

Loving Science, Discovering God: An Autobiographical Reflection on Science and Theology

Alistair E. McGrath

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Abstract: After an extended reflection on how I came to value exploring the interfaces of science and theology, this paper explores three of my recent areas of research in the field. The first is the area of *natural theology*, which is here presented as a natural and potentially productive interface between science and theology, with the potential to catalyze and inform discussion between these two disciplines. The second is the raft of questions raised by the “New Atheism” of writers such as Richard Dawkins and Daniel Dennett, which offer a challenge to theology to offer a more persuasive reading of the nature and limits of science. The third is the intellectual difficulties raised by interdisciplinarity, in particular the observation that different disciplines – such as individual natural sciences and Christian theology – rest on quite different understandings of methods, norms, and investigative procedures.

Keywords: theology; science; atheism; interdisciplinarity; natural theology

At the heart of my intellectual pilgrimage lies a quest to make sense of things through the transgression of restrictive and sometimes arbitrary disciplinary boundaries. My starting point in this quest was a sense of wonder at the complexity, beauty and sheer vastness of the natural world. I first experienced this on winter nights in my native Ireland in the early 1960s, when the sight of the solemn elegance of the silent star-studded heavens above me evoked a sense of awe. It was a gateway experience for me, generating a deep sense of intellectual desire to know more about astronomy. At the age of ten, I built myself a small telescope, which allowed me to see the moons of Jupiter and the galaxies that lay beyond our own. Around the same time, a great-uncle who had retired as Head of Pathology at a leading Irish teaching hospital gave me an old brass microscope which allowed me to explore the biological world in all of its glorious intricacy.

My parents, aware both of my growing love of the natural sciences and the lack of expertise in this field at my local high school, decided to enroll me at the Methodist College Belfast (popularly known as “Methody”), which had considerable teaching strengths in the fields of chemistry, physics, and biology. (The Irish physicist Ernest Walton, who won the Nobel Prize in physics in 1951 for his work on splitting the atom, had studied science at the same school – and for the same reasons. His daughter, incidentally, taught me physics from 1967-8). By the time I was 16, I had decided that my first love was chemistry, and that Oxford University had the best undergraduate chemistry course in the United Kingdom. I set myself the goal of securing a place on this degree program. This required staying on at high school for a few additional months to prepare for the Oxford scholarship examinations in December 1970. Just before Christmas that year, I learned that I had been offered a scholarship at Wadham College to study chemistry at Oxford University.

At this stage, I assumed that it was self-evidently true that science and religion were at war with each other. This firm conviction was not, it has to be said, the result of some active serious historical study on my part. It was more like a form of passive osmosis, more sociological than intellectual in nature, in which I absorbed the dominant ideas and values of the social circles within which I moved. At that stage, it seemed self-evidently true to me that science proved its ideas, whereas religion merely asserted them. Science entailed atheism and destroyed the illusions on which religion was based.

Yet the ease with which I came to such atheist conclusions partly reflected the political mood of the late 1960s throughout much of western Europe, in which a sense of weariness with the past was causing many to question religion. The journalist Tom Wolfe captured this cultural mood well in his later essay “The Great Relearning,” hinting at a widespread belief in the 1960s that the historical process had come to a point at which a radical Promethean reconstruction of everything was possible.¹ It was time to seize the moment, and break decisively with the past, sweeping religion aside as the moral detritus of humanity, at best an irrelevance to real life, and at worse an evil, perverse force which enslaved humanity through its lies and delusions. These ideas were highly plausible to Belfast’s progressive intellectual élite at this time, who believed that the city’s simmering religious tensions – which erupted into violence during my final years at the Methodist College – could best be subverted by subverting, abolishing or even criminalizing religion. If there was no religion, there could be no religious violence. It was a ridiculously simplistic argument; yet it gained cultural traction for many at this formative period.

¹ Tom Wolfe, “The Great Relearning.” In *Hooking Up*, 140-5. London: Jonathan Cape, 2000.

In my own case, I abandoned any pretense of interest in religion and embraced Marxism, which offered me an explicitly atheist “big picture” of reality – a metanarrative which claimed to make sense of the historical process. This was a form of atheism which I regarded as intellectually respectable, salvaging an imaginatively impoverished and emotionally bleak rationalist atheism by depicting it as morally preferable to the delusions of religion, and as creating a meaningful social role for individual agents in the redirection of the historical process. I looked forward to the confirmation of both my Marxism and atheism through a rigorous engagement with the natural sciences at Oxford University and exploring some hints about the synergy of Marxism and science that I found in the writings of Friedrich Engels.

