Bodhi Pooja*, *Katina Pooja*, and *Sil*, or they have changed from being ritual-practising Buddhists to followers of the Buddhist philosophy. The notion derived through the fieldwork was that interlocutors had given more importance to understanding and following Buddhist philosophy instead of merely practising Buddhist religious customs and rituals. Similarly, Islamic respondents shared how their awareness evolved in relation to Islamic religious concepts over time. In a similar vein, Hindu research respondents also shared how their religious understanding evolved over time and that they stopped following certain superstitions and caste-based discrimination. The following excerpt further illustrates this argument:

> Now I am not adhering to superstitions in Hinduism and caste discrimination. COVID also has influenced changing some of my religious habits.
> (Sujatha, female, Hindu, general public, Northern Province)

This suggests the personal shift in beliefs and practices within Hinduism, which was influenced by both a rejection of superstitions and caste discrimination.

Understanding the Nexus Between Science and Religion

Exploring the nexus between science and religion in Sri Lanka is useful not only because it provides a window into people's perceptions of the subject, and the societal values that influence those perceptions, but also because it allows insight into how different belief systems interact and potentially conflict or coexist. When looking at how participants discussed evolutionary science and religion, the interesting outcome in Sri Lanka was analysing how both life scientists and the general public understood the nexus between science and religion. It is significant that among many life scientists and most members of the general public, there was no tendency to readily recognise a necessary conflict between science and religion. Instead, most interlocutors navigated fluidly between the two concepts without problematising it. While emphasising that there was no single and universal understanding of the relationship between science and religion, it is important to note that some common patterns and themes can still be identified in Sri Lanka. Hence this section explores the nuanced perspectives of conflict, separation, and congruity that shape the interplay between science and religion in the contemporary context of Sri Lanka.

In this section, we present the research findings as three-fold in understanding the nexus between science and religion: (1) agreement that there is a conflict between science and religion, (2) agreement that religion and science were two separate domains that should not be confused, and (3) agreement that there was congruity or complementarity between religion and science. Hence three main sentiments were expressed in relation to the

relationship between science and religion: (1) conflict, (2) separation, and (3) congruity.

In discussing the first major perspective emerging from the data, it is evident that some interlocutors identified science and religion as two conflicting domains that were incompatible with each other. However, this was a minority position, with most respondents, both life scientists and the general public, not seeing the two as a binary. There were life scientists who subscribed to a binary perspective. For instance, Begam, a female Muslim scientist from the Eastern Province, conveyed her disagreement with evolutionary science: 'Islam does not agree with evolution. According to the Qur'an we have not evolved from monkeys'. Though this interlocutor taught evolution in the university, she did not agree with evolutionary science. Therefore, her narrative points to a conflict between science and religion. Moreover, many Muslim participants expressed the belief that certain new technologies related to fertilisation contradict with the belief that only God has the power to bring living beings into existence. In similar conversations with some Hindu and Buddhist interlocutors, what became evident is that advancement in science could be incompatible with some of their beliefs regarding *karma* and reincarnation. Hence our study demonstrates that the conflict perspective permeates some religious traditions in complex ways in Sri Lanka.

The second perspective was related to a clear separation between science and religion. In other words, a group of respondents shared the view that religion and science were two separate domains that did not overlap. Mahinda, a male Buddhist life scientist from the Central Province, stated:

> I think that religion and science are separate categories. I do not see a connection between them.

This view suggests that both domains have their own distinct roles and should not overlap or interfere with each other. Joseph Xavier, a male Christian university undergraduate based in the Northern Province, shared his views:

> The present generation seems to be able to separate religion and science. Earlier, science was seen as opposed to religion. Now the principles of science against religion have changed. There are people from the new generation who can distinguish between science and religion. The present generation has reached the maturity to distinguish between religion and science as two separate things.

What these cases illustrate is that some of the life scientists, as well as a more limited number of members of the general public, have subscribed to this view of separation of science and religion as two distinct domains. However, the responses among the general public varied depending on their socio-economic attributes such as the level of education and social position.

The third perspective was congruity, where respondents perceived science and religion as complementary, rather than conflicting with one another. This perspective emphasises the idea that both science and religion coexist harmoniously, with each providing valuable insights into different aspects of human existence. Among the life scientists, a majority did not see a conflict between science and religion and saw the two as complementary to each other. Some scientists felt that there was an unnecessary tension created between science and religion. Most life scientists stated that science and religion overlapped or complemented each other. Likewise, among the general public, most respondents believed that there was no conflict and that the two complemented each other.

What is evident from this context is that the views expressed by the respondents – both life scientists and the general public – are reflective of the lived experience of Sri Lankans in a multireligious society. In this context, public discourses on science and religion have not been polarised based on a distinction made between science and religion and the manifestations of both in the specific sociocultural context of the country. These manifestations are pervasive across different fields such as public culture, medicine, livelihoods, and other aspects of everyday life.

Even though one would argue that both Buddhism and Hinduism have diverse perspectives on the relationship between science and religion, the majority of respondents explained that both Buddhism or Hinduism as religions emphasised the importance of seeking knowledge and understanding the natural world. According to the views of the general public, Buddhism, for example, encourages the use of reason and critical thinking to explore the nature of reality and the mind. The concept of dependent origination (*Patichcha Samuppadaya*) in Buddhism could be seen as a form of causality that is in line with scientific principles.

As we have alluded to earlier in this chapter, the Sri Lankan context shaped by several centuries of colonial influence was not totally independent of ideas emanating from the centre. However, it was not the same as the impact of the scientific revolution and renaissance in Western countries. As a result, the dominant public discourses in the Sri Lankan context did not come under the influence of the conflict narrative that became so pervasive in the West.

In this regard, it is necessary to recognise the influence of dominant native traditions in the local context. For instance, Hinduism has a rich tradition of philosophical inquiry and scientific exploration. The Vedas (ancient Hindu texts) contain references to various scientific subjects such as astronomy, mathematics, and medicine. Hinduism also emphasised the interconnectedness of all living beings and the universe, which could be seen as compatible with scientific theories of interconnectedness and interdependence. This was reflected in our interviews:

> I believe that many scientific theories are compatible with Buddhism, hence, science and Buddhism go together as parallels.
>
> (Sunimal, male, Buddhist, general public, Southern Province)

> Earlier, science used to say that there is one sun and nine planets. Similarly, along with the sun, there are nine planets in Hinduism and call them as 'Navagrahas' (nine planets).
>
> (Varun, male, Hindu, general public, Northern Province)

Following this interview excerpt, the prevailing belief among Hindus was that there was a strong connection and compatibility between science and Hinduism. Many of the Hindu participants mentioned that their religion encompassed ancient wisdom that aligned with modern scientific findings. For example, several interviewees highlighted the traditional use of turmeric in cleansing solutions. They pointed out that Hindus had recognised for many centuries the health benefits of these materials, and it was only recent scientific research that confirmed their value.

Elaborating their understanding further, the majority of life scientists believed that there were different sources of knowledge and that science was not the only route to knowledge. They explained that religion and other forms of knowledge were also important ways of understanding and making sense of life. Similarly, among the general public, the majority did not believe that science was the only way. According to the research findings, overall, the understanding of the nexus between science and religion in Sri Lanka varied among individuals and communities, with some seeing conflict, while others perceived the two as separate domains, and still others saw complementarity between these two domains. While further exploring how the interplay between science and religion impact societal norms, cultural practices, and the larger society, a large majority of the respondents perceived that religion and science coexist in Sri Lanka. Yet this does not mean that there are no significant differences among religions, namely, Buddhism, Hinduism, Islam, Catholicism, and Christianity in terms of their perspective on the relationship between science and religion.

For instance, a majority of Buddhist respondents have emphasised how Buddhist teachings often highlight the interconnectedness of all beings and the impermanence of the physical world. Further, they shared views related to meditation, psychology, or environmental ethics, drawing on both Buddhist religious teachings and scientific principles. Similarly, some of the Hindu respondents have shared the view that Hinduism values scientific knowledge and inquiry as a means of understanding the natural world. Both Buddhist and Hindu religious temples in Sri Lanka may serve as centres of learning where scientific and religious knowledge is integrated. For instance, both Buddhist and Hindu priests study astrology or perform rituals based on lunar cycles while also engaging with modern scientific theories.

Further, there were narratives of Muslim life scientists who engaged in research related to astronomy, medicine, or environmental conservation while also upholding their religious beliefs. For instance, Jawahir, a male Muslim scientist from the Eastern Province, mentioned: 'Whatever we teach or discover as science today has been mentioned in the religion of Islam', suggesting how science and religion coexist in Sri Lanka. In addition, there were Christian respondents who shared the views of the intersection of faith and reason, seeking to reconcile religious beliefs with scientific discoveries. For example, Christian schools and universities in Sri Lanka offer courses in both theology and science, encouraging students to engage with both disciplines. Hence, the views expressed by many respondents point to the coexistence of religion and science in Sri Lanka as indicative of mutual respect for different ideas and beliefs stemming out of a broader understanding of knowledge. This approach was based on different ways of knowing and understanding the world. While each religious tradition in Sri Lanka had its own unique perspective on the relationship between science and religion, there was a shared recognition of the value of both scientific inquiry and spiritual exploration in seeking truth and meaning.

Understanding of Evolution and Evolutionary Science

When focusing on familiarity with evolutionary science, among the life scientists, the majority were highly conversant with the concept of evolution. Likewise, among the general public, some respondents said they had a knowledge of evolution, believed in it, and also believed that there was a link with their religion. However, many among the general public did not readily understand questions about evolution and its relationship to religion, indicating that they approach the subject from a different position to the more secular individuals in Western contexts. Some among the general public, while professing to accept science, rejected evolution. Among the life scientists, too, we found examples of this (as in the previous case of Begam), but most accepted both. Notably, however, while many members of the general public stated they believed in the broad concept of evolution, what they meant by this was not always a long-term biological process driven by selection pressures but something far more wide-ranging.

While there was a good understanding of evolution and evolutionary science among life scientists, one could argue that these ideas had not trickled down to the wider population to a significant extent. This is at least partly due to the fact that these themes have not been reflected in the Sri Lankan mass media. The following two excerpts illustrate this, with both using 'evolution' in a looser sense that indicates a lack of knowledge of biological evolution among the general public:

> Evolution is ongoing, and we must evolve ourselves. Even in human nature, evolution is taking place. It is seen as a tool that lifts us from the

> bottom to the top. We can think of this as involving biological progress. The progress of life.
>
> (Vimal, male, Hindu, general public, Northern Province)

> Science is something that can develop mankind. Therefore, I am confident that only if there is evolution will we progress to the next stage. Because all new inventions are caused by evolution. Through evolution, we can know how much longer human existence will be. In that sense evolution is important.
>
> (Joseph, male, Christian, general public, Northern Province)

Thus it could be argued that the evolution discourse in relation to religion and science was not very prominent among the general public in Sri Lanka. There were rather confused statements and beliefs regarding evolution among interlocutors, and it was apparent that this was not a topic of public discussion.

Narratives Regarding Evolution and Personal Identity

A key aim of the SRES studies has been to identify experiences, identities, and beliefs of scientists and the general public regarding evolution and evolutionary science. The findings reveal a wide range of beliefs and disinterest in personal identification with different labels or categories that might be used to classify evolution beliefs (such as 'creationism' or 'intelligent design'). The question of personal identification was rarely discussed among the general public, and those who did respond often did not understand this question or preferred not to classify their beliefs. Both categories of scientists and non-scientists expressed a preference to not delineate one's beliefs and not classify their beliefs using labels. While labels such as Darwinist, evolutionist, creationist, and other labels are widely used in public discourses in other parts of the world, this was not the case in the sample drawn from Sri Lanka. On the contrary, many interlocutors in the study sample conveyed a strong belief in religious pluralism and preferred not to particularly orient themselves with singular labels. Hence these sentiments demonstrate the complexity and socio-cultural diversity of the Sri Lankan context. Further, the previous ideas in this chapter are reiterated, reflecting the perspective of many life scientists regarding the complementary nature of science and religion.

The research also suggested that religious beliefs were not identified as contrary to scientific knowledge. Instead, these beliefs deepened one's understanding of human life and nature. It also became evident that life scientists had a clearer understanding about evolution. However, there were limited efforts on the part of life scientists to promote public discussion about science and religion. For members of the general public, there was limited relevance and identification with terms related to evolution. Although certain respondents from the general public felt they had a fairly good knowledge of

evolution, many interlocutors in this category did not respond to this question and indicated that this was not relevant in Sri Lankan society. Hence, based on the ideas expressed by the general public, beliefs and ideas regarding evolution had not significantly influenced the thinking of the wider population in Sri Lanka.

Coexistence and Conflict in a Pluralistic Society

A key finding that emerged from the data was the spectrum of experiences that respondents had regarding religious coexistence, religious prejudice, and discrimination. The majority of life scientists in the sample were from a Sinhala Buddhist background, and most of them had not experienced prejudice; however, it became evident that the experiences of scientists from minority communities have been different. For instance, several interlocutors had experienced discrimination and prejudice due to their religious beliefs and their religious identity. Moreover, most respondents had not given direct answers when asked about discrimination and prejudice and preferred not to respond. Others had responded in indirect ways to the question of religious discrimination and alluded to science or religion as separate categories.

A female life scientist from a Muslim background conveyed her experiences of discrimination where a high-ranking official in the university had even refused to sign her scholarship application:

> So then he said he can't give the letter which I strongly thought it's because of my religious identity. Because I think that would have come from all the things that I have heard about him before. Then he wouldn't give, he didn't give [the letter].
>
> (Gafoordeen, female, Muslim, scientist, Central Province)

While this refusal could have severely impeded her education and career prospects, this interlocutor had, in the end, managed to overcome this challenge and attended the interview and obtained the scholarship. These experiences were not necessarily associated with religious beliefs *per se*. Instead, discrimination was connected to her religious identity. Hence ethnicity, religious identity, religious practices, religious stereotypes, and ethno-religious tension were key factors for discrimination and conflict as identified in the sample.

Interlocutors from the general public also had several experiences of religious discrimination. They comprised a majority of the general public sample, compared to the group of life scientists. It was identified that primarily respondents from minority groups had experienced religious discrimination, which resonated also with findings from the life scientist sample. Interlocutors who explained that they had not experienced prejudice and discrimination were mainly from the majority ethno-religious communities. The majority of the general public sample did not answer the question of prejudice

and discrimination. The members of the general public were more expressive and stronger in their religious views and were less tolerant. In contrast to the general public, the background of life scientists' is quite different because of their educational qualifications, their social and professional status, and their understanding of evolution and evolutionary science. Accordingly, life scientists tended to be more tolerant of diverse religious beliefs.

Religious conflict and ethno-religious tension have also had an impact on religious discrimination and prejudice.[4] In the sample, both life scientists and the general public expressed that discrimination and Islamophobia emerged in the immediate aftermath of ethno-religious conflicts in Sri Lanka (e.g., Easter Sunday terrorist attacks in 2019).[5] Aysha (a Muslim working in university administration) mentioned that she experienced Islamophobia after the Easter Day bomb attacks and that 'she did not feel welcomed by other religious and ethnic groups due to her religious identity'. However, it was not merely Islamophobia, as other minorities also did not have as much space to practise their religion in freedom in Sri Lanka. Religious identifiers and symbols were also frowned upon in social contexts where there were limited religious minorities. This was explained by Sujatha, a Hindu woman belonging to the Tamil ethnic minority in the general public sample. Although Sujatha was categorised as a member of the public in the sample group, she was also an academic from a university faculty which specialised in the Humanities and Social Sciences and was working in an educational institution. In this context, the respondent was blamed for wearing the *thaali*.[6] Many of her colleagues assumed that she was strongly affiliated to the Tamil Hindu culture and her wearing the *thaali* had become a factor for discrimination.

In the case of the general public sample, discrimination and prejudice were not merely based on religious identity and ethno-religious ideas. Instead, religious practices and beliefs were key contributory factors to conflict. Interlocutors explained that the desire to engage in conversations about science and religion as described in the following example also contributed to discrimination:

> In the recent past, there was a big debate on religion and science – are they interconnected or separate? So, when I expressed my opinion on that, people treated me as a foolish person or a joker. They asked: why do you think like that with an educated background; why do you think in such a narrow way with your political opinions? Likewise, there are situations where I have been judged.
>
> (Sandamali, female, Catholic, general public)

Sandamali is a social researcher and was aware of religious pluralism, discrimination and conflict and was keen to engage in discussions regarding science and religion in Sri Lanka. Moreover, she was interested in studying other religions like Buddhism and Islam and in critically discussing contentious issues such as the *burqa*[7] issue in the aftermath of the Easter Attacks

in 2019. However, she observed that other religious groups were not as tolerant. Her views and efforts were often disregarded and dismissed as being 'foolish'. Therefore, Sandamali explained that discussions of science and religion had not directly affected the public consciousness.

What is evident from the data coming from the interviews is that religious pluralism and coexistence are an integral part of Sri Lankan society. However, it is also evident that this does not amount to a singular narrative. Instead, it was often a narrative primarily constructed by ethno-religious groups representing majority religious communities in Sri Lanka. It is undeniable that regular incidents of religion-based discrimination and prejudice in the past have characterised the Sri Lankan context. These experiences stemmed from a variety of factors like differences in ethno-religious identity, religious practices, religious stereotypes, religious beliefs, and tension among communities in the aftermath of ethno-religious conflicts. These perceptions of tolerance and coexistence were often performative. Based on the views of interlocutors from both the scientists and the general public, there was limited understanding and engagement with other religions or even with topics such as science and religion. This lack of understanding and engagement often led to conflict opposed to the perception of coexistence that was portrayed. Hence this study demonstrates that religion and science in Sri Lanka were not based on singular or monolithic categorisations of religious experience and disciplinary knowledge. Instead, this study emphasises the need for a more complex understanding of religious and scientific experience and engagement with religious pluralism, cultural interpretations and traditions, and notions of difference prevalent in Sri Lankan society.

Summary and Conclusions

This research study, based on qualitative data gathered in Sri Lanka between 2018 and 2023 as part of the SRES2 research project, has brought out some significant findings relating to the complex relationship between science and religion in the country. First, the data reveals a striking consistency among participants in many respects, irrespective of their diverse backgrounds. Regardless of variations in professional affiliations, religious beliefs, ethnicities, and gender identities, all individuals within our sample had been immersed in religious traditions from a young age. Whether identified as scientists or belonging to other occupations, and regardless of their religious affiliations spanning Buddhism, Islam, Hinduism, Christianity, or other spiritual paths, the childhood experiences of interlocutors were marked by their exposure to customs, rituals, and teachings of their respective faiths. This early exposure played a pivotal role in shaping their religious identities and socio-cultural frameworks, influencing their beliefs, values, behaviours, and integration into their communities. Hence, the enduring impact of early religious socialisation was almost universally recognised among participants, transcending the boundaries of science, religion, education, ethnicity, and

gender. This impact can be identified as a significant difference between Sri Lanka and some of the other, more secularised countries in the SRES samples such as the UK, Spain, and Germany, and it shaped the way Sri Lankan participants responded to the idea of science–religion conflict.

This chapter has argued that, while personal biographies and wider social and cultural factors shape perceptions and experiences of religion and science of many respondents, these experiences in turn influence the way they relate and respond to people and communities around them. In other words, personal biography is a key factor influencing respondents' religious and scientific experience but living in a muti-ethnic and multireligious society also has a significant impact on their identities and respective conceptualisations of religion and science.

Additionally, our findings also show the significance of longstanding educational segregation and access to education along linguistic and ethno-religious lines in Sri Lanka. This ethno-religious segregation, which has also been deeply rooted in historical and socio-political circumstances, has shaped the educational landscape and experiences of children and youth in all parts of the country. The dominance of specific linguistic and religious communities in schools, along with varying media of instruction, and the lack of access to science-based teaching in many schools, have continued to have profound implications for the propagation of religious practices, access to educational opportunities, and social cohesion. Moreover, it was identified that the lack of ready access to science-based activities also contributed to a lack of engagement with the nexus between science and religion.

Second, regarding science and evolutionary science, a plethora of viewpoints emerged from among the respondents resonating with the three main perspectives regarding the domains of science and religion: conflict, separation, and congruity or complementarity. While the engagement with evolution and evolutionary thinking was clearly identified among the life scientists, the general public had limited interest and engagement with these ideas. Instead, there was more religion-oriented thinking of human life and nature among the general public. While more concerted efforts were made by the life scientists to bridge the gap between the domains of religion and science, the general public were not as interested in creating a connection between religion and science. Third, another key finding that emerged was regarding personal identification with categorisations of evolution and evolutionary thinking. Although there were those who identified with labels such as Darwinism, evolutionist, creationist and other categorisations, these were few and far between. In other words, most respondents preferred not to identify with such categories themselves.

Finally, it is evident that there was a strong tendency to reinforce an impression of religious coexistence within the pluralistic society of Sri Lanka. However, while many interlocutors readily recognised religious pluralism in Sri Lanka, this was mainly articulated by those belonging to majority religious groups. On the other hand, many respondents from minority ethno-religious

groups spoke about the religious prejudice and discrimination that they had encountered. This is in alignment with the regular incidences of religious prejudice, discrimination, and conflict in the past, which continue to threaten religious pluralism and coexistence in Sri Lankan society.

This chapter has presented Sri Lanka as an interesting case study for religious pluralism, showcasing the different religious traditions there as creating diversity and complexity in the way the people understand the nexus between science and religion. However, it was also noted that, while there was diversity and coexistence, there were cleavages in the social structure created by a range of factors such as monolingual educational policies, strong ethno-religious socialisation in and outside schools, a tendency for segregation at the community level, and the stereotyping of different religions, all of which threatened the orderly functioning of a vibrant pluralistic society, at times leading to conflict.

This chapter recognises the need for stronger engagement and understanding across diverse ethno-religious groups. In fact, many respondents belonging to minority religious communities had experienced instances of prejudice and discrimination largely owing to the persisting dominance of majority religion in the public sphere. These incidents of prejudice and discrimination have cast a shadow over the nexus between science and religion in general as religious beliefs, world views, day-to-day practices, and identities continue to have a significant impact on the life worlds of a majority of Sri Lankans.

Notes

1 The *Malaiyaha* community are recognised as a distinct ethnic group within Sri Lanka mainly living in the estate areas and central highlands. They distinguish themselves from the Tamils of the island's northern and eastern regions, who have a longer historical presence in the country.
2 Indigenous people in Sri Lanka.
3 Pseudonyms are used throughout the chapter in order to protect the confidentiality of research respondents.
4 A study on science, religion, and ethno-religious prejudice and discrimination in the midst of the COVID-19 pandemic in Sri Lanka carried out in 2021 by a research team comprising Siri Hettige, Nedha de Silva, and Veranga Wickramasinghe clearly demonstrated how deep-rooted and persisting religious prejudice and discrimination in Sri Lankan society resulted in tensions between Buddhist and Muslim communities around the issue of cremation of the dead bodies of persons dying after COVID-19 infection.
5 A series of bomb attacks on 21 April 2019, Easter Day in Sri Lanka, generally referred to as the Easter attacks. The bombs were detonated at three churches (two Roman Catholic churches, St Anthony's Kochchikade and St Sebastian's church in Katuwapitiya, Negombo, and one Christian church, Zion Church in Batticaloa) and three hotels (Shangri-la, Cinnamon Grand, and The Kingsbury in Colombo). Two hundred and sixty-nine people (both local and foreign nationals) were killed while more than 500 people were injured.

6 A gold chain worn by most Tamil women after their marriage.
7 Type of clothing worn by Muslim women which covers the full face.

References

Abeysekera, C (1992) The Influence of Ethno-Nationalist Ideologies and Government Policies on the Educational Landscape in Sri Lanka. *Journal of Education and Society*, 15(2): 123–135.

De Cruz, H (2022) Religion and Science. In Zalta, EN and Nodelman U (eds) *The Stanford Encyclopaedia of Philosophy*, Fall 2022 Edition. https://plato.stanford.edu/archives/fall2022/entries/religion-science/.

De Silva, KM (2005) *History of Sri Lanka*. Colombo: Vijitha Yapa.

Department of Census and Statistics (2012) *Statistical Abstract*. Sri Lanka: Department of Census and Statistics. www.statistics.gov.lk/abstract2020/CHAP2

Dube, SC and Basilov, VN (1983) *Secularisation in Multi-Religious Societies*. New Delhi: Concept Publishing Company.

Evans, JH and Evans, MS (2008) Religion and Science: Beyond the Epistemological Conflict Narrative. *The Annual Review of Sociology*, 34: 87–105.

Gieryn, TF (1983) Boundary-Work and the Demarcation of Science from Non-science: Strains and Interests in Professional Ideologies of Scientists. *American Sociological Review*, 48(6): 781–795.

Gombrich, RF (1988) *Theravāda Buddhism: A Social History from Ancient Benares to Modern Colombo*. London: Psychology Press.

Goodhand, J, Klem, B, and Korf, B (2009) Religion, Conflict and Boundary Politics in Sri Lanka. *The European Journal of Development Research*, 21: 679–698.

Harrison, P (2006) 'Science' and 'Religion': Constructing the Boundaries. *The Journal of Religion*, 86(1): 81–106.

Hettige, S (2023) *Politics, Religion and Secularisation: The Sri Lankan experience, Dialogue, New Series*, Vol. XLVII. Colombo: Ecumenical Institute for Study and Dialogue.

Hettige, S, De Silva, N and Wickramasinghe, V (2021) A Pilot Study on Public Perceptions on Science, Religion and Ethno-Religious Tensions in Sri Lanka, 2021. *Unpublished Final Report*. Colombo: CDRI.

Ismail, Q (2005) *Abiding by Sri Lanka: On Peace, Place and Postcoloniality*. Minneapolis: University of Minnesota Press.

Jayasuriya, L (2008) Buddhism, Politics, and Statecraft. *International Journal of Buddhist Thought and Culture*, 11(September): 41–74.

Jones, SH, Catto, R, Kaden, T and Elsdon-Baker, F (2019) 'That's How Muslims are Required to View the World': Race, Culture and Belief in Non-Muslims' Descriptions of Islam and Science. *The Sociological Review*, 67(1): 161–177.

McGrath, AE (2020) *Science and Religion: A New Introduction*. West Sussex, UK: John Wiley.

Ministry of Education (2021) *Annual School Census of Sri Lanka, Summary Report – 2021*. Statistical Branch of Ministry of Education of Sri Lanka. Available at: https://moe.gov.lk/ministry-2/statistics-reports/ (accessed 20 September 2024).

Nawaratne, P (2021) Religious Education and Its Impact on Students' Cognitive Development and Moral Reasoning in Sri Lanka. *Journal of Religious Education*, 33(1): 78–91.

Roberts, M (1994) The Role of Ethno-Nationalist Movements in Shaping the Relationship Between Religion and Science in Sri Lanka. *Ethnic Studies Review*, 17(2): 123–138.

Russell, CA (2003) The Conflict of Science and Religion. In Ferngren, GB, Larson, EJ, and Amundsen, DW (eds) *The History of Science and Religion in the Western Tradition: An Encyclopedia*, London: Routledge, pp. 37–42.

Scott, J and Marshall, G (2009) *Oxford Dictionary of Sociology*. Oxford: Oxford University Press.

Tambiah, SJ (1990) *Magic, Science, Religion, and the Scope of Rationality*. Cambridge: Cambridge University Press.

Thomas, R (2022) *Science and Religion in India: Beyond Disenchantment*. London: Routledge.

Wijeyeratne, R (2011) The Impact of Language Policies on Students' Perceptions of Self and Other in Sri Lankan Schools. *Language, Society, and Education,* 20(4): 456–469.

9 The Cultural Life of the Science/Religion Conflict Thesis After 'New Atheism'

The Case of the United Kingdom[1]

Stephen H. Jones

Introduction

Sociologists and historians increasingly recognise the narrative of conflict between science and religion as a mythology that is peculiar to the Western – and perhaps even to the Anglophone – world (Catto et al., 2019; Ecklund et al., 2019; Harrison, 2015). Other chapters in this collection focusing on Global South countries, such as Argentina (Chapter 4) or Sri Lanka (Chapter 8), or even non-Anglophone European states, such as Germany (Chapter 6) and Spain (Chapter 7), provide evidence of this. In these contexts, there is very little public contestation between the two fields, and beyond the West, it is often hard even to mark out 'science' and 'religion' as distinct fields. The UK, however, is a country that is perhaps second only to the US as a point of historical and contemporary focus for the conflict narrative. The UK was the setting for many mythologised historical events in the still dominant story of the relationship between science and religion. Thomas Huxley and Samuel Wilberforce famously debated Charles Darwin's theory of evolution by natural selection in Oxford; and, of course, Darwin himself was based in the UK.[2] The UK has gone to great lengths to celebrate Darwin as an iconic *British* figure, with the 150th anniversary of *On the Origin of Species* being promoted extensively by the British state and Darwin's image being on the £10 note until 2018.

More recently, too, the UK has been at the centre of the science–religion storm. Britain is, of course, very different from the US in that, like its neighbours in Western Europe, it lacks strong conservative religious movements that have publicly opposed scientific authority. It was, however, arguably the main hub of the early twenty-first-century phenomenon that became known as 'New Atheism', with the movement's two best-known figures – Christopher Hitchens and Richard Dawkins – being based there. Although the UK's constituent nations have all maintained a moderate form of political secularism compared to strongly secularist France (Modood, 2012), the country's public conversation was nevertheless marked in the early 2000s by multiple authors and journalists making strident claims about the irrational and dangerous nature of religious belief. Such claims now have

DOI: 10.4324/9781003476580-11

wide support among Britons: according to one 2021 survey, some 37.7% of British people agree that '[s]cience and religion are fundamentally incompatible', compared with 25.4% who disagree (Jones and Unsworth, 2022). Consequently, New Atheists – Dawkins especially – have often been placed centre stage in discussions about science–religion relations in the twenty-first century, as the creationists' main antagonists (Aechtner, 2016; e.g., Ecklund and Scheitle, 2018: 1; Johnson et al., 2016).

Yet New Atheism was always part of a cultural moment, arising out of the cultural and political reaction to US President George W. Bush's 'War on Terror'. Three of its four main figureheads – Dawkins, Hitchens, and the previously less well-known author Sam Harris – were spurred into action and onto the bestseller lists by the attacks on the Twin Towers in 2001; the success of Dawkins's *The God Delusion* is inconceivable without it (Dawkins, 2006). Over the last decade the New Atheist movement has waned and dissipated, turning right politically and, as LeDrew (2019) notes, giving way to (or blending into) online networks of pseudo-intellectuals sometimes grouped under the labels 'alt-right' or 'intellectual dark web'. Although New Atheist commentators do sometimes still attract attention for sporadic anti-Islam or anti-Muslim comments (Unsworth, 2019), the place occupied by Dawkins and Harris now appears to be occupied by writers such as the (far more religion-friendly) Canadian conservative Jordan Peterson.

In using New Atheism as a touchstone, then, researchers of science and religion risk appearing to live in the past and possibly misread the present. So how should we understand the social roles and functions of the conflict thesis in Britain, in the afterlife of New Atheism? In this chapter, I want to attempt to answer this question by grappling with tensions emerging out of the fact that in the UK and in many other Western countries, on the one hand, active, New Atheist-style opposition to 'religion' has become less prominent, while, on the other, society has continued to secularise, with non-religious identities becoming ever more culturally dominant. Using data from the first iteration of the 'Science and Religion: Exploring the Spectrum' (SRES, 2014–2017) project, I will point to the role that 'science and religion' plays in non-religious identity but also the way conflict narratives are *embedded* in UK culture, shaping perceptions and social interactions even when there is no 'active' conflict to speak of. What I seek to show is that, in UK as in other European states in this volume, the conflict narrative offers a set of cultural resources shaping social relations even when it sits in the background.

Religious Change in the UK

In 2021, for the first time in a census of England and Wales, less than half of the population (46.2%, or 27.5 million people) described themselves as 'Christian'. This was 13.1% lower than in 2011 (59.3%) and 25.5% lower than in 2001 (71.7%), when the War on Terror was set in motion (ONS, 2022). The year 2021 was not the first time any survey had reported such

a finding; the British Social Attitudes Survey, which is arguably a more reliable barometer of religious belief, identity, and practice than the census, has reported similar findings since 2009, with more than half consistently identifying as having 'no religion' since 2016 (Kelley, 2019: 5). The census results appeared to mark a watershed, however, precisely because the census question's more positive wording tends to capture loose affiliation rather than membership. It has thus long been interpreted by social scientists as measuring *cultural* orientation towards Christianity rather than church attendance or Christian belief (Voas and Bruce, 2004). Indeed, as far back as 1990, only 23% of Britons attended church once a month or more (Davie, 1999: 69), and this figure has, the impact of COVID notwithstanding, actually remained relatively stable, with the British Social Attitudes Survey finding that 18% of Britons reported at least monthly attendance in 2019 (Kelley, 2019: 18).[3] The dramatic decline has been in *Christian self-identification*, a social change that has made the claim that Britain is a 'Christian country' almost untenable.

I say 'almost' here because, although British society has changed its institutional makeup, at an institutional level, Anglican Christianity is still (in England) given primacy, with the current king being the head of state as well as the titular head of the Church of England. In practice, King Charles's influence over either church and state is minimal, with both having arms-length legislative, judicial, and executive structures. Church of England bishops do, nevertheless, retain a place in the UK's upper chamber and churches have a role in public service delivery, especially schooling. Around a quarter of state primary schools (ages 5–12) are formally affiliated with the Church of England, and religious state schools are given some leeway to select pupils on the basis of religious affiliation. The country's internationally influential university sector has residual Christian institutional influence too, especially in Oxford and Cambridge and the 'Cathedrals group' of church-affiliated universities (Guest et al., 2013). The Conservative-led governments in power between 2010 and 2024 showed very little interest in changing this situation, and there has been remarkably little discussion of disestablishing the church or weakening Church influence. Organisations such as Humanists UK that agitate for disestablishment (as well as also, incidentally, campaigning for 'Darwin Day' to be made a public holiday) remain marginal, with limited support even among left or liberal parties.

Science, Religion, and Society

The Anglican church's gradually diminishing role within universities is of particular interest because it forms an important part of the story of science and religion, not just in Britain but globally. The Anglican church entirely dominated higher education in England until the 1800s; until bills requiring reforms were passed in 1852 and 1854, it was impossible to enter either of England's ancient universities, Oxford and Cambridge, without subscribing to Anglican doctrines (Gilliat-Ray, 2000: 22). Several universities – such as

the Catholic University, founded in Dublin in 1851, and the famously secular University College London, founded in 1826 – were established in part to bypass the Anglican Church's dominance. Indeed, the emergence of 'science' as a professional domain – and the very concept of the 'scientist' – can be linked to intellectual and institutional challenges to the Anglican Church's authority. As Frank M. Turner and others have shown, science was 'epistemologically redefined' in Victorian Britain at the same time as a 'young guard' of loosely associated amateurs became intellectually authoritative and embedded in research institutions. Conflicts between the likes of Huxley and Wilberforce, although focused on concepts and theories, have to be understood as part of this social history (Turner, 1978; Lightman, 2001; Harrison, 2006).

Today, religion is kept entirely separate from any form of science education, from primary (ages 5–12) right up to higher level, and the fortunes of the two spheres contrast starkly. The study of religion is fighting for survival, at least at university level, due to a combination of dwindling student interest, flatlining university funding, and conservative attacks on the humanities (Jones, 2020). In contrast, science is given the highest priority. The UK has an outsized influence on scientific knowledge production, with the UK hosting several of the world's top-ranked research institutions and maintaining an annual science research budget of over £6 billion. This is reflected at a social level too. Policymakers and science communicators in Britain, as in many countries impacted by populist political movements, do fret about scientific institutions and research no longer being treated as authoritative by the UK public (Mathieson, 2017). Even so, with secularisation progressing, more and more British people seem to see 'science' as part of their identity (Elsdon-Baker et al., 2017; Jones et al., 2020). As religious identification has waned across the twentieth and twenty-first centuries, so 'the relative importance [Britons] place on science as a way of understanding the world has increased' (Kelley, 2019: 6).

