

How to Do Religion and Science?

with Andrew B. Torrance, “Should a Christian Adopt Methodological Naturalism?”; Victoria Lorrimer, “The Scientific Character of Philip Hefner’s ‘Created Co-Creator’”; and Michael S. Burdett, “Assessing the Field of Science and Religion: Advice from the Next Generation.”

ASSESSING THE FIELD OF SCIENCE AND RELIGION: ADVICE FROM THE NEXT GENERATION

by Michael S. Burdett

Abstract. The field of science and religion is undergoing a transition today requiring assessment of its past movements and identifying its future trajectories by the next generation of science and religion scholars. This essay provides such assessment and advice. To focus efforts on the past, I turn to Ian Barbour’s own stock taking of the field some forty years ago in an essay entitled “Science and Religion Today” before giving some personal comments where I argue that much of the field has traditionally focused on the conversation between Christianity and the natural sciences. At present, however, we are beginning to see that the future of the conversation lies beyond the dialogue between the natural sciences and Christianity. I suggest that the future dialogue will and ought to expand in several directions: (1) into non-Christian religions and theology, (2) into the human sciences, (3) into science and technology Studies, and (4) into the humanities more broadly.

Keywords: Ian Barbour; Christianity; cognitive science of religion; myth; naturalism; science and technology studies; technology; theology and science

The field of science and religion¹ is undergoing a transition today requiring assessment of its past movements and identifying its future trajectories. Seasoned leaders that have made up the defining voices for decades have retired or are retiring imminently: Wentzel van Huyssteen, John Polkinghorne, John Hedley Brooke, Denis Alexander, Philip Hefner, Ted Peters, and Fraser Watts. This has left open major academic chairs in science and religion that have been recently filled or are to be filled in the impending future. What is more, there has been recent turnover with the Andreas

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Idreos Professorship at Oxford leading to a resurrected master's degree in science and religion along with burgeoning graduate degrees in science and religion at, for example, the University of Edinburgh. Science and religion societies also feel this sea change. The theme for the U.K. Science and Religion Forum in 2015 was a celebration of the society's forty-year anniversary (originally established by Arthur Peacocke) entitled "Science and Religion: Celebrating the Dialogue and Exploring the Future." David Wilkinson, Alister McGrath, John Hedley Brooke, and Willem B. Drees were invited to reflect on the field over the last half century and where they think it might be going (Spurway and Hickman 2016). Indeed, even the major funder of the field, the John Templeton Foundation, has seen changing leadership recently and sponsored a seminal event in 2012 at the British Academy entitled "Gifford Lectures Revisited" that had Templeton Prize winners and Gifford Lecturers reflect upon the past and present moments so as to speculate about the future of the field. But, more than this, I have had countless conversations during the past few years with many scholars and laymen and the sense many of us feel is that science and religion is at an inflection point. Indeed, these private conversations have spilled over into print and public discourse. Taede Smedes (2008) touches on this precise point when he says "although the field may have reached a state of maturity, it also seems to have reached a kind of midlife crisis." This inflection point cannot just be the product of generational turnover in the field and recent retirements, even if that contributes to it, for, as I argue later, the ideas, circumstances, and trajectories themselves also seem to be shifting around us. The inflection point seems more substantial and, hence, "stock taking" is needed for the health of the field and because our present moment requires it.

What is more, a voice from the next generation is timely and important. Whilst attempts to summarize the "state of play" from established senior science and religion scholars is an obvious and critical move—after all, for many of these figureheads the history of the field was actually lived discourse rather than words on a page as it has been for me—it does not eclipse the value of consulting the next generation on our perception of the most important developments over the last half century and where, we hope, it might go. Indeed, the eyes of distance are always critical for the health of any subject, science and religion included. Listening to those of us on the receiving end of this history is an important and needed perspective for the field. I am not claiming that the next generation has been without a voice or indeed lacked a place at the table. Consistent essay prizes awarded to younger scholars (e.g., from the European Society for the Study of Science and Theology), student conferences hosted by the Zygon Center for Religion and Science in Chicago, and the increasing proliferation of postdoctoral fellowships in science and religion surely manifest the value placed on the next generation. Furthermore, I am not presupposing

“generational warfare” and arguing that the younger generation will be the panacea to right the wrongs of those gone before us. I am merely saying that because the field is undergoing a change, it is even more imperative to consult those who will be the recipients of that field.