I was not, however, due to begin my studies at Oxford until October 1971. I decided to stay on at the Methodist College, making good use of its library and laboratory facilities to prepare for this new phase of my existence. I devoured works on biology, which I had neglected somewhat due to my intense concentration on mathematics. I also taught myself German and Russian, both of which would be useful for reading professional chemical journals such as *Zeitschrift für physicalische Chemie* or *Zeitschrift für Naturforschung*. Perhaps more importantly, given my outlook at this time, I would be able to read the works of Marx, Engels and Lenin in their original languages.

After a month or so of intensive reading in the school science library, having exhausted its holdings on biology, I came across a dusty bookcase labelled “The History and Philosophy of Science.” At the time, I regarded this as uninformed criticism of the certainties and simplicities of the natural sciences by people like Karl Popper who felt threatened by them – what Richard

Dawkins would later call “truth-hecklers”.² How, I wondered, could Popper seriously believe that all scientific “theories are, and remain hypotheses: they are conjecture (*doxa*) as opposed to indubitable knowledge (*episteme*).”³ However, I felt I had nothing to lose by exploring these works. So, after blowing away the dust on these volumes, I began to read them. By the time I had finished, I knew that I would have to do some very serious rethinking. I was experiencing an intellectual epiphany, and scales were falling from my eyes.

Far from being half-witted and uninformed obscurantism that placed unnecessary obstacles in the face of scientific advance, the history and philosophy of science raised legitimate questions about the reliability and limits of scientific knowledge. Issues that were new to me – such as the underdetermination of theory by data, radical theory change in the history of science, the difficulties in devising a “crucial experiment”, the theory-laden character of observation, and the enormously complex issues associated with determining what was the “best explanation” of a given set of observations – complexified what I had hitherto taken to be the clear, still and thoroughly unproblematic question of scientific truth.

It suddenly became clear to me why scientific positivists avoided engaging this material: if scientific theories that once commanded widespread support had now been displaced by superior alternatives, who could predict what would happen to these new theories in the future? These theories might be *better* than those they had supplanted; but were they *right*? Might they not be transient staging-posts, rather than final resting places? After all, the scientific consensus of the first decade of the twentieth century had been that the universe was more or less the same today as it always had been; yet this once fashionable and seemingly reliable view had been

² Richard Dawkins, *A Devil's Chaplain*. London: Weidenfield & Nicholson, 2003, 16.

³ Karl Popper, *Conjectures and Refutations*. 2nd edn. London: Routledge & Kegan Paul, 1965, 103-4.

eclipsed by the seemingly unstoppable rise of the theory of cosmic origins generally known as the “Big Bang”.⁴ (As I would later discover, Richard Dawkins’s evasion of such issues, though rhetorically presented as a refusal to deal with anti-scientific wafflers, actually reflected the severe vulnerability of his approach at these critical points.)

These reflections did not lead me to a religious faith; they simply alerted me to the intellectual provisionality of scientific theorizing and forced me to draw what I saw as the intellectually problematic conclusion that a scientist could commit herself to a theory that she knows might be shown to be wrong in the future. Michael Polanyi’s *Personal Knowledge* (1958) may have helped me to live with this tension – but it certainly did not resolve it. Perhaps more significantly, however, this realization triggered off a cascade of unsettling questions which brought home to me the complexity of what I had once thought to be simple. I had rejected religion partly because it made judgements that could not be demonstrated to be right. But what if atheism was also a faith – something that could not be *proved* to be right?

I arrived at Oxford in October 1971 to begin the study of chemistry at the University of Oxford, no longer certain about the intellectual resilience of atheism. During my first year, I had to select a specialist topic from a range of options and chose to focus on quantum theory. This was extremely demanding intellectually but helped me grasp and conceptualize some of the fundamental difficulties of my earlier somewhat rationalist approach to the natural world. It also allowed me to delve deeply into the writings of Albert Einstein, Werner Heisenberg, and

⁴ Helge Kragh, *Conceptions of Cosmos from Myths to the Accelerating Universe: A History of Cosmology*. Oxford: Oxford University Press, 2007.

Niels Bohr – all of whom remain important dialogue partners for me today as I reflect on the relation of science and theology.⁵

For alongside this immersion in the natural sciences, I was undergoing a fundamental change in outlook. I was becoming increasingly dissatisfied with what I now considered the rather simplistic link that some proposed between atheism and a love of the natural sciences. Perhaps my love of science might now lead me towards other metaphysical possibilities, which I had up to this point seen as lacking serious evidential substantiation. Marxism had piqued my interest in metanarratives, while failing to resolve its own contradictions – a point famously highlighted by Karl Popper.

At Oxford, I encountered more sophisticated forms of Christianity than I had known in Belfast, which suggested that Christianity offered a “big picture” of reality that would enable me both to make sense of the natural sciences on the one hand, while appreciating their limits on the other.⁶ I began to reappraise Christianity, helped along by writers such as C. S. Lewis, who highlighted this aspect of Christian faith in a lecture of 1945: “I believe in Christianity as I believe that the Sun has risen, not only because I see it, but because by it, I see everything else.”⁷

⁵ For my reflections on Einstein, see especially Alister McGrath, *A Theory of Everything that Matters: Einstein, Relativity, and the Future of Faith*. Wheaton, IL: Tyndale, 2019.