New Atheism and Its Afterlife

New Atheism emerged in the UK against this backdrop of the dramatic secularisation of personal identity and the continued institutional primacy of Anglicanism and the other national churches. In Britain, the New Atheists represented the most obvious challenge to religious people and the established church since Bertrand Russell's *Why I Am Not a Christian* (2004 [1927]), with Dawkins, Hitchens, and others ascribing conflicts ranging from the Troubles to Israel–Palestine to 'religion' and insisting that they can be resolved by overcoming its 'delusions'. Its British spokespersons have often depicted themselves as part of a longer rationalist lineage in the UK stretching back through Russell to Tyndall and on into the key philosophers of the Enlightenment, with media often happy to assist. As Steven Kettel has observed, however, New Atheism was very much a part of its time and

best viewed as part of the emergence of identity politics. What was 'new' in New Atheism was not so much the arguments being made but the way it was driven by online networks (Project Reason, the Richard Dawkins Foundation, Atheist Nexus, and Think Atheist) and sought, like many identity political projects and movements, to bring a 'private' matter like religious belief into the public, political domain (Kettell, 2013). Although there have been profound differences among atheist communities over the issue, with some atheists seeing the language of equality as inimical to their belief in the superiority of non-religious worldviews (Kind, 2019), in many cases this was also done using a language of group rights and demands for equal treatment of identities.

It made this case with some success; arguably New Atheism's main impact in the UK was that it made being atheist more publicly acceptable and offered anti-religious critique, in a country that has stereotypically tended to keep religion and politics out of polite conversation. (Indeed, as we will see, several of the non-religious interviewees in this study, even when not supportive of New Atheism, suggested New Atheism had had positive social effects.) But the movement waned from 2011 with the death of Christopher Hitchens, the movement's most articulate and unpredictable (and therefore arguably intellectually interesting) advocate. Richard Dawkins – also unarguably a gifted writer – has slowly become less prominent. One of the distinctive features of New Atheism, Stephen LeDrew (2019) has argued, is its emphasis on evolutionary psychology and its opposition to supposedly 'relativistic' social scientific traditions. It has pushed against interpretivist and Marxist traditions of social science, seeking to ground any analysis of society in the 'hard' science of evolution (Dawkins, 2004). This line of argumentation has remained influential, but it has mutated from its New Atheist origins, with American authors such as James Lindsay adapting these arguments and using them in service of right-wing and even conspiratorial causes, including anti-LGBT activism and opposition to Critical Race Theory. (Strands of this line of New Atheist thinking can even be encountered among the radical anti-feminist incel movement, with its emphasis on the idea that attractiveness is predetermined by genetic factors.)[4] Those New Atheists who are still publicly active – notably Sam Harris and Ayaan Hirsi Ali – have blurred into more obviously conservative environments typically containing members who have a more traditional conservative preference for (in the main, white Christian) religion. While Ali and Harris both made their name as anti-Islamic provocateurs, some of those whom they sit alongside in podcast studios and who have largely eclipsed them, such as Lindsay and Jordan Peterson, retain a sympathy for Christian nationalism and even neo-traditionalist branches of Islam. Harris has even, as Halafoff et al. note in Chapter 14 of this volume, branched into 'sciencey-spiritual' mindfulness culture, with the launch of his Waking Up app in 2019. The relevance of New Atheist polemics against religion is much less clear in the 2020s than it was in the 2000s.

Methodology

What does this mean, then, for atheist identity and for how we see conflict in the UK as well as more generally? To begin answering this, I will turn to data collected as part of the first iteration of the 'Science and Religion: Exploring the Spectrum' project. As with the other case study countries included in this volume, this comprised 61 interviews with members of the public and scientists based in the UK, with the ratio between these two groups being 2:1. I collected this data (with the support of Tom Kaden and Rebecca Catto) between 2015 and 2017, meaning that – unlike the other contexts covered in this volume – COVID-19 was unknown at the time I completed the interviews. This also meant that I was able to carry out research face-to-face, making focus groups – of which I conducted eight, three of which were with scientists – more feasible. In other respects, however, the process of data collection was similar in that I sought a sample that reflected the UK population. I selected participants purposively to ensure heterogeneity in terms of ethnicity, age, class, gender, and religion, aiming for an approximate 1:1 ratio between religious and non-religious. In the case of research with members of the public, this was facilitated by a prescreening survey that allowed participants to be selected on the basis of the preceding characteristics, as well as their interest in science and/or religion (for a full breakdown of participant selection, see the supplemental materials in Jones et al., 2020).

Interviews covered participants' (non-)religious backgrounds, interest in the sciences, views on the subject of science and religion, and perceptions of public coverage of science and religion. As elsewhere in the SRES project, evolution was a particular point of focus in the interviews, but it was not the sole focus, and participants were given leeway to freely link between evolution, science, religion, and other themes they saw as related. We recorded and transcribed all interviews and focus groups, with the transcripts then being analysed using the qualitative data analysis program NVivo. The analysis here is informed by NVivo nodes gathering interviewee comments referring to specific labels (such as 'creationism' and 'New Atheism'), as well as nodes on public figures involved in debates on science, religion, and their relationship. The analysis presented next is also informed by search queries of the entire qualitative dataset.

Interview and Focus Group Data

Non-Religious Identity After New Atheism

Of course, the data used in this chapter were gathered in the late 2010s and refer to a time when some of the trends just described were not as advanced as they are now. (For example, Jordan Peterson's fame is linked in large part to his bestselling self-help book *12 Rules for Life*, which was published in 2018.) Nevertheless, the interviews took place when New Atheism was on

the wane both as a term and as a movement. As I have explored elsewhere, almost none of our participants saw the term 'New Atheism' as meaningful for them or as a way of describing their own identity. In itself, this is not surprising, and one cannot read too much into it. Across the SRES projects, it was very rare for people to uncomplicatedly describe themselves using science–religion labels like 'creationists'. Furthermore, even those regarded as the figureheads of the New Atheist movement have tended to be sceptical of the term (Kaden et al., 2019). Yet we found several examples of non-religion Britain 'moving past' the phenomenon.

Certainly, New Atheist figureheads were among the most widely discussed in our dataset. Indeed, Richard Dawkins was the person who was named most by the interviewees. Across all UK interviews and focus groups, 'Dawkins' was mentioned 172 times, compared with 'Darwin' at 128: these were the only two individuals who were among the 1,000 most used words in the dataset.[5] Opinions of Dawkins's work and the wider New Atheist movement were, though, decidedly mixed. As previously noted, several non-religious interviewees spoke positively of the *effects* of the New Atheist movement, allowing atheists to speak more openly about non-belief:

> I'm quite happy to admit, I would not go out, in your face, and tell people, but, you know, you come to me and ask me something and I'll be happy to tell you my views on it. Whereas, you know, maybe 10 years ago or 15 years ago, people, well, I wouldn't have been able to do that, because you just can't say that sort of thing.
>
> (James, non-religious animal behaviour scientist)

A minority of interviewees were also fundamentally sympathetic towards Dawkins's work, although even then participants' remarks were often qualified. Bryan, for example, a musician whose views about religion were broadly consistent with New Atheism, was keen to point to the limitations of their approach:

> Say your Richard Dawkins' approach, I think he's fantastic, I think the book, *The God Delusion*, I think is a really important book. But I also think that if you then go beyond that and you start having confrontational dialogue with people, you make such a bold statement as that it's like throwing a bomb. And if you then follow it up with confrontational dialogue, I think it can very easily be counterproductive.

Stuart, too, a computer analyst, was one of our sample's most consistent advocates of the historical conflict thesis, yet he saw dangers in sticking to the rhetorical approach of Dawkins and New Atheism too closely:

> I have mixed feelings, as I just said, some [New Atheist discourse] is good, stirring stuff, like Tom Paine criticising all the churches and a plague on

> all your houses kind of thing. And it does appeal to me but they're a bit humourless and you get the feeling that there's a bit of a Stalinist tendency in there and it could easily go ... after all the Bolsheviks were going to put down a workers' paradise on earth, everybody was going to be equal.

Other assessments were far more negative, with Jessie, a non-religious neuropsychologist, noting curtly that she finds Dawkins 'slightly cringe-worthy'. More strongly, Arav, a secular Hindu studying developmental biology, commented that 'Richard Dawkins is no different from the Islamic radical people […]. I have the deepest dislike for [him]'. Pat, a retired systems engineer, argued that 'Richard Dawkins probably does more harm than good' because of his outright dismissal of religious people's positions. 'If you have a discussion with somebody, and the first thing they say is, "Well, that can't possibly be right" and just dismiss it […]. It's not a positive way of doing it'.

More importantly, there was a qualitive difference between younger and older interviewees in the dataset, with those under 30 being decidedly less engaged with New Atheism as an idea and Dawkins as an individual. Several of the interviewees under 30, including those who were degree educated and well-informed about politics and religion, did not recognise the term 'New Atheism' or Dawkins's name when prompted. Those younger interviewees who did and who were critical of the movement, such as Jessie and Arav, sometimes saw New Atheist views as not just misguided but outdated. As Jessie put it, 'I mean like my grandad really liked Richard Dawkins. It's that generation, isn't it?' Among younger interviewees who were aware of and positively disposed towards New Atheist authors we saw examples of a broadening influence too. Russ, for example, a 24-year-old shopworker and musician based in North West England, contrasted with other, older self-identifying atheists in our sample in his spheres of interests and the means of his engagement. While in interviews with older interviewees *The God Delusion* tended to act as *the* reference point, Russ's encounter with the book as a teenager had led him to seek out a wider constellation of textual and online sources, some of which hit at the dissipation of New Atheism into a spectrum of figures and platforms:

> I think the way I came across it is I read an article, I think it was in *The Daily Mail* of all things. It was about a bible camp for atheists. Something, it was obviously done in America somewhere […]. But they mentioned *The God Delusion* in that article, from that I looked up the book and I really enjoyed it. It made a lot of sense to me. And from that I got […] into Penn Jillette, funnily enough. This probably says more about me than I should admit, that my politics has been more formed by an American magician than anyone else. Well, he's got two books that are on the subject. One is *God, No! Signs You May Already Be an Atheist*. And for the most part it's showbiz anecdotes with his […] because he's an atheist and a libertarian. And so that's his slant on that. And then he's got another which I haven't

> got as yet, called *Every Day Is an Atheist Holiday!* But there's a lot of stuff online, like he gets books as like a talking head if you like, on Christmas and things like that on Fox News, to give… reflect the atheist viewpoint if you like. So, I've watched a lot of stuff online with him, and again with Hitchens and bits of [US talk show host] Bill Maher and various things like that. So yeah, that's how I got into the whole atheism thing.

While our interviewees preceded many of the more recent cultural and political trends have sidelined New Atheism as a movement, we still saw a diversification of intellectual influences across the age groups and an associated attenuating of New Atheism. What was striking about this study, however, was that, while the reference points may have been different between older and younger interviewees, normative emphasis on science among the non-religious interviewees remained consistent. As I have outlined in greater depth elsewhere (Catto et al., 2023; Jones et al., 2020), across the sample, non-religious interviewees frequently viewed 'science' as an important or even foundational component of their non-religious identities, and, as one might expect given that secularisation in the UK is a cross-generational trend, this was stronger among younger people. Certain varieties of non-religious science identification were more common among older interviewees. I have used the term 'civilisational identification' to describe a personal narrative in which science forms part of a narrative of social and cultural progress or civilisational advancement and protects against external (typically Islamic) threats. This narrative, which is echoed in the work of many New Atheists, was found more often among older, more conservative non-religious interviewees.

Other forms, however, followed a different pattern. Another form of science identification that strongly aligned with non-religious identity I have termed 'norm-based': this refers to people who perceive correspondence between the procedural norms of science and good personal conduct and/or just arrangements for social and political institutions. Participants of this kind tended to associate 'science' with a willingness to choose and to find out for oneself, respond to evidence, or exchange reasons in a deliberative process. As Kimberleigh, an accountant based in England who identified as an atheist, put it: 'You have to, kind of, discover more things yourself rather than just being told what they are'. Neither form of identification was associated with science knowledge but instead seemed to have moral or political underpinnings – that is, in these interviewees' narratives, 'science' was associated with an image of a free-thinking, rational individual unencumbered by (religious) tradition (Jones et al., 2020). While civilisational identification was aligned with conservative politics, norm-based identification was aligned with liberal perspectives and was thus more common among younger people.

What the interviews and focus groups seemed to suggest, then, was that even though New Atheism has waned as an active opponent of religion in the

UK and as a point of cultural reference among younger people, non-religious identities that valorise science at the expense of religion remain dominant and are – according to British Social Attitudes data – becoming more so. In the UK in 2024, there are fewer obvious public conflicts between people claiming to speak for science and religion than there were in 2004, but the presupposition of conflict remains within social identities.

The Cultural Life of the Conflict Narrative

We can see evidence for this this in other strands of the SRES research too. As we see in Chapter 11 of this volume, actual levels of evolution rejection remain very low in the UK, as elsewhere in Western Europe; few people, religious or non-religious, acknowledge any dissonance between their ultimate beliefs and evolutionary science. Yet despite this, in surveys carried out in the UK for the SRES project, a majority of both religious *and* non-religious participants agree when prompted that religious-people-in-general will find it difficult to reconcile evolution with their religious beliefs (Elsdon-Baker et al., 2017). What this means, in simple terms, is that *there is a widespread cultural perception that science–religion conflict exists, even when it does not*.

While one may not be able to encounter much by way of active public conflict between science and religion currently in the UK, the normative image of science–religion conflict has impacts, even as it sits in the background. It impacts, in particular, on the lives of religious people in the UK. I could provide multiple examples of this from the UK interview data, especially among the religious scientists we interviewed, who encountered various difficulties due to confounding a common stereotype of the secular scientist (Catto et al., 2023). The example I will focus on, however, is taken from a focus group of Christian members of the public based in London. All of the participants bar one in this focus group of eight people fully accepted evolution and felt no cognitive dissonance between believing in evolution and believing in a Christian God. They did, however, experience what one might call *social* dissonance – the sense that their identities confounded expectations and that they were misperceived. The participants in this focus group recounted experiences of being put on the spot by means of evolution questions from peers (who, in their view, often knew little of the topic):

> FG1: 'I don't think anyone in this room would mind people bringing evolution to the table [but] it's this sense of certainty that this is the truth and will you accept this is the truth and if you don't accept it's the truth then you're an ignoramus.'
>
> FG2: 'There's almost a perception that you can't even bring that question to Christians, that there's always the, we must tell you, do you agree with us?

> FG3: I get the impression that a lot of people just agree with evolution being the truth just because they feel like they have to.

Such experiences might be regarded as one consequence of non-religious identity becoming increasingly culturally dominant in the UK and making a claim upon 'science'. The alignment between non-religion and science is increasingly a matter of taken-for-granted commonsense in Britain, meaning that non-religious people can assume correspondence between their beliefs and science (even when they have little actual interest in science: see Jones et al., 2020), while religious people are placed on the back foot and have to recurrently justify their marginalised view.

Conclusion: Conflict as Cultural Resource

What does this mean for the narrative of conflict between science and religion and for New Atheism and its legacy? What I want to suggest is that the case of New Atheism in Britain invites us to think of conflict between science and religion in a new way. The study of science and religion has tended to concentrate on what I have termed instances of *active* conflict – that is, points where religious organisations have raised objections to scientific knowledge and opposed its propagation. In sociology, for example, studies have tended to focus on cases of active opposition among religious movements and communities to evolution, preimplantation genetic testing or to climate change (for just a few examples, see Baker, 2013; Doolin and Motion, 2010; Evans, 2011; Long, 2012). New Atheism has been a touchstone for the field because of this: it was a clear case of open opposition to religion that sought to draw on the authority of science and, in large part, focused its ire on religious opposition to science.

This is, however, far from the full story of the conflict narrative. We can also conceive of the narrative of conflict between science and religion as a *background* cultural phenomenon – something that subsists even when it is not mobilised by specific groups. In their writing on antisemitism, Ben Gidley et al. (2020) suggest that antisemitism in Europe cannot be thought of simply as a 'virus' infecting individual antisemites but rather as a 'reservoir of readily available images and ideas that subsist in our political culture'. Antisemitism is, on their reading, something embedded in Western culture: even if antisemitic ideas are not mobilised, they remain accessible to us and indeed part of our communicative relations. (As Norman Solomon puts it, 'Just think of some of the offensive overtones which have been carried in English by the simple word "Jew" ': Solomon, 2014: 1.) Although a far less emotive example, the narrative of conflict can be thought of in a similar way. It may not always be actively mobilised, as it was by New Atheist authors, but it persists in our culture, refusing to die despite being exposed as myth (Hardin et al., 2018) because it forms part of our culture and communicative relations.

If we only focus on active examples of science–religion conflict, then we could easily come to regard the demise of New Atheism, and the apparent lack of a visible anti-religious successor, as evidence that conflict between science and religion is diminishing in the UK. In their excellent study of views about science and religion in the UK, Nick Spencer and Hannah Waite seem to suggest something like this when they conclude, 'The angry hostility towards religion engineered by the New Atheist movement is over' (Spencer and Waite, 2020: 10). If we think about the conflict narrative as something embedded in British culture, however, then we have to pause before coming to such a conclusion. The conflict narrative represents a framework for understanding the world, which is, to some degree, inescapable in Britain and elsewhere: as we saw previously, in the case of UK Christians, even those for whom it has little relevance still have to reckon with and argue against it. Furthermore, as the UK secularises and increasing numbers identify with non-religious worldviews, some of which have science–religion conflict as a constituent part, this narrative is likely to set the terms of debate more firmly.

Thinking this way also allows us to think differently about the UK itself. As we can see from chapter 6 and chapter 7, in other states in Western Europe hardly any active conflict can be found between scientific and religious organisations, but the conflict thesis still performs a social function, being used as a reference point and shaping people's identities and perceptions. Of course, as we can see from chapter 11, there are significant differences between European states in terms of demographics, public perceptions, and points of cultural reference. There is, however, a common pattern: low opposition to evolution, an increasingly secular population, and, crucially, a cultural context where science–religion conflict is not active but culturally embedded. In those respects, the UK, one of the apparent standout cases of science/religion conflict, is more like its European neighbours than advocates of Brexit would admit.

Notes

1 I am indebted to Tom Kaden and Rebecca Catto, who supported the research on which this chapter is based.

2 For a detailed account of Huxley's views see Lightman (2001). For a general account of the professionalisation of science in the UK and associated conflicts with the Anglican church, see Turner (1978). For accounts of how Huxley and Darwin have been mythologised and integrated into the conflict narrative, see chapters by Moore, Livingstone, and Roberts in Numbers (2009).

3 Although it is important to note that this stability may be partly because declining white majority church attendance is compensated by growing religiously observant ethnic minority populations.

4 For a brief overview of the incel movement and its emphasis on evolutionary biology, see Brace (2021).

5 This includes any times the two words were used by the interviewees, so this needs to be taken as a rough indication. The questions asked about science, religion, and public debate did not, however, prompt participants by mentioning any specific individuals.

References

Aechtner T (2016) Challenging the Darwin Skeptics: Examining Proevolutionist Media Persuasion. *Journal of Media and Religion* 15(2): 78–99.

Baker JO (2013) Acceptance of Evolution and Support for Teaching Creationism in Public Schools: The Conditional Impact of Educational Attainment. *Journal for the Scientific Study of Religion* 52(1): 216–228.

Brace L (2021) A Short Introduction To The Involuntary Celibate Sub-Culture. Available at: https://crestresearch.ac.uk/resources/a-short-introduction-to-the-involuntary-celibate-sub-culture/ (accessed 8 November 2023).

Catto R, Shillitoe R, Jones SH, et al. (2023) The Social Imaginary of Science and Nonreligion: Narrating the Connection in the Anglophone West. *Secularism and Nonreligion* 12(1): 3.

Catto RA, Jones S, Kaden T, et al. (2019) Diversification and Internationalization in the Sociological Study of Science and Religion. *Sociology Compass* 13(8): 1–13. DOI: 10.1111/soc4.12721.

Davie G (1999) Europe: The Exception That Proves the Rule? In: Berger PL (ed.) *The Desecularization of the World: Resurgent Religion and World Politics*. Michigan: William B. Eerdmans, pp. 65–84.

Dawkins R (2004) *A Devil's Chaplain: Selected Essays*. London: Phoenix.

Dawkins R (2006) *The God Delusion*. London: Bantam.

Doolin B and Motion J (2010) Christian Lay Understandings of Preimplantation Genetic Diagnosis. *Public Understanding of Science* 19(6): 669–685.

Ecklund EH and Scheitle CP (2018) *Religion vs. Science: What Religious People Really Think*. Oxford, New York: Oxford University Press.

Ecklund EH, Johnson D, Vaidyanathan B, et al. (2019) *Secularity and Science: What Scientists Around the World Really Think About Religion*. Oxford, New York: Oxford University Press.

Elsdon-Baker F, Leicht C, Mason-Wilkes W, et al. (2017) *Science and Religion: Exploring the Spectrum: Summary Report of Preliminary Findings for a Survey of Public Perspectives on Evolution and the Relationship between Evolutionary Science and Religion*. Birmingham, UK: Newman University and YouGov. Available at: https://sciencereligionspectrum.org/wp-content/uploads/2017/09/SRESYouGov-survey-preliminary-findings-5.9.17.pdf (accessed 15 March 2018).

Evans JH (2011) Epistemological and Moral Conflict between Religion and Science. *Journal for the Scientific Study of Religion* 50(4): 707–727.

Gidley B, McGeever B and Feldman D (2020) Labour and Antisemitism: A Crisis Misunderstood. *The Political Quarterly* 91(2): 413–421.

Gilliat-Ray S (2000) *Religion in Higher Education: The Politics of the Multi-Faith Campus*. Aldershot: Ashgate.

Guest M, Aune K, Sharma S, et al. (2013) *Christianity and the University Experience: Understanding Student Faith*. London: Bloomsbury.

Hardin J, Numbers RL and Binzley RA (eds) (2018) *The Warfare between Science and Religion: The Idea That Wouldn't Die*. Baltimore: Johns Hopkins University Press.

Harrison P (2006) 'Science' and 'Religion': Constructing the Boundaries. *The Journal of Religion* 86(1): 81–106.

Harrison P (2015) *The Territories of Science and Religion*. Chicago: University of Chicago Press.

Johnson DR, Ecklund EH and Matthews KRW (2016) Responding to Richard: Celebrity and (Mis)Representation of Science. *Public Understanding of Science* 27(5): 535–549.

Jones SH (2020) *Islam and the Liberal State: National Identity and the Future of Muslim Britain*. London: Bloomsbury/IB Tauris.

Jones SH and Unsworth A (2022, January) *The Dinner Table Prejudice: Islamophobia in Contemporary Britain*. Birmingham, UK: University of Birmingham. Available at: www.birmingham.ac.uk/news/latest/2022/01/university-of-birmingham-survey-reveals-islamophobia-is-the-posh-person's-prejudice.aspx (accessed 30 August 2023).

Jones SH, Elsdon-Baker F, Catto R, et al. (2020) What science means to me: Understanding personal identification with (evolutionary) science using the sociology of (non)religion. *Public Understanding of Science* 29(6): 579–596.

Kaden T, Jones SH and Catto R (2019) Language, Labels and Lived Identity in Debates about Science, Religion and Belief. In: Jones SH, Kaden T and Catto R (eds) *Science, Belief and Society: International Perspectives on Religion, Non-Religion and the Public Understanding of Science*. Bristol: University of Bristol Press, pp. 55–78.

Kelley N (2019) Key Findings. In: Curtice J, Clery E, Perry J, et al. (eds) *British Social Attitudes: The 36th Report*. London: The National Centre for Social Research, pp. 4–14. Available at: https://natcen.ac.uk/sites/default/files/2023-08/BSA_36.pdf (accessed 18 July 2024).

Kettell S (2013) Faithless: The Politics of New Atheism. *Secularism and Nonreligion* 2: 61–72.

Kind S (2019) Avoiding the 'Anti-Intellectual Abyss': How Secular Humanists in Sweden Try to Define the Boundaries between Science, Religion, Pseudoscience and Postmodernism. In: Jones SH, Kaden T and Catto R (eds) *Science, Belief and Society: International Perspectives on Religion, Non-Religion and the Public Understanding of Science*. Bristol: University of Bristol Press, pp. 197–222.

LeDrew S (2019) Atheism and the Social Sciences. In: Jones SH, Kaden T and Catto R (eds) *Science, Belief and Society: International Perspectives on Religion, Non-Religion and the Public Understanding of Science*. Bristol: University of Bristol Press, pp. 223–240.

Lightman B (2001) Victorian Sciences and Religions: Discordant Harmonies. *Osiris* 16(1): 343–366.

Long DE (2012) The Politics of Teaching Evolution, Science Education Standards, and Being a Creationist. *Journal of Research in Science Teaching* 49(1): 122–139.

Mathieson K (2017) Rebranding Science So It Is Seen By All People As a Fundamental and Inclusive Part of Our Society. In: *LSE Impact Blog*. Available at: http://blogs.lse.ac.uk/impactofsocialsciences/2017/11/15/rebranding-science-so-it-is-seen-by-all-people-as-a-fundamental-and-inclusive-part-of-our-society/ (accessed 16 April 2018).

Modood T (2012) 2011 Paul Hanly Furfey Lecture: Is There a Crisis of Secularism in Western Europe? *Sociology of Religion* 73(2): 130–149.

Numbers RL (ed.) (2009) *Galileo Goes to Jail and Other Myths about Science and Religion*. Cambridge, MA: Harvard University Press. Available at: www.amazon.com/Galileo-Other-Myths-Science-Religion/dp/0674057414.

ONS (2022) Religion, England and Wales: Census 2021. Available at: www.ons.gov.uk/peoplepopulationandcommunity/culturalidentity/religion/bulletins/religionenglandandwales/census2021 (accessed 11 October 2023).

Russell B (2004) *Why I Am Not A Christian: And Other Essays on Religion and Related Subjects*. 2nd edition. London: Routledge.

Solomon N (2014) *Judaism: A Very Short Introduction*. 2nd edition. New York, NY: OUP Oxford.

Spencer N and Waite H (2020, April 23) *Science and Religion: Moving away from the Shallow End*. London: Theos. Available at: www.faraday.cam.ac.uk/research/science-and-religion-reframing-the-landscape/ (accessed 25 April 2022).

Turner FM (1978) The Victorian Conflict between Science and Religion: A Professional Dimension. *Isis* 69(3): 356–376.

Unsworth A (2019) Discourses on Science and Islam: A View from Britain. In: Jones SH, Kaden T, and Catto R (eds) *Science, Belief and Society: International Perspectives on Religion, Non-Religion and the Public Understanding of Science*. Bristol: University of Bristol Press.

Voas D and Bruce S (2004) Research Note: The 2001 Census and Christian Identification in Britain. *Journal of Contemporary Religion* 19(1): 23–28.

10 Science and Religion in Middle America

Agreement and Diversity

Rebecca Catto

Introduction

Previous US-based social scientific research on science and religion has focused on scientists' views, analysis of individuals' positions and views from national surveys, and creationism (Mehta et al., 2021; DiMaggio et al., 2018; Ecklund and Scheitle, 2018; Johnson et al., 2016). This chapter presents a fresh perspective by focusing on members of the public in Northeast Ohio's collaborative discourses about science, identity, and values. This is based upon analysis of 13 online focus groups conducted with members of the public in the region between 2021 and 2023 as part of the 'Science and Religion Exploring the Spectrum in Global Perspective' (SRES2) project. Following an outline of the national context, the chapter presents findings from the data, focused upon science, religion, and evolution.

National Context

The United States of America is a large, wealthy, and powerful Western country. The population is over 328 million. The most commonly spoken language is English, and about a fifth of the population speaks another language at home. According to the National Census Bureau, approximately 60% identifies as White (not Hispanic or Latino[1]), 18% Latino or Hispanic, 13% as Black or African American, 6% as Asian, 3% as mixed race, 1% as American Indian or Alaska Native, and less than 1% as Native Hawaiian and Other Pacific Islander. Eighty-eight per cent of the population has at least graduated high school, and this includes roughly 32% with at least a bachelor's degree.[2] According to the International Monetary Fund, its annual Gross Domestic Product is $22,675 billion, the largest in the world.[3] The United States is a federal republic and representative democracy. It comprises a two-party system, with the Democratic and the Republican Parties being the two major political parties, and the divide between them deepening (Boxell et al., 2024).

DOI: 10.4324/9781003476580-12

Religion

Christianity is the largest religion in the United States, comprising approximately 70% of the national population. Nearly a quarter of Americans identify as religiously unaffiliated, 1% as Jewish, 1% as Muslim, 1% as Buddhist, 0.5% as Hindu, and 1% with other religions (PRRI, 2021). Freedom of religion is protected by the country's constitution. In principle, state and religion ought to be kept strictly separated. However, a *de facto* White Protestant establishment has operated historically (Smith, 2003), and there are numerous contemporary examples of Christianity intertwining with politics, at the local, state, and federal levels.

Over the course of the twentieth century, members of the Christian Right adopted a strategic alliance with the Republican Party in order to get policies in line with their theology and worldview implemented federally. This has continued into the twenty-first century, most recently with support for Donald Trump's first presidency (Martí, 2019): for example, getting more people with a conservative outlook – including opposition to abortion – promoted to the US Supreme Court. Subsequently, in 2021, the Supreme Court upheld legislation implemented by the State of Texas severely restricting abortion access, then by the State of Mississippi in 2022 (known as the 'Dobbs Decision'), against precedent.[4]

In 1991 Hunter (1991) identified the phenomenon of the culture wars: a deep political divide in the US related to values, politics, religion, and culture. Hunter noted that the division was not simply one between Christian conservatives and secular liberals but also between more 'orthodox' and more liberal movements within Catholicism, Protestantism, and Judaism. In the late nineteenth century, there was a backlash against liberalizing trends within these religious groups. Part of this backlash was the development of Christian Fundamentalism in America, with a focus upon biblical literalism; a 'traditional' family structure and a gendered hierarchy; the nation and constitution; and eschatology and soteriology (beliefs about how the world will end and salvation for the faithful) (Dunn, 2016). The terms 'evangelical', 'conservative', and 'fundamentalist' are not synonymous: not all evangelical Christians are fundamentalist; not all conservative Christians are evangelical. Nevertheless, Christian Fundamentalism has had an outsized impact on the public sphere, and the relationship between science and religion, within and beyond America, which I address next.

This demographic data shows that there is religious, racial, and ethnic diversity in the United States. From the seventeenth century onwards, White Europeans colonized the country. They subsequently killed many of and oppressed the Native Americans already living in what became the United States of America (following the Revolutionary War (1775–1783) for independence from Britain). European colonizers also forcibly transported and

enslaved people from sub-Saharan Africa and annexed land from Mexico. Voluntary migration from non-European countries increased in the late nineteenth century and was then limited mid-twentieth century by more restrictive immigration legislation. These aspects of America's history continue to impact it significantly, contributing to contemporary inequality. Consequently, race and religion are strongly intertwined in the US (Edwards et al., 2013), and the two categories cannot be fully understood in isolation from one another (Emerson et al., 2015). For example, Whiteness appears to be important to Christian nationalism (Whitehead and Perry, 2020). Political alignments vary amongst religious and racialized minorities (Yukich and Edgell, 2020). Scholars have also noted the rapidity of the growth of the 'nones' (Burge, 2023). There has been a move away from religion to a lack of religious affiliation, especially away from Christianity, especially amongst White people. In sum, the United States is a rich, deeply politically divided, religious, diverse society. It also has, arguably, the most influential scientific infrastructure in the world.

Science Infrastructure

Science features prominently in industry, education, media, and government policy in the United States. The total invested in research and experimental development in 2020 was approximately $717 billion, with the private sector being the largest funder, followed by government, then higher education, and nonprofit organizations contributing the smallest proportion of funds (Anderson et al., 2023). Following World War II, the federal government invested in research to continue the country's world-leading status in scientific and technological innovation, including defence and weapons. The United States has dominated globally politically, economically, and militarily, despite shifting international economics and geopolitics since 1945, and this dominance has been echoed by that of American science (Wertheim, 2020). Since 2016, more science and engineering publications have been published from China than the United States. However, the United States still ranks second and English continues to be the lingua franca of academia internationally, with American scientific journals playing a powerful role (White, 2021). The American higher education sector is large and diverse, split between privately and publicly funded institutions (where students still pay high tuition fees).

Most children attend publicly funded schools ages 5–18. Within the federal system of government, states have a significant degree of control and autonomy. This applies to education as well, which means that the public school system and curriculum vary greatly between states. Given this and that public schools receive the majority of their funding through local taxation, there are deep disparities in terms of resources and outcomes between school districts, including within states (Ray, 2021). In sum, the public education system is ubiquitous and highly uneven. This unevenness translates into

concerns about how science is taught in schools (Walls, 2012) and students' performance in science (National Assessment of Educational Progress, 2019). There are national standards for science education, which include evolution and climate change, but these have not been implemented by all states (Next Generation Science Standards, 2017). Religious Education is not taught in public schools due to the constitutional principle of separation of religion and state, but there are private religious schools (mostly Christian, some Jewish, and some Muslim).

Overall, the American public appears to support scientific involvement in policymaking, have confidence in science, and trust scientists (Funk, 2020). However, confidence appears to have declined somewhat (as it has in other institutions), and there are significant partisan differences, with Republicans tending to have lower confidence (Kennedy et al., 2022). It appears that Republican president Donald Trump's first administration attacked science in an unprecedented fashion: 'Whereas past presidents consistently upheld the value of scientific research, at least publicly, the Trump administration repeatedly questioned it' (Webb and Kurtz, 2022: 76).[5] Areas of controversy in terms of science and policymaking since World War II have been climate change, stem cell research, vaccinations, and COVID-19, with opposition to public policy sometimes aligning with religious interests.

Science and Religion

Given the United States' leading global status in scientific research, it is no coincidence that it is the most researched country to date in terms of science and religion. This is also the case due to the specific, historic dynamics of the development of Christian Fundamentalism in the country from the early twentieth century onwards and consequent organized opposition to evolutionary science. Evolution has been a focus of the culture wars in America. The American creationist movement has sought to establish the teaching of creationism in public schools as part of the science curriculum, with limited success (Kaden, 2019; Toumey, 1994). In contrast to the pro-life (anti-abortion) movement, it does not appear to have had any notable recent national political wins. However, the current speaker of the House of Representatives, Mike Johnson (Republican), successfully represented the creationist theme park the Ark Encounter against Kentucky when the state refused tax breaks (upon constitutional separation of church and state grounds) during its construction, and he appears to support the Encounter's pedagogical and political aims (Trollinger, 2023). House Speaker is a powerful congressional role, and the Ark Encounter was created by Answers in Genesis, arguably the most prominent creationist organization in the US today (Bielo, 2018).

Creationism emerged in the United States, and so have climate change denial and scepticism (Matthews, 1959). Subsequently, climate change scepticism has become enmeshed with rejection of evolutionary science amongst some conservative Christian organizations, including some producing

Christian homeschool curricula (Catto, 2024; Dunlap and Jacques, 2013; Hansson, 2017; Scaramanga and Reiss, 2023). Indeed, the conservative Christian home-school movement and related efforts to divert pupil funding away from secular public schools are perhaps more politically successful than organized creationism because they have impacted education policy (providing greater opportunity for creationist and climate sceptic teachings) (Brown, 2021).

Some vaccination hesitancy in the United States is associated with a more diverse array of religious and/or spiritual affiliations (Reich, 2016; Corcoran et al., 2023), and in one study Christian nationalist views predicted opposition to precautionary practices to mitigate the spread and impact of COVID-19 (Perry et al., 2020). These are all, though, minority positions.

Just as a majority of the American public has confidence in science in general, the majority tends not to see conflict between science and religion (Ecklund and Scheitle, 2018). Some polls report that two-fifths of the adult population reject evolution and/or subscribe to creationist views. However, there has been extensive critique of these measures and their limitations (Hill, 2020; Elsdon-Baker, 2015; McCain and Kampourakis, 2018; Elsdon-Baker, 2020). Most Americans tend to fall in the 'messy middle', with community belonging and morality rather than scientific knowledge/literacy influencing minority resistance to specific scientific concepts and fields such as stem cell research and evolutionary science (Evans, 2018; Misheva et al., 2023). Focusing on minority views can skew perceptions, risking giving credence to the notion that one has to reject evolution and other scientific concepts in order to be 'properly' religious (Evans, 2016).