Therefore, in this article I will add my voice to this growing crowd of commentators. Since there is no “view from nowhere” and any commentary is contextual, I need to admit up front that my immediate access to the field is the United Kingdom and, hence, most of my assessment draws from that particular locality even if I think many of my claims can be extended beyond these borders. Regardless, in what follows, I will give a brief account of the history of the field of science and religion and analyze present issues so as to identify future trajectories. To focus my efforts on the past, I will turn to Ian Barbour’s own stock taking of the field some forty years ago in an essay entitled “Science and Religion Today” (Barbour 1968a) before giving some personal comments where I contend that much of the field in the past forty to fifty years has traditionally focused on the conversation between Christianity and the natural sciences. At present, however, we are beginning to see that the future of the conversation lies beyond the dialogue between the natural sciences and Christianity. I suggest that the future dialogue will and ought to expand in several directions: (1) into non-Christian religions and theology, (2) into the human sciences, (3) into science and technology studies, and (4) into the humanities more broadly.

SCIENCE AND RELIGION PAST

Pinpointing the origin of the science and religion field is difficult and contested. The year 1966 seems to be a watershed year for science and religion as a field in that the journal *Zygon: Journal of Religion and Science* was founded by Ralph Burhoe (Hefner 2014) and Ian Barbour published his seminal text *Issues in Science and Religion* (Barbour 1966). Both were field-defining in their own right (Drees 2010, 2) even if seminal works on science and religion preceded such a date. Barbour’s aforementioned book helped to solidify this area of study and secured his position as one of the patron saints of it (Smedes 2008, 235–36). The book itself is still one of the most important introductions to the field, if not a little dated in places, and every time I open its pages I am stunned by its balance, coherence, and comprehension. Some two years later, Barbour edited a sister volume entitled *Science and Religion: New Perspectives on the Dialogue* (Barbour 1968b). His chapter contribution in it, entitled “Science and Religion Today,” provides an instructive counterpoint to us for in it we glimpse a major figurehead of science and religion taking stock of the field rather early in the field’s coalescence. While other figures, such as Burhoe, could have been consulted to assess the field early on, it is precisely Barbour’s stature around the world today and his comprehensive assessment of the main

science and religion trends of the day in this essay, "Science and Religion Today," that make him and this particular work an ideal counterpoint to our own assessment. So, allow me to unpack this article by way of shining light on the "past" field of science and religion and what one particular leader of the field thought about science and religion in its infancy.

Barbour's Assessment at the Origin of the Field of Science and Religion

Barbour begins the essay by acknowledging that much of the field at its origin was concerned with not repeating the conflicts of the past. In particular, Barbour cites three areas where conflict had arisen for science and religion but that, by and large, were no longer issues for the field.

First, Barbour points to the volatility and conflict associated with scriptural literalism. Whereas scriptural hermeneutics proved to be an important topic in such seminal science and religion historical events as the condemnation of Galileo and in the reception of Darwin's theory of evolution, Barbour claimed in the late 1960s that the field of science and religion had moved beyond the impasse of scriptural literalism and scientific enquiry. As Barbour (1968a, 5) put it, "The authors in the present volume see in Genesis the images of a prescientific cosmology used to express abiding religious insights. Scriptural literalism is no longer a major issue between science and religion." And yet, some forty years later an entire museum in Kentucky would be built as a symbolic edifice to scriptural literalism and the continued battle between science and religion. Indeed, Barbour (2008, 266) himself would later say "I under-estimated the appeal of creationism and the new forms it would take in public education after losing repeated challenges in the courts."