⁶ My own developed approach is similar to that set out in Willibald Sandler, “Christentum als große Erzählung. Anstöße für eine narrative Theologie.” In *Religion—Literatur—Künste. Ein Dialog*, edited by Peter Tschuggnall, 523-38. Anif: Müller-Speiser 2002.

⁷ C. S. Lewis, *Essay Collection*. London: HarperCollins, 2002, 21. For my own reflections on Lewis, see Alister E. McGrath, *C. S. Lewis – A Life. Eccentric Genius, Reluctant Prophet*. Wheaton, IL: Tyndale, 2013.

Important though Lewis was for my intellectual development, my main mentor at this early stage was Charles A. Coulson, Oxford University's first Professor of Theoretical Chemistry. Coulson was a fellow of Wadham College, and a noted Methodist lay preacher. At some point around 1973, I heard him preach in Wadham chapel on the fundamental coherence of nature and faith, and why the idea of a "god of the gaps" was to be rejected in favor of a grander vision of reality, in which the natural sciences and religious belief could be held together meaningfully – a view he set out in some detail in his influential work *Science and Christian Belief* (1959). In a subsequent conversation, Coulson did not answer all my questions, but rather gave me something which I now realise was much better – a mental map of intellectual and imaginative possibilities. Coulson's basic framework remains important for me to this day.

At that stage, Oxford's chemistry course required that students undertake a research project in their fourth and final undergraduate year, and that they should present a dissertation as part of the assessment process. I chose to move into the biological sciences and became part of the large research team of Professor Sir George Radda based in Oxford University's Department of Biochemistry. I was fortunate in that final undergraduate year (1975-6), in that I stumbled across a new physical method for exploring the diffusion of molecules within and across biological membranes. While still an undergraduate, I thus found myself becoming the lead author of a research paper that had been accepted for publication.

After taking first class honours in chemistry, I remained part of Radda's team for the next three years. Those years were very exciting, raising many questions in my mind. Perhaps one of the most striking impressions that remains with me to this day is the fundamental differences between the physical and biological sciences, particularly in relation to their specific research methods and the theoretical expectations attached to them. Immersion in two quite different

scientific cultures made it clear to me that there was no single research methodology that could be applied comprehensively and coherently across the vast range of scientific disciplines. I shall return to the importance of this point later in this paper.

As I reflected on the relation between my faith and my scientific interests in the early 1970s, two things became clear to me. The first was that Coulson was right: I simply could not live with any kind of compartmentalisation of my mind, in which one hermetically sealed region was devoted to science, and another watertight compartment to my Christian faith. It was tempting to keep science and faith apart from each other; yet I felt that this amounted to an evasion of legitimate challenges and questions that I would have to confront, sooner or later. Intellectual integrity demanded that I had to find some way of allowing my love of science and my faith to interact, and to face up to any legitimate intellectual challenges that this raised.

The second was that I realized that I would have to study theology in detail if I was going to have the intellectual toolkit necessary for the meaningful inhabitation and intellectual exploration of the borderlands of science and faith. As I reflected on this, in conversation with colleagues, I gradually came to the conclusion that I ought to give up science after I had gained my doctorate and focus instead on theology. I owe much to the wisdom of Jeremy R. Knowles (1935-2008), my tutor in organic chemistry at Wadham College before his departure to Harvard in 1974, who knew of my growing interest in theology. He told me that my credibility as a serious participant in any dialogue between science and theology would rest on having a doctorate in a mainline natural science in the first place, and some publications in the field in the second. I took his advice. But how could I study theology seriously, given my situation?

This issue was resolved unexpectedly when I was awarded a senior scholarship for two years at Merton College Oxford in 1976 on the basis of my research work in the Department of Biochemistry. On examining the terms of this scholarship, I discovered that it could be used either to pursue advanced research, or to study for a second first degree. I asked if I could do both – continuing my doctoral research in molecular biophysics, while at the same time studying for Oxford's Final Honour School of Theology. For reasons I still do not entirely understand, the college authorities agreed enthusiastically to this proposal, and sorted out the administrative complexities of studying for two Oxford degrees at the same time.

And so I began to lead a double life. From October 1976, I continued to work on my scientific research, while at the same time being taught for Oxford's Final Honour School of Theology by some of Oxford's leading scholars, some of whom remain my friends to this day. I was allowed me to specialize in several topics of my choice, and perhaps predictably chose to include a paper in science and religion. Because my scientific research was so advanced, I was able to submit my doctoral thesis in September 1977, and concentrate from that point onwards on theology. My doctoral viva took place in December 1977, and I faced the theology final examinations in June 1978. By the summer of 1978, I had gained both my doctorate in molecular biophysics, and first class honours in theology, being awarded a University Prize for gaining the top mark achieved in the subject that year.

