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Most of us know that heart-stopping feeling of awed wonder at the beauty and majesty of nature. I remember well a journey I made across Iran in the late 1970s. I was traveling on a night bus through the vast desert between Shiraz and Kermān, when its ailing engine finally failed. It sputtered to a halt in the middle of nowhere. We all left the coach while its driver tried to fix it. I saw the stars that night as I had never seen them before – brilliant, solemn and still, in the midst of a dark and silent land. I simply cannot express in words the overwhelming feeling of awe I experienced that night – a sense of exaltation, amazement and wonder. I still feel a tingle, a shiver of pleasure, running down my spine when I recall that desert experience, all those years ago.

## RAPTUROUS AMAZEMENT: A GATEWAY TO UNDERSTANDING

For some, that sense of wonder – what Albert Einstein called “rapturous amazement”<sup>1</sup> – is an end in itself. Many of the Romantic poets took this view. Toward the end of his life, the great German novelist and poet Goethe declared that a sense of astonishment or wonder was an end in itself: we should not seek anything beyond or behind this experience of wonder, but simply enjoy it for what it is.<sup>2</sup> But for many it is not a destination, however pleasurable, but is rather a starting point for exploration and discovery.

The great Greek philosopher Aristotle also knew that sense of wonder. For him it was an invitation to explore, to set out on a journey of discovery in which our horizons are expanded, our understanding deepened and our eyes opened.<sup>3</sup> As the great medieval philosopher Thomas

Aquinas once put it, this sense of wonder elicits a *desiderium sciendi*, a “longing to know,” whose fulfillment leads to joy as much as to understanding.<sup>4</sup>

This journey of discovery involves both reason and imagination, and leads not to a new place, but rather to a new way of looking at things. There are two main outcomes of this journey of exploration. One of them is *science*, one of humanity’s most significant and most deeply satisfying achievements. When I was young, I wanted to study medicine. It made sense. After all, my father was a doctor and my mother a nurse. Knowing my career plans, my great-uncle – who was head of pathology at one of Ireland’s leading teaching hospitals – gave me an old microscope. It turned out to be the gateway to a new world. As I happily explored the small plants and cells I found in pond water through its lens, I developed a love of nature which remains with me to this day. It also convinced me that I wanted to know and understand nature. I would be a scientist, not a doctor.

I never regretted that decision. From the age of fifteen, I focused on physics, chemistry and mathematics. I won a major scholarship to Oxford University to study chemistry, where I specialized in quantum theory. I then went on to do doctoral research at Oxford in the laboratories of Professor Sir George Radda, working on developing new techniques for studying complex biological systems. I still have that old brass microscope on my office desk, a reminder of its pivotal role in my life.

Yet though I loved science as a young man, I had a sense that it was not complete. It helped us to understand how things worked. But what did they *mean*? Science gave me a neat answer to the question of how I came to be in this world. Yet it seemed unable to answer a deeper question. *Why* was I here? What was the point of life?

Science is wonderful at raising questions. Some can be answered immediately; some will be answerable in the future through technological advance; and some will lie beyond its capacity to answer – what my scientific hero sir Peter Medawar (1915-1987) referred to as “questions that science cannot answer and that no conceivable advance of science would empower it to answer.”<sup>5</sup> What Medawar has in mind are what the philosopher Karl Popper called “ultimate questions,” such as the meaning of life. So does acknowledging and engaging such questions mean abandoning science? No. it simply means respecting its limits and not forcing it to become something other than science.

## WHY WE CAN'T EVADE THE BIG QUESTIONS

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The Spanish philosopher José Ortega y Gasset (1883-1955) put his finger on the point at issue here. *Scientists are human beings*. If we, as human beings, are to lead fulfilled lives, we need more than the partial account of reality that science offers. We need a “big picture,” an “integral idea of the universe.” As a young man, I was aware of the need for a “bigger narrative,” a richer vision of reality that would weave together understanding and meaning. I failed to find it. What I found to be elusive I then took to be merely illusory. Yet the idea never entirely died in either my mind or my imagination. While science had a wonderful capacity to explain, it nevertheless failed to satisfy the deeper longings and questions of humanity.

Any philosophy of life, any way of thinking about the questions that really matter, according to Ortega, will thus end up going beyond science – not because there is anything wrong with science, but precisely because its intellectual virtues are won at a price: science works so well because it is so focused and specific in its methods.