Second, Barbour insists that the "God of the gaps" strategy within the science and religion engagement had run its course. The examples of history caution such a move. The Newtonian God who had to periodically intervene to realign planetary deviations was removed a century later by Laplace's calculations. Similarly, the God who created the eye by divine fiat invoked by certain eighteenth century scientists was made superfluous by Darwin's theory of evolution. Barbour claimed that direct "intervention" into the natural world was no longer *en vogue* for the field of science and religion. Yes, special divine action was an important topic and would become a central issue in the 1990s to the present thanks, in part, to the work of Robert John Russell and the collaboration between the Center for Theology and the Natural Sciences and the Vatican Observatory (Russell, Murphy, and Stoeger 2008), but noninterventionist approaches were favored. Thus, Barbour (1968a, 6) happily claimed "the 'God of the gaps' is rejected by most theologians as well as scientists today." Yet many argue the Intelligent Design movement today has once again resurrected this whipping boy of the science and religion dialogue. Indeed, Barbour (2001,

211) would go on to criticize Intelligent Design for invoking this science and religion heresy.

Finally, Barbour cites the demise of both evolutionary naturalism and natural theology. Barbour argues that there are still proponents of naturalism but that this is not a conclusion warranted by scientific findings but rather a philosophical/metaphysical position presupposed outside of the domain of science. In the same way, Barbour argues we need to resist the urge to utilize scientific evidence in support of theism. In other words, trying to build a robust theology on purely natural and scientific means, as natural theology had done in the eighteenth and nineteenth centuries, was doomed to failure from the beginning. Doing so would only ever invite the God of deism, not that of any particular faith tradition, and would lead to God's removal in public life (Jüngel 1983). As Barbour (1968a, 8) claims, "Most contemporary Protestant theologians have little interest in natural theology, and most philosophers are dubious about deriving any far-reaching metaphysical conclusions . . . from scientific theories." However, yet again, we find here that Barbour's contentions about "sorting out" the past conflicts of science and religion are not so clear-cut. Metaphysical naturalism still seems to be a constant threat to the field with characters such as Jerry Coyne and Richard Dawkins still, somehow, having a voice in how science and religion is perceived by the surrounding populace even when more palatable and less reductionist forms of naturalism abound in the field (Crosby 2002; Clark 2016). And we have seen a renewed interest in natural theology by theologians such as Alister McGrath (2008), albeit not the brand that is decried by Barbour. In fact, it is anticipated by him.

Perhaps Barbour's assessment of the field in the late 1960s should act as a cautionary tale to us. As someone whose area of interest in theology is eschatology and futurism, I can personally attest to the short shelf-life of any claims about the future. What is more, making bold claims that certain conflicts or issues would be sorted once and for all just does not take seriously enough the highly contextual nature of these issues. For, when we take the claims of scholars such as David Livingstone (2014) seriously—that is, that doctrinal adherence or cognitive belief is just one factor in a wide array of influences on how an issue in science and religion takes hold—we ought to be more reticent that *pure argument* alone can sort out anything for good in this field.

Past conflicts were not the greatest threat to the field of science and religion, Barbour thought. Rather, in the 1960s he found a much larger threat to the dialogue in the form of various arguments for their independence—that is, the Gouldian nonoverlapping magisteria (Gould 1999). Several movements promulgated the separation of science and religion; the two most significant Barbour identifies were neo-orthodoxy and existentialism. Neo-orthodoxy challenged the theological contention that anything of real value could be gained from studying "the book of nature." Instead, all

knowledge of God had to be grounded in the special self-revelation of God in Christ and adhered to by faith. As Barbour put it, “Religious faith depends entirely on the divine initiative, not on discovery of the kind by which science advances” (Barbour 1968a, 9). For the neo-orthodox position, science might fill out the empirical details of particular natural events but the theological import of things like a doctrine of creation is not in the “how” of the natural order but rather is to tell us something of God’s nature (that he is sovereign, transcendent, and purposeful) and that the world is ordered and largely good (Barbour 1968a, 10–11). Therefore, scientific and theological statements operate on different levels and have differing aims. As Barbour tells us, it is hard to see, then, why science and religion ought to discuss anything if they have no area of common overlap.