But what would I do next? As a result of my performance in theology at Oxford, I was awarded the Naden Studentship in Divinity at St John's College, Cambridge. I discussed the possibility of researching a topic in the field of science and religion with Dr Arthur Peacocke, who was then based at Clare College, Cambridge. However, after much reflection, I decided I would

have to postpone any serious engagement with the field of science and theology until I had acquired a thorough immersion in Christian theology.

I had enjoyed reading Jürgen Moltmann and Wolfhart Pannenberg while at Oxford, and had noticed that both these theologians had cut their teeth through engaging historical case studies in theology.⁸ It occurred to me that I could do the same during my two years at Cambridge University. A long discussion with Gordon Rupp, who had recently retired as Dixie Professor of Ecclesiastical History at Cambridge University, led me to conclude that I should focus on the development of Martin Luther's doctrine of justification in its intellectual context, under Rupp's expert supervision. This theological research program eventually led to three substantial and interconnected monographs: a study of the historical emergence of Luther's "theology of the cross";⁹ a detailed exploration of the origins of the theological methods of the Protestant Reformation in the shifting trends in theological methodology of the later Middle Ages and Renaissance;¹⁰ and a landmark account of the development of the Christian doctrine of justification from its origins to the present day.¹¹

Finally, in 1995 I felt I was ready to engage questions of science and faith in an informed way, in dialogue with others who had explored this region before me – such as the leading Scottish

⁸ Moltmann's early research focussed on the French Reformed theologian Moyse Amyraut; Pannenberg's on the theology of Duns Scotus.

⁹ Alister E. McGrath, *Luther's Theology of the Cross*. Oxford: Blackwell, 1985.

¹⁰ Alister E. McGrath, *The Intellectual Origins of the European Reformation*. Oxford: Blackwell, 1987.

¹¹ Alister E. McGrath, *Iustitia Dei: A History of the Christian Doctrine of Justification*. 2 vols. Cambridge: Cambridge University Press, 1986. The fourth revised and expanded edition of this work will be published in 2020.

theologian T. F. Torrance.¹² By then, I was well settled in Oxford University's Faculty of Theology, with a solid reputation as a historical and systematic theologian which was confirmed by the University's decision to recognize me as its Professor of Historical Theology in 1999. After more than 20 years of serious research in theology, I felt I was now sufficiently competent as a theologian to engage the interface of the natural sciences and Christian theology. An invitation to speak on this theme at the University of Utrecht led to my first monograph in this field in 1999.¹³ I followed this with a three-volume work entitled *A Scientific Theology*, which represented a scoping exercise, taking the form of a detailed mapping of potential methodological convergences between science and theology and an assessment of their potential for critical and constructive dialogue.¹⁴

Science and Theology: The Enrichment of our Vision of Reality

The view I expressed in those works, which continues to inform my thinking, is that the natural sciences and Christian theology represent quite distinct intellectual disciplines, which cannot be melded or equated with each other on the one hand, nor regarded as "others" who cannot, or should not, be allowed to engage and explore each other. Where some propose a narrative of conflict between science and religion, I advocate a narrative of potential enrichment through the expansion of intellectual vision that accompanies the exploration and transgression of

¹² For my reflections on Torrance, see Alister E. McGrath, *T. F. Torrance: An Intellectual Biography*. Edinburgh: T&T Clark, 1999.

¹³ Alister E. McGrath, *The Foundations of Dialogue in Science and Religion*. Oxford: Blackwell, 1999.

¹⁴ Alister E. McGrath, *A Scientific Theology*. 3 vols. Edinburgh: T&T Clark, 2001-3. The three volumes dealt with the broad areas of "Nature", "Reality", and "Theory".

disciplinary boundaries.¹⁵ This approach, unfortunately, does not map easily onto the standard taxonomies of interaction between science and religion.¹⁶

Christianity and the natural sciences are methodologically and conceptually distinct approaches to understanding and inhabiting our strange and complex world. Complex relationships are often best envisaged using metaphors, which are now recognized to be more than rhetorical embellishments to make our language more interesting, but are rather to be seen as powerful cognitive tools for our conceptualization of the world.¹⁷ Such metaphors are helpful in the imaginative representations of disciplinary boundaries, the mapping of complex structures, and the framing of potential relationships. The most influential metaphor used to conceptualize the relation of Christianity and the natural sciences is that of their intrinsic and necessary “conflict” or “warfare.”¹⁸ Though long discredited by historical scholarship, it retains an appeal that ensures its constant and uncritical repetition in the popular media.

Yet there are alternative metaphors within the western intellectual tradition, with the potential for productive and meaningful conversations between Christian theology and the natural sciences was acknowledged and actualized. The most important of these, which informs my

¹⁵ For its formulation and exploration, see Alister E. McGrath, *Enriching Our Vision of Reality: Theology and the Natural Sciences in Dialogue*. West Conshohocken, PA: Templeton Press, 2017.