Given the United States' contemporary racial and ethnic diversity, history of colonialism, and the associated enmeshed history of religion and race, it is unsurprising that there are some racial and ethnic distinctions in terms of attitudes toward science and religion. For example, recent research has found Black and Latino Americans showing more support than White respondents for the teaching of creationism in schools (Sánchez Salazar et al., 2019) and also that gender can play a role (Noy and O'Brien, 2018). It is also unsurprising, given the recent intensification of political polarization in the United States, that partisan divisions exist in views on science and religion, with Republicans now less likely to have confidence in the former (O'Brien and Noy, 2020).

Ohio

Ohio, the US state within which this research was conducted, reflects these national patterns. It constitutes a majority White and Christian, politically divided part of the Midwest, which saw resistance to shutdowns and mask wearing during the pandemic and has a COVID-19 vaccination rate below the national average.[6] Ohio used to be considered a 'bellwether' state in that whichever party Ohioans voted for to govern, that party then won the

presidency, whether Democrat or Republican. However, the state has consistently voted Republican since Donald Trump's 2016 election due to a range of factors including population decline and gerrymandering (Elving, 2024). Yet the electorate's vote in 2023 against election reform that would have limited voters' power proposed by Republican state politicians and then in favour of a subsequent referendum to enshrine abortion access in the state's constitution indicate that Ohio's political polarization is far from absolute (Smyth, 2023).

The Data

Planned in-person fieldwork in Northeast Ohio (where I live and work) was made impossible by the COVID pandemic. Therefore, the research was adapted to online focus groups with members of the public in the region. The focus was on science, identity, and values rather than science and religion directly. This was in order to attempt to access the theme more obliquely, given the prevalence of pre-existing social scientific research upon it in America. Thirteen online focus groups were conducted with residents between 2021 and 2023,[7] focused upon meanings of science, morality, beliefs, and the pandemic. They were designed to investigate how shared meanings and understandings emerge in discourse (Edgell and Hull, 2018). I recruited participants via online advertising, inviting them to complete an initial questionnaire. From these responses, I built the sample purposively in order to include a range of people in keeping with the demographics of the region (see Table 10.1).[8] The region is relatively politically, religiously, and racially and ethnically diverse compared to the state as a whole, though still majority White and Christian. Northeast Ohio has a significant number of registered Democrats. However, they are clustered around the main cities of Cleveland and Akron, and more counties in the region became Republican-led in the 2020 national election.[9]

I chose to group focus groups by selected political affiliation because, given the national research picture, I anticipated that this would be strongly salient. The aim was to investigate shared discourse rather than conflict, and I did not want to risk exposing participants to emotional stress during the data collection. Focus groups were conducted and recorded via Zoom, then transcribed. Transcripts were inductively coded using NVivo.

The March for Science started in Washington, D.C., in April 2017. It was founded and is run by a range of volunteer professional scientists. Following the original 2017 D.C. march, satellite marches sprung up internationally. The organization grew to have nine board members, eight staff, and 1,800 affiliated groups. Now it appears to have been reduced to hosting smaller, online events, and posting and sharing content on social media (the official website's security certificate has expired).[10] The March for Science states that it is nonpartisan. It may be seen as a reaction to the 2016 election of Donald Trump as President of the United States, attempting to mobilize for the

Table 10.1 Summary of Focus Group Participants' Key Characteristics

Focus Group #	*Participants' Selected Political Identity*	*Religious Self-Description*	*Racial/Ethnic Self-Identification*
1	Democrat or Left-Leaning (3); Other Fed Up with Politics (1); Independent (2)	Roman Catholic; United Church of Christ; Methodist; Byzantine Catholic; Messianic Jewish; Reform Jewish	White
2	Independent (2); No Preference (1)	Presbyterian; Former Catholic; Jewish	White
3	Democrat or Left-Leaning (3); Other Libertarian (1)	Unitarian Universalist; None; Roman Catholic; Methodist	White
4	Republican or Right-Leaning (2)	Christian	White
5	Democrat or Left-Leaning (1); No Preference (1); Independent (1)	None; Hindu; Spiritual	Mixed; South Asian; White
6	Independent (2); Democrat or Left-Leaning (3)	Catholic; Unitarian Universalist; Jewish; None; Presbyterian	White
7	Republican or Right-Leaning (3); Independent (1)	Agnostic; None; Mormon; Baptist	White (3); Black (1)
8	Republican or Right-Leaning (2)	Christian	White
9	Democrat or Left-Leaning (6)	Christian (4); Roman Catholic (1); Episcopalian (1)	Black (4); White (2)
10	Democrat or Left-Leaning (6); Independent (1)	None (3); Christian; Christianity; United Church of Christ; Not Stated	White (5); African American; Black
11	Republican or Right-Leaning (5)	Catholic (2); Christian; United Methodist; Not Stated	White
12	Democrat or Left-Leaning (5); Independent (1)	Agnostic; Hindu; Christian-Pentecostal; Christian Non-Denominational; None; N/A	Black (2); White (2); Asian American; Filipino
13	Republican or Right-Leaning (3)	Christian (2); Christian (non-denominational)	White (2); White, South African

common good, whatever that may be perceived to be. Its mission statement includes the following lines:

- We advocate the application of science that strengthens human rights, addresses injustices, and improves conditions for all species to thrive.
- We recognize that science can be exploited to perpetuate harms and reinforce oppression. We are committed to challenging power structures within science communities that cause harm.
- We understand that science does not operate in a vacuum and is inherently connected with and influences many issues in society. To build a future where we all share the benefits of science, we must work purposefully and in solidarity with ally movements working toward social justice.

Here the myth of scientific dispassionate, apolitical neutrality, and objectivity is rejected.

The March for Science constitutes an example of the political mobilization of science, explicitly tied to morals and ideals. Hence I thought its mission statement would make a valuable, relevant stimulus for focus group discussions. It emerged that most participants had never heard of it. Those who had heard of it tended to be Democrat or left-leaning. One teacher had had students from their school attend the main 2017 Washington, D.C., march, and another had been on a regional march. Nevertheless, what is clear from the focus groups is that Democrats, Independents, and Republicans alike in the region all value science, are interested in it, and regard it has having cultural authority, across religious identities. For example, Sarah (Independent, former Catholic, White, Focus Group 2) said: 'I like to understand why it is that we do what we do and what the benefits and what the consequences are and all of those things. So, it might be a piece of science, not the entirety of it. But I feel like it's something I enjoy doing'. There is pleasure here, in engaging with science (Schaefer 2022), and Mallory (Republican; Christian; White): 'I love the science of animals and learning, you know, how they live and how they evolved over time. And it's just fascinating to me how everything's all interconnected'.

Religion and Science

Given the oblique approach to religion in the study, it is perhaps unsurprising that religion did not emerge as one of the most frequently occurring themes. Nonetheless, participants did discuss science and religion (toward the end of the focus groups I asked about science and beliefs and perceptions of science as anti-religious). Comments tended toward regarding science and religion as either complementary or separate, but some conflict was discussed. Given the focus on shared discourse, indicative, longer extracts from focus groups are presented in order to explore meanings arising in

discussion. Complementarity, separateness, and conflict all surface in the following extended extract from Focus Group 13:

Annika (Republican, Christian, White, South African): Yeah, so I'm Christian. And definitely I think people just assume I am very right leaning. I feel like sometimes a handful of Christians throughout time, just give a bad name, give a bad impression. And I'm thankful for the diversity of my friends, because I have Christians both left leaning and right leaning because the political, or what each side believes doesn't necessarily rock the fundamental core of what we believe in terms of the Bible. But yeah, definitely, I've been categorized based on that.

And I've had to be like, 'Well, you know, let's unpack that. Let's just have a conversation, because that's not necessarily the truth because of a stereotype'. And I just think about just throughout history how Christians in the name of the Crusades have gotten obliterated, and try to civilize the North American Indians, or the Native Americans. It's a bad rap.

And I think it's just understanding and getting people to understand, we're still humans, different humans. We all belong to like the same organization, creed, religion, but we're still humans with different brains and different upbringings and different thoughts and different opinions and exposed to different things. So yeah, I still enjoy keeping a good diversity of friends, because it definitely helps and just even my own viewpoint being broader.

Rebecca: So is that like, people thinking that because you're a Christian that you have an anti-scientific perspective?

Annika: Sometimes they would think that, or I guess there's maybe just a list of stereotypes that they would assume that we would believe, maybe even climate change. That we would have a particular anti, but, being in the Christian church, I just know how much diversity is within the Christian church.

I don't even bring up politics around Christian friends, because they could be completely left or right leaning. It's just so, yeah. I think that there is a false opposition that because you belong to this particular group of people that you all march in the same direction.

Rebecca: So John, how about you, any of those kinds of experiences?

John (Republican, Evangelical Christian (non-denominational), White): Yeah, absolutely. Very similar to Annika just a lot of the things that she's saying really resonated with me too, because I'm also a Christian. I grew up in a Christian home and everything. And so a lot of times, there's a lot of biases that people automatically are just like, 'Oh I met people in the past this stereotype'. And it's like, no, everybody's diverse

and everybody has, like Annika was saying, a different brain in their head. And there's so much diversity within just the Christian church, of just diversity of opinions and beliefs, where there's that central kind of core tenant that we all believe in. But there's just a lot of diversity even within that […]. To me, I view science as a better way to understand the world that God created for us to be in. And so to me, I feel like a lot of times people think that, 'Oh, if you're a Christian, then you're anti science,' kind of like what you were saying.

Where I think a lot of times it can help to inform and even enrich what I believe because I'm like look at the intricacy of this thing, or this other thing that was discovered. And to really see with my opinion, what I think like what our Creator made, and how he made that in the similarities between a lot of things.

So I personally, I enjoy science, and I think that it really shouldn't be separated from religion, or a lot of people think like, 'You know, oh, you're a scientist. So, you can't be religious or vice versa type of thing.'

In this extract, Annika and John agree that inaccurate assumptions about their attitudes toward science have been made because of their Christian identity. Then in Focus Group 7 there is agreement across religious and non-religious identities that science and religion do not have to conflict:

Jessica (Republican, Christian, White): People talking about stuff like that. And how could you believe in God, if you're a scientist, stuff like that. I think it all begins with being […] believing in God. It's kind of like being attacked with the fact that when other people don't believe, and that just might be the people I know. The people that I've talked to about it, that they think that the God-fearing people don't believe in science, and that's just not true.

Rebecca: Yeah, so there's kind of that again like this. So, you have experienced that and kind of this incorrect assumption being made ...

Jessica: I have.

Rebecca: ... about if you're religious, then you're not scientific. Anyone else had experiences of that or seen or observed that as well?

Bethany (Republican, none, White): Well. I'm going to go the opposite direction. I do declare myself an atheist. But I never see personally, I never feel that the religion has anything to do with the science part of it. It's, how do you not believe in the science? That's kind of it's out there. It's everywhere. That's kind of how I feel. So I've never, I guess I've experienced that, that you were saying, Jessica, to that side of it. But I've never felt that

just because you believe in God that, you can't believe in science. And I've never felt that way either direction.

Rebecca: But so maybe you've seen that other people holding that assumption, and it's not something that you've held yourself being an atheist?

Bethany: Correct, yes. […]

Joseph (Republican, Agnostic, White): I was just going to say that. I don't know that I've ever experienced that if you're scientists, you can't believe in God, that from my own personal perspective. I'm an agnostic, so I'm open to anything that's out there. And whatever you want to believe I'm free to let you believe it. And then I'll just filter it to my own brain and go where I got to go at that point […].

Rebecca: And Rikki, and Manny, anything to add on that?

Manny (Independent, Baptist, White): This is Manny. I was raised strict Baptist. And I do see people who see if you believe in God, or if you believe in Jesus that, okay, they're not thinking with a full deck. Or how can you believe that. I really appreciate what the one woman who said she was an atheist. She says, 'I'm okay with whatever you want to believe I'm not going to force my views on them'.

But it seems more and more atheists, people who do not believe in God or they're going to put down people, Christians who believe that God does exist. Just was at the spa just this week, the guy there who was on [his] deathbed, he had a bunch of people in church praying for him, and the doctors can't explain how he was healed but he was healed.

So, sometimes maybe God helps out the science, its all depends on your point of view, and what your beliefs are. I don't think anybody should be put down for believing in God. I am not, I don't go to church, I'm not a strong Christian, but my parents were, and I don't think anybody should put any of them down or my family down because they are strong believers.

And I think God can advance science. 'God, we need a cure, what can we do?' Maybe God's helping me to allow those discoveries to be made. I just think in this day and age, I also do wedding services. I've performed over 100 marriages. And quite frankly, why am I doing so many marriages is the young kids are getting totally away from the church. And there's an old verse that says, train up a child in the way he will go and when he's old, he won't depart from it.

Well, I think a lot of kids aren't getting any type of biblical or church training and atheism is getting stronger and stronger in the United States.

Rebecca: Yeah, I'd say, there's some – I think that's the demographics like the statistics would bear that out as well. Jessica?

Jessica: I also really appreciated what Bethany said, and everyone really, but in regard to atheism and that she understands America, you get to choose. So we can have both because we get to choose we live in a free country.

Rebecca: Thank you, and Rikki any thoughts on that as well on that. I think you're the only person we haven't heard on about this kind of stereotype of science as anti-religion, atheistic, anti-religious.

Rikki (Republican, Mormon, Black): Yes. I grew up in a religious household. I am very religious, not the same religion I grew up with though. But with science, you have to think of all possible scenarios, whether it is religious, some people it's supernatural, out of this world, or whether it's just everyday things, you have to think of like a broad horizon. That's what makes you a scientist. So for someone to say that science discredits religion or religion discredits science is not thinking of it in a scientific manner, you're thinking of as just a basic simple idea.

In these extracts, Annika, John, Bethany, and Manny all reflect a pattern that appears in the national survey also conducted as part of the SRES2 project: participants assuming it will be more difficult for religious members of the public to accept scientific concepts than the non-religious and is actually reported by religious members of the American public (Gosschalk et al., 2023). Stereotypes persist, but a national of value of freedom is invoked. Freedom and individual choice were more commonly raised in focus groups including Republican or right-leaning participants.

In Focus Group 1, in Peter's (Independent, Byzantine Catholic, White) response to my question about science and religion, complementarity, separateness, and conflict are again all present:

So, I have definitely seen that, I don't think that that's a true statement, that they that they are against each other. Certainly, any science teacher like myself, has had students and parents who have said, 'Are you going to be teaching the Big Bang? Are you going to be teaching evolution? Are you going to be teaching these things? I have a religious exemption for that. I have a religious complaint about that'. And the way I've handled that, in the past is simply to say, 'Well, what is the point of religion? It's to find some truth in the universe, what's the point of science, it's to help us find our way to some truth'.

And so really they're just different branches on the same tree. I believe if you can get people to believe that things are, that the trunk of the tree is philosophy, and the branches are, 'Hey, religion will take you

to a supernatural understanding of the universe and science will take you to a natural understanding of the universe. So this one I just need evidence, I can't rely on faith in this one. I need faith that goes beyond evidence'.

Most of the time, you can get people to say, 'Okay, well, as long as we're really understanding which branch I'm on we're good'. It's when scientists try to speak as religious leaders or religious leaders try and speak as scientists when we try and conflate those two that I think we run into problems.

Jenny (Fed Up with Politics, Methodist, White) continued:

I just have to agree with what Peter said. And I've often looked at, I don't, there are always going to be places where science and religion ways of looking at things don't quite match up. But if that happens, just wait, the science will advance or our religious understanding will. So I've never seen it in the same way. I've seen it as two different ways of discovering the truth.

And I likened it to that analogy about the blind men and the elephants. The blind man once saying, 'Well, science is like the tail or science is like the tree trunk because they're feeling the leg'. They're all touching a different part of the element. They're all getting different slivers of truth and we're really stronger when we put all those slivers together.

So personally, I solved that a long time ago that I don't see that as something that should be a conflict. But acknowledge that yeah, there are places where they're not going to point in the same direction. But it doesn't mean that they have to be at odds.

Then Karen (Democrat, Reform Jewish, White) added:

In Judaism, we look at science as a way of advancing health for others, as a way of advancing the world. One of our tenets is called *tikkun olam* which is 'repairing the world.' Whether it's through conservation or things like that, that's a way of repairing the world. We have another tenet called *gemilut hasadim*, which is acts of loving kindness.

And, still another one, which is where you can break Shabbat restrictions, if it's to save another life. So, if you have to rush a person to the hospital or if you need to do something to save a person's life, then it's more important ethically, we look at it from an ethical standpoint. We don't look at it from a religious standpoint, we look at it from an ethical standpoint. Will this help others? Will this help the world? That's how we look at things.

And that is how we approach science is, how does this help the world? How does this help others? How does this advance our understanding of other people and other things?

Again, there is agreement across religious and political identities. Yet Peter's reference to parents questioning aspects of the school science curriculum serves as a reminder that these sites of conflict in relation to science and religion do exist within the United States.

Evolution and Tension

The only religious professional amongst participants – a Presbyterian pastor – in a rare instance of raising the issue of science and religion before I did, early on in Focus Group 2 made it clear that he is not a creationist in response to the March for Science stimulus:

> Mark (Independent, Presbyterian, White): The impression I have about, I think the science I saw were promoting, or opposing creationism in education. And I don't hold the creationist views myself, that I see diversity, my personal views are intelligent design, I think there's just too much complexity for everything around us to happen randomly. But as far as long-time things developing, I'm okay with that. I just like to have just different theories of the approach in education.

Then toward the end he added:

> I don't think religion and science are mutually exclusive at all. There are people that make it so but I know a number of scientists who are Christians, I even know a few who are creationists. I had, a creationist taught me biology in high school. He's the best teacher I had. It doesn't have to be that kind of divide. We should be able to talk to each other.
>
> Well, I see some differences happening with Richard Dawkins. He's softening I think compared to what he was before. He called himself a cultural Christian. And last thing I read from it, he likes the Christian values in society, the love and the care for other people. Just doesn't see that God is necessary for it. He wouldn't have said that before.

In between, Mark also discussed his passion for science and the challenges of encouraging his congregation to embrace COVID-safe precautions when returning to in person worship during the pandemic.

In Focus Group 8, Destiny (Republican, Christian, White) expressed her personal difficulty reconciling her faith in God with evolution. Her focus group partner Tracey (Republican, Christian, White) asked her: 'Like creation versus evolution?' and Destiny responded:

> Yes. I don't believe in evolution. I believe God created man, and He made woman out of the rib. But I don't know where He did that at. If it was at the cellular level, at the scientific level? Or did He just make man and put over at Asia, at BC? I don't know.

> I always said someday when I can sit down and have a cup of coffee or tea with Him. I'm going to ask Him these questions. Because some of these questions, I don't know, when we have Bible study at our church. I have faith but you can't see faith. It's like a mustard seed. But if you have faith of a mustard seed, then you have no faith.
>
> So, all those things that they teach us in religion, do have a science background, but it's hard to connect them scientifically, perfectly like I like to do when I have my Web MD and my *Journal of Medicine* and all of that that is not supporting what the Bible says. And it's okay, I don't care, but it would be nice to know someday I'll know how he put it all together.

Tracey, who is a nurse, then commented:

> I completely understand absolutely everything that Destiny was saying. And it's taken me a lot, I try to wrap my head around things. And as sometimes it can be pretty difficult. But if I keep in mind, on this one thing that I really think of is we are souls with a body, not a body with a soul. I think of that often and it kind of carries me through when I'm really trying to figure things out between science and religion. I just kind of keep on repeating that in my head.

Which led to this exchange:

Destiny: That's cool. We are souls with a body but not a body with souls.
Tracey: Not a body with a soul, we're a soul with a body.
Destiny: That is cool. That's a good way to think about it.

In this focus group, these two women helped each other think through their stances (with minimal input from me).

Only one other participant (so three out of 56) also queried evolutionary science at all. Mallory and Bethany (both just seen) were the only two participants to talk about having not been vaccinated against COVID-19 as of yet, though some talked about family members who had not. Two others (both identifying as Republican or right-leaning, Christian, and White) affirmed conspiracy theories during one focus group. None expressed any climate change scepticism, though some expressed ire at climate sceptics.

Discussion

In these focus groups, likeminded individuals came together to discuss science, identity, and values, using the March for Science's mission statement as a stimulus. Initially, participants were wary of revealing too much in front of strangers. They tentatively tested the waters, feeling out where others stood politically and on the topic of the pandemic specifically. In contrast to religion, given the time period of the data collection, the pandemic came up

frequently. Tracey (just seen) put it this way: 'Well, I mean, [science means] something totally different now than it did before COVID. That's all I'm going to say. I just, that word science is an everyday occurrence as far as that that word, you hear that word. Every day "science, science, science". And before COVID I know I didn't hear that word every day'.

Yet, when religion was discussed, as seen in the extended excerpts presented, consensuses were reached in the processes of legitimizing and delegitimizing claims, behaviours, institutions, and groups of people. Overall, participants did not see some essential conflict between science and religion. More commonly, the two arenas were seen as complementary, or separate, and others seen as the ones with issues reconciling the two. Both more left- and more right-leaning participants managed to move across religious difference. The few instances just reported, where participants did express views divergent from scientific consensuses, including on evolution, did not incite any rebuke from fellow participants and can be seen as in keeping with national patterns (Gosschalk et al., 2023).

As stated, I intentionally grouped participants according to self-selected political identifications in the screening survey. Thus, methodologically, I set up the juxtaposition between more right- and more left-leaning participants. Also, the risk of self-selection bias (of those willing and able to volunteer for research related to science) must be borne in mind, despite efforts to recruit widely and the compensation for participants' time of a $20 gift card (thus also recruiting people with little interest in the topic itself, with some participants expressing that this was the case).

Nevertheless, this data helps contextualize national findings, sheds light on cross-partisan enthusiasm for science, and considers regional as well as national specificities in a large, varied, influential country. The seeming paradox that science has enduring cultural authority *and* that there is distrust in specific scientific fields linked to political identity plays out (Gauchat, 2023; Mann and Schleifer, 2020). Overall, Whiteness remained an unmarked category in the background, though three participants of colour did reference experiences of racism in the United States.

Conclusion

The United States is culturally hegemonic in terms of science and religion dynamics as well as international economics, geopolitics, and media (participants in other case study chapters, especially Chapter 6 and Chapter 7 on Germany and Spain, consistently reference the situation in the United States), although not the blueprint. The pandemic affected the research and data significantly, and it is difficult to fathom how much it will continue to impact life and research. Whilst not discounting that stances in opposition to specific aspects of science can be harmful (Glass, 2019), the data again reminds us that such stances are minority ones, even within the American Midwest and amongst more right-leaning people. When religion was not asked about

directly in relation to science, it did not come up very much. In line with prior research in relation to evolution previously cited, this suggests taking care when interpreting survey results: assessing the salience of any anti-science positions expressed in response to closed questions. Perhaps reorienting attention toward the science enthusiasm, joy, and approval found amongst all participants, of various religious, non-religious, and political identities, could be a constructive way to approach science communication, as research is developing on at the moment (Davies, 2019; Felt and Davies, 2020; Marsh, 2016).

Notes

1 A classificatory distinction is drawn between White people in the United States of America with family origins in Central and South America and White people with origins in other world regions. This is given the similar socio-economic patterns, experiences, and culture people with family origins in Central and South America can share within the United States (despite the huge diversity of both regions), influenced by European colonialism and American imperialism. The distinction speaks to the complexity and challenges of racial and ethnic categorization. The term 'Latine' or 'Latinx' is now preferred by some to Latino or Hispanic as less gendered or colonial.
2 www.census.gov/quickfacts/fact/table/US/PST045219 (accessed 10:35 A.M. Friday 15 October 2021)
3 https://tinyurl.com/4nksufvs (accessed 11:08 A.M. Friday 15 October 2021)
4 www.npr.org/2021/09/02/1033048958/supreme-court-upholds-new-texas-abortion-law-for-now and www.supremecourt.gov/opinions/21pdf/19-1392_6j37.pdf (accessed 10:06 A.M. Thursday 21 October 2021)
5 The impacts upon science infrastructure of the second Trump administration are unfolding as of May 2025.
6 https://usafacts.org/visualizations/covid-vaccine-tracker-states/state/ohio/ (accessed 11:53 A.M. 29 September 2023)
7 I am grateful to Kent State University Sociology and Criminology graduate students Leslie Wood and Joshua Warren for their help as graduate assistants conducting this research.
8 I am grateful to all participants who volunteered to take part in the research. Pseudonyms are used throughout.
9 www.dispatch.com/story/news/politics/elections/presidential/2020/11/04/analysis-how-donald-trump-easily-beat-joe-biden-battleground-ohio-election-day-results-for-president/6050222002/ (accessed 11 October 2023).
10 www.nature.com/articles/d41586-018-04474-w (accessed 11 October 2023); www.sciencefriday.com/spotlights/the-march-for-science/ (accessed 11 October 2023); https://undark.org/2019/05/16/the-march-for-science-fizzled-but-didnt-fail/ (accessed 11 October 2023)

References

Anderson G, Jankowski J and Boroush M (2023) *U.S. R&D Increased by $51 Billion in 2020 to $717 Billion; Estimate for 2021 Indicates Further Increase to $792 Billion*. Alexandria: National Science Foundation, 4 January.

Bielo J (2018) *Ark Encounter: The Making of a Creationist Theme Park*. New York: New York University.
Boxell L, Gentzkow M and Shapiro JM (2024) Cross-Country Trends in Affective Polarization. *Review of Economics and Statistics* 106(2): 557–565.
Brown H (2021) *Homeschooling the Right: How Conservative Education Activism Erodes the State*. New York: Columbia University Press.
Burge R (2023) *Review of The Nones: Where They Came From, Who They Are, and Where They Are Going*. Minneapolis: Fortress Press.
Catto R (2024) Creationism and Climate Skepticism: Power and Public Understandings of Science in America. *Cultural Studies of Science Education* 19(1): 15–22.
Corcoran KE, Scheitle CP and DiGregorio BD (2023) Paranormal Beliefs, Vaccine Confidence, and COVID-19 Vaccine Uptake. *Sociology of Religion* 84(2): 111–143.
Davies SR (2019) Science Communication as Emotion Work: Negotiating Curiosity and Wonder at a Science Festival. *Science as Culture* 28(4): 538–561.
DiMaggio P, Sotoudeh R, Goldberg A, et al. (2018) Culture Out of Attitudes: Relationality, Population Heterogeneity and Attitudes Toward Science and Religion in the U.S. *Poetics* 68: 31–51.
Dunlap RE and Jacques PJ (2013) Climate Change Denial Books and Conservative Think Tanks: Exploring the Connection. *American Behavioral Science* 57(6): 699–731.
Dunn JDG (2016) The Roots of Christian Fundamentalism in American Protestantism. In: Dunn JDG (ed) *Fundamentalisms: Threats and Ideologies in the Modern World*. London; New York: I. B. Tauris, pp. 9–26.
Ecklund EH and Scheitle C (2018) *Religion vs. Science: What Religious People Really Think*. New York: Oxford University Press.
Edgell P and Hull KE (2018) Cultural Schemas of Religion, Science, and Law in Talk About Social Controversies. *Sociological Forum* 32(2): 298–320.
Edwards KL, Christerson B and Emerson MO (2013) Race, Religious Organizations, and Integration. *Annual Review of Sociology* 39(1): 211–228.
Elsdon-Baker F (2015) Creating Creationists: The Influence of 'Issues Framing' on Our Understanding of Public Perceptions of Clash Narratives between Evolutionary Science and Belief. *Public Understanding of Science* 24(4): 422–439.
Elsdon-Baker F (2020) Creating Hard-Line "Secular" Evolutionists: The Influence of Question Design on Our Understanding of Public Perceptions of Clash Narratives. In: Lightman B and Elsdon-Baker F (eds) *Science and Religion: Exploring the Spectrum*. Pittsburgh: University of Pittsburgh Press, pp. 30–49.
Elving R (2024) *Ohio Has Been a Bellwether and a Battleground: What Is It Telling Us Now?* NPR, 23March: www.npr.org/2024/03/23/1240249291/ohio-bellwether-battleground-election (accessed 6 May 2025).
Emerson MO, Korver-Glenn E and Douds KW (2015) Studying Race and Religion. *Sociology of Race and Ethnicity* 1(3): 349–359.
Evans JH (2018) *Morals Not Knowledge: Recasting the Contemporary U.S. Conflict Between Religion and Science*. Oakland: University of California Press.
Evans MS (2016) *Seeking Good Debate: Religion, Science, and Conflict in American Public Life*. Oakland, CA: University of California Press.
Felt U and Davies SR (2020) *Exploring Science Communication: A Science and Technology Studies Approach*. Los Angeles: SAGE.
Funk C (2020) *Key Findings about Americans' Confidence in Science and Their Views on Scientists' Role in Society*. Pew Research Center, 12 February: https://pewrsr.ch/2Hgq31S (accessed 6th May 2025)

Gauchat GW (2023) The Legitimacy of Science. *Annual Review of Sociology* 49(1): 263–279.
Glass J (2019) Why Aren't We Paying Attention? Religion and Politics in Everyday Life. *Sociology of Religion* 80(1): 9–27.
Gosschalk K, Piggott L, Gray H, et al. (2023) *Science and Religion Exploring the Spectrum: A Multi- Country Study on Public Perceptions of Evolution, Religion and Science*. Birmingham: University of Birmingham, December.
Hansson SO (2017) Science Denial as a Form of Pseudoscience. *Studies in History and Philosophy of Science* 63: 39–47.
Hill JP (2020) Science and Religion Conflict in the United States: A Closer Look at the Polls. In: Elsdon-Baker F and Lightman B (eds) *Identity in a Secular Age: Science, Religion, and Public Perceptions*. Pittsburgh, PA: University of Pittsburgh Press, pp.50–66.
Hunter JD (1991) *Culture Wars: The Struggle to Define America*. New York: BasicBooks.
Johnson DR, Scheitle CP and Ecklund EH (2016) Conservative Protestantism and Anti-Evolution Curricular Challenges Across States. *Social Science Quarterly*. 97(5): 1227–1244.
Kaden T (2019) *Creationism and Anti-Creationism in the United States: A Sociology of Conflict*. Cham: Springer.
Kennedy B, Tyson A and Funk C (2022) *Americans' Trust in Scientists, Other Groups Declines*. Washington, DC: Pew Research Center, February.
Mann M and Schleifer C (2020) Love the Science, Hate the Scientists: Conservative Identity Protects Belief in Science and Undermines Trust in Scientists. *Social Forces* 99(1): 305–332.
Marsh O (2016) "People Seem to Really Enjoy the Mix of Humour and Intelligence": Science Humour in Online Settings. *Journal of Science Communication* 15(2): 1–9.
Martí G (2019) The Unexpected Orthodoxy of Donald J. Trump: White Evangelical Support for the 45th President of the United States. *Sociology of Religion* 80(1): 1–8.
Matthews MA (1959) The Earth's Carbon Cycle. *New Scientist* 6(151): 644–646.
McCain K and Kampourakis K (2018) Which Question Do Polls About Evolution and Belief Really Ask, and Why Does It Matter? *Public Understanding of Science* 27(1): 2–10.
Mehta SK, Thomson RA and Ecklund EH (2021) Polarized Scientists? Exploring Political Differences about Religion and Science among U.S. Biologists and Physicists. *Sociological Forum* 36(1): 5–28.
Misheva T, Brownell SE and Barnes ME (2023) "It's More of a Me-Thing than an Evolution Thing": Exploring the Validity of Evolution Acceptance Measures Using Student Interviews. *CBE Life Sciences Education* 22(4): 1–13.
National Assessment of Educational Progress (2019) *Results from the 2019 Science Assessment at grades 4, 8, and 12*. Washington, DC: U.S. Department of Education.
Next Generation Science Standards (2017) The Standards. Washington, DC: The National Academies Press.
Noy S and O'Brien TL (2018) An Intersectional Analysis of Perspectives on Science and Religion in the United States. *The Sociological Quarterly* 59(1): 40–61.
O'Brien TL and Noy S (2020) Political Identity and Confidence in Science and Religion in the United States. *Sociology of Religion* 81(4): 439–461.

Perry SL, Whitehead AL and Grubbs JB (2020) Culture Wars and COVID-19 Conduct: Christian Nationalism, Religiosity, and Americans' Behavior During the Coronavirus Pandemic. *Journal for the Scientific Study of Religion* 59(3): 405–416.

PRRI (2021) *The 2020 Census of American Religion*. Washington, DC: Public Religion Research Institute.

Ray R (2021) School as a Hostile Institution: How Black and Immigrant Girls of Color Experience the Classroom. *Gender & Society* 36(1): 88–111.

Reich J (2016) *Calling the Shots: Why Parents Reject Vaccines*. New York: New York University Press.

Sánchez Salazar E, Vaidyanathan B, Howard Ecklund E, et al. (2019) Challenging Evolution in Public Schools: Race, Religion, and Attitudes toward Teaching Creationism. *Socius* 5: 1–13.

Scaramanga J and Reiss MJ (2023) Evolutionary Stasis: Creationism, Evolution and Climate Change in the Accelerated Christian Education Curriculum. *Cultural Studies of Science Education*. 18: 809–827.

Schaefer D (2022) *Wild Experiment: Feeling Science and Secularism After Darwin*. Durham: Duke University Press.

Smith C (2003) *The Secular Revolution: Power, Interests, and Conflict in the Secularization of American Public Life*. Berkeley: University of California Press.

Smyth JC (2023) *Ohio Voters Enshrine Abortion Access in Constitution in Latest Statewide Win for Reproductive Rights*. The Associated Press, 7 November: https://apnews.com/article/ohio-abortion-amendment-election-2023-fe3e06747b616507d8ca21ea26485270 (accessed 6 May 2025).

Toumey CP (1994) *God's Own Scientists: Creationists in a Secular World*. New Brunswick: Rutgers University Press.

Trollinger W (2023) *Before He Was House Speaker, Mike Johnson Represented a Creationist Museum in Court. Here's What That Episode Reveals About His Politics*. Religion News Service, 12 December: https://religionnews.com/2023/12/12/before-he-was-house-speaker-mike-johnson-represented-a-creationist-museum-in-court-heres-what-that-episode-reveals-about-his-politics/ (accessed 6 May 2025).

Walls L (2012) Third Grade African American Students' Views of the Nature of Science. *Journal of Research in Science Teaching* 49(1): 1–37.

Webb RM and Kurtz L (2022) Politics v. Science: How President Trump's War on Science Impacted Public Health and Environmental Regulation. *Progress in Molecular Biology and Translational Science* 188(1): 65–80.

Wertheim S (2020) *Tomorrow, the World: The Birth of U.S. Global Supremacy*. Cambridge: Havard University Press.

White K (2021) *Publications Output: U.S. Trends and International Comparisons*. Washington, DC: National Science Foundation, 28 October.

Whitehead AL and Perry SL (2020) *Taking American Back for God: Christian Nationalism in the United States*. New York: Oxford University Press.

Yukich G and Edgell P (eds) (2020) *Religion Is Raced: Understanding American Religion in the Twenty-First Century*. New York: New York University Press.

Part III

Cross-Cultural Analysis

11 Where the Conflict Really Lies

Quantitatively Locating Evolution Conflicts Internationally

James Riley and Fern Elsdon-Baker

Introduction

The early 2000s saw a raft of philosophical and polemical tracts dedicated to the topic of science and religion, perhaps most notably Richard Dawkins' *The God Delusion*. Dawkins, a zoologist by training, centred evolutionary science in his arguments for the redundancy of a creator God and the purportedly antiscientific nature of religious belief (Dawkins, 2006). Historian of science Geoffrey Cantor suggests Dawkins followed in the 'strong version' of the conflict thesis, which posits a necessary conflict between science and religion and provides 'a master-narrative in which science is portrayed as inevitably pitted against religion, because of some essential difference between the two'. Dawkins's argument can be seen as a part of a longer history of the 'strong version' of the conflict thesis, particularly associated with John William Draper's *History of the Conflict Between Religion and Science* (1875) and Andrew Dixon White's *A History of the Warfare of Science with Theology in Christendom* (1896) (Cantor, 2010: 285).