Besides a blow to science and religion from within the confines of theology, Barbour also identifies a detractor from within philosophy. Existentialists and those in the I-thou tradition assert that personal selfhood and interpersonal relationships can only be known in terms of “subjective involvement.” There is a special kind of knowledge gained only when one is personally committed and invested in the area of inquiry. Many religious thinkers claim religious knowledge is of this existentialist, self-involved variety. Scientific knowledge, on the other hand, eradicates such knowledge and promotes detachment from its line of inquiry. One cannot be a good scientist by giving subjective accounts of experimental data—it must be reproducible without personal bias. Therefore, any dialogue between science and religion will be foolhardy because they are isolated by method, commitment, and aim.

Of course, in this essay Barbour does more than cite past conflicts. He also points out the areas of productive dialogue that he foresaw would define it for the future. In particular, Barbour puts forward two areas of productive dialogue and several more future “prospects for dialogue” he thought required addressing.

First, several scholars at that time were actually drawing several parallels between the methods of science and religion despite the existentialist and positivist claims to the contrary. The work of philosophers Russell Hanson (1958) and Thomas Kuhn (1970) challenged the positivistic view of science, and Michael Polanyi (1962) indicated that personal judgments were endemic to the practice of any science. Hence, separating science and religion by differing methods of concern (i.e., “subjective involvement” vs. “objective distance”) just did not fit the evidence on either side. Instead, identifying commonalities in method and in operation of respective field was a highly fecund venture that Barbour encouraged greatly.

Second, Barbour points to the productive interaction between evolution and theology. The work of Pierre Teilhard de Chardin (1975) was flying off the shelves in the 1960s across the English-speaking world. His creative and

bold synthesis of evolution and the Christian faith was ground-breaking at the time and, despite constantly finding his texts in used bookshops today, he is enjoying something of a minor resurgence. Indeed, Barbour himself seemed to be swept away by the productivity of Teilhard's synthesis for both its broad evolutionary scope and a scientifically informed theology. Barbour held that projects such as Teilhard's boded the shape of things to come.

Barbour became even more speculative when commenting on the many issues raised by others in the book aforementioned. Inasmuch as the other contributions fill out and help to delineate the field at its origin, Barbour raises five illuminating questions in dialogue with these other scholars. (1) What is the place of nature in theology? (2) Should we seek a unified world-view? (3) Is metaphysics a bridge between science and religion? (4) Is the idea of God's creativity in nature a reversion to the "God of gaps?" (5) Does evolution have implications for our understanding of God? I do not have the space here to unpack all of these questions or how Barbour approaches them as important trajectories for future research, but what fascinates me in all these questions is how many of them still drive the field today. We are still trying to work out the proper bounds and place of natural theology and indeed the place of nature within a robust theological framework. We are still grappling with the implications of evolutionary theory for theology and religion. We are still wrestling with the nature of divine action as it relates to natural mechanisms. We are still trying to discern the boundaries of science and religion as they relate to each other, and we continually rely upon and hope that philosophy can act as an important handmaiden to addressing many of these questions.

Of course, I am not saying that nothing of substance has occurred in the field over the last half century. Clearly, much has been done in the intervening time to advance our deeper appreciation of these questions and perhaps we understand a bit more about how to begin answering some of them. But these questions remain and it is startling how similar the research programs are today to those at the origin of the field itself.

My Thoughts on the Past

Transitioning now from Barbour's perspective on the field at its origin, I would like to make some comments about what I think has typified it over the past forty to fifty years. It is clear to me that the natural sciences have dominated the science and religion conversation even when there has been a minority voice from the human sciences. Within the *physical* sciences the following illuminate the kinds of topics broached: (1) Divine action and quantum indeterminacy, (2) the theological implications of Big Bang cosmology and the physical origins of the universe, and (3) the far future of the cosmos and its import into eschatology. Leading figureheads in the

physical sciences includes people like Robert John Russell (2008, 2012), John Polkinghorne (2007), and John Barrow and Frank J. Tipler (1986). Or we might turn to representative issues within the *life* sciences. Things like (1) apparent directionality or convergence in special trajectories and what this might say about a divine Creator, (2) what paleogenetics might tell us about our mythic primogenitors, and (3) how sociobiology through things like kin selection and reciprocal altruism shifts our conceptions of evolution and has significant import for theism. Arthur Peacocke (1971, 2004), Celia Deane-Drummond (2006, 2014), Ted Peters (2003), and Philip Hefner (1993) are among those who have left a substantial mark in religion and the life sciences. The natural sciences seem to be where the bulk of science and religion action has taken place.