¹⁶ See the excellent scoping exercise in Ted Peters “Science and Religion: Ten Models of War, Truce, and Partnership.” *Theology and Science* 16, no. 1 (2018): 11-53. My approach mingles and straddles – precisely because I see them as aspects of a greater whole – four of Peters’s ten models: the Two Books; the Two Languages; Dialogue accompanied by creative mutual interaction; and a Theology of Nature.

¹⁷ Zoltán Kövecses, “Conceptual Metaphor Theory.” In *The Routledge Handbook of Metaphor and Language*, edited by Elena Semino and Zsófia Demjén, 13-27. London: Routledge, 2016.

¹⁸ For the historical emergence of this rhetorical trope, see John Hedley Brooke, *Science and Religion*. Cambridge: Cambridge University Press, 1991; Peter Harrison, *The Territories of Science and Religion*. Chicago: University of Chicago Press, 2015.

own reflections, is the “Two Books” metaphor, which emerged during the early medieval period¹⁹ and was further developed during the Renaissance.²⁰ This Christian metaphor invites us to see God as the author or creator of two distinct yet related “books” – the natural world, and the Bible – and thus to imagine nature as a readable text which requires interpretation in a manner comparable to the Christian interpretation of the Bible.²¹ It is a “view from somewhere”, intellectually and historically embedded within a Christian perspective. I do not see this intellectual embeddedness as being a problem. Like Thomas Nagel and Alasdair MacIntyre, I am unpersuaded by the Enlightenment’s unwarranted belief that there exists some single universal intellectual standpoint, independent of specific traditions or communities, from which any intelligent person must view and interpret the world.²²

The metaphor of “God’s Two Books” rests on a fundamental belief that a God who created the world is also the God who is disclosed in and through the Christian Bible. Without this underlying and informing assumption, the “Two Books” need be seen as nothing more than two disconnected entities. From a Christian perspective, the link between them is established and safeguarded by the theological assumption of a creator God who is revealed in the Bible. The validity and intuitive plausibility of this metaphor during the Renaissance era reflects the cultural hegemony of Christianity at this time. Yet while this might now be seen to undermine the general

¹⁹ Constant J. Mews, “The World as Text: The Bible and the Book of Nature in Twelfth-Century Theology.” In *Scripture and Pluralism: Reading the Bible in the Religiously Plural Worlds of the Middle Ages and Renaissance*, edited by Thomas J. Heffernan and Thomas E. Burman, 95-122. Leiden: Brill, 2005.

²⁰ Kenneth J. Howell, *God’s Two Books: Copernican Cosmology and Biblical Interpretation in Early Modern Science*. Notre Dame, IN: University of Notre Dame Press, 2002.

²¹ For a superb provocative study of this point, see Hans Blumenberg, *Die Lesbarkeit der Welt*. Frankfurt: Suhrkamp, 1986.

²² See Thomas Nagel, *The View from Nowhere*. New York: Oxford University Press, 1986; Alasdair MacIntyre, *Three Rival Versions of Moral Enquiry: Encyclopedia, Genealogy, and Tradition*. Notre Dame, IN: University of Notre Dame Press, 1990.

cultural acceptability of this metaphor, it nevertheless remains a valid and valuable conceptual tool for the Christian epistemic community, as it seeks to frame and engage the natural sciences.

The metaphor of the Two Books originated within an historical context which sought to hold together the various elements of human knowledge, seeing this both as a cultural virtue and a spiritual duty. As has often been noted, one of the motivations for the serious scientific study of nature was a profound sense that this would enrich the believer's appreciation of the beauty and wisdom of God as creator. Yet the specific historical location of this metaphor does not render it inapplicable to today's discussions and reflections. It continues to offer an imaginative framing of the relation of Christian theology and the natural sciences which has the potential to engage questions under consideration today, rather than restrict us to those which preoccupied Renaissance thinkers.

Recent thinking on metaphors has noted their potential to open up new ways of visualizing abstractions and framing relationships, rather than locking us into any specific ways of thinking or conventions of representation associated with bygone ages in cultural history.²³ We may thus retain this Renaissance metaphor, without being trapped in the controversies and limited scientific understandings of that age, provided we are attentive to the process of "re-imagination" that is integral to any contemporary application of such an historic metaphor.