The title of this chapter draws on the title of American analytic philosopher Alvin Plantinga's 2011 book: *Where the Conflict Really Lies: Science, Religion, and Naturalism*. In this book, which was in part written in direct response to atheistic authors such as Dawkins at the start of twentieth century, Plantinga attempted to turn the philosophical debate around science and religion on its head, arguing it is not science and religion that are in fact in conflict, but science and naturalism (Plantinga, 2011). This chapter is not concerned with the content of Plantinga's philosophical positions but rather takes inspiration from his overall framing: Where does the often discussed conflict between science and religion *really* lie?

To answer this question, we move beyond philosophical and essentialised debates about science and religion and recast the question of their relationship as social (Evans and Evans, 2008). This follows a noticeable shift in the investigation into the relationship between science and religion over the previous 15 years, which has seen an upsurge in the attention paid to this relationship by social scientists seeking to understand, map, and theorise how

DOI: 10.4324/9781003476580-14

science and religion, or their representatives, actually interact (e.g. Evans and Evans, 2008; Ecklund, 2010; see Chapter 1). The present chapter furthers this social scientific turn in the study of science and religion, refocusing on the question of where the conflict really lies, and exploring it using quantitative data regarding public attitudes around evolutionary science as a case study.

Prior to this sociological turn in the study of science and religion in society, a common way to measure public acceptance of evolution was to present respondents with scenarios concerning the origins and development of humans and the role of God in this process and then ask respondents to self-categorise into a position that is closest to their view. Gallup has deployed this type of measure in the US since 1982, presenting the following options: (1) human beings have developed over millions of years from less advanced forms of life, but God guided this process; (2) human beings have developed over millions of years from less advanced forms of life, but God had no part in this process; (3) God created human beings pretty much in their present form at one time within the last 10,000 years or so. Between 1982 and today, this approach has indicated that the proportion of creationists in the US has fluctuated between 47% and 37% respondents, with a noticeable downward trend since 2012 (see Brenan, 2019; 2024).

The results of this type of self-categorisation measure often receive media attention, particularly around events concerning the religious right in the US, as well as politics or education. For example, after the evolution-sceptical Republican Mike Johnson was elected as Speaker of the House of Representatives in 2023, *The Washington Post* led with the story, 'A Plurality of Americans Believe God Created Humans Without Evolution' (Bump, 2023). This story was based on polling in 2023 by Suffolk University for *USA Today*, which asked the US public: 'What comes closest to your belief about humans and evolution? Humans evolved into their present form without divine intervention; 2) Humans evolved into their present form, but God directed the process; 3) Humans did not evolve, They [sic] were created in their present form by God'. Based on the results of this survey, 37% of the US public were creationists (Suffolk University, 2023).

These types of self-categorisation measures, however, have been criticised for being restrictive, forcing an embedded conflict into question design that can lead to the creation of creationists through survey approaches (see Elsdon-Baker, 2015; Hill, 2019). Pew Research Centre (2019) have empirically tested the effects of small changes in the wording and structure of their questions regarding attitudes to human origins and development. Researchers at Pew found that small changes in wording and structure, particularly around the inclusion of the word 'God', can have major impacts on the amount of the public found to have creationist or various types of evolutionist views (Pew Research Center, 2019). The problem is, however, that the percentages are often reported in news articles uncritically, suggesting the existence of a large, committed and homogeneous creationist bloc (e.g. Bump, 2023).

Since the sociological turn in this field, there have been various researchers who have developed less blunt measures regarding the perceptions origins and development of humans across different groups, which seek to bypass the issues inherent in simple self-categorisation measures. For example, rather than asking the three scenarios of the preceding Gallup measure, Ecklund and Scheitle (2018) offered six more gradated narratives and allowed participants to say if they believed more than one option was true or false. This approach allows for a more complex view of public beliefs regarding human origins to emerge. Another approach has been taken by both Hill (2014) and Unsworth and Voas (2018), who, instead of offering overarching scenarios, asked their survey participants to respond to a series of items outlining more nuanced belief positions in relation to evolution and compiled these measures to reconstitute categories of 'creationism' and 'naturalistic evolution'. Both these studies, in the US and the UK, demonstrated that the levels of more extreme versions of creationist beliefs (such as young earth creationism) were much less prevalent than previous approaches had found.

Alongside the prevalence of reductionist approaches to the categorisation and quantification of anti-evolutionary stances, there has also been a significant focus both in scholarly literature and public or media discourse on the relationship between science and religion and creationism in the USA, with a concurrent lack of research attention paid to other parts of the world. This leads to the potential danger of a preconception of a US-style creationist model being imported into the study of these debates across and within other cultures globally. This was in part the motivation for the project that generated the data discussed in this chapter. How do beliefs regarding evolution, science, and religion operate internationally within non-Anglophone or predominately non-Protestant contexts? How might these compare to better studied contexts such as the US and UK? And how do we best design research programmes to allow attitudes to emerge bottom-up, resisting problematic issues framing in research design (Elsdon-Baker, 2015)?

A further preoccupation, both in public discourse surrounding evolution and in polling in this area, has been to solely focus on levels of creationism, rather than other forms of belief concerning human origins and broader attitudes and debates regarding evolutionary science and beliefs. One such approach which sought to more deeply understand how debates around evolutionary science and belief operate was developed during the first phase of the 'Science and Religion: Exploring the Spectrum' (SRES) project. In addition to asking individual-level belief questions, such as those just discussed, respondents were also asked what they believed *others* believed about evolutionary science (see Elsdon-Baker et al., 2017a; 2017b). This identified a widespread social narrative in the UK and Canada that it would be difficult to accept evolutionary science if one is religious:

> We found similar levels of this kind of projection across all respondents – people think that religious publics and, to a lesser degree, religious

> scientists will struggle, regardless of whether they themselves are religious, spiritual, or nonreligious.
>
> (Elsdon-Baker (2019: 628–629)

This social narrative of inevitable conflict, however, did not match the individual-level beliefs of religious individuals in either the UK or Canada, leading to the conclusion that 'at a societal level, there is a mismatch between how we think religious people think about evolutionary science and what they actually think about evolutionary science' (Elsdon-Baker, 2019: 628–629). The present chapter presents data from subsequent studies that sought to replicate and expand these findings from the 2017 surveys undertaken in the UK and Canada and by further testing this survey methodology in five new countries: Argentina, Australia, Germany, Spain, and the US.

Methods

In this chapter we utilise 2023 data from a survey designed and deployed as part of the 'Science and Religion: Exploring the Spectrum of Global Perspectives' project (SRES2). The survey built on the question design and approaches developed during the original SRES project survey, which investigated attitudes towards evolution through nationally representative samples in the UK and Canada in 2017 (see Elsdon-Baker et al., 2017a; 2017b).

International research can suffer from researchers from one context not fully understanding the cultural specificities of other international research sites. An international partnership approach was used to design and test the survey in order to reduce the risks of issues framing being imported from one cultural context to another. At the same time as collaborating in the design, translation, and testing of this survey, our international partners also conducted in-depth qualitative studies of science and belief in each of the countries of the study (see Chapter 1 and Chapters 4-10). By running this survey towards the end of the wider programme of international qualitative research, we were, as a research team, better able to understand how question wording and issues framing might impact on the ways in which participants might engage with the survey questions.

Initially, an English-language survey was created and cognitively tested with UK participants. Where relevant, the English language survey was professionally translated, and translations were checked by our project partners at institutions in each of the other six countries of the study. This expert review stage also allowed scholars with a better understanding of each country in the study to assess whether the questions were applicable and relevant to their context. Following translation checks, cognitive interviews were carried out in each country by our international partners to ensure that the original meaning of the question had been maintained through the translation process to make sure questions were easily understood and to ensure

Table 11.1 Number of Respondents to Each Survey, and Breakdown of Religious/Spiritual and Non-Religious/Spiritual in Each Country

	Argentina	*Australia*	*Canada*	*Germany*	*Spain*	*UK*	*US*
Total respondents (n=)	2,040	2,000	2,027	2,051	2,006	2,133	2,000
Religious/spiritual	70%	45%	48%	34%	41%	50%	64%
Non-religious/ non-spiritual	30%	55%	52%	66%	59%	50%	36%

questions did not import culturally UK-specific concerns or idioms into the other geographically situated studies.

The surveys were conducted between May and June 2023 in Argentina (n = 2,040), Australia (n = 2,000), Canada (n = 2,027), Germany (n = 2,051), Spain (n = 2,006), the UK (n = 2,133) and the US (n = 2,000). Samples were sourced from YouGov's online research panels in each country. YouGov utilises active sampling, drawing a subsample from each panel that is socio-demographically representative of the target country's population. The field-work is managed using a quota sampling approach, and data is weighted by relevant demographic variables to ensure a representative sample of each country's population (Gosschalk et al., 2023).

As an initial measure of religiosity, respondents in each country were asked the yes-or-no question: 'Do you identify as religious or spiritual?' Those who answered yes were then asked 'What is your religion, religious affiliation or spiritual tradition?' and presented with an extensive and branching list of religious and spiritual affiliations. Those who answered 'no' were presented with a series of non-religious identities, such as 'atheist' or 'agnostic'. During analysis of the results that we discuss in this chapter, we used this measure to categorise respondents for each country in the study, between those who identified as religious/spiritual and non-religious/non-spiritual (see Table 11.1). Therefore, whilst we collected very fine-grained self-identification data for individual participants (non-)religious/(non-) spiritual identities, in this chapter, we use this retrospective categorisation as the primary religious demographic measure, presenting descriptive statistics highlighting key findings from our international surveys.

Results

Self-Categorisation of Human Origins Beliefs

As discussed in the introduction, one of the most common ways to measure attitudes towards evolution is to present respondents with a blunt measure consisting of number of possible statements regarding human origins, evolution, and the role of a God and ask for the alternative that comes closest

to their view. We also included a version of this type of self-categorisation measure that, unlike some previous versions previously discussed, additionally let respondents say they don't know or had another view not listed. We included this simple self-categorisation measure to establish a baseline of attitudes that can be compared to previous surveys.

In our survey, respondents were asked: 'People have different views about the origin of species and development of life on Earth. Which of the following statements comes closest to your view about the origin and development of life on earth?' followed by a number of answer statements displayed in Figure 11.1.

According to this self-categorisation measure, levels of creationism were highest in the US (24%) and Argentina (18%), while Spain (6%) and Germany (7%) had the lowest levels. However, our survey found the level of 'creationism' in the US was less than previously found through other similar measures undertaken by Gallup, which have historically fluctuated between 47% and 37% respondents endorsing this position (e.g. Brenan, 2019; 2024). In most of the countries surveyed, 'naturalistic evolution' was the dominant view, except in the US, where 'God-guided evolution' (29%) was slightly more popular than 'naturalistic evolution' (27%). Additionally, in all countries included in the study, 'God-guided evolution' was more widely accepted than 'creationism'. Finally, a majority of respondents in all countries of our

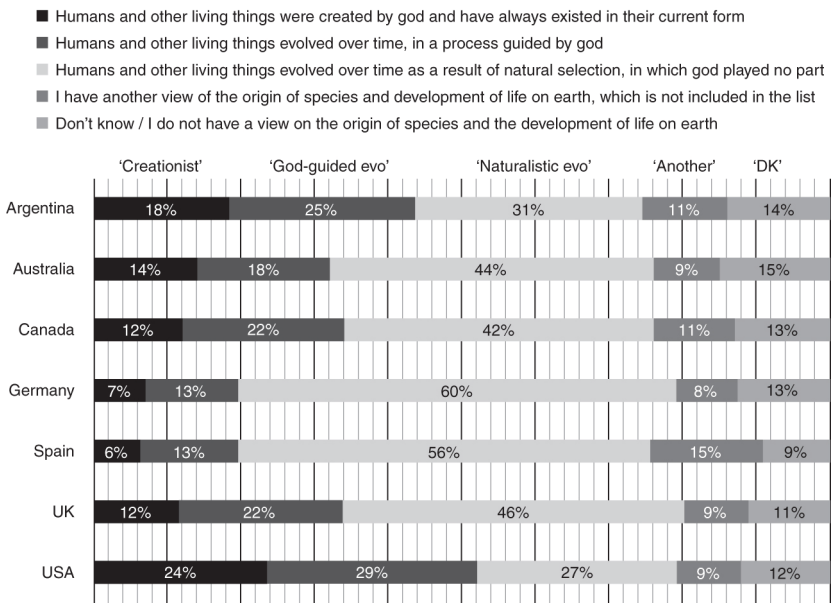


Figure 11.1 People have different views about the origin of species and development of life on earth. Which of the following statements comes closest to your view about the origin and development of life on earth?

study subscribed to some form of evolutionary explanation, be they evolution explanations in which God guided the process or in which God played no part. (It should be noted the categories of creationist, God-guided evolution, and naturalistic evolution have been retrospectively applied for ease of description and did not feature in the survey design itself.)

Individual Difficulty in Accepting Evolutionary Science

Given the difficulties in utilising self-categorisation questions to ascertain specific numbers for origin beliefs discussed in the introduction, it is also important to ask people other types of questions regarding their attitudes toward evolution. Our survey included numerous other strategies and questions attempting to ascertain views on evolutionary science. One way we did this is to ask respondents how difficult they found it to accept evolutionary science in reference to their personal beliefs or views (with a Likert scale of possible responses ranging from Very difficult, Difficult, Somewhat difficult, Neither difficult nor easy, Somewhat easy, Easy, Very easy).

The majority of respondents in each country of our study said they found it easy to accept evolution in regard to their own personal beliefs and views (Figure 11.2). Spain had the lowest percentage of respondents who reported

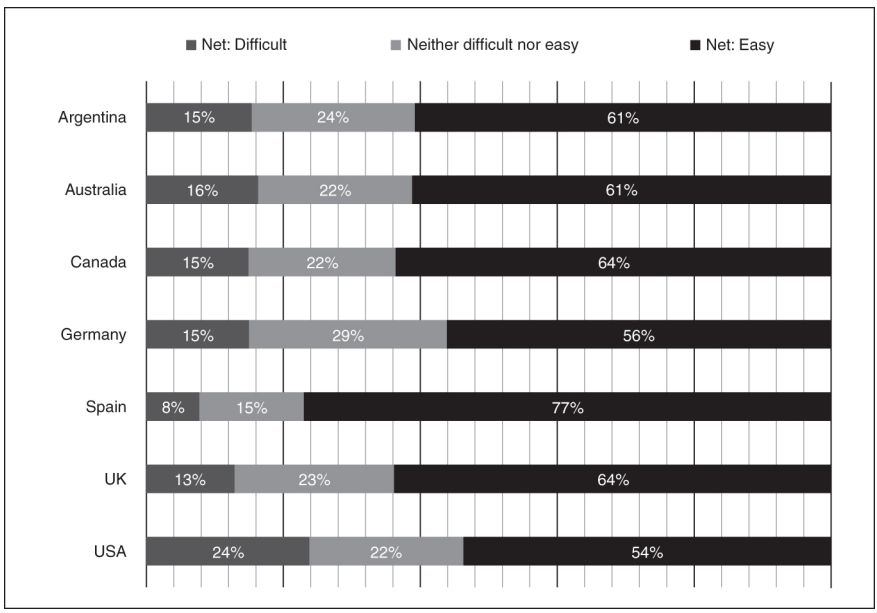


Figure 11.2 In your daily life, how difficult or easy do you find it to accept evolutionary science in reference to your own personal beliefs or views?

difficulty in accepting evolution (8%), while the US had the largest proportion of the population who said they found it difficult to accept evolution (24%). Interestingly, while Germany (56%) and the US (54%) had a similar proportion of the population reporting ease in accepting evolution, fewer members of the German public reported difficulty (15%) than in the US (24%).

By separating out those who identified as religious/spiritual and those who did not (Figure 11.3), we can see, perhaps unsurprisingly, that in each country in this study, those who did not identify as religious or spiritual were less likely to express difficulty in accepting evolution compared to those who identified as religious or spiritual. The religious/spiritual population of the US were most likely to express difficulty in accepting evolutionary science (32%), followed by Australia (28%), Canada (24%), the UK (22%), Germany (20%), Argentina (19%), and Spain (13%). Yet, again, it is important to note that this is a minority position across all countries for religious/spiritual groups to find evolutionary science difficult to accept in reference to their own personal beliefs or views. However, perhaps more surprisingly, an albeit smaller minority of non-religious/non-spiritual respondents across all countries also found evolutionary science difficult to

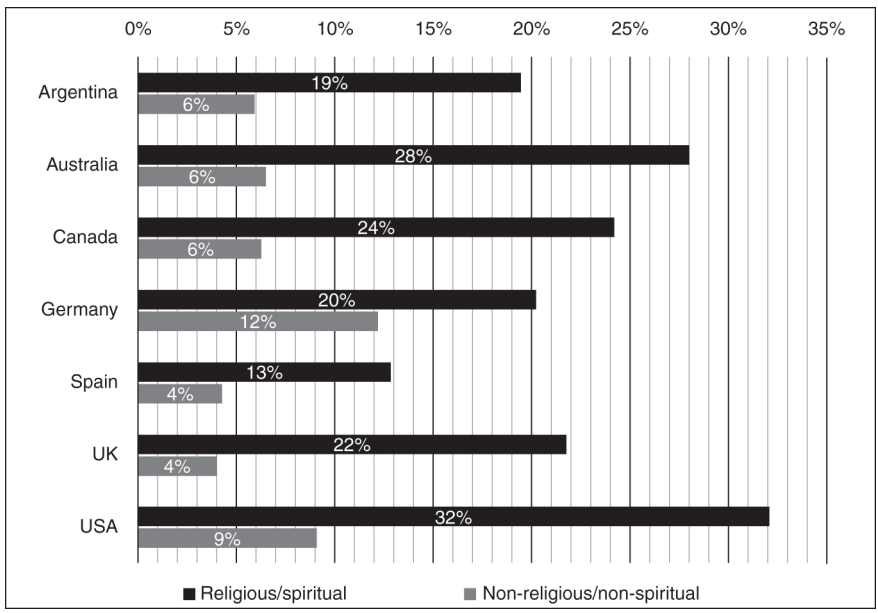


Figure 11.3 In your daily life, how difficult or easy do you find it to accept evolutionary science in reference to your own personal beliefs or views? (Net: Difficult, separated by religious/spiritual and non-religious/non-spiritual).

accept. The German non-religious/non-spiritual group had the highest level of difficulty accepting evolutionary science (12%), followed by the US (9%), Australia, Canada, and Argentina (all at 6%), and finally Spain and the UK (both 4%). Interesting cross-country patterns also emerge. For example, the percentage of non-religious/non-spiritual people in Germany reporting difficulty in accepting evolutionary science (12%) is similar to the proportion of religious/spiritual people in Spain who also reported difficulty (13%).

Beliefs of Others: Social Projection

A novel aspect of our survey approach was that we were not solely interested in the beliefs of individuals about evolutionary science and human origins. Building on the approaches of the SRES project in the UK and Canada (Elsdon-Baker et al., 2017a; 2017b), we also asked questions assessing what individuals perceived *other individuals* within specified groups as believing in relation to evolutionary science. We presented respondents with a range of social identities and asked, 'How difficult or easy do you think the following people would find it to accept evolutionary science, in reference to THEIR own personal beliefs or views?' Our 2017 survey highlighted that there was a mismatch between how people think religious publics think about evolutionary science and what religious individuals actually think about evolutionary science (Elsdon-Baker, 2019). We therefore wanted to test whether this finding was replicable six years later and also to see whether this was a culturally specific phenomena to the UK and Canada where the original survey was conducted.

Figure 11.4 displays the results of measures ascertaining public perceptions of others' beliefs across four categories: (1) a member of the general public, (2) a member of the public who is religious, (3) a member of the public who is not religious or spiritual, and (4) a member of the public who is an atheist. Across all countries, a small percentage of people (8–16%) thought that a member of the general public would find it difficult to accept evolutionary science in reference to their own personal beliefs and views. This suggests the widespread perception that evolution is not a challenging topic for members of the general public. However, when asked about a member of the public who is religious, the percentage of people who thought that this hypothetical person would find it difficult to accept evolution is far larger, with 55–63% of people across all the countries in this study endorsing this view. The number of people who thought that a person who is not religious or spiritual would have difficulty in accepting evolutionary science was similar (8–19%) to that of a member of the general public (8–16%). In some countries, such as the UK, the US, and Canada, a greater percentage of people believed a non-religious/spiritual person would find it easy to accept evolutionary science (69%, 63%, 62%, respectively) than the percentage who believed similarly about a member of the general public (53%, 49%, 49%, respectively). In other countries, such as Argentina, there was little difference between these

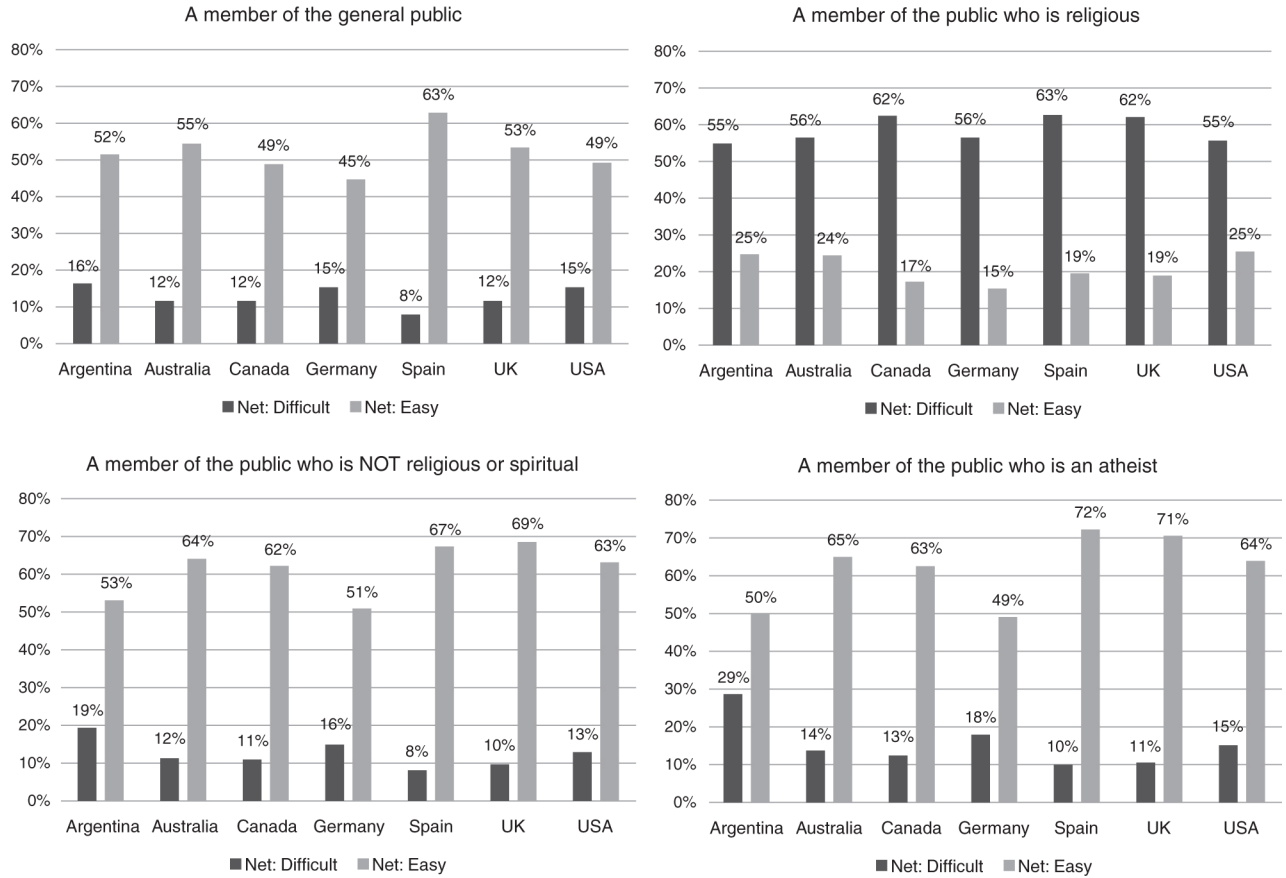


Figure 11.4 How difficult or easy do you think the following people would find it to accept evolutionary science, in reference to THEIR own personal beliefs or views?

percentages regarding a member of the public who is non-religious/spiritual and a member of the general public (53 and 52%, respectively).

The fact that a minority of religious/spiritual individuals across each country in this study expressed difficulty in accepting evolutionary science (Figure 11.3), coupled with the perception of the majority of people sampled who believe religious individuals would find it difficult to accept evolutionary science in reference to their own personal beliefs (Figure 11.4), evidences that the mismatch found in our original 2017 surveys of the UK and Canada (Elsdon-Baker et al., 2017b; Elsdon-Baker, 2019) is a pattern that holds across the different international contexts within this study. We are therefore confident that, whilst this merits further study in a wider range of cultural contexts, this is not a finding that is culturally specific to UK and Canada, nor simply a product of potentially slightly more polarised public discourse around evolutionary science in 2017.

Beliefs of Others: Specific Religious Groups

In the 2023 international surveys, we expanded this measure to investigate how this type of social projection of conflict might work when the target was more specific as opposed to an generic religious identity. Beyond the broad identity marker of 'religious' or 'non-religious', the second stage of this approach involved asking respondents: 'How difficult or easy do you think the following religious or non-religious groups would find it to accept evolutionary science in reference to their own personal beliefs or views?' This was followed by a series of religious and non-religious group identities including the world's major religions. Figure 11.5 displays the results of this measure for each of our seven countries. This approach, then, allows a more fine-grained picture to emerge, in which groups are most likely to experience conflict between religion and evolutionary science and which gives us a clearer indication of how and where differing social narratives about both evolutionary science and different religious groups might be driving this form of social projection.

Generally, across all countries, Abrahamic religious groups (Christians, Muslims, and Jews) are perceived as having more difficulty accepting evolutionary science than non-Abrahamic religious groups (Buddhists, Hindus, and Sikhs). There are also some notable differences across countries when we focus on the perceptions of Abrahamic faiths. For example, in Australia and Canada, participants were more likely to think that Christians and Muslims were equally as likely to find it difficult to accept evolutionary science (Christians 46%/48% and Muslims 46%/47%, respectively), followed by Jews (39%/38%). In the US, publics perceived Christians (50%) as being more likely to find it difficult to accept evolutionary science, compared to a lesser proportion of the public who perceived the same about Muslims (41%) and Jews (37%).

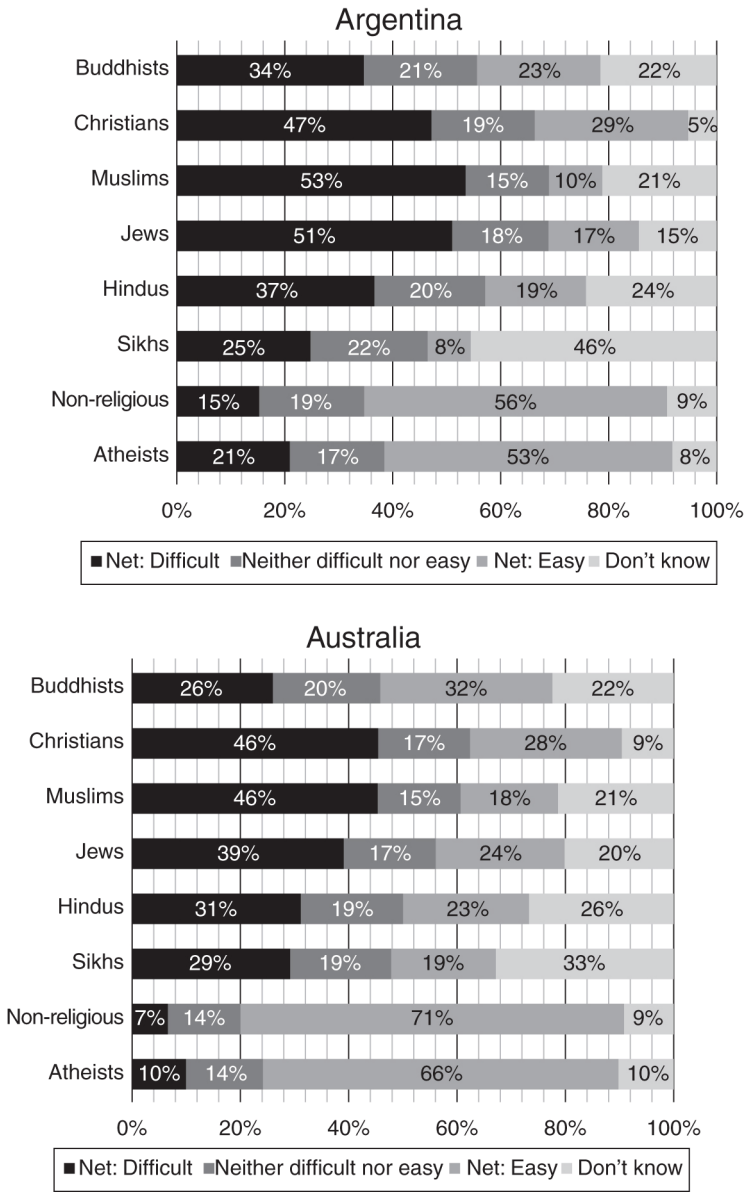


Figure 11.5 How difficult or easy do you think the following religious or non-religious groups would find it to accept evolutionary science in reference to their own personal beliefs or views?

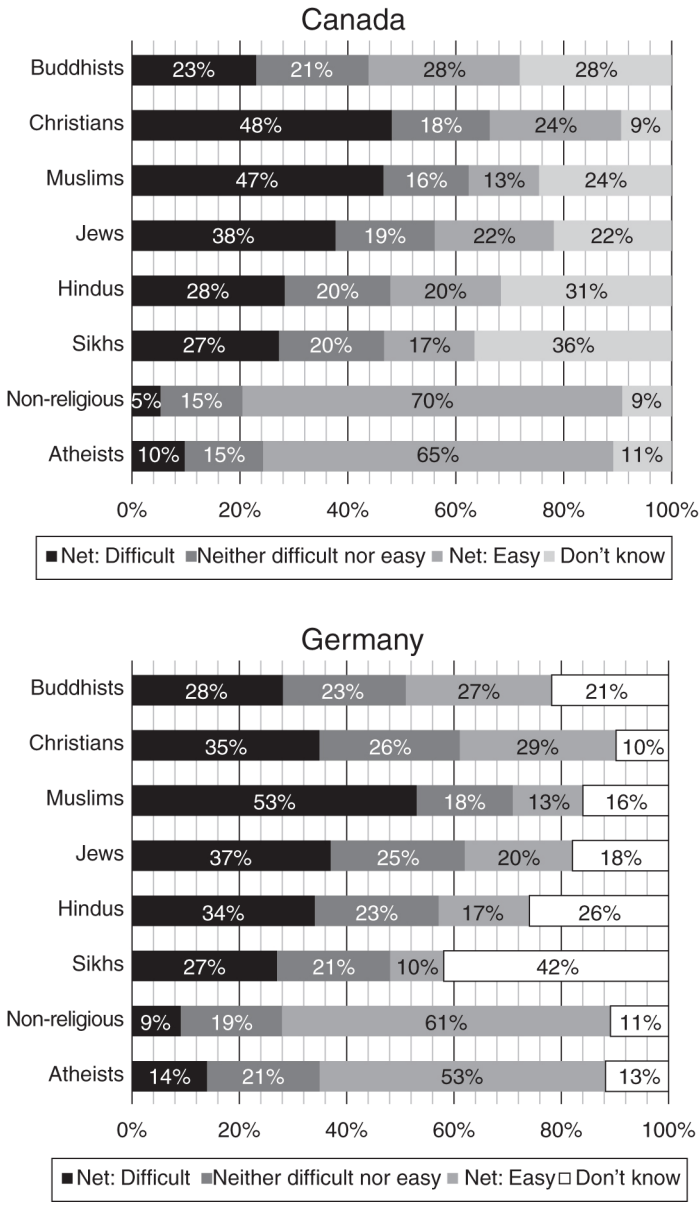
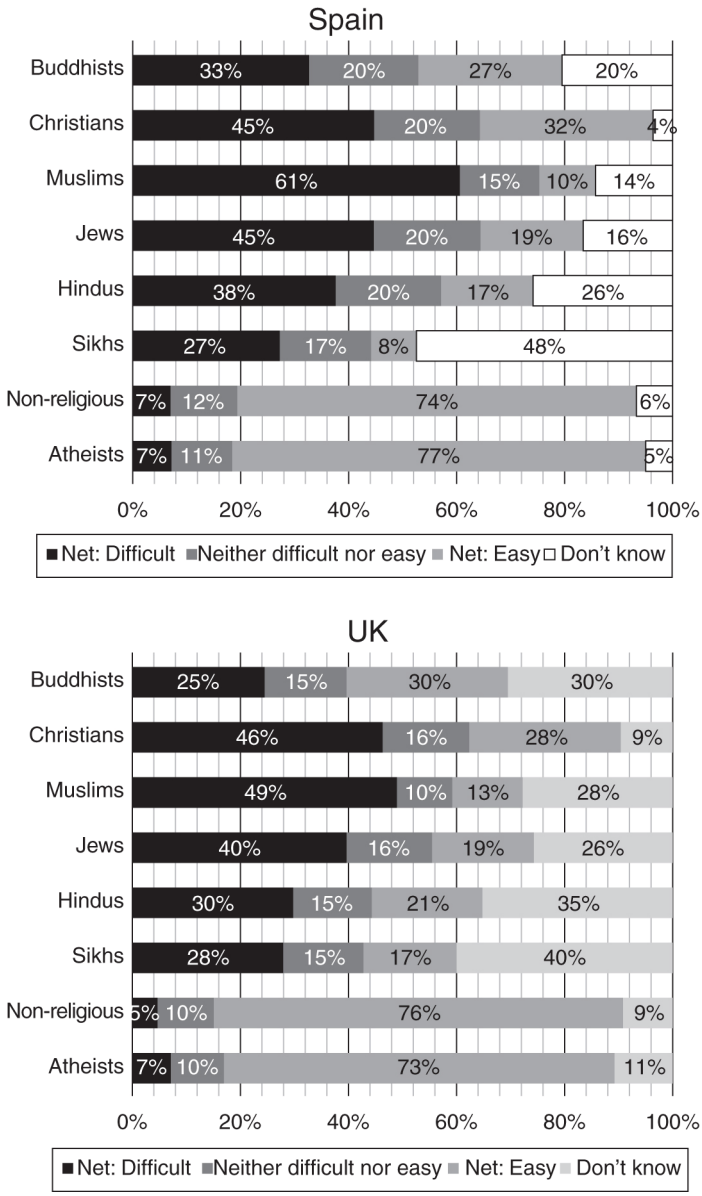


Figure 11.5 (Continued)



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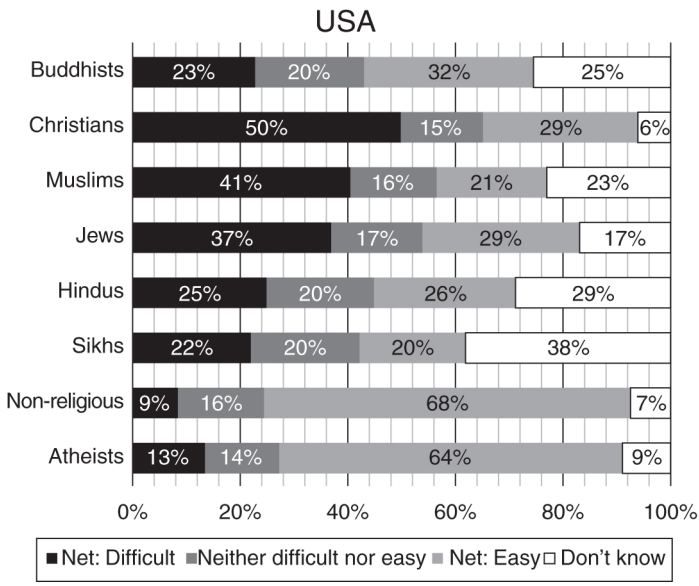

Figure 11.5 (Continued)

However, in Argentina, more people perceived Muslims to have difficulty accepting evolutionary science (53%), followed by Jews (51%), then Christians (47%). Similarly, a higher proportion of the UK publics (49%) also thought that Muslims would find accepting evolutionary science more difficult than Christians (46%) and Jews (40%). There is a larger discrepancy between perceptions of Muslims and the other Abrahamic faiths in Germany, with 53% of publics thinking that Muslims would find it difficult to accept evolutionary science, 37% when asked about Jews, and 35% for Christians. Spain has the largest percentage of the population across any country who thought Muslims would find it difficult to accept evolutionary science (61%), followed by the same proportion of people who believe Jews and Christians would experience difficulty (45%).