I am in good company when I make this claim. In the aforementioned event at the British Academy where previous Templeton Prize winners and Gifford Lecturers were asked to comment on the field in 2012, the majority made the exact same observation. What is more, as we have seen in Barbour's synopsis of the field, all scientific issues he touched upon were firmly lodged within the natural sciences. I am sure there are a plethora of explanations for this bias that many more senior than I could hazard to make but, whatever explanation might be given, those scholars that agree to the label "science and religion" have most often focused on the natural sciences.

Before turning to the final section of this article on the present concerns and trajectories latent in the field, it is important to note, briefly, three other features that I believe have characterized the field since its inception. Moving from the biases on the scientific side of this dialogue, we can distinguish something similar on the theology/religion side. Namely, most of the engagement with the sciences in the field have been with Christianity and Christian theology. Of course, there have been notable examples outside of Christianity, like the work of Bruce Alan Wallace (2003), Noah Efron (2007), Ahmad Dallal (2010), and Taner Edis (2007). Furthermore, books like *Science and Religion around the World* (Brooke and Numbers 2011) and the recent special edition of *Zygon: Journal of Religion and Science* in 2015 (Drees 2016) has helped to move these non-Christian perspectives to the center of the field. However, these have tended to be relatively recent additions and they prove to be the historical exception rather than the rule. Finally, I would like to add that both history and philosophy have been significant areas of discourse in the field of science and religion. Indeed both have acted as an important ballast amidst the forays into the tumultuous and normative waters of engagement between science and religion. Some of the most impressive and timely work relies upon the consistent work done by historians of science and religion such as John Hedley Brooke (1991), Peter Harrison (2015), David Livingstone (2014), and Ronald Numbers (2009). Philosophers such as

Keith Ward (2008), Philip Clayton and Steven Knapp (2011), Ernan McMullin (1992), and Alvin Plantinga (2011) have equally been robust figures in science and religion providing the conceptual clarity so needed to make certain scientists and those that study faith do not talk past one another. So, to summarize, I would say the past has been typified by, largely, engagement between the natural sciences and Christianity with significant and steady input from historians and philosophers.

SCIENCE AND RELIGION PRESENT AND FUTURE: BROADENING THE BOUNDARIES

In the remaining space, I want to both assess current trends in the field that signal a new tack and trajectory and, where no such trend is observable, I also will comment on where I think the field *ought* to go. I have structured my thoughts around four distinct foci in this regard: (1) expansion into non-Christian religions and theology; (2) more substantial discourse in the human sciences; (3) greater dialogue with the burgeoning field of science and technology studies; and (4) broadening into the humanities more generally.

Expansion into Non-Christian Religions and Theology

In many ways the recognition that the bulk of the conversation has depended upon a singular religion, Christianity, invites such a call to the rest of the faith traditions. But, beyond just the argument for “playing fair,” it is clear that this invitation is critical because non-Christian religions are on the rise. Recent numbers from the Pew Research Center (2015) suggest that Islam is expected to be one of the fastest growing religions in the world the next several decades. From 2010 to 2050, it is expected to grow by 73% worldwide while the next closest religion, Christianity, will only grow by 35% during the same period of time. In fact, Islam is the only religion that will spread faster than the world’s population as a whole. It is expected that Islam will nearly make up the same percentage of the world population in 2050 as the current leader Christianity. The expansion of globalization and mobilization the past fifty to sixty years has meant an increasing exposure to the plurality of differing faiths. Indeed, whereas some fifty to sixty years ago the standard secularization thesis reigned supreme and we were taught that the rest of the world would soon look like Western Europe, it is clear that current global politics and society cannot be explained without reference to the proliferation of religion (Taylor 2007; Berger, Davie, and Fokas 2008; Calhoun, Juergensmeyer, and VanAntwerpen 2011).