The metaphor of "God's Two Books" affirms that the natural world and the Christian faith are distinct, and that they must not be conflated or assimilated. Each has its own distinct integrity, and thus demands and deserves its own distinct methods of investigation, representation, and

²³ See the analysis in Brian F. Bowdle, and Dedre Gentner, "The Career of Metaphor." *Psychological Review* 112, no. 1 (2005): 193-216.

systematization. This thus creates an expectation of a meaningful, if limited, dialogue between science and Christianity, which is grounded in a theological insight – namely, that God is the “author” of each of these Two Books. A reading of both Books can thus potentially lead to the enrichment of our apprehension of a vast reality that is inadequately grasped by any single discipline or research method – thus leading to the exploration of how, and to what extent, such insights might be woven together to give a greater vision of this reality than that afforded by any single investigative approach.

In what follows, I shall explore how this way of thinking has informed three significant elements of my research and public engagement as Oxford University’s third Andreas Idreos Professor of Science and Religion.²⁴

Natural Theology: An Interface between the Natural Sciences and Christian Theology

The concept of natural theology is complex and contested. Many Renaissance writers saw natural theology as a knowledge of God drawn from the “Book of Nature,” in contrast to a knowledge of God disclosed in the “Book of Scripture.”²⁵ Although many theologians and philosophers of religion regard natural theology as a way of proving the existence of God on natural grounds, without an appeal to revelation, this specific way of conceptualizing natural theology is a relatively late arrival on the theological landscape, dating from the seventeenth century.²⁶ Yet it is evident that a wide variety of understandings of natural theology can be

²⁴ My two distinguished predecessors in this post were John Hedley Brooke (1999–2006) and Peter Harrison (2007–11).

²⁵ Fernando Vidal and Bernard Kleeberg, “Knowledge, Belief, and the Impulse to Natural Theology.” *Science in Context* 20 (2007): 381-400.

²⁶ Peter Harrison, “Physico-Theology and the Mixed Sciences: The Role of Theology in Early Modern Natural Philosophy.” In *The Science of Nature in the Seventeenth Century*, edited by Peter Anstey and John Schuster, 165-83. Dordrecht: Springer, 2005.

evidenced from within the Christian theological tradition, none of which has any particular claim to privilege or priority.

I take the view that natural theology is best understood as a general enterprise of exploring symbolic and discursive correlations between the natural world and God. When understood in such a generous and inclusive manner, the domain of natural theology enfolds and enables a rich terrain of exploration at the interface of the natural sciences and Christian theology. In particular, I believe it is important to note the many natural scientists who – without using the term – choose to develop a form of natural theology in exploring the grander questions and issues that arise from their scientific research, but which cannot be answered by it. I engage these questions in four substantial monographs, published over the period 2008-16, which include my Gifford Lectures at the University of Aberdeen and Hulsean Lectures at the University of Cambridge. In *The Open Secret* (2008), I set out the case for recasting the conceptual vision of natural theology, noting especially its imprisonment within the rational categories of the Enlightenment, and its failure to engage the imagination on account of its misplaced, though historically intelligible, emphasis on demonstrating the rationality of faith.²⁷ In particular, I note how Barth's critique of natural theology is actually a critique of one specific form of natural theology; other forms are not affected by those criticisms. (I explored this in more detail in my 2014 monograph on Emil Brunner, which included an extended section reviewing the 1934 debate between Barth and Brunner on this topic).²⁸

Two succeeding monographs then further explored the historical development of natural theology, while exploring its conceptual entanglements with the physical and biological

²⁷ Alister E. McGrath, *The Open Secret: A New Vision for Natural Theology*. Oxford: Blackwell, 2008.

²⁸ Alister E. McGrath, *Emil Brunner: A Reappraisal*. Oxford: Blackwell, 2014, 90-132.

sciences. In *A Fine-Tuned Universe* (2009), I consider how a Trinitarian natural theology offers an imaginative framework for comprehending the phenomenon of cosmic fine-tuning.²⁹ In *Darwinism and the Divine* (2011) I consider the historical emergence of certain views of natural theology in England during the eighteenth and nineteenth centuries, particularly that associated with William Paley, before going on to explore how Darwin's theories called these into question.³⁰ After this historical review, I then consider how forms of natural theology might be developed in the twenty-first century which offer a viable conceptual and imaginative interface between theology and evolutionary biology.

Having laid this groundwork, I now felt able to set out a constructive proposal for natural theology. In my fourth monograph on this theme, *Re-Imagining Nature* (2016),³¹ I set out a genealogical account of the six main divergent senses in which the term “natural theology (*theologia naturalis*)” has been understood in the western intellectual tradition since late classical antiquity. While recognizing that this plurality of construals might point to the fundamental incoherence of natural theology, I nevertheless develop the idea that there might be some grander vision of natural theology which is able to accommodate and colligate these six approaches, which retains a traditional emphasis on affirming the rationality of faith while at the same time doing justice to its imaginative dimensions. In particular, I reflect on how a

²⁹ Alister E. McGrath, *A Fine-Tuned Universe: The Quest for God in Science and Theology*. Louisville, KY: Westminster John Knox Press, 2009.

³⁰ Alister E. McGrath, *Darwinism and the Divine: Evolutionary Thought and Natural Theology*. Oxford: Wiley-Blackwell, 2011.