These findings potentially reflect a range of different social narratives about both evolutionary science and religion and religious communities across the different geographies. Creationism has historically been largely associated with North American Protestant Christian discourses, which may explain why we see a marked drop in publics' expectation that those who follow non-Abrahamic faiths will have difficulty accepting evolutionary science. In North America and Australia, where concerns over Protestant Christian creationism have been more pronounced and where creationists themselves have been at points more vocal in the public sphere, participants are more likely to assume that Christians will be among those more likely to find difficulties

in accepting evolutionary science. However, in the more culturally and historical Catholic contexts (Argentina, Spain) or increasingly secularised contexts (UK, Germany, Spain), we see that Muslims are more likely to be perceived as finding difficulty in accepting evolutionary science. This potentially reflects not only the weakness of Christian anti-evolution movements within these contexts but also specific populist political and Islamophobic social narratives, which have often focused on the threat that Muslims supposedly pose to European Enlightenment values (see Jones et al, 2019; Jones and Unsworth, 2022).

Religious Identity and Science Beyond Evolution

Social studies of science and religion have tended to focus on attitudes towards evolutionary science. This is unsurprising given the prominent nature of evolution in public discourse concerning science and religion in the later part of the twentieth century through to the early part of this century. In order to gain an indication of how concerns over human evolution might relate to broader science scepticism, our surveys also included questions relating to other domains of scientific consensus, including publics' view of anthropogenic causes of climate change, vaccine safety, and whether the earth is spherical. Respondents were asked, 'Please indicate the extent to which you personally disagree or agree with each of the following statements'. Then they were presented with a number of statements regarding various scientific consensus positions and asked to respond on a seven-point Likert scale ranging from 'strongly disagree' to 'strongly agree', alongside 'neither agree nor disagree' or 'don't know' options. For simplicity, here we only present the percentages for those who reject the consensus position for these domains. We varied the positive/negative nature of these statements to reduce satisficing; therefore our vaccines measure is reverse-coded for comparability. The statements and answer coding (displayed in Figure 11.6 and Table 11.2) included anthropogenic climate change ('Human activity is the main cause of climate change', net: disagree), the spherical nature of the earth ('The earth is round', net: disagree), vaccine safety ('Vaccines are not safe', net: agree), and human evolution ('Humans evolved from earlier forms of life', net: disagree). These are not scientific knowledge measures; instead, they assess individuals' beliefs *about* scientific consensus positions. For example, an individual may know that most scientists believe vaccines are safe yet disagree with this position.

Figure 11.6 displays the level of rejection of mainstream scientific positions on anthropogenic climate change, vaccine safety, and the spherical nature of the earth, by those who identify as religious/spiritual or non-religious/non-spiritual. We also included a basic evolution rejection measure for comparison to these other domains. Table 11.2 is shaded where figures are <20%. This is an arbitrary cut-off yet represents that at least one in five people in the given populations reject the consensus in each domain. From this, we can see

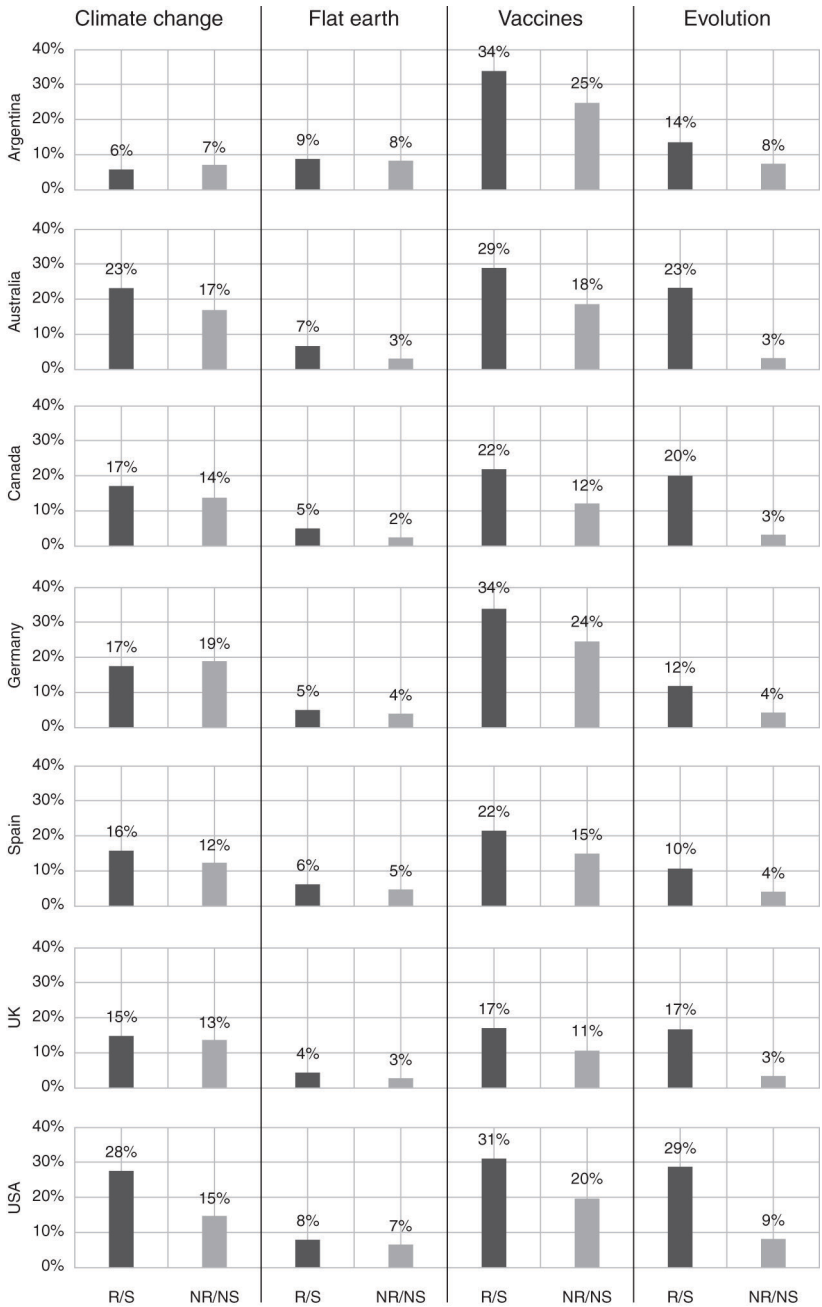

Figure 11.6 Percentages of populations who disagree with scientific consensus positions on anthropogenic climate change, spherical earth, vaccine safety, and human evolution (Net: Difficult, separated by religious/spiritual [RS, dark bars] and non-religious/non-spiritual [NR/NS, light bars]).

Table 11.2 Percentages of Populations Who Disagree with Scientific Consensus Positions on Anthropogenic Climate Change, Spherical Earth, Vaccine Safety, and Human Evolution (figures equal to or larger than 20% are shaded in grey)

	Climate Change		*Flat Earth*		*Vaccine Safety*		*Human Evolution*	
	R/S	*NR/NS*	*R/S*	*NR/NS*	*R/S*	*NR/NS*	*R/S*	*NR/NS*
Argentina	6%	7%	9%	8%	34%	25%	14%	8%
Australia	23%	17%	7%	3%	29%	18%	23%	3%
Canada	17%	14%	5%	2%	22%	12%	20%	3%
Germany	17%	19%	5%	4%	34%	24%	12%	4%
Spain	16%	12%	6%	5%	22%	15%	10%	4%
UK	15%	13%	4%	3%	17%	11%	17%	3%
US	28%	15%	8%	7%	31%	20%	29%	9%

that of the scientific domains displayed, generally, that vaccine safety is more likely to be a contested domain for both religious/spiritual and non-religious/non-spiritual groups than the shape of the earth, climate change, and human evolution.

Across the religious/spiritual or non-religious/non-spiritual categories when it comes to the rejection of human evolution, we see differences between these groups across all countries, with the religious/spiritual respondents more likely to reject human evolution than the non-religious/non-spiritual. We find less difference between the religious/spiritual or non-religious/non-spiritual groups views on the human causes of climate change. Indeed, across Argentina, Canada, Germany, Spain, and the UK, we see marginal differences between both these groups in the level of rejection of climate change. In the US, however, there is a more notable difference with religious/spiritual respondents (28%) more likely than non-religious/non-spiritual respondents (15%) to disagree with the statement that 'Human activity is the main cause of climate change'.

Overall, non-religious/non-spiritual respondents were more likely to reject the consensus around anthropogenic climate change than around human evolution. Similarly, with the rejection of a spherical earth, we see no notable differences between religious/spiritual and non-religious/non-spiritual groups; there are, however, very slightly more religious/spiritual (7%) than non-religious/non-spiritual (3%) respondents in Australia who endorse a non-spherical earth position, although this is within the margin of error. Overall, however, only a very small percentage of the population of all countries rejected a spherical earth. Interesting within-country patterns also emerged. For example, in Germany, more non-religious/non-spiritual individuals rejected anthropogenic climate change and vaccine safety than religious/spiritual individuals who rejected human evolution.

How do those who are religious or spiritual and who reject human evolution map onto other forms of scientific consensus rejection? Figure 11.7 shows this group separated out by country. This is a small subgroup of our overall representative sample (Argentina $n = 195$, Australia $n = 120$, Canada $n = 193$, Germany $n = 81$, Spain $n = 85$, UK $n = 178$, and US $n = 371$); therefore we cannot claim these figures are representative of wider publics who are religious and spiritual and who reject human evolution, yet the results do give us an interesting indication how these worldviews may or may not interrelate, which merits further study.

Figure 11.7 shows that, with the exception of vaccine safety in the UK and Spain and climate change in the US, the majority of religious/spiritual individuals in our survey who disagree with human evolution do not necessarily disagree with scientific consensus on anthropogenic climate change, vaccine safety, or a spherical earth. Therefore, our research does not support the idea that one form of scientific consensus rejection easily maps onto or translates to another. This aligns with earlier qualitative (Hildering et al., 2013) and quantitative (Evans, 2011) research that suggests those endorsing

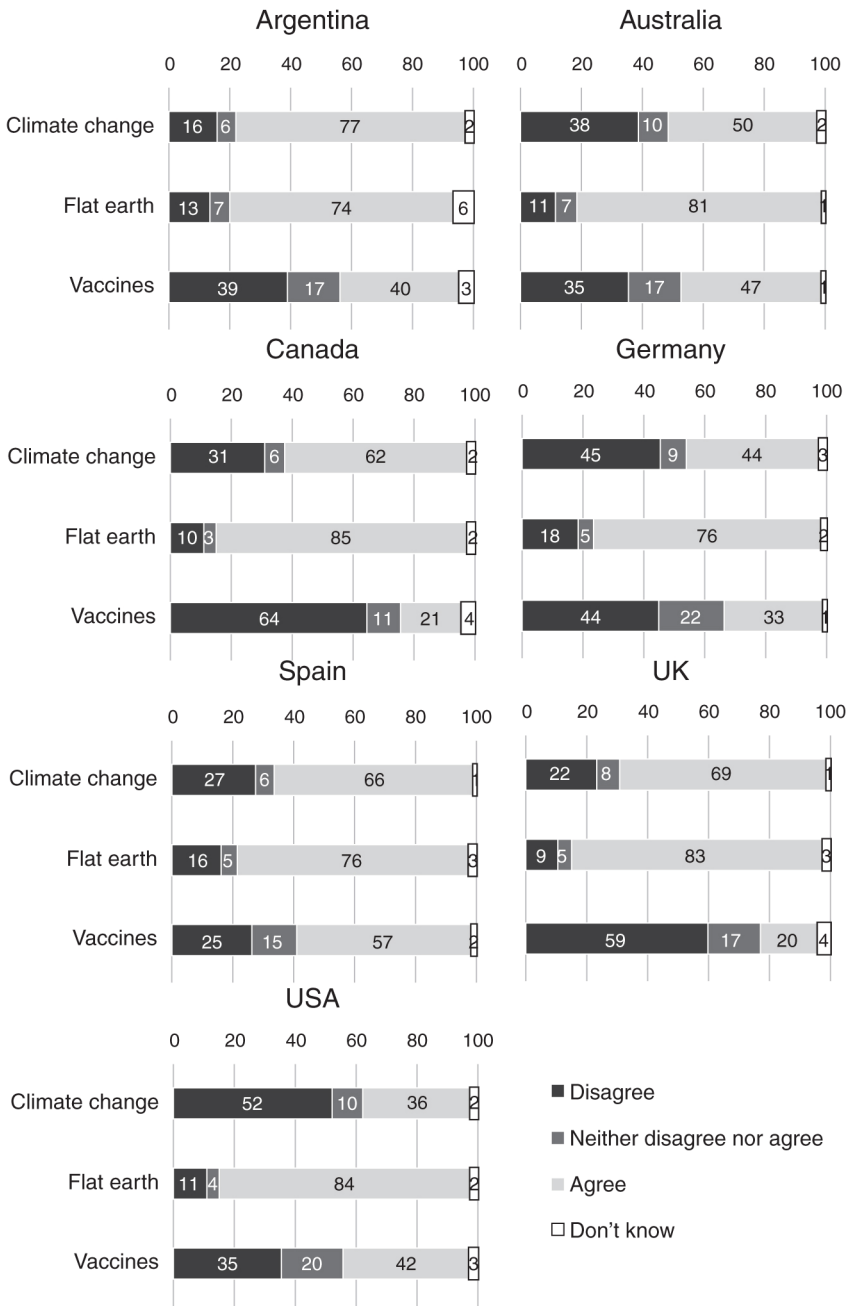

Figure 11.7 Views of other scientific consensus positions (anthropogenic climate change, spherical earth, and vaccine safety) for religious/spiritual individuals who disagree with human evolution (percentages).

a creationist position might be treating evolutionary science as unscientific, and therefore rejection of human evolution does not necessarily equate with endorsement of wider anti-science stances. However, it is notable that, when compared with the findings in Table 11.2, we can see that religious/spiritual individuals who reject human evolution are overall more likely to reject some other forms of scientific consensus than the wider sample of religious/spiritual individuals – though here there are also some important geographical differences. For example, within this subsample, Germany, the US, Australia, and Canada are far more likely than the wider religious/spiritual sample to reject human causes of climate change. In Canada and the UK, they are very markedly more likely than the wider religious/spiritual sample to reject vaccine safety. And in Germany and Spain they are slightly more likely than the wider religious/spiritual sample to think the earth is not round. Given this regional variance and that these are not all majority positions within the religious/spirituals' human-evolution rejection subsample, our results indicate that other political and cultural narratives may be intersecting with 'creationist' narratives within this group, especially in relation to climate change and vaccine safety. Though it should be noted our subsample sizes are relatively small, and this therefore merits further investigation.

Conclusion

This chapter explored international attitudes toward evolutionary science and views of human origins, particularly focusing on the interplay between (non-)religious/(non-)spiritual identities and views regarding human evolution and evolutionary science across different cultural contexts. Our surveys, conducted in Argentina, Australia, Canada, Germany, Spain, the UK, and the US, find that creationist views are most prevalent in the US and Argentina, but across all countries the majority of respondents, including the majority of religious and spiritual respondents, accepted some form of evolutionary explanation, whether God-guided or naturalistic. Additionally, whilst those who identify as non-religious/spiritual are less likely to have difficulty accepting evolution compared to religious or spiritual individuals across all countries in this study, a small minority of non-religious and non-spiritual publics still experience difficulty in accepting evolutionary science.

We also investigated international publics' views of other people's beliefs regarding evolutionary science. Our findings highlight that, while religious individuals are often perceived to struggle with accepting evolutionary science, this perception does not align with the actual beliefs of the majority of people who identify as religious or spiritual. Across all countries in this study, self-reported difficulty in accepting evolutionary science was a minority position within religious/spiritual populations. The highest percentage of religious/spiritual respondents expressing difficulty was found in the US (32%) and the lowest in Spain (13%). Interestingly, the percentage of people assuming a religious/spiritual individual would experience difficulty in accepting

evolution was the highest in Spain (63%), where the lowest percentage of religious/spiritual individuals self-reported difficulty (13%). Conversely, the US had the joint lowest (with Argentina, at 55%) level of respondents who thought a religious/spiritual individual would experience difficulty, in a country with the highest level of self-reported difficulty in accepting evolution among religious/spiritual individuals (32%). Muslims, Christians, and, to a lesser extent, Jews are more likely to be seen as experiencing difficulty in accepting evolutionary science. Interestingly, non-Abrahamic religious groups such as Buddhists, Sikhs, and Hindus were less likely to be perceived as experiencing difficulty in accepting evolutionary science than people who follow Abrahamic faiths.

Across all countries, the majority of the population assumed a religious individual would find it difficult to accept evolutionary science. This study therefore finds further evidence of a process of social projection (Elsdon-Baker, 2019) whereby the majority of individuals across countries hold the preconceived view that religious members of the public will find it difficult to accept evolutionary science, in contrast to those individuals' actual lived experience. This overall mismatch between the perception of other groups' beliefs or worldviews and the reality of religious group members' beliefs or worldviews was found across all countries studied, continuing the trends observed in our previous studies in the UK and Canada (Elsdon-Baker et al., 2017b; Elsdon-Baker, 2019).

Returning to the title of this chapter in the context of quantitatively assessing attitudes towards evolution, we may ask: Where does the conflict between science and religion *really* lie? Based on our international surveys of over 14,000 people, in relation to attitudes towards evolutionary science, one answer is that it is not predominantly located in the beliefs or worldviews of individuals who identify as religious or spiritual. There are minorities of those who identify as religious or spiritual and who express difficulty or reject evolutionary science. However, we find that the conflict between religion and evolution is instead a socially projected conflict based on preconceptions, stereotypes, or wider social narratives about *other people's beliefs or worldviews*. Overall, our survey findings underscore the complexity of public attitudes towards evolutionary science, particularly human evolution and debates involving science and religion more broadly, revealing that societal narratives about inevitable conflict between religion and evolutionary science are often overstated and that more nuanced, culturally sensitive approaches are needed to better understand global views on human origins and attitudes towards evolutionary science.

We also found a range of complexities regarding perceptions of various scientific domains. While we do see differences between religious/spiritual and non-religious/non-spiritual groups on the topic of evolutionary sciences, for other domains like anthropogenic climate change, these differences are lesser or non-existent, with the exception of the US and to a lesser extent Australia. Further, vaccine safety appears to be a more contentious issue than

human evolution across the majority of countries in this study and across both religious/spiritual and non-religious/spiritual groups. Our data also indicates that, whilst religious or spiritual individuals who reject evolution might, in some contexts, be more likely to also reject anthropogenic causes of climate change, vaccine safety and the fact that the earth is round, this does not hold for the majority of this sub-group across all geographical contexts and scientific domains. This points towards the need for richer data in a range of countries to fully comprehend how religious, spiritual, and non-religious identities inform perceptions of science across a range of domains.

In this chapter, we have used the simple demographic contrast between religious/spiritual and non-religious/spiritual, yet other important demographics and identifications also effect these perceptions. Particularly, more work should be undertaken to investigate how political affiliations and worldviews intersect with (non)religious or spiritual beliefs to influence perceptions of scientific domains globally. We must also remember the importance of multidisciplinary work and of approaching these questions using a range of methods, as surveys themselves necessarily reduce the complexities of social worlds. This volume represents an effort in this direction, combining global case studies using both qualitative and quantitative approaches. We hope future work will continue to attempt to understand the relationships between scientific domains and the rich varieties of (non)religious and spiritual belief positions worldwide.

References

Brenan, M. (2019) '40% of Americans Believe in Creationism', *Gallup News*, 26 July 2019. [Available at: https://news.gallup.com/poll/261680/americans-believe-creationism.aspx]

Brenan, M. (2024) 'Majority Still Credits God for Humankind, But Not Creationism', *Gallup News*, 22 July 2024. [Available at: https://news.gallup.com/poll/647594/majority-credits-god-humankind-not-creationism.aspx]

Bump, P. (2023) 'A Plurality of Americans believe God Created Humans Without Evolution', The Washington Post, 31 October. [Available at: www.washingtonpost.com/politics/2023/10/31/johnson-speaker-evolution-poll/]

Dawkins, R. (2006) *The God Delusion*. (Bantam Press, London).

Draper, W. (1875) *History of the Conflict Between Religion and Science*. (D. Appleton & Company, New York).

Cantor, G. (2010) 'What Shall We Do with the "Conflict Thesis"?', in Dixon, T., Cantor, G., and Pumfrey, S. (eds) *Science and Religion: New Historical Perspectives*. (Cambridge University Press, Cambridge), pp. 283–298.

Ecklund, E. H. (2010) *Science vs. Religion: What Scientists Really Think*. (Oxford University Press, New York).

Ecklund, E. H. and Scheitle, C. P. (2018) *Religion vs. Science: What Religious People Really Think*. Oxford University Press, Oxford, New York.

Elsdon-Baker, F. (2015) 'Creating Creationists: The Influence of "Issues Framing" on Our Understanding of Public Perceptions of Clash Narratives between Evolutionary Science and Belief', *Public Understanding of Science*, 24(4): 422–439.

Elsdon-Baker, F., Leicht, C., Mason-Wilkes, W., Preece, E., and Piggott, L. (2017a) *Summary Report of Preliminary Findings for a Survey of Public Perspectives on Evolution and the Relationship Between Evolutionary Science and Religion*. (Newman University, Birmingham).

Elsdon-Baker, F., Leicht, C., Mason-Wilkes, W., Preece, E., and Piggott, L. (2017b) *Supplementary Summary Report of Preliminary Findings for a Survey of Public Perspectives on Evolution and the Relationship between Evolutionary Science and Religion*. (Newman University, Birmingham).

Elsdon-Baker, F. (2019) 'In Defense of Publics: Projection, Bias, and Cultural Narratives in Science and Religion Debates', *Zygon*, 54: 618–633.

Evans, J. H., and Evans, M. S. (2008) 'Religion and Science: Beyond the Epistemological Conflict Narrative', *Annual Review Sociology*, 34(1): 87–105.

Evans, J. H. (2011) 'Epistemological and Moral Conflict between Religion and Science', *Journal for the Scientific Study of Religion,* 50(4): 707–727.

Grosschalk, K., Piggott, L., Gray, H., Riley, J., and Elsdon-Baker, F. (2023) *Science and Religion Exploring the Spectrum: A Multi-Country Study on Public Perceptions of Evolution, Religion and Science*. (YouGov and University of Birmingham: Birmingham). [Available at: https://scienceandbeliefinsociety.org/wp-content/uploads/2023/12/UoB-YouGov.-Science-and-Religion-Survey-Report.-8-Dec-2023-.pdf]

Hildering, P., Consoli, L., and Born, R. (2013) 'Denying Darwin: Views on Science in the Rejection of Evolution by Dutch Protestants', *Public Understanding of Science,* 22(8): 988–998.

Hill, J. P. (2014) *National Study of Religion and Human Origins*. (BioLogos, Grand Rapids, MI).

Hill, J. P. (2019) 'Survey-based Research on Science and Religion: A Review and Critique', in: Jones, S. H., Kaden, T., and Catto, R. (eds) *Science, Belief and Society: International Perspectives on Religion, Non-Religion and the Public Understanding of Science*. (University of Bristol Press, Bristol), pp. 25–54.

Jones, S. H., Catto, R., Kaden, T., et al. (2019) 'That's How Muslims Are Required to View the World': Race, Culture and Belief in Non-Muslims' Descriptions of Islam and Science', *The Sociological Review*, 67(1): 161–177.

Jones, S. H., and Unsworth, A. (2022, January) *The Dinner Table Prejudice: Islamophobia in Contemporary Britain*. (University of Birmingham, Birmingham). [Available at: www.birmingham.ac.uk/news/latest/2022/01/university-of-birmingham-survey-reveals-islamophobia-is-the-posh-person's-prejudice.aspx] (accessed 30 August 2023).

Pew Research Center. (2019) 'The Evolution of Pew Research Center's Survey Questions About the Origins and Development of Life on Earth', 6 February 2019. [Available at: www.pewresearch.org/religion/2019/02/06/the-evolution-of-pew-research-centers-survey-questions-about-the-origins-and-development-of-life-on-earth/]

Plantinga, A. (2011) *Where the Conflict Really Lies: Science, Religion, and Naturalism*. (Oxford University Press, New York).

Suffolk University. (2023) '*National Issues Poll with USA Today*'. (Suffolk University Political Research Centre). [Available at: www.suffolk.edu/-/media/suffolk/documents/academics/research-at-suffolk/suprc/polls/national/2023/10_30_2023_national_marginals_final.pdf?la=en&hash=47978D869126DD17AAE182778B95286A227018EE]

Unsworth, A., and Voas, D. (2018) 'Attitudes to Evolution Among Christians, Muslims and the Non-Religious in Britain: Differential Effects of Religious and Educational Factors', *Public Understanding of Science*, 27(1), 76–93. https://doi.org/10.1177/0963662517735430

White, A. D. (1896) *A History of the Warfare of Science with Theology in Christendom*. (D. Appleton & Company, New York).

12 Comparability vs. Relevance, and the Related Methodological Hurdles

Exploring Perceptions of Science and Religion Across Countries from a Psychological Perspective

Carissa A. Sharp, Carola Leicht, and Rebecca E. Hughes

Science and Religion: Exploring the Spectrum

For nearly a decade now, the 'Science and Religion: Exploring the Spectrum' (SRES) team has been addressing the top-level research question, 'What social and cultural factors have driven, and are currently driving, the narrative in the public domain that there is a necessary clash between religious belief and acceptance of evolutionary science?' We have addressed this in a multidisciplinary way, with four strands of research: historical, qualitative, social psychological, and nationally representative surveys. In SRES1, which ran from 2014 to 2017, we focused on the UK and Canada. In 'Science and Religion: Exploring the Spectrum of Global Perspectives' (SRES2), which ran from 2019 to 2023, we expanded to include eight different countries. We will talk about the social psychological research in this chapter, for which we conducted research in the UK, Germany, Spain, Argentina, and Sri Lanka. Our goal was to apply and expand our findings from SRES1 and explore the psychological underpinnings of people's perceptions of the relationship between science (and specifically evolutionary science) and religion across these countries.

SRES1: Focus on Social Identity

It is very common to think of religion as an individual difference variable, often also denoted as 'religiosity', ranging from 'not at all religious' to 'very religious'. This kind of question tends to be understood as the extent to which people ascribe to a particular belief system, and most psychological research on science and religion has taken this approach (e.g., Preston & Epley, 2009). However, in our initial SRES1 research, our data showed operationalising religion using this approach did not yield significant insights into perceptions of the relationship between science and religion. Religion occupies a unique space in that it functions both as a belief

DOI: 10.4324/9781003476580-15

system and as a social identity, which has been studied in this way in varying contexts including psychology (Ysseldyk, Matheson, & Anisman, 2010), critical social justice research (Edwards, 2018), and religious studies (Sikka, 2020). Therefore, we shifted our focus to the social identity aspect of religion and, using a social identity approach to studying religion (and science), came upon much more fruitful and insightful discoveries. This is something we have discussed more in-depth elsewhere, arguing that in order to gain a more in-depth and nuanced understanding as to how science and religion shape people's cognition and behaviour, the field of psychology and religion should expand to explore how religious identities can also function as social identities (Sharp & Leicht, 2020).

Social identities can be viewed as identities that people derive from their group memberships (Abrams & Hogg, 1999; Turner, Brown, & Tajfel, 1979; Tajfel, 1978). The social identity approach within which we rooted our understanding and conceptualization of science–religion relations has shown that people have the tendency to categorize themselves as well as others into distinct social groups, for example around gender, ethnicity, or nationality. Research has shown that once a social identity is salient within an individual, cognition and behaviour tend to be altered. For example, once a social identity is salient, people tend to prefer others who share their social group (ingroup favouritism), whilst also having clear guidance on how to behave. Additionally social identities can provide a sense of belonging and a source of self-esteem (Abrams & Hogg, 1999; Turner, Brown, & Tajfel, 1979; Tajfel, 1978).

Research on religion has shown that religion can provide a distinct social identity to individuals (Ysseldyk, Matheson, & Anisman, 2010), often serving positive psychological functions, such as providing people with a sense of belonging. However, research on religious individuals (particularly in the US) has shown that stereotypes about religion and science being each other's 'other' can have important consequences when it comes to religious people's engagement with science. For example, religious individuals tend to hide their identity within the science classroom (Barnes et al., 2021), and reminding religious people of science/religion tropes can cause underperformances on science-related tasks through a process called 'stereotype threat' (Rios, 2021).

In addition to conducting research on religion as a social identity, researchers have also started to focus on how different forms of non-belief (e.g. being spiritual but non-religious, atheist, or agnostic) can serve as a social identity, especially in more secularised countries such as the UK. For example, our research from SRES1 showed that within the UK and Canada, individuals who identify as religious, atheist, or other non-religious (non-religious but not atheist) have distinct patterns when it comes to their perceptions of the relationship between science and religion (Leicht et al., 2021), how they think other people think about the science–religion relationship (Sharp, Leicht, & Elsdon-Baker, under review), and how they think about religious scientists compared to atheist scientists (Sharp et al., 2022),

indicating that their social identity directly relates to their attitudes and perceptions of others.

However, whilst these social identities based around religious and non-religious belief are prevalent in the UK and Canada, it remains to be seen whether the same forms of religious and non-religious social categories serve a social identity function in other countries, especially countries where the religious composition of the population is significantly different. This project gave us the unique opportunity to collect data across a subset of the SRES2 countries – UK, Germany, Spain, Argentina, and Sri Lanka – to investigate the extent to which social categories of belief and non-belief form social identities, which affect people's perceptions of science and religion. Before we delve deeper into this cross-cultural research, we will first briefly discuss cross-cultural research on religion and outline how using a social identity approach to religion and non-religion differs from other cross-cultural approaches to studying religion.

The Study of (Non)-Religion Across Cultures vs. Studying (Non)-Religious Identity Across Cultures

The Study of (Non)-Religion Across Cultures

Much cross-cultural research on religion has focused on Abrahamic religious contexts and societies, exploring extensively how religion can be understood from a psychological perspective. However, there has been a recent recognition that, to understand religion and its psychological functions and effects across the globe, other religious contexts need to be considered (Colbert, 2021). For example, a large-scale project has explored whether there are similar cognitive, emotional, moral, and social dimensions of religion that are shared across cultures (Saroglou et al., 2020). In addition to including several Abrahamic religions in various national contexts from Europe, the Caribbean and the US, they also investigated to what extent the same dimensions were measurable amongst Taiwanese participants. Whilst this study provides interesting insights into religion across cultures, the authors also note that most participants were students from the humanities and social sciences, rather than coming from varied age and educational backgrounds, a limitation that the authors address themselves. Moreover, they note that the measure itself was 'developed by Western European psychologists in collaboration with psychologists in the US' (Sargalou et al, 2020, p. 553), ensuring that the measure has a solid theoretical foundation but with the potential pitfall of not being grounded in the lived experiences of people from different, and non-WEIRD (Western, educated, industrialized, rich, democratic; Henrich, Heine, & Norenzayan, 2010) cultural backgrounds.

One important reason why researchers are attempting to investigate similarities and differences in religion across cultural contexts is to attempt to disentangle what impacts culture and religious beliefs have on individuals

(Saroglou & Cohen, 2013). For example, it has been shown that the importance of religion within cultures moderates the effect religion has on subjective well-being, demonstrating that cultural differences must be considered when trying to understand how religion affects individuals (Lun & Bond, 2013).

However, whilst there has been a move towards a more nuanced approach to understanding cross-cultural differences in religion, there has been less focus on understanding cultural differences or similarities in non-religion or unbelief. It is evident that across WEIRD societies, the percentage of individuals not identifying with a religion is on the rise (Curtice et al., 2019; Pew Research Centre, 2022). Whilst in some WEIRD countries being non-religious or atheist is still associated with negative stereotypes, such as in the US being stereotyped as not trustworthy or immoral (Brown-Iannuzzi, McKee & Gervais, 2018); in most WEIRD contexts, being non-religious in general is not controversial.

However, there is limited understanding of this rising demographic of non-religious individuals. To fill this research gap, the 'Explaining Atheism' research programme is conducting research across six countries and urges researchers to focus on a variety of cultural contexts when exploring unbelief (Explaining Atheism, 2024). Whilst this network and the core research conducted within it takes a more global approach to understanding unbelief, understanding unbelief in societal contexts that are predominantly religious is still scarce. A recent study exploring atheist or non-religious youth in Kenya, as well as a larger-scale project aiming to get an understanding of individuals identifying as 'nones' within Sub-Saharan Africa must be regarded as groundbreaking (Gez, Beider & Dickow, 2022; Muhriithi, 2023). Moreover, there is an urge from researchers to explore the effect religion has on the well-being of individuals who identify as atheist in largely religious countries (Himwan et al., 2022). In their commentary, Himwan and colleagues argue that it would be especially important to explore how a social identity approach to religion and non-religion could shed light on the effects of religion and non-religion in different cultural contexts. In a similar manner, Hopkins and Reicher (2011) argue that taking a social identity lens when conducting cross-cultural research would provide novel insights into how identities are shaped and formed as part of a cultural context.

Studying (Non)-Religious Identity Across Cultures

As outlined at the beginning of this chapter, research, especially within WEIRD societies, have shown that (non)-religious categories serve as a social identity for many individuals within these cultural contexts (Ysseldyk et al., 2010). However, cross-culturally, social categories of religion and (non)-religion are less well understood. Prominent researchers within the social identity approach have argued, however, that using the social identity framework could provide novel and unique insights into cross-cultural psychological research (Hopkins & Reicher, 2011) and that social identities must

be considered within their cultural context. For example, Brewer and Yuki (2007) conclude that:

> All cultures rely on social identification and ingroup loyalty, trust, and cooperation as an essential mechanism of social coordination and social control. The nature of social identities, however, is embedded in cultural values and practices, with the consequence that ingroup boundaries and ingroup– outgroup distinctions may be culture-specific.
>
> (p. 319)

With this notion in mind, we decided to apply the social identity approach we had used in SRES1 but adapt it to include Global Perspectives. We therefore applied this social identity approach to studying people's perceptions of the relationship between science and religion across the UK, Germany, Spain, Argentina, and Sri Lanka. As our previous research has shown that, within the UK and Canada, broad social identities constructed around religious belief and non-belief affect how people think about the relationship between science and religion, we decided to use similar broad categories for this project. In the following section, we will outline the process by which we tried to understand people's perceptions of the relationship between science and religion based on culturally relevant social identities.

Science and Religion: Exploring the Spectrum of Global Perspectives

Research Plan: An Iterative Process

Embarking on a multi-country research project comes with significant challenges, including the fact that, at least at the outset, the researchers will necessarily not be embedded in all the country contexts that they plan on studying. The multidisciplinary nature of the SRES2 project helped us to combat this issue. Initially, we had designed the social psychological research of the larger SRES2 project to include extensive research trips to each country for all the UK-based researchers. This would allow us to spend considerable time in each country alongside the qualitative researchers who were either from or deeply embedded in those country contexts, to get a deeper understanding of the culture within each country and how these cultural differences needed to be accounted for within our research.

However, just as we were about to embark on the first of these research trips at the start of SRES2, the COVID 19 pandemic forced lockdowns in all countries, making travel impossible for most of the project. We therefore had to adapt our initial research plan to ensure that we were able to address our research questions. The only way to ensure data collection was conducted in a timely manner was to resort to something we originally had hoped to avoid – collecting data online. However, as the world switched to online, so

did our research approach, and, rather than being embedded in the cultures and having in-person meetings and discussions with our colleagues in the various SRES countries, we met via online meeting tools, following our initial plan for developing the research with our partners as closely as possible.