Of course, part of this growing plurality is into minority religions and nontraditional religions or religious faith. This can mean growth of minority religions like Baha’i or, as we see in the United States and elsewhere, the rise of the “Nones” where people increasingly have no faith or decline

official affiliation (Pew Research Center 2012). The rapidly changing currents on the religious side of the science and religion field command engagement with these growing religious trends and the faithful who adhere to them explicitly or implicitly.

I should add a few things related to my claims here. First, this does not mean utilizing only the tools of religious studies to do so. Yes, studying the phenomenon of religion is an important venture especially with the proliferation of faiths around the world, but real substantive work also needs to be done by practitioners, adherents, and theologians. Drawing in the work done by comparative theology will be critical to engaging these other faith traditions well.

Second, I signal a similar call to the underrepresented theological and religious studies subdisciplines in the field. So often scientists who happen to be amidst the faithful lead the dialogue. Frankly, as Smedes (2008, 244ff) agrees, we need more theological and religious studies representation in this field. In terms of theology, traditionally, this has meant employing philosophers of religion as philosophical theologians or, to a lesser extent, constructive theologians. However, historical theology, biblical theology, ethics and political theology, and practical and applied theology all can contribute in their own way to the field. What is more, underrepresented religious studies variants also need to be included in future dialogue: sacred text scholars, ecclesiastical historians, and religious ethicists. For example, new work on the evolution of morality ought to spur us to include both theological and religious ethicists. Current research on the science of ritual ought to incite us to call upon practical, historical, and liturgical theologians and scholars. Even if this work is already being done it is not often included within the boundaries of the science and religion field. Hence, it is a key component of this “broadening the boundaries” initiative I am putting forward here.

Finally, increased globalization and mobilization has not just meant exposure to other faiths within our own borders but rather an expansion of our faith traditions into other parts of the world. Current research by the Pew Research Center (2011) and from work by Phillip Jenkins (2002) reveals the center of gravity of Christianity is creeping southward. Much could be said about what impact this might have beyond the borders of science and religion but one of the most significant challenges ahead for the field will be the clash between a lauded naturalistic (methodological or metaphysical) paradigm from America and Europe that is so central to the practice of science and the more animistic, spiritualist, and holistic paradigm of places like Africa and South America. Works done by James Smith and Amos Yong (2010) on science and religion from a Pentecostal and renewalist vantage point are central to starting this dialogue well and facing it head on. However, this is just the beginning of the dialogue and all contributions in this text are still based in the renewalism of America

and Europe. More resources from contextual and international localities need to be poured into it.

More Substantial Discourse in the Human Sciences

I have referred several times now to the event at the British Academy in London entitled “Gifford Lectures Revisited.” All the speakers present were asked to comment not only on their own contribution to the past field of science and religion but how their views of the field have changed and what they might include in the Gifford Lectures were they to give them today. As an attendee I was given the distinct impression that, as I have intimated, the consensus was that the past focused on our surrounding natural environment. However, the speakers also overwhelmingly stated that the future of the field lies with the study of ourselves—in the study of the human being.

Today we are seeing a surge of interest in the human sciences. Whereas human science leaders in the field have been around since the beginning—Malcolm Jeeves, Nancey Murphy, or Fraser Watts—it is only in the past ten to fifteen years that it has begun to take a major position in the field, which is surprising given that academic societies such as the Society for the Scientific Study of Religion have been around since the 1940s.

Two areas in the human sciences are worth unpacking in more detail: (1) psychology and neuroscience and (2) sociology and anthropology. One area of the scientific study of religion has had significant impact in recent years: the cognitive science of religion. Led by people such as Stewart Guthrie (1995), Thomas Lawson, Richard Sosis, Justin Barrett (2004), Robert McCauley (2011), Pascal Boyer (2001), and Scott Atran (2002), the study of the development of religion and religious thinking as “maturationally natural” (McCauley 2011, 31–82) within normal human beings has helped to solidify the fecundity of the human sciences in the field of science and religion. Indeed, we are at the leading edge of identifying the philosophical and theological implications of the findings of the cognitive science of religion and texts by Aku Visala (2011) and Helen De Cruz and John De Smedt (2015) are leading this important conversation.