³¹ Alister E. McGrath, *Re-Imagining Nature: The Promise of a Christian Natural Theology*. Oxford: Wiley-Blackwell, 2016. Cf. Alister E. McGrath, “Natürliche Theologie: Ein Plädoyer für eine neue Definition und Bedeutungserweiterung.” *Neue Zeitschrift für Systematische Theologie und Religionsphilosophie* 59, no. 3 (2017): 1-14.

natural theology offers a richer way of imagining and inhabiting the natural world than that afforded by the scientism of Richard Dawkins or Daniel Dennett.

Science and Religion: A Critical Engagement with the New Atheism

As a former atheist, I retain an interest in those who continue to assert that the scientific method eliminates any grounds for religious belief, or marginalizes the place of a religious account of the natural world. Having read Richard Dawkins's *Selfish Gene* (1976) while doing biological research at Oxford, I developed a particular interest in this scientist's somewhat puzzling take on religion, focussing particularly on his *Blind Watchmaker* (1986). In 2004, I published a monograph setting out the basic elements of Dawkins's approach, and offering an extended criticism of him at points – particularly his scientific notion of the “meme.”³²

I was taken by surprise by both the publication and the extent of the public response to Dawkins's *God Delusion* (2006), which became the intellectual and rhetorical flagship of the movement we now call the “New Atheism”, and created intense interest in the relation of science and religious belief. Realizing that some kind of response was required, I collaborated with my wife – who is a psychologist – to assess and engage Dawkins's main lines of criticism of religion.³³ We wrote the book in six weeks, and our publisher fast-tracked it to get it into the marketplace as soon as possible. It was published three months later, and became an international best-seller. Other and better responses to Dawkins would follow in due course

³² Alister E. McGrath, *Dawkins' God: Genes, Memes and the Meaning of Life*. Oxford: Blackwell Publishing, 2004. I later produced a second edition of this work, updating it in the light of *The God Delusion*: see Alister E. McGrath, *Dawkins' God: From The Selfish Gene to The God Delusion*. 2nd edn. Oxford: Wiley-Blackwell, 2015.

³³ Alister McGrath and Joanna Collicutt McGrath, *The Dawkins Delusion? Atheist Fundamentalism and the Denial of the Divine*. London: SPCK, 2007.

from other scholars; we, however, felt that a short and rapid response was required as a holding strategy. I returned to this theme in 2014, when I was invited to give the Boyle Lecture in London, noting the need for Christian apologists to take seriously the history and philosophy of science in responding to the New Atheism.³⁴

The outcomes of this debate with Dawkins were significant. Perhaps most importantly, public interest in the field of science and religion soared, as university students and a wider audience realized its importance for opening up the great questions of life. I developed a public lecture which compared and contrasted Dawkins with C. S. Lewis on the question of God, and was astonished at the large audiences – typically in the range 500-1000, and mainly consisting of young people – that came to hear them.³⁵ I began to appreciate that the interdisciplinary field of science and religion allowed people to explore, side by side, the question of cosmic and human *functionality* on the one hand, and cosmic and human *significance* on the other. I made this point a major theme of my inaugural lecture as Andreas Idreos Professor at Oxford University.³⁶

Enrichment: The Importance of Interdisciplinarity

The theme of the possible enrichment of both science and theology through creative, constructive, and critical dialogue has become a major theme in my thinking in recent years. This does not, I must emphasize, involve collapsing theology into science, or science into

³⁴ Alister E. McGrath, “The Boyle Lecture 2014: New Atheism – New Apologetics: The Use of Science in Recent Christian Apologetic Writings.” *Science and Christian Belief* 26, no. 1 (2014): 99-113.

³⁵ For a published version, see Alister McGrath, *Richard Dawkins, C. S. Lewis and the Meaning of Life*. London: SPCK, 2019.

³⁶ For an edited version of this lecture, see Alister E. McGrath, “Conflict or Mutual Enrichment? Why Science and Theology Need to Talk to Each Other.” *Science and Christian Belief* 27, no. 1 (2015): 3-16.

theology. Rather, it is a respectful interaction with recognizes the distinct identity and divergent methods of each domain,³⁷ and seeks to integrate their insights into a greater vision of reality than any single discipline can achieve. The philosopher Mary Midgley makes this point in her idea of the “multiple maps” or “multiple windows” through which we view a complex reality.³⁸ No single angle of gaze or tradition of investigation is adequate to represent human existence in all its richness and complexity.

This interweaving of scientific and theological narratives seems to me to be essential as we deal with life’s “ultimate questions” that persistently refuse to go away. To answer these properly, we need to bring together multiple approaches, and recognize the existence of multiple levels of meaning – such as purpose in life, values, a sense of individual efficacy, and a basis for self-worth.³⁹ What I am proposing is not some crude homogenization of narratives. It is like an artist’s palette; each color needs to be valued in its own right, and used appropriately to render the rich texture and vibrancy of our world.