Deciding On and Translating Questions

Our initial starting point was the insight we had from our SRES1 research in the UK and Canada. Through this research, we discovered that taking a social identity approach facilitated a deep understanding of many of the narratives underpinning people's perceptions of the relationship between science and religion. Moreover, we had developed items (such as personal identification with religion and with science) and scales (such as the conflict/compatibility scale: Leicht, Sharp, LaBouff, Zarzeczna, & Elsdon-Baker, 2021), which were face valid,[1] and differentiated between people's beliefs and attitudes in those country contexts. Our research plan was to use these as an initial starting point but to adapt the questions and methodologies to other country contexts. To do this, we used a case study approach to ensure that social and cultural differences that were uncovered as part of the sociological research as well as through discussions with colleagues situated within each country context would be reflected in our research design.

As a starting point, we collated the relevant questionnaires and items we developed in English as part of SRES1 within one single document and distributed those measures to all colleagues situated within the SRES2 countries: Germany, Spain, Argentina, and Sri Lanka. We asked them to provide initial commentary on the measures to ensure face validity in each country context. Upon return of the document, we discussed the suggested changes and proceeded to the second stage, which meant that if we changed an item to ensure that it was contextualised within one country, we redistributed the changed wording of the item/question to all other country partners to establish whether the new measure would also be contextually appropriate in the other countries. This multi-partner and detail-oriented iterative process provided us with a final English version of our measures to use in SRES2. The final English-language document, including all measures, was sent to a professional translation service to get a first-stage translation of the items in Spain, Argentina, and Germany. The translation was then passed back to our colleagues within each country who assessed the questions in their native languages. This was usually done by more than one person on the qualitative research team so that we were able to incorporate multiple perspectives. The exception to this procedure was Sri Lanka, where our colleagues translated the items in the first instance. Once these steps were completed, we had our questionnaires ready to conduct our initial pilot study in each country, with parallel versions in English, Spanish, Argentinian Spanish, German, Sinhalese, and Tamil.

Our First Study

Our pilot study was conducted online through the survey company Qualtrics Panels. We initially collected data only in the UK, Germany, Spain, and Argentina as there were additional obstacles with setting up the project in Sri Lanka. Moreover, whilst Qualtrics Panels were initially unable to provide participants from Sri Lanka, we were also concerned about the representativeness of online survey data within the Sri Lankan context due to digital exclusion. We therefore decided to conduct data collection within the Sri Lankan context at a later stage to overcome those challenges. Despite the pandemic-related challenges, we gathered data from four different countries.

While we had engaged in measurement development and our pilot study, our partners in Germany, Spain, and Argentina had been conducting in-depth qualitative data, and we were able to benefit from their initial insights. Through a number of in-depth online discussions weighing up our methods, measures, and results with initial insights from the qualitative research, we made further adaptations and revisions before proceeding to collect any further data. We will outline and describe some of those revisions and discussions in further detail before providing some country-specific results highlighting contextual similarities and differences across our research.

Further Studies: A Tension Between Comparability and Adaptation

From the beginning, we were conscientious about ensuring that our research was culturally embedded and relevant, yet comparable in the focus on religious social identities and perceptions of science and religion. This is especially visible in our decision to take a case study approach rather than designing cross-cultural studies that were strictly comparable across different country contexts. This comparative cross-cultural methodological approach often values comparison over and above deeply embedded research across different countries. Managing this tension was probably the most difficult aspect of our research. However, we managed this through taking an iterative and collaborative approach with our international partners to write the surveys, utilizing both our expertise and our collaborators' expertise. In this way, we ended up with the most comparable survey possible without sacrificing cultural relevance: a mixed approach of mainly comparable items, while investigating different, though more importantly culture-specific, social identities in the different countries. This allowed us to account for larger societal and cultural differences when it comes to understanding religious and non-religious identity groups. Next we will outline a few adaptations we made within each country context, to provide a more in depth understanding of our approach, as well as some of the cross-cultural variations in how religion, science, and related subjects are conceptualised.

Adapting Question Wording

Germany. As English and German have the same language origin, translating the measures into German was relatively straightforward, with few concerns about the applicability of items. Nevertheless, there were some cultural differences and sensitivities, such as political discussions around the use of ethnic identity questions. We therefore removed that item from our survey to be culturally sensitive.

Spain. Again, the process of translating items was quite straightforward, although there were times when terminology that made sense in an English context (e.g., 'extended family') made less sense in the Spanish context, and we made some revisions to the wording for the Spanish survey to make this clear (in this case giving examples of what we meant by 'immediate family' and 'extended family').

Argentina. Although, of course, both Spain and Argentina are Spanish-speaking countries, there are many differences in the vernacular language and idioms used. Therefore, we went through a separate translation process for the Argentinian context. One of the things that particularly came up in our conversations with colleagues in Argentina (although it also came up in the other countries) was that the science–religion debate may be focused around different kinds of issues than in the UK. For example, 'moral' issues such as abortion and euthanasia were the types of concerns that people raised when thinking about science and religion. However, this raised a dilemma for us because we were using a scale that had previously been validated in the UK and Canada and wanted to maintain the overall structure of this scale (Leicht, Sharp, LaBouff, Zarzeczna, & Elsdon-Baker, 2021). Moreover, we had included some 'ethical' questions in the original version of our scale, but in the process of scale validation we dropped them because people with different social identities were interpreting them differently. Once again, this raised the issue of whether we wanted to prioritize comparability or cultural relevance in our research design. In this instance, we decided to keep the overall structure of the scale as it was (only making slight wording changes where necessary for clarity) but to put a free response question afterwards, where people could write in any additional issues where they thought that religious/spiritual viewpoints and science might interact.

Sri Lanka. Sri Lanka was the most 'different' of the country contexts that we worked in, compared to the SRES1 project. Although it does have sizable populations of Christians and Muslims, it is majority Buddhist and Hindu, meaning that it was the only context in our project that was neither currently nor historically (in the case of the UK) majority Christian. Unlike our other SRES2 countries, there is not a sizable non-religious population, and in pretesting we found that some participants did not even know what the term 'atheist' was, and our Sri Lankan colleagues indicated that this is common in Sri Lanka. Thus while we kept most of the questions as similar

as we could to our other country contexts, we made some of them (particularly questions about atheists) optional rather than forced choice, as forcing people to answer something they had no concept of would not produce high-quality data.

We included the four major religious traditions in our design for Sri Lanka: Buddhist, Hindu, Muslim, and Christian. In our discussions with our Sri Lankan colleagues, we found that in that context, religious traditions were often more associated with family and culture than with beliefs. Therefore, we added in an extra question to try to get an understanding of whether people thought about religion more as culture rather than a set of beliefs: 'Do you think of religion as more based on beliefs or more based on culture?'[2] Furthermore, there is a huge educational disparity in the country, with many people not having any conceptualization of what evolutionary science was, as different from 'science'. For this reason, we decided to make the evolutionary science questions optional as well.

Adapting the Social Identity Approach

Germany. Of all the SRES2 countries, we had the strongest local knowledge of Germany, going into the research. This was due to one of the authors, Carola Leicht, being German herself (although having worked in the UK context since her PhD) and due to our co-investigator in Germany, Tom Kaden, having been a postdoctoral researcher on SRES1 and heavily immersed in the research agenda of the SRES projects.

Our early discussions regarding how to adapt the social identity categories for Germany indicated that the categories we had used for the UK (religious, atheist, and other non-religious) would be relevant in the German context. Due to the different character of organized nonreligion in Germany compared to the American and UK contexts (Schröder, 2017), we hypothesized that the difference between atheist and other non-religious social identities would be less pronounced than in the UK but that this would still be an interesting comparison to explore. We did have some conversations about other social identities that might be interesting to explore (e.g. East vs. West Germany, with their different levels of secularization for historical reasons, Froese & Pfaff, 2005; or Protestant vs. Catholic), but none of these seemed to yield particularly strong hypotheses for our research agenda, so we decided to stick with our original categories.

After running the pilot study, we met with the team in Germany to discuss our results and our plan going forward. We had found that, although there was not always a clear difference between atheist and other non-religious, the categories we were using were generally of interest in terms of capturing differences in people's beliefs and attitudes.[3] We decided that it was important to be able to investigate this nuance in the survey design going forward. We discussed other types of social identity in Germany (such as

East vs. West), but the on-the-ground qualitative research that our colleagues were doing wasn't bringing up any clear distinctions that we felt needed to be addressed in our research. The conversation that came up very often in regard to science and religion in their research was vaccination attitudes, but this was not part of our research agenda for SRES2, which was to focus on evolutionary science attitudes, so we decided to retain our original categories for the remaining research.

Spain. In Spain, similarly to Germany, we decided to retain the original SRES social identity categories for the pilot study, although we were unclear how much differentiation there would be between the identities of atheist and other non-religious. Upon gathering our pilot data, the categories that we had been using (religious, atheist, and other non-religious) did seem to work well in terms of being face valid to participants and distinguishing between people's attitudes about science and religion. However, upon discussing our results with our Spanish team, they pointed out that we could not distinguish clearly the large community of non-practicing Catholics in Spain, as we weren't sure whether they would describe themselves as 'religious' or 'other non-religious' on our screening questionnaire. We initially suggested that we could control for the extent to which religious participants engaged in religious practices as measured through questions on our surveys. However, they explained that 'practicing Catholic' is a separate, recognized category in Spain which appears on standard religious demographic measures. So, although it sounds potentially like a strange differentiation to researchers in the UK, it is a clearly recognized social identity in Spain. For example, in Spain's June 2024 opinion barometer, 36.7% of those surveyed identified as non-practicing Catholic, compared to only 17.8% identifying as practicing Catholic (Centro Investigaciones Sociologicas, 2024). Having finally understood this important cultural distinction, we decided to keep our original categories of atheist and non-religious, then split our religious category into two: practicing Catholic and non-practicing Catholic. Going forward we used these four (non-)religious social identity categories in our research in Spain, which turned out to be a very important distinction in the remainder of our research.[4]

Argentina. Argentina is a relatively secularized country compared to others in Latin America (Pew Research Center, 2014) and has a relatively high number of non-religious people (Statista Research Department, 2023; see chapter 4). However, very few people specifically identify as atheist (Bargsted, Somma, & Valenzuela, 2019), and we determined alongside the qualitative research team in Argentina that it would not be a good use of time and resources for us to try to gather data from the tiny population of atheists but rather to focus on the religious and non-religious social identity categories in the pilot study.

When we met to discuss the results of the pilot study with our colleagues, they discussed the qualitative research that they had been doing, as well

as their knowledge of cultural narratives in Argentina. It was becoming more clear to them that, in the research they were doing, there was a large difference between Catholic and Evangelical conversations around science and religion in Argentina, with Evangelical participants (a growing population in Argentina: Statista Research Department, 2023, 2024) often using similar arguments about science and religion that you might hear among creationists in the US. Based on this information, we decided to use three social identity categories in our future research: Catholic, Evangelical, and non-religious.[5]

Sri Lanka. Because we started our data collection so late in Sri Lanka, we had most of our conversations about relevant social identity categories prior to collecting data for our pilot study. Due to the recent civil war and conversations around ethnic identity, we had originally decided that it might be useful to focus on Sinhalese (majority Buddhist) and Tamil (majority Hindu) social identities. However, in conversation with our colleagues in Sri Lanka, we learned that the relationship between religious and ethnic social identity is so complicated (U.S. Department of State, 2020; see chapter 8) that it made more sense for us to ask only about religious social identities for recruitment purposes and then include a demographic questionnaire at the end of the survey. Moreover, this allowed us to include the sizable Muslim and Christian communities in our research design, so it was decided to focus on all four of these identities. This also helped us tease apart whether we would find different patterns for monotheistic/Abrahamic religions in that context.[6]

Sri Lanka was the only country in which we were able to go in person to start the psychological research, after the height of the COVID-19 pandemic. We did this (1) to train the project research assistants in conducting psychological research, as we were not able to conduct the research online due to our concerns about digital exclusion, and (2) to get a better understanding of the research context and common data collection processes used. During this time, we took the opportunity to have in-depth discussions about the research with our colleagues, something that had been quite difficult previously online because these meetings tended to be more formalized and time-bound but also because of the frequent technical issues that our Sri Lankan team faced due to systemic problems like power cuts.

Because of these in-person conversations we were able to understand more of the intricacies of how religious social identity is construed in Sri Lanka. For example, 'Muslim' functions as both a religious and an ethnic category in Sri Lanka, even though someone who identifies as Muslim might have a family history that includes either conversion or migration from many different national contexts. It is, therefore, very different as an 'ethnic' category from what we would consider to be one in the UK. We are very grateful that the timing of our research enabled us to have this time working in person with the team in Sri Lanka, as we may have missed this kind of insight otherwise.

Top-Level Findings

The Utility of the Social Identity Approach Across Country Contexts

Going into this project, our aim was to investigate the extent to which the social identity approach was applicable to studying science and religion across country contexts. While we had found in SRES1 that using a social identity approach was particularly helpful in understanding people's perceptions of science and religion in the UK and Canada, we did not want to presume that this would be the case in all contexts. Our research has shown that the social identity approach does indeed work across a number of different country contexts, including those as different as Sri Lanka (Hughes et al., in press) and Germany (Hughes et al., 2023).

Context Does Matter

That said, while the social identity *approach* proved to be explanatory in all the contexts we studied, we want to emphasize that context does indeed matter. We were not able to impose the social identities that were particularly useful in understanding the UK and Canadian contexts directly onto the other countries we studied. In some cases, the fact that we were studying this specific subject matter made this relatively obvious (e.g. not studying atheists in Argentina or non-religious in Sri Lanka since there are so few people with those identities in those countries); however, some of these distinctions were less obvious to us at the beginning (e.g. practicing vs. non-practicing Catholics in Spain). We would caution researchers employing a social identity approach cross-culturally, no matter what subject they are studying, to adapt the social identities they are investigating to the context as necessary.

Religious Individuals Do Not Drive the Conflict Narrative Between Science and Religion

Finally, one further point that we would like to emphasize is that, across all the countries we investigated (except Sri Lanka, which did not have a large enough population of non-religious to study), religious people on average perceived more compatibility between science and religion than non-religious/atheist individuals (Sharp, Grove, Hughes, Leicht, & Elsdon-Baker, 2024). This suggests to us that the conflict narrative between science and religion is, in fact, not driven by the average religious person's understanding of science and religion but by other cultural factors.

Lessons Learned

We must admit that conducting multi-country, case-study-based research during a global pandemic was not a stress-free research experience. However, we do have some hard-won lessons that we can share.

Challenges and Benefits

We'll start with the challenges. The field of psychology is moving much more towards Open Science and the preregistration of studies/hypotheses (Hagger, 2022). This is overall a net positive for the field as it helps to avoid systemic problems not just of outright fraud but of questionable research practices like p-hacking[7] (Head, Holman, Lanfear, Kahn, & Jennions, 2015). However, it is very difficult to fit an exploratory, multi-country programme of research into this framework. We found this particularly difficult in the first stages, when we were still working out which questions/social identities to focus on. Our pilot study data is very rich but does not fit the stringent Open Science standards now required for many psychology journals.[8]

Moreover, working in this way makes writing our data up for publication quite tricky. We have largely written up research from different country contexts as case studies (or Study 1a, 1b, 1c, etc.) given that we are using similar frameworks but sometimes implementing it slightly differently (e.g. with different social identities). This means that we necessarily have quite a bit of repetition in writing up our results, and sometimes struggle to keep it within a tight word count. It can also be difficult to find the right outlets, which are happy to publish this kind of work.

However, while some clear challenges are built into this kind of research, which we certainly cannot deny, we would still highly recommend using this model when doing cross-cultural research. By working closely with teams of researchers 'on the ground', deeply embedded in the local context, we were able to build lasting collaborative relationships and learn far more about the cultures that we were working in. We were also able to conduct research that was far more nuanced than we would have been able to do otherwise (as is shown by the changes we made to the research design after our initial pilot study). Although we certainly have not been able to capture all of the nuances of social identities related to (non-)religion in the different countries we worked in (even in the UK, where we are based, we would not make this claim), we were able to learn much more about the psychological underpinnings of people's perceptions of the relationship between science and religion than we would have been able to otherwise.

Comparability vs. Relevance

When designing SRES2, we felt caught 'between a rock and a hard place', in terms of trying to balance comparability and relevance. We wanted comparability so that we could say something about perceptions of science and religion overall rather than having to consider every country context in isolation. However, we also wanted to be relevant to each country context. For example, atheist social identity plays a large part in social narratives about science and religion in the UK but is completely irrelevant in the Sri Lankan context. This is why we designed our research process to be iterative from

the outset, so that we could adapt as needed as we went along. This kind of research is not a static process. We found ourselves repeatedly coming back to the issue of comparability vs. relevance throughout the research project and rebalancing the scales the best that we could at various stages. This may be a more complicated way of doing research, but we believe that it enabled us to pursue a research agenda that was nuanced and culturally relevant, while still adhering to the rigorous standards of psychological research.

Acknowledgements

Although for practicality's sake, there are only three authors on this chapter (the three members of the social psychological 'strand' of research who finished out the SRES2 project), given the collaborative nature of the research we presented here, we feel that it is important to mention in-text the amazing team of researchers who contributed to this project. In the UK, our Principal Investigator, Fern Elsdon-Baker, oversaw the research process. During the course of the project we also had two other Research Fellows who worked with us on the psychology research strand: Natalia Zarzeczna and Richard Grove. We also had team members based in the UK who coordinated the qualitative research teams in the different countries: Stephen Jones and Rachael Shillitoe. In Germany, we worked with Tom Kaden and Amrei Sander. In Spain, we worked with Mar Griera, Rafael Cazarin, and Cecelia Delgado-Molina. In Argentina, we worked with Reynaldo Rivera and Arturo Fitz Herbert. In Sri Lanka we worked with Siri Hettige, Premakumara de Silva, Mohamed Mahees, Luxshe Hariharan, and Mahesh Premarathna. We would also like to thank the research assistants in Sri Lanka who conducted the in-person data collection.

Notes

1 Face validity refers to the extent to which the measure appears to measure what it is supposed to be measuring – that is, does it 'make sense' to your participants?
2 Interestingly, we found a difference by religious tradition, with Hindu participants more likely to think of religion as being more based on culture than Muslim or Christian participants (Hughes, Sharp, & Leicht, 2023).
3 For example, while we found that within response patterns, atheists often rated non-religious participants similarly to themselves (perhaps as an inclusion into their perceived in-group), non-religious participants did not always do the same (Hughes et al., 2023; Sharp et al., 2023).
4 For example, it helped with understanding stereotypes about people with different (non-)religious identities. When rating the perceived intelligence of these different (non-)religious categories, practicing Catholic participants tended to rate non-practicing Catholics as slightly less intelligent than practicing Catholics but slightly more than non-religious and atheist. On the other hand, non-practicing Catholic participants tended to rate practicing Catholics as less intelligent than non-practicing Catholics, but on similar levels to non-religious and atheist participants.

Interestingly, when rating 'scientifically minded' for each, practicing Catholics rated non-practicing Catholics, atheists, and non-religious at similar levels, higher than practicing Catholics. Non-practicing Catholics also rated practicing Catholics as less scientifically minded than non-practicing Catholics, atheists, and non-religious (Hughes, Sharp, & Leicht, 2024).

5 An example of the explanatory power that separating out Catholics and Evangelicals gave us was in the ratings of the adjective 'scientifically minded' for our different religious identities. Evangelical participants tended to view Catholics like themselves, rated as less scientifically minded than non-religious. However, Catholic participants tended to view Evangelicals as less scientifically minded than themselves, though both still less scientifically minded than non-religious. We would not be able to see this difference in perceptions with only a religious and non-religious category (Hughes, Sharp, & Leicht, 2024).

6 For an example of the efficacy of using these religious social identities, we can look at participants' responses on the eight-item science and religion conflict compatibility scale. We found that Hindu and Muslim participants perceived the most compatibility between science and religion, significantly more so than Buddhist participants, followed by Christian participants. In other words, Christian participants viewed the most conflict between science and religion, and Hindu and Muslim participants viewed the most compatibility between science and religion (Sharp, Grove, Hughes, Leicht, & Elsdon-Baker, 2024).

7 Essentially, the misuse of data analysis to find (generally through multiple testing until a significant finding is found) and publish statistically significant results even though there is no underlying effect.

8 We should note that this also points to some of the limitations of Open Science: there is a risk that due to the pressures of meeting these publishing standards, some researchers will avoid exploratory research and proceed with their preconceived ideas rather than going through the kind of exploratory, iterative process we have outlined here.

References

Abrams, D., & Hogg, M. A. (Eds.). (1999). *Social identity and social cognition* (pp. 196–229). Oxford: Blackwell.

Bargsted, M., Somma, N. M., & Valenzuela, E. (2019). Atheism and nonreligion in Latin America, Geography. In: Gooren, H. (Ed.), *Encyclopedia of Latin American religions. Religions of the world*. Cham: Springer. https://doi.org/10.1007/978-3-319-27078-4_558

Barnes, M. E., Maas, S. A., Roberts, J. A., & Brownell, S. E. (2021). Christianity as a Concealable Stigmatized Identity (CSI) among biology graduate students. *CBE—Life Sciences Education*, *20*(1), ar9. https://doi.org/10.1187/cbe.20-09-0213

Brewer, M. B., & Yuki, M. (2007). Culture and social identity. *Handbook of Cultural Psychology*, 307322, 1–47.

Brown-Iannuzzi, J. L., McKee, S., & Gervais, W. M. (2018). Atheist horns and religious halos: Mental representations of atheists and theists. *Journal of Experimental Psychology: General*, *147*(2), 292.

Centro Investigaciones Sociologicas. (2024). Barometro de Junio 2024. www.cis.es/documents/d/cis/es3463mar-pdf

Colbert, M. (2021). East versus West: Psychology of religion in East Asian cultures. *Current Opinion in Psychology*, *40*, 61–66.

Curtice, J., Clery, E., Perry, J., Phillips, M., & Rahim, N. (Eds.). (2019). *British social attitudes: The 36th report*. London: The National Centre for Social Research.

Edwards, S. (2018). Distinguishing between belief and culture: A critical perspective on religious identity. *Journal of College and Character*, *19*(3), 201–214.

Explaining Atheism. (2024). www.explainingatheism.org

Falade, B. A., & Guenther, L. (2020). Dissonance and polyphasia as strategies for resolving the potential conflict between science and religion among South Africans. *Minerva, 58*(3), 459–480.

Froese, P., & Pfaff, S. (2005). Explaining a religious anomaly: A historical analysis of secularization in Eastern Germany. *Journal for the Scientific Study of Religion, 44*(4), 397–422.

Gez, Y. N., Beider, N., & Dickow, H. (2022). African and not religious: The state of research on Sub-Saharan religious nones and new scholarly horizons. *Africa Spectrum*, *57*(1), 50–71.

Hagger, M. S. (2022). Developing an open science 'mindset'. *Health Psychology and Behavioral Medicine*, *10*(1), 1–21.

Head, M. L., Holman, L., Lanfear, R., Kahn, A. T., & Jennions, M. D. (2015). The extent and consequences of p-hacking in science. *PLoS Biology, 13*(3), e1002106. https://doi.org/10.1371/journal.pbio.1002106

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world?. *Behavioral and Brain Sciences*, *33*(2–3), 61–83.

Himawan, K. K., Martoyo, I., Himawan, E. M., Aditya, Y., & Suwartono, C. (2022). Religion and well-being in Indonesia: Exploring the role of religion in a society where being atheist is not an option. *Religion, Brain & Behavior*, 13 (3): 313–315.

Hughes, R. E., Sharp, C. A., & Leicht, C. (2023). *SRES2 pilot study: Sri Lanka* [unpublished raw data]. Birmingham: University of Birmingham.

Hughes, R. E., Sharp, C. A., & Leicht, C. (2024). *Stereotypes about science and religion across cultures* [unpublished raw data]. Birmingham: University of Birmingham.

Hughes, R. E., Sharp, C. A., Leicht, C., & Elsdon-Baker, F. (2025). Global perceptions of religious and non-religious scientists: A social identity perspective. *Archive for the Psychology of Religion,* https://doi.org/10.1177/00846724251314496.

Hopkins, N., & Reicher, S. (2011). Identity, culture and contestation: Social identity as cross-cultural theory. *Psychological Studies*, *56*, 36–43.

Legare, C. H., Evans, E. M., Rosengren, K. S., & Harris, P. L. (2012). The coexistence of natural and supernatural explanations across cultures and development. *Child Development*, *83*(3), 779–793.

Leicht, C., Sharp, C. A., LaBouff, J. P., Zarzeczna, N., & Esldon-Baker, F. (2021). Content matters: Perceptions of the science-religion relationship. *The International Journal for the Psychology of Religion*, 32 (3): 232–255.

Lun, V. M. C., & Bond, M. H. (2013). Examining the relation of religion and spirituality to subjective well-being across national cultures. *Psychology of Religion and Spirituality*, *5*(4), 304.

Muriithi Ndereba, K. (2023). Faith, science, and nonreligious identity formation among Male Kenyan Youth. *Zygon®, 58*(1), 45–63.

Pew Research Center. (2014). Religion in Latin America. Pew Research Center. www.pewresearch.org/religion/2014/11/13/religion-in-latin-america/#:~:text=On%20many%20questions%20in%20the,even%2020%25%20of%20the%20population.

Pew Research Center. (2022). Modeling the future of religion in America. Pew Research Center. www.pewresearch.org/religion/2022/09/13/modeling-the-future-of-religion-in-america/

Preston, J., & Epley, N. (2009). Science and God: An automatic opposition between ultimate explanations. *Journal of Experimental Social Psychology*, *45*(1), 238–241.

Rios, K. (2021). Examining Christians' reactions to reminders of the religion-science conflict: Stereotype threat vs. disengagement. *Personality and Social Psychology Bulletin*, *47*, 441–454.

Saroglou, V., & Cohen, A. B. (2013). Cultural and cross-cultural psychology of religion. *Handbook of the Psychology of Religion and Spirituality, 2*, 330–353

Saroglou, V., Clobert, M., Cohen, A. B., Johnson, K. A., Ladd, K. L., Van Pachterbeke, M., Adamovova, L., Blogowska, J., Brandt, P. Y., Çukur, C. S.. & Hwang, K. K. (2020). Believing, bonding, behaving, and belonging: The cognitive, emotional, moral, and social dimensions of religiousness across cultures. *Journal of Cross-Cultural Psychology, 51*(7–8), *551–575*.

Schröder, S. (2017). Organized new atheism in Germany? *Journal of Contemporary Religion*, *32*(1), 33–49.

Sharp, C. A., Grove, R. C., Hughes, R. E., Leicht, C., & Elsdon-Baker, F. (2024). *Perceptions of conflict/compatibility between science and religion across four countries: Results from the UK, Germany, Spain, and Argentina* [manuscript in preparation].

Sharp, C. A., & Leicht, C. (2020). Beyond belief systems: Promoting a social identity approach to the study of science and religion. In Elsdon-Baker, F. & Lightman B. (Eds.), *Identity in a secular age: Science, religion and public perceptions*. Pittsburgh, PA: University of Pittsburgh Press.

Sharp, C. A., Leicht, C., & Elsdon-Baker, F. (under review). Projecting and counter-projecting the conflict narrative. Submitted to Psychology of Religion and Spirituality.

Sharp, C. A., Leicht, C., Rios, K., Zarzeczna, N., & Elsdon-Baker, F. (2022). Religious diversity in science: Stereotypical and counter-stereotypical social identities. *Group Processes & Intergroup Relations*, *25*(7), 1836–1860.

Sharp, C. A., Zarzeczna, N., Grove, R., Leicht, C., & Hughes, R. E. (2023). *SRES2 pilot study: Germany* [unpublished raw data]. Birmingham: University of Birmingham.

Sikka, S. (2020). Pluralism about what? Religion as belief and identity. In: Puri, B., & Kumar, A. (Eds.), *Re-thinking religious pluralism*. Singapore: Springer.

Statista Research Department (2023, September 5). *Religion affiliation in Argentina as of 2020, by type* [Infographic]. Statista. www.statista.com/statistics/1066875/religious-affiliation-argentina/

Statista Research Department (2024, February 5). *Religious affiliation in Argentina in 2019 compared to 2008, by religion* [Infographic]. Statista. www.statista.com/statistics/1250568/religious-affiliation-changes-argentina/

Tajfel, H. E. (1978). *Differentiation between social groups: Studies in the social psychology of intergroup relations*. New York: Academic Press.

Turner, J. C., Brown, R. J., & Tajfel, H. (1979). Social comparison and group interest in group favouritism. *European Journal of Social Psychology*, *9*(2), 187–204.

U.S. Department of State. (2020). 2020 Report on International Religious Freedom: Sri Lanka. www.state.gov/reports/2020-report-on-international-religious-freedom/sri-lanka/

Ysseldyk, R., Matheson, K., & Anisman, H. (2010). Religiosity as identity: Toward an understanding of religion from a social identity perspective. *Personality and Social Psychology Review*, *14*(1), 60–71.

Part IV

New Horizons in the Study of Science, Culture, and Belief

13 Culture, Politics, and Economy as Mediators of the Science and Religion Relationship in Africa

Bankole Adebayo Falade

Ethnic, Religious, and Medical Pluralism

All religions in Africa rest on a foundation of African cultural traditions (Paden, 2005). Religious identity may thus not have the same meaning in Africa as it does elsewhere, where you are more likely you belong to one religion, identifying as Muslim, Catholic, Protestant, Anglican, etc. Although there are different branches within these faiths, it's rare to identify across faiths. Religion in Africa, for some, is to identify with one faith, while for others, it's selective prevalence across faiths (Jovchelovitch and Priego-Hernandez, 2015), as distinct belief systems are held together and retrieved separately at different points in time – the metaphor of multiple drawers.

Africa is also a continent with hundreds of ethnic groups, each with its own language, culture, beliefs and traditions. Nigeria, for example, has over 250 ethnic groups with the dominant ones being the Yoruba, Igbo, and Hausa. In Kenya you have the Kikuyu, the Luhya, Luo, Kalenjin, etc. In Ghana, you have the Akan (Ashanti), Ewe, Ga-Adangbe, etc., and in South Africa, they include the Zulu, Xhosa, Sotho, and Tswana. The kings of these tribes were also custodians of African religions in their respective domains before the advent of Islam and Christianity and continue to form part of the cultural and religious fabric of Africa today. African traditional religion, Christianity, and Islam constitute the triple religious heritage of the African continent (Aderibigbe, 2015; Paden, 2005).

While African publics have been described as 'incurably' (van den Toren et al., 2020) and 'notoriously' (Mbiti, 1990; Paas, 2019) religious, they are also 'incredibly tolerant' of other religions, and this may be explained partly because all recognise a supreme being, the Yoruba of South-West Nigeria refer to as 'Olodumare', the creator of heaven and earth, referred to by Christians as Omnipotent God and the Muslims as Allah, the gracious and merciful. This is the bedrock Paden (2005) made reference to, the concept of a supreme being overseeing the affairs of humans. Also, proximity and multi-lingualism have led to a better understanding of other ethnic groups with

DOI: 10.4324/9781003476580-17

intermarriages very common across faiths (and ethnic groups) and at times with each partner keeping to his own faith in the same household.

The Yoruba comprise a group of kingdoms each with its own traditional head and dialect but with strong cultural and religious ties. They occupy six (and part of a seventh and an eighth) of Nigeria's 36 states in the South-West part of the country and a land area about the size of the United Kingdom. What is unique about them is their religious diversity and respect for other beliefs. The Yoruba are almost evenly populated by Christians and Muslims, living together with the African Religions. Intermarriages, shared language, and culture are characteristic of the Yoruba, and tension (or conflict) between faiths and ethnic groups is very rare in modern times; coexistence is thus harmonious, informed by mutual understanding. In modern times, the Yoruba have also married across tribes, and urbanisation has made Lagos, a Yoruba town, into the most ethnically and religiously diverse commercial capital, perhaps, in the whole of Africa. This provides a template (or baseline) for examining coexistence across Africa, recognising however, the intertribal tensions informed by democratic struggles for power and economic prosperity among tribes and beliefs.

Churches in Africa have over time incorporated elements of African traditions, which are also part of African religions; drums and dance, alongside solemn worship with organs, and practices such as prophecy are seen in the same light by some adherents as divination by the *ifa* priest in Nigeria or the *sangoma* priest in South Africa or the *mganga* priest in Kenya. However, while the different faiths have had some level of influence on one another, they exist in public as different entities, tied to their origins and governed by different laws. All religious groups believe in the concept of one God, the difference being the messenger of God, which varies across the religions. This difference is, however, fundamental, but the one God concept brings all altogether, enabling peaceful coexistence, although with occasional skirmishes from a minority preaching purity.

'We treat, God heals' is a popular bumper sticker among clinical medical practitioners in Nigeria, which portrays their belief in the role of God in health and illness. The scientific approach also has its traditional forms with African medical practitioners openly advertising their trades claiming cure for a variety of diseases, spiritual or natural in origin, with the *ifa* priest, the *sangoma*, or the *mganga* acting as both the diviner (doctor) and herbalist (pharmacist). This is what is referred to as medical pluralism in African democratic states.

A diversity of ethnic and religious groups in coexistence with minimal conflict is the context in which science, both traditional and Western, meet African publics. They pride themselves in one faith or the other (Muslims, Christians, African religion) and have codified religious teachings and both clinical and African medical practices into their body of laws (Abrams et al., 2020).

Case Studies of Science and Belief in Culture

Mental Health

Psychiatric practices in Morocco are strongly rooted in Western medicine which views mental health problems as medical and amenable to clinical interventions. In Moroccan culture, however, power and freedom in mental health choice making are shared between family members in a country where the majority believes in traditional approaches such as faith healers and marabouts. In practice, while the field of psychiatry has kept its distance from traditional modes of healing, Moroccans seek the services of both, and decision autonomy is further constrained by family choices (Ouazzani et al., 2021). In Ghana, Lo and Dzokoto (2005) found that the country's mental health counselling service is heterogeneous in nature with an interplay of clinical practices, culture and religion in assessment, case conceptualization, and treatment. Ae-Ngibise et al. (2010) also found that people with mental health problems consult doctors, traditional and faith healers, while Babb et al. (2007) found that 23% of persons taking antiretroviral therapy for HIV in South Africa reported using traditional medicines obtained from the *sangomas*. Pentecostal clergy in Ghana also lean more towards a diabolical explanatory model of mental health than a biomedical perspective, engaging in exorcism, social support, and health education (Asamoah et al., 2014).

Traditional healers see their practice of medicine as impacted by God, and what modern science has introduced is the concept of dosage. In the past, the healers recommended herbal solutions without specifying dose and duration of treatment. In Nigeria, they now undergo training on safety, and their practices and drugs are also regulated by agencies (Osuide, 2002) such as the National Agency for Food and Drug Administration and Control, the Center for Research in Traditional, Complementary and Alternative Medicine of the Nigeria Institute of Medical Research, and the Traditional, Complementary and Alternative Medicines Department of the Federal Ministry of Health and Social Welfare. These agencies ensure that the traditional medicine is regulated, licenced, and marketed under guidelines similar to Western pharmaceutical medicine. In South Africa, the Traditional Health Practitioners Act 22 of 2007 also provides a regulatory framework to ensure the efficacy, safety, and quality of traditional health care services (see also Mothibe and Sibanda, 2019).

In a series of interviews conducted by the author, a herbalist in Nigeria (Falade, 2014: 205) confirmed that traditional drugs were given in the past without dosage, but training in the scientific research process has made them better practitioners such that they now specify daily dosage, and this has greatly enhanced treatment instead of causing other ailments in the patient. The knowledge about herbs, he attributed to God, a claim another interviewee agreed with: 'it is God that gives us knowledge' and 'it is God that inspires scientists'. He is the creator of everything. Thus, clinical and

traditional medical practices coexist in the population, and both are seen as 'knowledge' from God, and this may further explain why the public consult both knowledge systems.