The second area concerns sociology and anthropology. There has been a proliferation of sociological studies on religious adherents’ views of science and scientists’ views of faith. Elaine Ecklund (2010) gives an important assessment of top scientists’ beliefs about religion, debunking some of the myths in the process (like all atheistic scientists are hostile to religion) and that spirituality does not matter to scientists. Studies such as Ecklund’s are a breath of fresh air in a public space dominated by accusation and misunderstanding. We find something similar in the work of Christian Smith and Jonathan Hill, only now it is the faithful’s perception of science that is scrutinized. The work of Jonathan Hill (2014), for example, ascertains what

factors influence rejection of science and specifically evolution in North American Christian populations. Hill concludes it has everything to do with one's social networks and the inherent ideologies found therein—not home schooling, not level of education, and not geography.

What recent sociological studies tell us is that often noncognitive or extracognitive factors can play a tremendous role at the intersection of science and religion. We are seeing an extracognitive turn in science and religion where scholars are attending more and more to practice and other embodied factors that help to shape people besides just rational belief. Practices infuse and shape a group and give them ways of embodying and inhabiting the claims that draw them together. These kinds of scholars recognize that religion, ideologies, and beliefs are tied to embodiment and practice. Indeed, there has been some significant work done by Donovan Schaefer (2015) that appeals to affect theory and the emotions as a better way to understand religion in the context of science. And scholars such as Robert McCauley, Thomas Lawson, Harvey Whitehouse, and Cristine Legare have researched the scientific study of ritual that has vital import for understanding not only religion as a practice but even science as it is practiced (McCauley and Lawson 2002).

Greater Dialogue with Science and Technology Studies

Paying attention to practice in the sciences naturally leads to the third area of future engagement—with science and technology studies. Science and technology studies (sometimes referred to as science, technology, and society) has been a growing field the past fifty to sixty years and Ian Barbour himself played a role in its establishment and growth. It is an offshoot of science studies and it assesses how political, social, and cultural forces affect science and technology and how science and technology, likewise, influence politics, society, and culture. In other words, it studies how science and technology are endemically human disciplines and practices.

Perhaps the greatest contribution this new area of dialogue would make to the field of science and religion is its scrutiny of the big elephant in the room, technology, and the difference it makes to science and society. While there have been scholars and texts devoted to technology in science and religion (e.g., Brent Waters, Ted Peters, Ronald Cole-Turner, Bronislaw Szerszynski, Hava Tirosh-Samuelson, and Laurie Zoloth), it is still underrepresented in the field. It is surprising that technology has played a small role to date, because Barbour's seminal Gifford lectures include the often forgotten second volume *Ethics in an Age of Technology* (1992). Perhaps explanation should be sought in the title of the field itself: we are talking about "science" and religion, not "technology" and religion. Or perhaps explanation might be sought in a major tenet of the philosophy of technology: that the point of technology is that it remains tacit and seamless

with our actions. By its very essence technology is *meant* to remain hidden to explicit awareness and, thus, it has remained understudied.

However, it has been underrepresented from the conversation for far too long. We would not have modern science today without technology and vice versa. It surely inflects and colors our experience of the natural world when doing science and, clearly, it does so outside of the laboratory. Furthermore, it is the most immediate way people outside of the sciences experience the fruits of science. Science and technology studies recognizes the power of technology in the scientific world and even gives it a new name to better describe the incorporated synthesis of both in our contemporary world—technoscience (Ihde and Selinger 2003; Nordmann 2011). There is an entire conversation happening in this field that is so close and relevant to what we do in science and religion—history of science and technology, philosophy of science and technology, hermeneutic and critical approaches to both—that it amazes me there is not more interaction. We would have a lot to gain from this exchange.