Yet this proposal raises a fundamental difficulty, which has concerned me greatly for the past decade: given that each intellectual discipline has its own distinct criteria of rationality and method of investigation, developed with its own specific field of investigation in mind, how can such insights from disciplines be integrated, without rational incoherence? For example, I have great respect for John Dewey’s assertion that the “deepest problem of modern life” is our

³⁷ I explore this issue in an appreciative engagement with the Barth-Scholz debate of the early 1930s: Alister E. McGrath, “Theologie als *Mathesis Universalis*? Heinrich Scholz, Karl Barth, und der wissenschaftliche Status der christlichen Theologie.” *Theologische Zeitschrift* 62 (2007): 44-57.

³⁸ See Ian James Kidd, “Doing Science an Injustice: Midgley on Scientism.” In *Science and the Self: Animals, Evolution, and Ethics*, edited by Ian James Kidd and Liz McKinnell, 151-67. New York: Routledge, Taylor & Francis Group, 2016.

³⁹ As argued by Roy F. Baumeister, *Meanings of Life*. New York: Guilford Press, 1991.

collective and individual failure to integrate our “thoughts about the world” with our thoughts about “value and purpose”.⁴⁰

Yet how can we follow Dewey in aiming to integrate such thoughts about the world, value and practice, while acting *rationally* throughout this process? The empirical investigation of our world is the domain of the natural sciences, which some hold to be characterized by a rational precision which is quite absent from any exploration of non-empirical notions, such as value, meaning or purpose – notions that are traditionally seen as falling within the domain of religion, which provides a way of helping individuals to transcend their own concerns or experience and connect up with something greater.⁴¹

I engage this question in my most recent monograph *The Territories of Human Reason* (2019), which considers how dialogue and conceptual integration might be possible across disciplinary boundaries – including the natural sciences and theology – in an age of multiple rationalities.⁴² Werner Heisenberg, in reflecting on the Copenhagen approach to quantum theory, highlighted the importance of one of its implications – that “what we observe is not nature itself, but nature as it is disclosed by our methods of investigation.”⁴³ Even if we conceive nature as a unitary entity, Heisenberg’s line of thought leads us to the conclusion that a multiplicity of research methods leads to a corresponding plurality of perspectives or insights, which thus require to be

⁴⁰ John Dewey, *The Quest for Certainty A Study of the Relation of Knowledge and Action*. London: Allen & Unwin, 1930, 255.

⁴¹ E.g., see Crystal L Park, “Religion as a Meaning-Making Framework in Coping with Life Stress.” *Journal of Social Issues* 61, no. 4 (2005): 707-29.

⁴² Alister E. McGrath, *The Territories of Human Reason: Science and Theology in an Age of Multiple Rationalities*. Oxford: Oxford University Press, 2019.

⁴³ Werner Heisenberg, “Die Kopenhagener Deutung der Quantentheorie.” In *Physik und Philosophie*, 67-85. Stuttgart: Hirzel, 2007; quote at p. 85.

integrated, coordinated, or colligated in order to allow the best possible overall representation of nature.

The Territories of Human Reason explores how these different insights can be woven together in a manner that is respectful of their divergent intellectual pedigrees, and avoids the two fundamental problems with E. O. Wilson's attempt to do something similar in his *Consilience* – namely, operating within an outdated Enlightenment framework, and privileging the insights of the natural sciences.⁴⁴ It remains to be seen whether the critical analysis and positive suggestions I offer in this work are helpful in moving this interdisciplinary conversation forward. However, the task I have attempted remains important to the future of the relation of science and theology, and calls out for further discussion.

Conclusion

I have come a long way since my first hesitant reflections of the early 1970s on how the natural sciences and Christian theology could be held together. I think I now understand the questions better; it remains to be seen whether the answers I have developed are of any use to anyone other than myself. Yet I must end by making a point which reconnects with one of the themes I noted at the beginning of this article – the experience of wonder. I can now see that a sense of what Albert Einstein called “rapturous amazement”⁴⁵ at the vastness and beauty of the natural world opens the way to a longing to understand both how nature works, and what it means – and thus leading to an extended and enriching reflection on the relation of theology and science.

⁴⁴ E. O. Wilson, *Consilience: The Unity of Knowledge*. New York: Vintage, 1999.

⁴⁵ Albert Einstein, “Religion and Science”, in *Ideas and Opinions*. New York: Crown Publishers, 1954, 6-40; quote at p. 38.

Notes on Contributor:

Alistair McGrath is Andreas Idreos Professor of Science and Religion at Oxford University, Director of the Ian Ramsey Centre for Science and Religion, and Editor of the Ian Ramsey Centre Studies in Science and Religion, published by Oxford University Press.