Beliefs, Ebola and COVID-19

The Ebola virus outbreak in West Africa was a recent experience of the relationship between science and beliefs in some African states. A study by Falade and Coultas (2017) examined 4201 articles from 17 newspapers published in 12 African countries between January 2013 and May 2015. The study shows that the roles played by religious actors were distinguishable as three subcategories:

1. *Rejection of science:* Those that preached the sanctity of faith in God to cure all ailments and rejected scientific advice, such as pastors laying hands on the sick to cure them of the disease which they believed was a 'spiritual attack'.
2. *Combination of belief and science:* The middle of the road approach was deployed by those who gave conflicting directives like the church leader who told his pastors that all those who had fasted for 100 days should have no fear of Ebola, but he also warned them to avoid laying hands on anybody they suspected of having the disease.
3. *Acceptance of science over belief:* Those activities that aided its containment, such as churches that complied with medical directives. A religious leader called on fellow men of God: 'I beg you in the Name of Jesus … please stop laying hands on people in order to cure them of Ebola'.

The COVID-19 pandemic presented perhaps the greatest challenge to all forms of religious worship in recent memory and the relationship between science and belief. All churches and mosques were ordered to close during the holy months of both Abrahamic faiths, Lent and Ramadan, and worshippers were restricted from African religious sites. The communication strategy of the leaders of the religious groups were also of three types: elevate God over disease, accept science over faith in God, or a combination of both belief systems.

1. *Elevation of God over disease:* A pastor said, 'The virus will be there until the whole world has had a compulsory holiday. … He wants to prove to the world that he is in charge'. His message was to elevate God above science and use the pandemic to advance belief.
2. *Combination of belief and science:* The middle of the road approach was taken by a pastor who looked up to both God and science, praying, 'Let there be healing, let there be sun rays always, which is one of the antidotes to the disease. God release a drug that will cure it in Jesus' name'.

3. *Acceptance of science over faith:* A pastor called for adherence to scientific advice on the disease, saying, 'We need to follow instructions concerning COVID-19. It is for our good. I cannot imagine how we will cope with the disaster if it breaks on a massive scale in Nigeria'. His statement was an elevation of science over God, in a hierarchical format, as he also said, 'It is the prerogative of God to protect people. May God envelop you and protect you in this season' (Falade, 2022).

'Continue to wash your hands, continue to wear your mask, continue to sanitize, continue to maintain social distance, and lastly continue to pray' were the closing remarks of a pastor who was preaching online to his congregants in the context of the second and third waves of COVID-19 variants. He elevated science over God under the 'wash' and 'pray' theology and showed the extent to which the church was willing to embrace scientific knowledge in efforts to deal with COVID-19 (Muyambo et al., 2022).

Some African traditional belief practitioners offered spiritual sacrifice to appease the gods to cleanse the land, elevating God above disease while others such as the Osun Osogbo priests and worshippers ignored lockdown rules and went ahead to hold the festival's annual rites of making sacrifices to the river goddess (Falade, 2022).

Science, Beliefs, Economy, and Politics

Most African countries belong to the World Bank classification of low and lower middle-income groups, and the distribution of wealth is uneven across countries, social groups, and location in society with implications for access to scientific interventions in daily life, as well as for health and illness. Science museums, the internet, and hospitals, symbolic of science, are harder to find in the rural communities than in the cities, thus choices are limited for many to traditional practices. For health and illness, traditional practitioners are about the only choice for many in rural communities.

Traditional African medicine practices are a socioeconomic and sociocultural heritage, with an estimated coverage of 80% of the population in Africa (Ochwang'i and Oduma, 2017). Cook (2009), citing the 2006 Human Development Report, observed that, while there are 77 medical doctors per 100 000 population, there are about 500 traditional healers (*sangoma*, herbalist, prophet, or faith healer, traditional birth attendant, and traditional surgeons) for every 100 000 people. The *sangoma*'s HIV treatment option is also cheaper than going to public hospitals, and patients do not pay if health does not improve, making this an attractive option for the poor and less educated (Cook, 2009; Babb et al., 2007). Traditional birth attendants also remain popular in Northern Nigeria due largely to the absence of hospitals in the rural areas, and these attendants, not trained in clinical practices, are guided by traditions and religious beliefs which attribute deaths in pregnancy from

pre-eclampsia, for example, to evil spirits or martyrdom, and do not have the capacity to diagnose high blood pressure (Aliyu, 2021).

In Tanzania, the late president, John Magufuli, allowed the passage of goods through the Dar es Salaam port during COVID-19 pandemic while the world was in lockdown. Magufuli said this was to revive the economy and prevent hunger in the six partner states of the East Africa Community and other countries that depend on the port, which accounts for 80% of Tanzania's income. It was also an election year in Tanzania, and this became another constraint given that physical distancing measures would severely affect political campaigns. Magufuli, who had earlier supported the lockdown, backtracked for economic and political reasons (Falade, 2022). A devout Catholic, with a PhD in Chemistry, he was constrained by economic and political realities and called for divine intervention, saying that through 'Christ's crucifixion, God will save humanity from the disasters happening around the world, including the COVID-19 pandemic'. Tanzania, he argued, would not allow itself to be ruled by COVID-19: 'We have had a number of viral diseases, including AIDS and measles. Our economy must come first. It must not sleep.' Political and economic exigencies guided his attitude to the lockdown, and he sought a solution in his faith.

The attitude of the public in Northern Nigeria to the oral polio vaccine during the revolt of 2003 was also partly informed by political developments in the country and abroad, as it pertained to Muslims in general, and experience with science. A Muslim cleric, Mohammed bin Uthman, said the infamous field trial of the drug, Trovan by Pfizer in Kano in 1996, which led to the deaths and deformities of some children, undermined his trust as well as the economic embargo on Bosnia and Iraq (see BBC, 2002). He queried the argument the vaccine was to protect children, asking, 'Why did they watch Bosnian children killed and 500,000 Iraqi children die of starvation and disease under an economic embargo' (BBC, 2002; Falade, 2014). Two very influential Islamic groups, the Supreme Council for Sharia in Nigeria (SCSN) and the Kaduna State Council of Imams and Alfas, later rejected the vaccine, warning against its potential danger to make children infertile and reduce the population of Muslims as part of a global Western agenda (Falade, 2014). Ghinai et al. (2013), however, attributed the boycott to the spread of rumours at local levels, which were intensified by the involvement of high-profile individuals whose views were misunderstood or underestimated. Some traditional healers, however, saw the superiority of the vaccine over their own approach, which attributed the disease to an evil spirit called *Shan'inna*, but maintained the spiritual dimension to disease, calling the vaccine 'a spiritual cure produced by the white man' (Yahaya, 2006).

In Cameroon school girls boycotted classrooms to avoid tetanus toxoid vaccination teams fearing the vaccines would sterilise them. The TT vaccine was part of a global strategy by WHO to eliminate neonatal tetanus. The boycott followed a campaign by the pro-life Catholic group Family Life Association of Cameroon that the TT vaccine, being administered to girls of

childbearing age, contained a hormone that could cause sterility in women. The disagreement between the government and the anti-abortion group soon spilled over to politics, and the opposition described it as a plot to reduce their population. The controversy was followed by a sharp rise in teenage pregnancies and abortion as the girls sought to confirm their fertility post vaccination (Feldman-Savelsberg et al., 2000; Miller, 1995; Milstien et al., 1995).

COVID-19 travel restriction policies and other enforcement rules created a dilemma for many religious leaders, forcing them to accommodate science. The pastor who said God wants to prove to the world that he is in charge was compelled to take the vaccine after travel restrictions were imposed on the unvaccinated. The decision, he said, was to spread the gospel, 'If there are nations in the world that say that I cannot come to preach the gospel there because of vaccination, I will do anything for Jesus Christ … even if they ask me to be vaccinated 100 times, I will be vaccinated' (Falade, 2022).

These case studies have shown that the science religion relationship is often mediated by culture, location, poverty, the economy, and political events which may sometimes occur seemingly far away from the community that it is having an impact. Behavioural outcomes are thus not only informed by faith in God and/or science but also the context of knowledge production and use.

Hierarchical and Complementary Coexistence

What happens when two or more different ways of knowing, each with its own set of rules and guiding principles, meet: African religion, Islam, Christianity, and science? Does one system of knowing move up and the other down as theorised by Vygotsky (see Moscovici, 1984), or is the ensuing cognitive dissonance/conflict (Festinger, 1962) resolved in favour of science, or does it follow the replacement hypothesis of Durkheim (2012 [1912]), or do all systems of knowing coexist in the same individual or group? This chapter has shown that debating this relationship outside the context in which they meet is too narrow and may not do justice to the uncertainties, trade-offs, and the socio-cultural, economic, and political circumstances in which these behavioural outcomes are expressed.

Moscovici's (2008) social representations theory focused on the familiarisation (common sense-making) of the unfamiliar (science), examining the way in which scientific language becomes common dialect, pervades judgement, and leads to behavioural outcomes. In his study of the reception of psychoanalysis in France in the 1950s, Moscovici found that different communication strategies were employed by different social groups when confronted with a new scientific phenomenon, Freud's psychoanalysis. France in the 1950s was still living through the consequences of the Second World War, and psychoanalysis and Marxism had diffused widely in the culture, and society was divided on the acceptance of both. The study showed how three distinct subcultures of French society, the communists, the Catholics, and the

liberals, responded to psychoanalysis. For the communists, the communication strategy was that of propaganda seeking to enforce a stereotypical rejection of psychoanalysis which they described as an invasion of French culture and morals and a tool for political intervention. The Catholic press adopted the strategy of propagation, a middle of the road approach that condemned the practice while urging spiritual advisers to work with therapists. The liberals adopted the strategy of diffusion (Falade, 2014).

The context is key for the social representation's paradigm of research, and Bauer and Gaskell (2008) proposed an extension called 'the wind rose model', which sees representations as a function of the subject, object, project, time, medium, and intergroup context. Lahlou (2015) also introduced another contextual approach, proposing that human behaviour is guided by installations that simultaneously support and control human behaviour. In Lahlou's approach, human behaviour is determined at three levels: (1) the physical or material properties of objects, (2) the psychological or interpretive systems in humans, and (3) the social affordances of the environment or rules enforced by institutions that constrain what society members can do in a specific situation. Bauer and Gaskell (2008) focused on the project, time, intergroup, etc., while Lahlou (2015) focused on installations that guide behaviour; this chapter also adopts the social representations approach but goes further to propose a modification of Moscovici's concept of cognitive polyphasia (Moscovici, 2008) as a plausible explanation for behavioural outcomes disavowing the need to resolve perceived cognitive dissonance.

Cognitive polyphasia, according to Moscovici' social representations theory, is the dynamic coexistence of distinct modalities of knowledge in the same individual or group. This theory is supported by Legare et al. (2012), providing evidence that the same individuals use both natural and supernatural explanations to interpret the very same events and that there are multiple ways in which both kinds of explanations coexist in individual minds. The proposal of this chapter is that behavioural outcomes, when science and all types of belief systems meet, are mediated in cognition and expressed in two main forms: hierarchical and complementary associations, coexisting in the same individual or group. Hierarchical associations assume a choice of one over the other, although this is context-specific and open to change while complementary associations act either for enhancement or as parallel forms (Falade and Bauer, 2018). Hierarchical associations take the form of a hierarchy of choice, without feelings of dissonance. Parallel forms are akin to Stephen Jay Gould's (1999) theory of 'non-overlapping magisteria', where both forms of knowledge act without overlapping, 'interdigitating in wondrously complex ways along their joint border'. Enhancement is not a new phenomenon and has featured in mathematics as optimisation, either maximising or minimising attributes (Gill et al., 2008; Billups and Murty, 2000), and in quantum physics where Bohr argues for conclusions based on everything that can be associated with a phenomena (Nature, 1949; Bohr and Rosenfeld, 1996).

In the COVID-19 controversy, Magufuli, who had earlier supported the lockdown in Tanzania, changed his mind and ignored the science ostensibly to get the economy moving and allow gatherings for the upcoming elections, a change in his hierarchy of choices. To enable him to travel out of the country to preach, the pastor announced he was taking the vaccine, 'I will do anything for Jesus Christ', indicating he had to overcome the constraint imposed by the social affordances; this is an example of parallel complementary forms of cognitive polyphasia. Asking God to release a drug that will cure the disease exemplifies the argument for complementary enhancement, religion helping science, reminiscent of the bumper sticker, 'We treat, God heals'.

Summary

African publics want to visit the hospital for a clinical cure and still go to their religious places of worship to pray for a miracle, for the same ailment, a complementary or 'booster dose' phenomenon. They get Western-style education and knowledge about the scientific process yet seek the hand of the *sangoma* or *ifa* priest for success. What is also interesting is that the booster is not limited to science and one religion relationships, as some individuals visit the pastor, the imam, and the *sangoma,* alternatingly, on the same issue, as they seek complementary healing from multiple sources. This phenomenon can be explained more by the phenomenon of social representations and cognitive polyphasia and less by a conflict or replacement hypothesis. The hierarchical and complementary approaches to cognitive polyphasia provide better explanations for choice making and behavioural outcomes in Africa.

Beyond Africa, there are billions of believers in several faiths, across the world, and research on science and beliefs in these publics have shown the coexistence of multiple rationalities as well but maybe not theorised as social representations (see Ali Ali, 2010 study of native Arab speakers). Going forward, future research (or a systemic review) may re-evaluate these findings to see how they fit into the social psychological framework of cognitive polyphasia, providing more evidence for the validity of the theory.

Future research also needs to look beyond the relationship between science and beliefs as one of conflict between two knowledge systems, which often leads to undesirable health behaviour. Behavioural outcomes in health and illness must be viewed in the context in which they are produced – of multiple rationalities in cognition – the resulting choices being hierarchical or complementary and subject to change when new knowledge is acquired.

References

Abrams, A. L., Falkenberg, T., Rautenbach, C., et al. (2020). Legislative landscape for traditional health practitioners in Southern African development community countries: A scoping review. *BMJ Open*, *10*(1), e029958. https://doi.org/10.1136/bmjopen-2019-029958

Aderibigbe, I. S. (2015). Religious traditions in Africa: An overview of origins, basic beliefs, and practices. In Aderibigbe, I.S. and Jones Medine, C.M. (eds) *Contemporary Perspectives on Religions in Africa and the African Diaspora*, pp. 7–29. Palgrave MacMillan. https://doi.org/10.1057/9781137498052_2

Ae-Ngibise, K., Cooper, S., Adiibokah, E., et al. (2010). 'Whether you like it or not people with mental problems are going to go to them': A qualitative exploration into the widespread use of traditional and faith healers in the provision of mental health care in Ghana. *International Review of Psychiatry*, *22*(6), 558–567. https://doi.org/10.3109/09540261.2010.536149

Al-Ali, M. N. (2010). Generic patterns and socio-cultural resources in acknowledgements accompanying Arabic Ph. D. dissertations. Pragmatics. *Quarterly Publication of the International Pragmatics Association (IPrA)*, *20*(1), 1–26. https://doi.org/10.1075/prag.20.1.01ali

Aliyu, R. Y. (2021). Evil spirits and Martyrdom as perceptions of pre-eclampsia among traditional birth attendants in Kano, North-West Nigeria. In Falade, B. and Murire, M. (eds.) *Health Communication and Disease in Africa,* pp. 231–246. Palgrave Macmillan. https://doi.org/10.1007/978-981-16-2546-6_10

Asamoah, M. K., Osafo, J., and Agyapong, I. (2014). The role of Pentecostal clergy in mental health-care delivery in Ghana. *Mental Health, Religion and Culture, 17*(6), 601–614. https://doi.org/10.1080/13674676.2013.871628

Babb, D. A., Pemba, L., Seatlanyane, P., et al. (2007). Use of traditional medicine by HIV-infected individuals in South Africa in the era of antiretroviral therapy. *Psychology, Health and Medicine*, *12*(3), 314–320. https://doi.org/10.1080/13548500600621511

Bauer, M. W., and Gaskell, G. (2008). Social representations theory: A progressive research programme for social psychology. *Journal for the Theory of Social Behaviour*, *38*(4), 335–353. https://doi.org/10.1111/j.1468-5914.2008.00374.x

BBC. (2002). Nigeria Muslims oppose polio vaccination. *BBC News*. Available at: http://news.bbc.co.uk/2/hi/africa/2070634.stm (accessed 22 July 2024).

Billups, S. C., and Murty, K. G. (2000). Complementarity problems. *Journal of Computational and Applied Mathematics*, *124*(1–2), 303–318. https://doi.org/10.1016/S0377-0427(00)00432-5

Bohr, N., and Rosenfeld, L. (1996). Complementarity: Bedrock of the quantal description. *Foundations of Quantum Physics II (1933–1958). Niels Bohr Collected Works*, *7*, 284–285.

Cook, C. T. (2009). Sangomas: Problem or solution for South Africa's health care system. *Journal of the National Medical Association*, *101*(3), 261–265. https://doi.org/10.1016/S0027-9684(15)30855-5

Durkheim, É. (2012). *The Elementary Forms of the Religious Life*. Courier Corporation.

Falade, B. A. (2014). *Vaccination resistance, religion and attitudes to science in Nigeria*. Doctoral dissertation, London School of Economics and Political Science. https://etheses.lse.ac.uk/911/

Falade, B. A. (2022). 'Where are the graves of coronavirus victims?' Beliefs, conspiracy theories and representations of COVID-19 in Africa. *Cultures of Science*, *5*(4), 192–209. https://doi.org/10.1177/20966083221143927

Falade, B. A., and Coultas, C. J. (2017). Scientific and non-scientific information in the uptake of health information: The case of Ebola. *South African Journal of Science*, *113*(–8), 1–8. http://dx.doi.org/10.17159/sajs.2017/20160359

Falade, B. A., and Bauer, M. W. (2018). 'I have faith in science and in God': Common sense, cognitive polyphasia and attitudes to science in Nigeria. *Public Understanding of Science*, *27*(1), 29–46. https://doi.org/10.1177/0963662517690293

Feldman-Savelsberg, P., Ndonko, F. T., and Schmidt-Ehry, B. (2000). Sterilising vaccines or the politics of the womb: Retrospective study of a rumour in Cameroon. *Medical Anthropology Quarterly*, *14*(2), 159–179. https://doi.org/10.1525/maq.2000.14.2.159

Festinger, L. (1962). Cognitive dissonance. *Scientific American*, *207*(4), 93–106.

Ghinai, I., Willott, C., Dadari, I., et al. (2013). Listening to the rumours: What the northern Nigeria polio vaccine boycott can tell us ten years on. *Global Public Health*, *8*(10), 1138–1150. https://doi.org/10.1080/17441692.2013.859720

Gill, P. E., Murray, W., Saunders, et al. (2008). George B. Dantzig and systems optimization. *Discrete Optimization*, *5*(2), 151–158. https://doi.org/10.1016/j.disopt.2007.01.002

Gould, S. J. (1999). Non-overlapping Magisteria. *Skeptical Inquirer*, pp 55–61.

Jovchelovitch, S., and Priego-Hernandez, J. (2015). Cognitive polyphasia, knowledge encounters and public spheres. In Sammut, G., Andreouli, E., Gaskell, G. and Valsiner, J. (eds.) *Chapter 11 in The Cambridge Handbook of Social Representations*, Cambridge: Cambridge University Press (Vol. 163).

Legare, C. H., Evans, E. M., Rosengren, K. S., and Harris, P. L. (2012). The coexistence of natural and supernatural explanations across cultures and development. *Child Development*, *83*(3), 779–793. https://doi.org/10.1111/j.1467-8624.2012.01743.x

Lahlou, S. (2015). Social representations and social construction: The evolutionary perspective of installation theory. *The Cambridge Handbook of Social Representations*, *193*, 210–223.

Lo, H. W., and Dzokoto, V. (2005). Talking to the master: Intersections of religion, culture, and counselling in Taiwan and Ghana. *Journal of Mental Health Counselling*, *27*(2), 117–128. https://doi.org/10.17744/mehc.27.2.gx7d7thlvgkju4pd

Mbiti, J. S. (1990). *African Religions and Philosophy*. Heinemann.

Mothibe, M. E., and Sibanda, M. (2019). African traditional medicine: South African perspective. *Traditional and Complementary Medicine*, *2019*, 1–27.

Miller, J. A. (1995). Are new vaccines laced with birth control drugs? *Human Life International*, *13*(8).

Milstien, J., Griffin, P., D., and Lee, J.-W. (1995). Damage to Immunisation programmes from misinformation on contraceptive vaccines. *Reproductive Health Matters*, *3*(6), 24–28. https://doi.org/10.1016/0968-8080(95)90155-8

Moscovici, S. (1984). The phenomenon of social representations. In Farr, R.M., and Moscovici, S. (eds) *Social Representations*, pp.3–69. New York University Press.

Moscovici, S. (2008). *Psychoanalysis: Its Image and Its Public*. Polity.

Muyambo, T., Sande, N., and Tendere, J. (2022). 'Wash and pray': The Nexus of African Christianity and science in the context of COVID-19 in Zimbabwe. *Journal of Religion in Africa*, *52*(3–4), 348–373. https://doi.org/10.1163/15700666-12340234

Nature (1949) Significance of complementarity in physics: Dialectica. *Nature*, *163*, 435. https://doi.org/10.1038/163435c0

Ochwang'i, D. O., and Oduma, J. A. (2017). Overview of governmental support across Africa toward the development and growth of herbal medicine. In Kuete, V. (ed.) *Medicinal Spices and Vegetables from Africa* (pp. 153–169). Academic Press. https://doi.org/10.1016/B978-0-12-809286-6.00006-6

Osuide, G. E. (2002). Regulation of herbal medicines in Nigeria: The role of the National Agency for Food and Drug Administration and Control (NAFDAC). In Iwu, M.M. and Wootton, C. (eds) *Advances in Phytomedicine* (Vol. 1, pp. 249–258). Elsevier. https://doi.org/10.1016/S1572-557X(02)80030-7

Paas, S. (2019). 'Notoriously religious' or secularising? Revival and secularisation in Sub-Saharan Africa. *Exchange*, *48*(1), 26–50. https://doi.org/10.1163/1572543X-12341508

Paden, J. N. (2005). *Muslim Civic Cultures and Conflict Resolution: The Challenge of Democratic Federalism in Nigeria*. Brookings Institution Press.

Ouazzani, S. E., Zanga-Martin, I., and Burgess, R. (2021). Culture and mental healthcare access in the Moroccan context. In In Falade, B. and Murire, M. (eds.) *Health Communication and Disease in Africa* (pp. 249–270). Palgrave Macmillan. https://doi.org/10.1007/978-981-16-2546-6_11

Toren, B. van den, Bangura, J. B., and Seed, R. E. (2020). *Is Africa Incurably Religious? Secularization and Discipleship in Africa*. Augsburg Fortress Publishers.

Yahaya, M. (2006). *Polio Vaccines -Difficult to swallow. The story of a controversy in northern Nigeria*. Institute of Development Studies (IDS).

14 *Sciencey-Spirituality*, Neoliberalism, and Eco-Anxiety in Australia

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Introduction: Science and Spiritual Complexity

Earlier scholarship on the rising popularity of New Age spirituality at the turn of the twenty-first century largely focused on its individualism, emphasis on self-realisation, and its alignment with a capitalist consumer culture pursuing self-centred interests (Roof 1999; Carette and King 2005; Heelas 1996; Heelas and Woodhead 2005). However, twenty years on, 'spiritual complexity' and 'ambivalence' (Halafoff et al. 2023) are now generally acknowledged among scholars of spirituality, whose analysis of data reveals spirituality's personal *and* social, capitalist *and* anti-capitalist, peaceful *and* potentially violent dimensions (Houtman and Aupers 2007; Ammerman 2013a, 2013b; Jain 2014, 2020; Clot-Garrell and Griera 2019; Gauthier 2020; Halafoff et al. 2022; Watts 2022; Bramadat, 2022b; Beres, Remski and Walker 2023; Halafoff et al. 2023).

Another significant aspect of spiritual complexity is evident in spirituality's relationship with science. Again, while commonly thought of as antithetical, this is certainly not reflected in empirical evidence on spirituality arising from recent European and Australian studies (Harambam and Aupers 2015; Jacobsen, Kühle and Christensen 2021; Halafoff et al. 2022; Halafoff et al. 2023), including Australian data reported on in this chapter. Recent studies of young people in Canada and Australia have revealed the ongoing popularity and mainstreaming of spirituality, beyond the earlier 1960s counterculture and the 1980s' New Age (Singleton et al. 2021; Watts 2022). Australian research on spirituality has also discovered a new kind of '*sciencey-spirituality*', where holistic spiritual influencers and movements increasingly co-opt science that validates the benefits of their products and practices and/or critique mainstream science and medicine perceived as a threat to personal and planetary well-being, such as pesticides and COVID-19 vaccines (Halafoff et al. 2022: 157). These trends have been amplified by social media, often to increase public profiles and for financial gain. This sciencey-spirituality has also been drawing more men into holistic spiritual movements, which have previously been largely associated with women, the

DOI: 10.4324/9781003476580-18

private sphere, and peacebuilding (Fedele and Knibbe 2020; Halafoff et al. 2022, Halafoff et al. 2023).

Media discussion and research examining the nexus of spirituality and science intensified particularly during the COVID-19 pandemic amid concerns of rising 'conspirituality' – originally flagged as an issue by Charlotte Ward and David Voas in 2011 (Evans 2020a,b; Halafoff et al. 2020, 2022; Beres, Remski and Walker 2023). This analysis centred on conspiritual theories being promoted by influencers regarding the origins of the virus, vaccine mandates and lockdowns, and risks of 'militant wellness' (Gerrand 2020) which resisted state and scientific authority. Studies investigating links between religion, spirituality, and vaccine hesitancy and refusal had been conducted previously (Kata, 2010; Leask, 2011; Bramadat 2017a, b; Aechtner 202) but had not gained as much attention, given the small number of persons engaged in previous vaccine dissent. While fears, especially in the first year of COVID-19, of a major conspiritual revolution were largely unfounded, valid concerns persist. Given the mainstreaming of spirituality, there is uncertainty about how extreme and militant spiritual adherents might become in response to future pandemics and environmental crises related to climate change (Halafoff et al. 2022, 2023).

Holistic spirituality, associated with "spiritual but not religious persons" (SBNR) as distinct from religious spirituality, is deeply relational, drawing heavily on Indigenous and Buddhist concepts of interdependence of all life, and care for all beings and the earth. Holistic spiritual persons report strong connections with nature and environmental ethics, which influences their lifestyles, diets, and involvement in climate change activism (Singleton et al. 2021; Halafoff et al. 2023). Consequently, spirituality has been equated with 'Dark Green Religion' (Taylor 2010) and more recently with 'reverential naturalism' (Bramadat 2022a) and 'relational naturalism' (Halafoff et al. 2023). Indeed, connection with nature, with or without spiritual dimensions, has been reported as the most prevalent contemporary worldview in a study of the Cascadia region in the Pacific North West of Canada and the US (Bramadat 2022a).

Understanding the links between spirituality, science scepticism, vaccine resistance, and eco-anxiety is more complex than popular conspiritual narratives and media reporting on them suggest. This chapter first discusses the nexus between spirituality and science, in previously published scholarly literature, and then presents the findings of the Spirituality and Wellness (SWell) in Australia pilot study, conducted in 2021, at the height of the COVID-19 pandemic.[1] It concludes with an analysis of this data, arguing that it provides further evidence of the 'spiritual complexity' and 'sciencey-spirituality' revealed in recent studies of spirituality and (con)spirituality in Australia (Halafoff et al. 2023). It also suggests that elements of critical, decolonial, holistic frameworks of ethical, relational spirituality – which have been or are in the process of being scientifically proven – could play a significant role in both quelling eco-anxiety and addressing vaccine resistance

in spiritual communities, in the face of mounting environmental crises and concerns.

Conspirituality and Sciencey-Spirituality

According to Ward and Voas (2011: 104), the primary core conviction of (con)spiritualists is that we are amid a 'paradigm shift' in consciousness, a great spiritual awakening of the utopian New Age, ushered in by an awake, enlightened few. It is a prophetic soteriology, working toward a better future, yet concurrently seeks a return to a pure, natural state, drawn from Indigenous, Pagan, and Asian knowledges and traditions (Asprem and Dyrendal 2015, citing Hanegraaff 2006; Harambam and Aupers 2021; Halafoff et al. 2022;).

The second core conspiritual conviction is that of 'a secret group', an Illuminati or cabal, driving a (dystopian) New World Order (NWO) and covertly controlling politics, markets and society (Ward and Voas 2011: 104; Evans 2020a, 2020b; Halafoff et al. 2022). (Con)spiritual individuals and movements have been documented as identifying themselves as distrustful of and in opposition both to this "elite", and to the mainstream more generally. Mainstream authorities include states, media, science, medicine, agriculture, religion and global corporations (Campbell 2005 [1987]; Ward and Voas 2011; Asprem and Dyrendal 2015; Bramadat 2017a; Gauthier 2020; Harambam and Aupers 2021; Parmigiani 2021; Baker 2022; Halafoff et al. 2022).

Indeed, a distrust of institutional authority, be it government, the pharmaceutical or vaccine industry is a core characteristic of conspiritual, wellness, and far-right conspiracy groups (Aechtner 2021; Baker 2022; Bramadat 2017a). Stephanie Alice Baker, a scholar of wellness industry and alternative health cultures, highlights how effectively critiquing mainstream media, politics, science, and medicine is central to the way conspiritual influencers ('micro celebrities', 'lifestyle gurus') establish authority amongst their followers (Baker 2022: 21; Harambam and Aupers 2021). Conspirituality podcasters, Derek Beres, Matthew Remski, and Julian Walker (2023: 33) also note that, when conspiritual leaders' views are rejected by institutional authorities (be they scientific, medical, governmental, religious), the conspiracists position themselves as 'stigmatised outsiders' (Baker (2022: 20) and, similarly, label themselves as 'persecuted heroes'. Beres et al. (2023) and Baker (2022) both highlight how adopting this 'stigmatised' status lends weight to the purportedly 'hidden' and 'exclusive' knowledge the conspiracist influencers espouse, making it feel both elevated and revolutionary to their followers.

Spiritual communities – often in far less extreme and potentially harmful ways – have long been critical of industrialisation, modernity, and reason (and by extension the institutions and epistemologies that shape them), linked to holistic spirituality's historical antecedents in Romanticism and Western esotericism and occultism (Asprem and Dyrendal 2015; Gauthier 2020;

Watts 2022). These critiques intensified during the 1960s counterculture movement, the 1990s New Age, and again during the COVID-19 pandemic. They have been aptly described as forming a '*dissensus*'—'both cognitive and affective'—from the 'common sense' of the majority (Parmigiani 2021: 511, quoting Rancière 1999: 123), relying more on pre- and post-secular, experiential, intuitive—often Indigenous and/or "Eastern"— ways of knowing rather than Western rational scientific facts (Harambam and Aupers 2021; Parmigiani 2021; Halafoff et al. 2022).

This lack of trust in governments, "big pharma", and biomedicine, given the damage that they are perceived to be causing to personal and planetary health, is also central to vaccine hesitancy, refusal, and anti-vax campaigning, which predates but was intensified during the COVID-19 pandemic (Bramadat 2017a, b; Aechtner 2021; Baker 2022; Ganga Keiffer 2023). It is the global elite, imposing the New World Order and supressing negative information about vaccines, who conspiracists rally their fight against (Aechtner 2021; Halafoff et al. 2022). Instead, conspiritualists favour the populism mantra of "doing your own research" online, where knowledge is more freely available, yet the accuracy of this knowledge is often questionable (Bramadat 2017a). Many scholars argue that spirituality's reliance on subjective experience and an intuitive epistemology are factors that stand in contradiction to science (Hanegraaff, 1996; Rutjens and Van der Lee 2020; Baker 2022; Rutjens, et al. 2022; Rutjen, Zarzeczna & van der Lee, 2022). As Baker (2022: 4) states, this renders 'wellness culture susceptible to unsubstantiated health claims, misinformation and conspiracism' where 'personal truths are elevated over expert opinion, resulting in compelling stories of self-transformation standing in for professional expertise.'

In contrast, Kira Ganga Kieffer (2023: 22), in her extensive examination of vaccine hesitancy in the United States identifies the prevalent depiction of "anti-vaxxers" as "anti-science", as reductive and counterproductive, highlighting, for example, the way in which those who are vaccine hesitant employ science to 'determine the facts of biology, the effects of toxic chemicals on the body, and the reliability of statistical analyses,' albeit sometimes in selective and problematic ways.

Stef Aupers and Jarom Harambam's (2015: 467–477) earlier research similarly argued that, while many who identify as spiritual hold a critical stance toward some aspects of science, the relationship between spirituality and science is 'complex, nuanced, and ambivalent'. They investigated how and why proponents of conspiracy theories, many of whom were identified as spiritual, resisted scientific authority and found that, while they were 'critical about modern science', they were 'not straightforwardly *against* science'. Such conspiracy theorists critiqued the 'cultural authority' of modern science (Aupers and Harambam 2015: 471), namely its dogmatism, vested interests, the exclusion of lay knowledge by scientific experts who formed a global 'power elite' (Aupers and Harambam 2015: 466, 477), and particularly 'the materialist foundations of the scientific worldview' (Aupers and Harambam

2015: 471). However, these 'conspiracy prosumers' did not 'in any way deny or dismiss the relevance of science'; by contrast, they thought that modern science was 'not scientific enough, since it has lost the openness and scepticism that should inform the habitus of "real" scientists' (Aupers and Harambam 2015: 473). This interrogation of the power dynamics of science in contemporary society, according to Aupers and Harambam (2015), actually mirrors social-scientific processes of critical research. They also found that the social practices (including natural food and lifestyles, Eastern philosophy, and fair-trade businesses) of conspiracy prosumers were fundamentally related to critical ideas about science and that their science scepticism more broadly was shaped by their own personal (negative) experiences with scientific experts and practices, including medical specialists, doctors, and academics. Baker (2022: 11, 13) similarly notes how, during the pandemic, rather than dismissing science *per se*, wellness influencers accused scientists and medical experts, whom they depicted as being 'domineering' and 'compromised by vested interests' of 'circumvent[ing] The Scientific Method' by deploying 'science to silence voices that deviate from the mainstream narrative'.

In a recent study, Harambam and Aupers (2021: 991) also explore how one of the most well-known and prolific conspiritualists, David Icke, draws on science to make his conspiracy theories 'plausible'. Citing David Robertson (2016), they highlight the significance of Icke's employment of a 'full range of epistemic strategies' in his arguments, which include experiences, tradition (such as 'myths and perennial narratives from ancient cultures'), futuristic imageries, (critical) social theory, *and* science (Harambam & Aupers 2021: 991, 1005). Harambam and Aupers (2021: 1000–1001) highlight how Icke 'taps extensively into science to legitimize his claims' selectively and ambivalently, deploying it as the 'positive Other' when leaning on scientists' claims, or the negative 'Other' when he can provide answers they can't. There is a slight of hand here worth noting, given conspiritualists often present absolutist claims with little scope or means of sound verification.

This is well illustrated in the recent study of (con)spirituality in Australia, by this chapter's authors, where Australian conspiritualist and alternative health practitioner Neil Pascoe/Nate Max revealed his ambivalence toward science. He is quoted as exclaiming, at the height of the COVID pandemic lockdowns, against scientific elites, that 'Bill Gates' vaccine, science … [was] getting absolutely decimated by smart people who are understanding the narrative' and later in the same YouTube video called for 'a global meditation' as he had his 'chi master sorted' and 'because that's something that works, it's scientifically proven' that 'we can co-create a new reality' and 'win this' spiritual war[2] (Halafoff et al., 2022: 157).

The research team chose to bracket the 'con' in conspirituality to highlight the complexity within spiritual movements when it came to conspiracy theories, science, eco-anxiety, and vaccine resistance. While conspiracists were no doubt 'selling (con)spirituality' to increase their social media profiles and to monetise their wellness practices in problematic ways, they were

concurrently raising some legitimate concerns regarding the negative health and environmental impacts of processes of industrialisation and agriculture, which are also increasingly being scientifically proven (Halafoff et al. 2022), as will be discussed in more detail in this chapter.

Spirituality and Wellness in Australia 2021 Study

As stated previously, concerns about conspirituality (Halafoff et al. 2020; Wilson 2020) and 'militant wellness' (Gerrand 2020) in Australia were widespread during the COVID-19 pandemic, as they were internationally. Given the large proportions of Generation Z young Australians identifying as SBNR (22%) and spiritual and religious (SRL) (16%) (Singleton et al. 2021: 57), this was particularly concerning.