Indeed, one area of perceived growth in the future for science and religion related to technology is in the future of human transformation. With the mapping of the human genome and new ground-breaking biotechnologies such as CRISPR/Cas9 the future of genetic engineering has really arrived. We can do it cheaply, universally, and effectively now, whereas not more than a couple of decades ago we could not. Proximate ethical and safety issues always arise with these new technologies and powers but what is often overlooked are the anthropological and special implications of intentional genomic change. Right now more than forty countries have formally banned the intentional modification of the germline (the heritable genetic material), but CRISPR was used not so long ago in China to alter human embryos (Cyranoski and Reardon 2015). These embryos were nonviable but had they been introduced into society they could initiate vast changes to the human species. Such genetic possibilities have even incited many to speak about a transhuman or posthuman future that invites substantial theological reflection beyond just immediate ethical concerns (Cole-Turner 2011; Mercer and Trothen 2015).

Expanding into the Humanities

Finally, I want to turn to the last area that science and religion should turn to as part of broadening its borders: the humanities. C. P. Snow famously summarized in 1959 the growing rift between the sciences and the humanities in what he referred to as “The Two Cultures.” Snow contended that the major hurdle to solving global problems in the twentieth century stems from this undesirable bifurcation. Indeed, it is difficult to find anyone in higher education who is not privy to the proliferation of specialization in the academy and the constant splintering of relative academic disciplines.

I am sure we would not suffer so much if this splintering were not beset with diverging disciplinary cultures or the ensuing lack of dialogue or synthesizing that fails to take place. Indeed, the very idea of a uni-versity with a common pursuit of knowledge almost seems laughable now—then again “multi-versity” sounds rather strange if not more correct.

But here the field of science and religion is in a privileged position. Science and religion can act as a vanguard for bridging these two cultures and, indeed, it has a responsibility to do so. Because the field has had such consistent dialogue and practical experience “crossing the aisle” these past fifty years, we ought to invite other disciplines into our conversation, not only because the state of education needs it, but because science and religion has much to gain from it as well.

What is to be gained? Several things. Deepening discussions with those in literature has vast import for science and religion. A neglected topic within science and religion is the imagination and its role in the construction of controlling images, metaphors, and analogies that are the bedrock of the scientific and religious task. Janet Soskice’s book *Metaphor and Religious Language* (1985) and Michael A. Arbib and Mary B. Hesse’s *The Construction of Reality* (1986) have both been seminal works and a good start but they are a rarity. This means we pay little attention to the role of science fiction—the cradle of the scientific imagination—in influencing people’s beliefs on science and religion topics. Instead, it is dismissed as half-baked science or idle speculation not worthy of academic attention. Gaining a stronger appreciation for the imagination in science and religion also means taking the literary and existential/religious category of myth seriously. Demythologization might have had its place in the early twentieth century but we cannot deny the role particular narratives of the existential/mythic variety play in our lives and this influences how we perceive and pursue both science and religion together and respectively. It really is time to expand our remit and invite the rest of the humanities to the table.

CONCLUSION

The field of science and religion is at a crossroads. As I have indicated, much of the past dialogue has focused on the natural sciences and Christianity with important input from history and philosophy. However, we are seeing today a major transition within the field and one that, I have argued, requires a broadening of the boundaries. For the health of the field, what is required is no less than (1) expansion into non-Christian religions and theology; (2) more substantial discourse in the human sciences; (3) greater dialogue with the burgeoning field of science and technology studies; and (4) broadening into the humanities more generally. As we meet the present opportunities and challenges we currently face, it is imperative we respond to them well. And, perhaps in another half century our own academic

progeny will be assessing how well we both assessed the field and acted for its betterment.

NOTE

1. Throughout I will be referring to the science and religion field. By this I mean to refer to the group of people, practices, questions, topics, and research agendas that propose to engage the sciences with religion and theology. As will become clearer throughout the piece, I also mean to refer to the field that descends from the work of Ian Barbour. I mean to explicitly define this field in contradistinction from the field referred to as science and technology studies for the precise reason of diverging and distinct histories and peoples over the past half century. As will be argued later, this divergence and independence is to be lamented, and future work in science and religion should seek to increase its engagement with science and technology studies.

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