Scientific truth is characterized by its precision and the certainty of its predictions. But science achieves these admirable qualities at the cost of remaining on the level of secondary concerns, leaving ultimate and decisive questions untouched.<sup>6</sup>

For Ortega, the great intellectual virtue of science is that it knows its limits. It only answers questions that it knows it can answer on the basis of the evidence. But human curiosity wants to go further. We feel we need answers to deeper questions that we cannot avoid asking. Who are we, really? What is the point of life? As Ortega rightly observed, human beings – whether scientists or not – cannot live without answering these questions, even in a provisional way. “We are given no escape from ultimate questions. In one way or another they are in us, whether we like it or not. Scientific truth is exact, but it is incomplete.” We need a richer narrative, linking understanding and meaning. That is what the American philosopher John Dewey (1859-1952) was getting at when he declared that the “deepest problem of modern life” is that we have failed to integrate our “thoughts about the world” with our thoughts about “value and purpose.”<sup>7</sup>

So we come back to that haunting and electrifying sense of wonder at the world. As we have seen, one of its outcomes is science – the attempt to understand the world around us. But there is another outcome. It is one that I initially resisted, believing that it was utterly opposed to science. The shallow materialism of my youth had no space for it. Yet I gradually came to realize that we need a richer and deeper vision of reality if we are to do justice to the complexity of the world and live out meaningful and fulfilling lives. So just what are we talking about? *The quest for God*.

Like so many young people in the late 1960s, I regarded the idea of God as outdated nonsense. The 1960s were a time of intellectual and cultural change. The old certainties of the past seemed to crumble in the face of a confident expectation of a revolution that would sweep away outdated nonsense, such as belief in God. Without quite realizing what I was doing, I adopted a worldview that then seemed to me to be the inevitable result of the consistent application of the scientific method. I would only believe what science could prove.

So I embraced a rather dogmatic atheism, taking delight in its intellectual minimalism and existential bleakness. So what if life had to be seen as meaningless? It was an act of intellectual bravery on my part to accept this harsh scientific truth. Religion was just a pointless relic of a credulous past, offering a spurious delusion of meaning which was easily discarded. I believed that science offered a complete, totalized explanation of the world, ruthlessly exposing its rivals as lies and delusions. Science disproved God, and all honest scientists were atheists. Science was good, and religion was evil.

It was, of course, a hopelessly simplified binary opposition. Everything was black and white, with no sense of the many shades of grey that demanded their proper recognition. But this simplistic outlook suited me just fine then. Without quite understanding what was happening, I had fallen into an “in-group–out-group” mentality, which consolidates a privileged sense of belonging to a superior “in-group” by ridiculing, vilifying and demonizing its opponents. (It is traditionally understood to be one of the nastier features of religion, but it has now become clear that it is characteristic of any fundamentalism, whether religious or anti-religious.) Religion was intellectually wrong, and morally evil. It was a contaminant, best avoided rather than engaged.

Looking back, I now realize that the world must have seemed very simple to my sixteen-year-old mind. I lacked both the detailed knowledge of the history and philosophy of the sciences that would have shown me that things were rather more complicated than this and the wisdom to cope with the paradoxes, ambiguity, limits and uncertainty of any serious engagement with reality.<sup>8</sup> Yet for about three years, I was totally convinced of both the intellectual elegance of atheism and the utter stupidity of those who embraced alternative positions.

In December 1970, I learned that I had won a scholarship to study chemistry at Oxford University. Yet I could not begin my studies at Oxford until October 1971. So what was I to do in the meantime? Most of my friends left school in order to travel the world or earn some money. I decided to stay on at school and use the time to learn German and Russian, both of which would be useful for my scientific studies. Having specialized in the physical sciences for two years, I was also aware of the need to deepen my knowledge of biology and begin to think about biochemistry. I therefore settled down to begin an extended period of reading and reflection.

After a month or so of intensive reading in the school science library in early 1971, having exhausted the works on biology, I came across a section that I had never noticed before: “The History and Philosophy of Science.” I had little time for this sort of material, tending to regard it as uninformed criticism of the certainties and simplicities of the natural sciences by those who felt threatened by them. Philosophy, in my view, was just pointless speculation about issues that any proper scientist could solve easily through a few well-designed experiments. What was the point? Yet in the end, I decided to read these works. If I was right, what had I to lose by doing so?

By the time I had finished reading the somewhat meager holdings of the school in this field, I realized that I needed to do some very serious rethinking. Far from being half-witted obscurantism that placed unnecessary obstacles before the relentless pace of scientific advance, the history and philosophy of science asked all the right questions about the reliability and limits of scientific knowledge. And they were questions that I had not faced thus far – such as the underdetermination of theory by data, radical theory change in the history of science, the difficulties in devising a “crucial experiment” and the enormously complex issues associated with devising what was the “best explanation” of a given set of observations. I was

overwhelmed. It was as if a tidal wave was battering against my settled way of thinking, muddying what I had taken to be the clear, still and, above all, *simple* waters of scientific truth.