In response to this, the 2021 *Spirituality and Wellness in Australia* (SWell) pilot study set out to investigate spiritual characteristics, practices, and beliefs of self-identified spiritual persons, including their views about the origins of the COVID-19 pandemic, levels of trust in science and state authorities, and attitudes towards COVID-19 vaccines. The 2021 SWell study included a small pilot survey, four interviews with wellness industry public figures and interviews with three survey participants. This chapter reports on these findings.

Spirituality and Wellness (SWell) in Australia Pilot Survey

More than 200 Australian adults who self-identified as spiritual participated in the SWell pilot survey.[3] It utilised a dual approach of advertising the survey on various social media platforms and social networking sites, to gather participants. The survey was conducted online using the survey tool Qualtrics.

Seventy-six per cent of survey participants were female, 23% male, and 1% were transgender. Seventy-five per cent were born in Australia and 25% overseas (all resided in Australia at the time of the survey). Five per cent were from Aboriginal or Torres Strait Islander backgrounds. The cohort were highly educated: among those who identified as " spiritual" in some way, 13% had PhDs, 32% master's degrees, and 32% bachelor's degrees. All participants were also very active on social media, with 72% saying they checked social media 'several times a day'.

Forty-seven per cent of respondents identified as "Spiritual and Religious" (SRL), and 35% identified as " Spiritual but not Religious" (SBNR). In the rest of this paper, we examine these two groups. Most of the SRL group were Christian (84%), but the sample also included small percentages of Buddhists, Hindus, Wiccans, Pagans, Muslims, and Jewish people, reflective of the diversity of religions in Australian society. High numbers of the entire cohort said spirituality were extremely (37%), very (28%), and somewhat (23%) important in shaping their daily lives.

Table 14.1 shows that the SRLs hold stronger beliefs in concepts like life after death, the existence of angels, and the devil compared to the SBNR group. This is not surprising, given the predominance of Christian affiliation in this sample. The SBNRs by contrast believe more strongly in reincarnation, karma, communicating with the dead, ghosts, and UFOs.

Table 14.2 shows the most popular practices of SBNRs and SRLs were meditation, yoga, and receiving treatment from an alternative medicine practitioner, such as naturopaths. Meditation was practiced equally among both

Table 14.1 Spirituality and Wellness in Australia 2021 Pilot Study Participants: Spiritual Beliefs

ITEM: belief in:	*SBNR*	*SRL*
	(N = 69)	*(N = 93)*
Life after death	57%	88%
The existence of angels	43%	64%
Reincarnation, that people have lived previous lives	66%	25%
Karma	61%	23%
Possibility of communicating with the dead	61%	28%
Ghosts	52%	35%
Devil	15%	43%
UFOs	31%	14%

Source: *Spirituality and Wellness in Australia 2021* pilot study.

Table 14.2 Spirituality and Wellness in Australia 2021 Pilot Study Participants: Most Popular Spiritual Practices

Item	*Frequency*	*SBNR (spiritual but not religious)*	*SRL (spiritual and religious)*
		(N = 69)	*(N = 93)*
Practised yoga	**Often**	31%	17%
	Sometimes	34%	26%
	Rarely	13%	27%
	Never	22%	29%
Practised meditation	**Often**	35%	34%
	Sometimes	38%	41%
	Rarely	16%	16%
	Never	12%	9%
Received treatment from an alternative medicine practitioner (e.g., naturopath)	**Often**	20%	10%
	Sometimes	26%	28%
	Rarely	26%	27%
	Never	28%	35%

Source: *Spirituality and Wellness in Australia 2021* pilot study.

Table 14.3 Spirituality and Wellness in Australia 2021 Pilot Study Participants: Other Popular Spiritual Practices

Item	*Frequency*	*SBNR (spiritual but not religious)*	*SRL (spiritual and religious)*
		(N = 69)	*(N = 93)*
Read tarot or angel cards	**Often**	9%	4%
	Sometimes	28%	8%
	Rarely	26%	12%
	Never	38%	76%
Consulted your horoscope for guidance	**Often**	9%	4%
	Sometimes	29%	5%
	Rarely	26%	20%
	Never	36%	70%
Consulted a psychic, medium, or fortune-teller	**Often**	1%	0%
	Sometimes	14%	3%
	Rarely	38%	15%
	Never	46%	81%
Consulted a Reiki healer	**Often**	3%	1%
	Sometimes	12%	4%
	Rarely	19%	13%
	Never	67%	81%

Source: *Spirituality and Wellness in Australia 2021* pilot study.

SBNRs and SRLs, while yoga and alternative medicine have a more frequent uptake among SBNRs.

Table 14.3 reveals the SBNR group showed a much higher and broader interest in alternative spiritual practices such as astrology, tarot, angel cards, consulting a psychic medium, or Reiki healing.

Table 14.4 shows that both groups expressed frequently feeling a profound connection with nature, and with the universe and/or a higher power, highlighting the more-than-human relational essence of spirituality present in this sample, reported in previous Cascadian and Australian studies (Bramadat 2022a, b; Halafoff et al. 2023).

Spirituality and the Pandemic

Around a third (28%) of all respondents reported that they started a 'new spiritual or wellbeing activity' during the pandemic, including yoga, meditation, mindfulness, and 'walking outdoors' in nature. The vast majority, around two-thirds (66%), believed that the virus was transmitted from animals to humans, and about a third (29%) thought the virus escaped from a lab in Wuhan, China. Only 1% thought it was a product of 'global elites' and no one thought the virus was linked to 5G networks, a popular conspiritual narrative. The high percentage of adherents of the discredited

Table 14.4 Spirituality and Wellness in Australia 2021 Pilot Study Participants: Spiritual Connections

Item	*Frequency*	*SBNR (spiritual but not religious)*	*SRL (spiritual and religious)*
		(N = 69)	*(N = 93)*
How often, if at all, have you –experienced a deep connection with nature?	**Often**	59%	62%
	Sometimes	32%	35%
	Rarely	4%	2%
	Never	4%	1%
How often, if at all, have you – felt a connection with the universe?	**Often**	36%	42%
	Sometimes	46%	36%
	Rarely	13%	13%
	Never	4%	9%
How often, if at all, have you – been aware of a presence or power that was different from your everyday self?	**Often**	25%	51%
	Sometimes	54%	34%
	Rarely	15%	13%
	Never	6%	2%

Source: *Spirituality and Wellness in Australia 2021* pilot study.

Wuhan lab theory, perhaps reflects a prevalent Sinophobia in Australia, more so than widespread conspiratorial views, given the lack of uptake of other conspiritual theories such as that the pandemic was linked to global elites or to 5Gs. The respondents also largely agreed with COVID restrictions including mask wearing (91%), lockdowns (88%), restrictions on household gatherings (90%), spiritual practices such as yoga classes (84%), and even bans on protests (67%).

Table 14.5 provides a detailed comparison of the confidence levels in authorities between the two groups.

Both groups exhibited the highest levels of trust – by far – in scientists, far higher than any other form of authority. This corroborates arguments made by scholars, as cited, that trust in science and spiritual and/or religious affiliation are not incompatible, and of a strong trend of sciencey–spirituality evident among both SBNRs and SRLs.

Both groups exhibited similar moderate levels of confidence in journalists. Not surprisingly, the SRL group showed markedly more confidence in religious leaders. The SRLs also had stronger confidence in the Australian federal government than the SBNRs, but trust in the Australian government was moderate to low overall. Furthermore, both groups expressed even less confidence in social media influencers, with over half of the participants in each group having no confidence in them at all.

Of the 202 respondents, the vast majority of SBNRs and especially the SRLs had already or were intending to be vaccinated (see Table 14.6). Only

Table 14.5 Spirituality and Wellness in Australia 2021 Pilot Study Participants: Spirituality and COVID-19

Item	*Frequency*	*SBNR*	*SRL*
		(N = 69)	*(N = 93)*
How much confidence, if any, do you have in each of the following to act in the best interests of the public? – Journalists	A great deal of confidence	7%	3%
	A fair amount of confidence	22%	32%
	Not too much confidence	48%	46%
	No confidence at all	19%	15%
	I don't know	4%	3%
	Total	**100%**	**100%**
How much confidence, if any, do you have in each of the following to act in the best interests of the public? – Religious leaders	A great deal of confidence	0%	14%
	A fair amount of confidence	12%	45%
	Not too much confidence	45%	31%
	No confidence at all	41%	8%
	I don't know	3%	2%
	Total	**100%**	**100%**
How much confidence, if any, do you have in each of the following to act in the best interests of the public? – Scientists	A great deal of confidence	41%	39%
	A fair amount of confidence	51%	55%
	Not too much confidence	7%	5%
	I don't know	1%	1%
	Total	100%	100%
How much confidence, if any, do you have in each of the following to act in the best interests of the public? –Australian (Federal) government	A great deal of confidence	0%	2%
	A fair amount of confidence	19%	18%
	Not too much confidence	41%	44%
	No confidence at all	41%	32%
	I don't know	0%	3%
	Total	**100%**	**100%**
How much confidence, if any, do you have in each of the following to act in the best interests of the public? – Social media influencers	A fair amount of confidence	4%	2%
	Not too much confidence	35%	33%
	No confidence at all	57%	65%
	I don't know	4%	0%
	Total	**100%**	**100%**

Source: Spirituality and Wellness in Australia 2021 pilot study.

seven said they would 'probably not', and four would 'definitely not' be vaccinated, only 5.5% of the sample in total. Most of these were SBNRs. While it is important to note that those with more extreme views may well not have agreed to share information and participate in such a survey, it is nevertheless significant that the vast majority of people identifying as spiritual (and/ but not religious) who took the survey did not display conspiritual or anti-vax tendencies. Interviews with mainly pro-vaccine spiritual community leaders and survey respondents, and one vaccine resistant survey respondent provide additional insights into the complexity of sciencey-spirituality in contemporary Australia.

Table 14.6 Spirituality and Wellness in Australia 2021 Pilot Study Participants: Spirituality and COVID19

Item	*Frequency*	*SBNR*	*SRL*
		(N = 69)	*(N = 93)*
Which of the following statements describes your COVID19 vaccination intentions? I will ...	Definitely get a vaccine	39%	34%
	Probably get a vaccine	10%	9%
	Probably NOT get a vaccine	7%	1%
	Definitely NOT get a vaccine	4%	0%
	ALREADY VACCINATED FOR COVID19 (in full or partially.)	39%	56%
	Total	**100%**	**100%**

Source: *Spirituality and Wellness in Australia 2021* pilot study.

Spirituality and Wellness (SWell) in Australia – Interviewees

Interviewees'[4] definitions of spirituality were deeply relational, expressing a connection to something larger than oneself, be that the infinite, the universe, the divine, and/or nature and community. Their spirituality was closely tied to a deep sense of ethics. For Daniel, an SRL Aboriginal Gen X survey participant, spirituality is 'a *way of life*' of how 'we live our lives in community and in relationship with the Earth and the Cosmos … in mutually supportive ways' and in 'ethical responsibility'. For Elisabeth, an SRL Pagan Gen Y survey participant, spirituality is 'that level of tapping into something bigger than you … be it the divine, or just the energy of the world around us … and its nature as well.'

For Sarah Wilson, influencer, climate educator and author of *I Quit Sugar* and *This One Wild and Precious Life*, spirituality is also 'a deep connection, that can't be explained rationally, with something that is bigger than ourselves … this infinite oneness that… has always guided me to… go beyond myself, my selfish interest.' Both Sarah and Vanessa, an SBNR Gen X survey participant, also linked this 'guiding force' within spirituality to 'nature'.

Vanessa described the COVID19 pandemic as 'nature's force', which humans had to adapt to rather than fight against. Vanessa was anti-vaccinations given her belief that a person's 'body is one of the last bastions that they have control over' and relying instead on natural 'preventative medicines' to boost her immune system. The other six interviewees were vaccinated. Vanessa's emphasis on bodily sovereignty is worth noting, given it aligns in ways with problematic purity doctrines expressed by the Far Right and conspiritualists during the COVID-19 pandemic and with the spiritual bypassing of some privileged white wellness adherents who chose to downplay the potential risks of COVID-19 to more vulnerable members of society (Halafoff et al. 2022.

When asked about the relationship between science and spirituality, many of the interviewees viewed them as similar, in aspects. Two interviewees equated both science and spirituality with interpretive, meaning making. Daniel explained how:

> I think science is a spirituality, in that is just like any meaning making activity, it develops models of reality. And it tests those models of reality against reality itself, through the mode of experimentation. I'm with those scientists who say that science is a form of spirituality.

And Sarah stated enthusiastically:

> I really enjoy the nexus between science and spirituality, the fact that both try to do the same thing, both have the noble aim of trying to understand who we are and what we were about. So, both for me satisfy the same itch. … [I]t's a great dance.

Elisabeth also found science and spirituality to be 'compatible', as 'there's nothing in Paganism that completely disregards science. They can exist quite happily side by side.' Michelle Mahrer, Founder of Radiance 5 Rhythms Dance, provided examples of 'some extraordinary intersections of both, of science and spirituality'. She explained that while previously they were considered 'separate', the advent of quantum physics, and its emphasis on 'interconnection' was a significant turning point.

Moreover, science was seen to be 'legitimate' by Sarah, and legitimising when it came to spirituality and wellness, both personal and planetary. For example, Sarah equated her spiritual view with science, and physics in particular:

> Now for me, that thing that's bigger [than oneself] is the oneness of life, so in some ways, a lot of my thinking is aligned with, I suppose physics, where physics arrived at. In a sense that there's this infinite oneness that we're all connected into.

Sarah further explained that we 'live in a world where for things to be taken seriously … science is the forum, or is a tool for that.' Consequently, she stated that: 'I do try to work with science as much as possible … to share information responsibly, and with the least harm.' Vanessa also recounted that her meditation teacher was 'very analytical and very scientific', in describing the benefits of meditation in navigating stress and that this is what 'appealed' to her initially.

At the same time, several of the interviewees, including Sarah, noted the limits of science and medicalisation, particularly a sense that there were things pertaining to spirituality and well-being that were less quantifiable, difficult to measure, or yet to be studied or proven.

Nikola Ellis, Director, Adore Yoga and Vice-President, Yoga Australia, linked the rise of conspirituality during the COVID-19 outbreak in Australia with what she described as a 'low level of scientific literacy' among the broader population, not just yoga practitioners. She also explained how she thought there has been 'a very dangerous precedent' set by the global wellness brands before the pandemic, which instilled a 'sense of superiority' among their wellness constituents of 'knowing better' than medical experts. She added:

> [T]hat's not so dangerous when it's just a bit of eczema. But when it's a global pandemic is freaking dangerous. … I work in the cancer space, and I meet people whose yoga teachers have told them that chemo is poison, and they should hold rose quartz crystals next to their tumour site, it's just so much bollocks.

Some of the interviewees highlighted the difference between individualised, self-centred, neoliberal spirituality and a deeply relational, ethical, spirituality. Sarah referred to the former as 'spirituality-lite':

> We've cherry picked over the last 30 years or so, the bits of spirituality or religious traditions that serve that neoliberal mentality. So, we will take the sound bath lessons, and the nice rainbows and unicorns stuff, the self-care … but at least 50% of spiritual traditions throughout history have been about sacrifice and service to the greater good, to the broader community.

Nikola similarly lamented that the 'wellness industry' is 'now, all about hyper-individualism' and 'follow your bliss', so 'if it feels good do it'. However, she cautioned that this 'is not a motto for life, that's not how we behave, that's how toddlers behave.' She thought it was important for leaders within the wellness movement to counter the individualism, immaturity, and cries for 'sovereignty' in their communities by emphasising 'collectively … looking after each other'.

Analysis and Conclusions

Aware of the broader cultural context of 'epistemological insecurity' of post-truth cultures, wherein it appears that 'the authority of science is eroding' (Aupers and Harambam 2015, 2021; Bratich, 2008; Houtman, Aupers and Laermans 2021), this chapter on science–spirituality indicates that science remains possibly *the* most dominant cultural authority, including among spiritual persons in Australia. Among these spiritual persons, critiques of science target its broader limitations. Additionally, a minority of these spiritual individuals, who tend to be conspiratorial and vaccine-resistant, criticise the use of science as a tool of social control by "elite" forces and state authorities.

Given (con)spirituality's key conviction to usher in a New Age holistic paradigm shift, what is also evident is a sense that mainstream science is beginning to analyse and document some of the wisdom and benefits of Indigenous and Eastern knowledge systems and practices. This aligns with critical, decolonial, post-secular, feminist, material, affective, and multispecies turns that decentre White, male, anthropocentric, disembodied, rational authority in broader society and academia. The results of this can be extremely beneficial to previously marginalised persons and non-human species and contribute to more holistic personal and planetary well-being (Stein 2019; Paradies 2020; Weng 2023; Halafoff et al. 2024).

This is the science that is being accepted and used by spiritual and wellness influencers and businesses to legitimise their ideas and products, resulting in the rise of sciencey-spirituality. Significantly and as a result, this is challenging the stereotype of spirituality as irrational. This is most evident in the Australian context in Sarah Wilson's work, reported here, and internationally in the popularity of Sam Harris's *Waking Up* app and *Making Sense* podcast, and in Dan Harris's *Ten Percent Happier* podcast. This may also help to explain the attraction of men to contemporary spirituality, seen to now not only be compatible with a scientific, rational worldview, but at the very cutting edge of science and technology. This can bolster both egos and pockets of these sciencey-spiritual experts, influencers, and entrepreneurs.

Again, most of this is harmless and as previously stated, can even be beneficial for physical and mental health and quelling eco-anxiety. Risks here are apparent, however, if scientific evidence is only applied selectively or is overstated and used for personal gain or the benefit of an exclusive few, by a small number of conspiritualists such as David Icke and Neil Pascoe/Nate Max, in ways that can contribute to public health and security risks such as vaccine resistance. Again, of particular interest, are calls from spiritual community leaders and influencers in this Australian pilot study, to not only raise scientific literacy and use scientific evidence to debunk conspiritual theories within their wellness communities but, more importantly, to draw on cutting-edge science, which legitimates an ethical relational spirituality that stresses a common multispecies good, rather than a privileged 'spirituality-lite' that aligns with self-centred, neoliberal interests. All of this contributes further evidence to the complex and ambivalent relationship science has with spirituality in contemporary societies.

Notes

1 The 2021 Spirituality and Wellness (SWell) pilot study in Australia was conducted by this chapter's authors, Anna Halafoff, Andrew Singleton, and Ruth Fitzpatrick, together with Enqi Weng and Alexandra Roginski (Deakin University) and Cristina Rocha (Western Sydney University).

2 Titled *Live with Neil Pascoe, Jason Christoff and Tom Barnett*, this discussion was hosted by conspiracist Fanos Panayides livestreamed and recorded on YouTube on 14 August 2020 at the height of Victoria's second lockdown.
3 It is important to note that the goal was not to create a representative sample of the entire adult population but rather to gain deeper insights into this specific group who self-identified as spiritual within the community. Hence, the research team opted for a purposive sample, deliberately selecting individuals who could provide valuable information and perspectives on the topic. The team are not making any claims about the representativeness of the sample. Rather, the aim is to identify indicative patterns among individuals who self-identify as spiritual.
4 Ethics approval was obtained from Deakin University for this study. The Public Figure interviewees reported on here granted consent to be identified. The survey participant interviewees have been given pseudonyms.

References

Aechtner, T. (2021), 'Distrust, danger, and confidence: A content analysis of the Australian vaccination-risks network blog', *Public Understanding of Science 30*, 16–35.

Ammerman, N. T. (2013a), *Sacred Stories, Spiritual Tribes: Finding Religion in Everyday Life*, Oxford: Oxford University Press.

Ammerman, N. T. (2013b), 'Spiritual but not religious? Beyond binary choices in the study of religion', *Journal for the Scientific Study of Religion 52* (2): 258–278.

Asprem, E. and A. Dyrendal (2015), 'Conspirituality reconsidered: How surprising and how new is the confluence of spirituality and conspiracy theory?', *Journal of Contemporary Religion 30* (3): 367–382.

Baker, S. A. (2022), 'Alt. Health Influencers: How wellness culture and web culture have been weaponised to promote conspiracy theories and far-right extremism during the COVID-19 pandemic', *European Journal of Cultural Studies 25* (1): 3–24.

Beres, D., M. Remski, and J. Walker (2023), *Conspirituality: How New Age Conspiracy Theories became a Health Threat*, New York: Public Affairs.

Bramadat, P. (2017a), 'Crises of trust and truth: Religion, culture, and vaccine hesitancy in Canada', in P. Bramadat, M. Guay, J. A. Bettinger and R. Roy (eds), *Public Health in the Age of Anxiety: Religious and Cultural Roots of Vaccine Hesitancy in Canada*, 16–55, Toronto: University of Toronto Press.

Bramadat, P. (2017b), 'Introduction: Seeking a better conversation', in P. Bramadat, M. Guay, J. A. Bettinger and R. Roy (eds), *Public Health in the Age of Anxiety: Religious and Cultural Roots of Vaccine Hesitancy in Canada*, 5–15, Toronto: University of Toronto Press.

Bramadat, P. (2022a), 'Reverential naturalism in Cascadia: From the Fancy to the sublime', in P. Bramadat, P. O'Connell Killen, and S. Wilkins-Laflamme (eds), *Religion at the Edge: Nature, Spirituality, and Secularity in the Pacific Northwest*, 23–40, Vancouver; Toronto: UBC Press.

Bramadat, P. (2022b), 'Wellness in the wild: Reverential naturalism in the Pacific Northwest', in G. Mossière (ed), *New Spiritualities and the Cultures of Well-being: Religion, Spirituality and Health: A Social Scientific Approach*, 135–151, Switzerland: Springer Nature.

Bratich, J. Z. (2008), *Conspiracy Panics: Political Rationality and Popular Culture*, New York: State University of New York Press.

Campbell, C. (2005 [1987]), *The Romantic Ethic and the Spirit of Modern Consumerism*, Oxford: Blackwell.

Carrette, J. and R. King (2005), *Selling Spirituality: The Silent Takeover of Religion*, New York: Routledge.

Clot-Garrell, A. and M. Griera (2019), 'Beyond narcissism: Towards an analysis of the public, political and collective forms of contemporary spirituality', *Religions 10* (10): 579–599.

Evans, J. (2020a), '"Conspirituality"—The overlap between the new age and conspiracy beliefs', *Medium*, 17 April.

Evans, J. (2020b), 'Commusings: The rabbit hole', *One Commune*, 20 November.

Fedele, A. and K.E. Knibbe (2020), 'Introduction: Spirituality, the third category in a gendered triangle', in A. Fedele and K.E. Knibbe (eds), *Secular Society, Spiritual Selves? Gendering the Overlaps and Boundaries between Religion, Spirituality and Secularity*, 1–29, London: Routledge.

Ganga Kieffer, K. (2023), *Pure Bodies, Sacred Authority: A Religious History of Vaccine Hesitancy in the United States*, Doctoral Dissertation, Boston University, Graduate School of Arts and Sciences.

Gauthier, F. (2020), *Religion, Modernity, Globalisation: Nation State to Market*, London: Routledge.

Gerrand, V. (2020), 'Pete Evans, Militant Wellness and Nazism', *Overland,* 2 December. Available Online: https://overland.org.au/2020/12/pete-evans-militant-wellness-and-nazism/ (accessed 30 July 2021).

Halafoff, A., E. Weng, C. Rocha, A. Singleton, A. Roginski, and E. Marriott (2020), 'The pandemic has provided fertile conditions for conspiracy theories and "conspirituality" in Australia', *ABC Religion & Ethics*, 13 October. Available online: www.abc.net.au/religion/covid- conspiracies-and-conspirituality/12760976 (accessed 7 September 2022).

Halafoff, A., E. Marriott, R. Fitzpatrick and E. Weng (2022), 'Selling (con)spirituality and COVID- 19 in Australia: Convictions, complexity and countering dis/misinformation', *Journal for the Academic Study of Religion 35* (2): 141–167.

Halafoff, A., A. Singleton and R. Fitzpatrick (2023), 'Spiritual complexity in Australia: Wellbeing and risks', *Social Compass*, *70* (2): 243–262.

Halafoff, A., R.C. Shorter, E. Weng, Y. Paradies, W. Abur and M. Winarnita (2024), 'Decolonising studies of religion in so-called Australia: Truth-telling, collective reflections and future trajectories', *Journal of Intercultural Studies*, DOI: 10.1080/07256868.2024.2317152

Hanegraaff, W. J. (1996). *New Age Religion and Western Culture: Esotericism in the Mirror of Secular Thought*, New York: Brill.

Hanegraaff, W. (2006), *Dictionary of Gnosis and Western Esotericism*, Brill: Leiden.

Harambam, J. and S. Aupers (2015), 'Contesting epistemic authority: Conspiracy theories on the boundaries of science', *Public Understanding of Science*, *24* (4), 466–480.

Harambam, J. (2021), 'Against modernist illusions: Why we need more democratic and constructivist alternatives to debunking conspiracy theories', *Journal for Cultural Research 25* (1): 104–122.

Harambam, J. and S. Aupers (2021), 'From the unbelievable to the undeniable: Epistemological pluralism, or how conspiracy theorists legitimate their extraordinary truth claims', *European Journal of Cultural Studies 24* (4): 990–1008.

Heelas, P. (1996), *The New Age Movement: The Celebration of the Self and the Sacralization of Modernity*, Oxford: Blackwell.

Heelas, P. and L. Woodhead (2005), *The Spiritual Revolution: Why Religion Is Giving Way to Spirituality*, Malden, MA: Blackwell.

Houtman, D. and S. Aupers (2007), 'The spiritual turn and the decline of tradition: The spread of post- Christian spirituality in 14 Western countries, 1981–2000', *Journal for the Scientific Study of Religion 46* (3): 305–320.

Houtman, D., S. Aupers, R. Laermans (eds) (2021), *Science under Siege: Contesting the Secular Religion of Scientism,* Switzerland: Springer Nature.

Jacobsen, B. A., L. Kühle, and H. R. Christensen (2021), 'Tillid under COVID-19'. [Trust during Covid-19]', *Religionsvidenskabeligt Tidsskrift 72*: 137–56.

Jain, A.R. (2014), *Selling Yoga: From Counterculture to Pop Culture,* Oxford: Oxford University Press.

Jain, A.R. (2020), *Peace Love Yoga: The Politics of Global Spirituality*, Oxford: Oxford University Press.

Kata, A. (2010), 'A postmodern Pandora's box: Anti-vaccination misinformation on the Internet', *Vaccine 28*: 1709–1716.

Leask, J. (2011), 'Target the Fence-Sitters', *Nature 473*: 443–45

Paradies, Y. (2020), 'Unsettling truths: Modernity,(de-) coloniality and Indigenous futures', *Postcolonial Studies*, *23* (4), 438–456.

Parmigiani, G. (2021), 'Magic and politics: Conspirituality and Covid-19', *Journal of the American Academy of Religion 89* (2): 506–529.

Rancière, J. (1999), Disagreement: Politics and Philosophy, Minneapolis: University of Minnesota Press.

Roof, W.C. (1999), *Spiritual Marketplace: Baby Boomers and the Remaking of American Religion,* Princeton, NJ: Princeton University Press.

Robertson, D.G. (2016), UFOs, *Conspiracy Theories and the New Age: Millennial Conspiracism,* London: Bloomsbury Publishing.

Rutjens, B.T. and R. van der Lee (2020), 'Spiritual skepticism? Heterogeneous science skepticism in The Netherlands', *Public Understanding of Science 29* (3): 335–352.

Rutjens, B. T., N. Zarzeczna and R. van der Lee (2022), 'Science rejection in Greece: Spirituality predicts vaccine Scepticism and low faith in science in a Greek sample', *Public Understanding of Science 31* (4): 428–436.

Rutjens, B. T., N. Sengupta, R. van der Lee, G. M. van Koningsbruggen, J. P. Martens, A. Rabelo, and R. M. Sutton (2022), "Science skepticism across 24 countries." *Social Psychological and Personality Science 13* (1): 102–117.

Singleton, A., A. Halafoff, M. Rasmussen and G. Bouma (2021), *Freedom, Faiths and Futures: Teenage Australians on Religion, Sexuality and Diversity*, London: Bloomsbury Publishing.

Stein, S. (2019), 'The ethical and ecological limits of sustainability: A decolonial approach to climate change in Higher Education', *Australian Journal of Environmental Education*, 35 (3): 198–212.

Taylor, B. (2010), *Dark Green Religion: Nature Spirituality and the Planetary Future,* Oakland, CA: University of California Press.

Ward, C. and D. Voas (2011), 'The emergence of conspirituality', *Journal of Contemporary Religion* 26 (1): 3–121.
Watts, G. (2022), 'The spiritual turn in Canada: "Spiritual but not Religious" Canadian millennials', in T. Shoemaker, R. Schneider and X. Alvizo (eds), *The Emerging Church, Millennials, and Religion: Volume 2: Curations and Durations*, 81–90, Eugene: Cascade Books.
Weng, E. (2023), 'Contesting empire religion: Coloniality and sticky media discourses', *Culture and Religion*, 22 (2), 164–183.
Wilson, S. (2020), 'The Wellness Realm has fallen into conspiritualism—I have a sense why', *Guardian Australia*, 15 September.

Coda

From Complexity to Globality

Fern Elsdon-Baker, Stephen H. Jones, and James Riley

The chapters in this edited collection reiterate the growing need to approach the study of science and belief with greater nuance, recognizing them as interconnected aspects of people's everyday experiences worldwide and to explore the dynamic interplay between science and belief across diverse historical, cultural, and global contexts. The chapters reflect the wider development of the field over the past 25 years, from historical controversies and material culture to present-day country-specific studies and quantitative research comparing global perspectives. Themes such as the persistence of conflict narratives, the role of social identity in shaping these perceptions, and the projection of conflict onto 'others, are prominent. Moving beyond traditional Westerncentric frameworks – and the Abrahamic faiths – the final chapters highlight new directions in studying science and belief, examining underexplored regions, traditions, and movements.

Together, these chapters reveal a complex, interconnected landscape and lay the groundwork for a more nuanced, global research agenda. Over the past decade, the 'Science and Religion: Exploring the Spectrum' projects and the work being undertaken by an increasing number of connected scholars globally has contributed significantly to our understanding of the complex social and cultural dynamics that influence the diverse interactions between science and belief in society. By moving beyond the myth-busting of the earlier epistemic conflict-framed narratives and critically embedding a wider range of research traditions, we have collectively developed a better understanding of science and religion not as abstract knowledge systems but as facets of individual or group lived experience and identities, which are deeply embedded in their social, cultural, and political contexts. Recognizing the roles of nonreligious and spiritual identities, alongside traditional religious identities, has further broadened this field of study. As the COVID-19 pandemic (during which much of the data collection for this volume was undertaken) exemplified, the social and cultural study of the intersecting domains of science and belief address some of the most pressing challenges of the twenty-first century and demand continued exploration. Moving forward, therefore, this field must address additional emerging or key issues and expand to address

DOI: 10.4324/9781003476580-19

a wider diversity of contexts globally. Here we would like to outline some of the key future directions that scholars might pursue to deepen the field's scope and perhaps, more importantly, its impact. This list is by no means exhaustive, and as this field further develops in the next 25 years, no doubt further new and pressing foci and loci of study will emerge.

Diversifying Contexts: Moving Further Beyond Eurocentric Perspectives

While this volume has taken steps to extend its geographical reach beyond the United States and Europe, there is still significant work to be done in diversifying the contexts of study. Most research has continued to focus on industrialized, predominantly Western countries. In many parts of the Global South, however, research is beginning to exemplify how the relationship between science and belief is shaped by unique colonial histories, diverse Indigenous belief frameworks, and differential socio-economic challenges or (geo)political realities. Further, in-depth research in a wider range of global contexts will clearly yield richer critical examination of the (post)colonial intersections that have contributed to a perpetuation of the hegemony of European science, often in opposition to Indigenous forms of knowledge, and reveal alternative narratives about science and belief that will no doubt further complexify the traditional Western conflict narrative framing.

Additionally, research in the Global South can further illuminate the role of science in postcolonial nation-building, showing how science, which was in some instances historically embedded in state or educational structures through colonialism, came to symbolize both Western narratives of societal progress and ongoing cultural or geopolitical tensions. Where progress narratives surrounding science were increasingly imposed on, or embraced by, non-Western societies as a proxy for economic, social, and technological development, it becomes crucial to understand how local belief systems or communities accommodated or, conversely, resisted these progress narratives and the lasting legacies of this process in terms of contemporary cultural narratives and social identities.

Examining the Role of Media and Technology in Shaping Science–Belief Narratives

The rapid evolution of social media and digital technologies have transformed how people access, interpret, and rebroadcast information about scientific, quasi-scientific, and pseudo-scientific concepts and ideas or, conversely, information about religious, spiritual, or non-religious communities' beliefs, with the potential to amplify the spread of conflict-based narratives surrounding multiple aspects related to science and belief. The clash narratives of the past are gaining new and more diffuse audiences. Social media platforms, for instance, have become spaces where scientific ideas and religious beliefs are being repackaged and presented to younger generations as frequently

clashing, with significant implications for the publics' understanding of science and intergroup relations. Future research should examine how digital platforms mediate the relationship between science and belief, particularly in relation to misinformation, extremist or divisive political discourses, or conspiracy theories that erode public trust not only in scientific institutions but in the nature and value of diverse, inclusive, or pluralist societies. Further, the role of algorithm-driven information ecosystems in shaping public attitudes toward science and belief warrants rigorous study.

Science and Belief in Public Policy

Research on the intersection between science and belief holds increasing significance for public policy, especially as governments worldwide grapple with how to respond to complex social issues like public health, environmental sustainability, the role of new technologies in society, and social cohesion. In democratic contexts there are many and varied ways in which public policies require public buy-in and understanding the ways in which diverse belief systems or worldviews might shape people's attitudes toward science is essential for effective policy design and implementation. As the work in the volume has highlighted, both identities and context matter. For instance, public health initiatives such as vaccination campaigns or mental health programs cannot succeed without considering how belief identities across diverse cultural contexts shape perceptions of scientifically oriented or framed medical interventions and the resulting behavioural choices of those seeking healthcare. Conversely, it is also vital that we more critically engage with the ways in which policymakers alienate key communities by projecting stereotypes onto different groups. As seen during the COVID-19 pandemic, failure to consider both of these aspects can result in public hesitancy, mistrust and ultimately differential outcomes and impacts across communities for the critical health measures introduced. Moreover, policies regarding education, climate action, and technological development benefit significantly from an understanding of science–belief dynamics. Governments can enhance policy effectiveness by better recognising the implicit biases and stereotypes that are currently informing some policy design choices. Research in this field can thus play a critical role in guiding policymakers in designing culturally responsive, citizen-engaged, evidence-based policies that resonate with the public, ultimately improving policy outcomes across a range of societal challenges.

Equality, Diversity, and Belonging in Education and Scientific Workforces

The social and cultural study of science and belief plays a vital role in deconstructing the stereotypes that can marginalize religious or spiritual individuals within educational and scientific environments. These stereotypes

often portray science as an intrinsically secular endeavour or, conversely, religious or spiritual individuals as inherently anti-science, less rational, or less willing to engage with scientific discourse, leading to their exclusion from both academic settings and scientific careers. This bias can have a profound impact on progression pathways, as students and employees from religious or spiritual backgrounds may feel undervalued or invalidated, leading to disengagement or lack of confidence in pursuing or advancing in scientific fields. By examining how cultural and religious factors influence students' and employees' experiences within scientific contexts, this research field provides key critical insights into how educational institutions and workplaces could and should be creating more inclusive environments.

The study of science and belief has undergone a remarkable transformation, from a marginalised field rooted in debates over the conflict thesis, to a burgeoning area of research with the potential to address some of the most pressing issues of our time. To fulfil this potential, future research must move beyond Eurocentric perspectives, engage more with digital media and new technologies, incorporate policy, meet sustainability and public health challenges, and further investigate the psychological, cultural, and social dimensions of science–belief interactions. By expanding both our methodological and thematic scopes, the field can better understand – and contribute to resolving – the complex and multifaceted ways in which science and belief have and do intersect in the modern world.

Index

Note: Page numbers with an "n" denote notes.