Things thus turned out to be rather more complicated than I had realized. My eyes had been opened and I knew there was no going back to the simplistic take on the natural sciences I had once known. I had enjoyed the beauty and innocence of a childlike attitude to the sciences, and secretly wished to remain in that secure place. Indeed, I think that part of me deeply wished that I had never picked up those books, never asked those awkward questions and never questioned the simplicities of my scientific youth. But there could be no going back. I had stepped through a door which up to that point I did not know existed, and could not escape the new world I now began to inhabit.

I found that I could no longer hold on to what I now realize was a somewhat naïve view – that the only authentic knowledge we can possess is scientific knowledge based on empirical evidence. It became clear to me that a whole series of questions that I had dismissed as meaningless or pointless had to be examined again – including the God-question. Having been forced to abandon my rather dogmatic belief that science necessarily entailed atheism, I began to realize that the natural world is conceptually malleable. Nature can be interpreted, without any loss of intellectual integrity, in a number of different ways. So which was the best way of making sense of it?

## AN ENRICHED UNDERSTANDING OF REALITY

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My own rediscovery of the enriched understanding and appreciation of the world made possible through belief in God took place at Oxford University. It was a somewhat cerebral and intellectual conversion, focusing on my growing realization that belief in God made a lot more sense of things than my atheism. I had no emotional need for any idea of God, being perfectly prepared to embrace nihilism – if this was right. Yet I mistakenly assumed that its bleakness was an indication of its truth. What if truth were to turn out to be attractive?

Having already discovered the beauty and wonder of nature, I realized that I had – as the poet T.S. Eliot put it – “had the experience but missed the meaning.” I gradually came to the view so winsomely expressed by C.S. Lewis: “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.”<sup>9</sup> It was as if an intellectual sun had risen and illuminated the scientific landscape before my eyes, allowing me to see details and interconnections that I would otherwise have missed altogether. I had once been drawn to atheism on account of the minimalism of its intellectual demands; I now found myself discovering the richness of the intellectual outcomes of Christianity.

It will be clear that my conversion – if that is the right word – was largely intellectual. I had discovered a new way of seeing reality, and was delighted by what I found. Like Dorothy L. Sayers (1893–1957), I was convinced that Christianity seemed to offer an account of reality that was “intellectually satisfactory.”<sup>10</sup> Yet, also like Sayers, I found my initial delight in the internal logic of the Christian faith to be so compelling that I occasionally wondered if I had merely “fallen in love with an intellectual pattern.”<sup>11</sup> I did not think of myself as being “religious” in any

way, and my new faith did not result in any habits of “religiosity.” As far as I was concerned, I had simply discovered a new *theoria* – a way of seeing things which originated in wonder and ended in a deeper understanding and appreciation of reality. To borrow Salman Rushdie’s terms, I discovered that “the idea of God” is both “a repository for our awestruck wonderment at life and an answer to the great questions of existence.”<sup>12</sup> Like Rushdie, I came to realize the ultimate futility of “the idea that men and women could ever define themselves in terms that exclude their spiritual needs.”

I tended at this stage to think of my Christian faith as a philosophy of life, not a religion. I had grasped something of its intellectual appeal but had yet to discover its imaginative, ethical and spiritual depths. I had a sense of standing on the threshold of something beautiful and amazing, which my reason had tantalizingly only grasped in part. Like Einstein, I realized that nature “shows us only the lion’s tail,” while hinting at the majesty and grandeur of the magnificent animal to which it is attached – and to which it ultimately leads.<sup>13</sup> I was like a traveler who had arrived on an island and discovered the beauty of the lowlands around its harbor. But beyond lay far mountains and distant landscapes I had yet to explore.

I gradually came to see that I did not need to see my faith as conflicting with science but as filling in the detail of a “big picture” of which science was a major part – but only a part. As the theoretical physicist and Nobel laureate Eugene Wigner pointed out, science is constantly searching for the “ultimate truth,” which he defined as “a picture which is a consistent fusion into a single unit of the little pictures, formed on the various aspects of nature.”<sup>14</sup> If there was a conflict between faith and science, it was with the view sometimes called “scientific imperialism” (and now usually abbreviated to “scientism”), which holds that science, *and science alone*, is able to answer all of life’s deepest questions. This distortion of science involves borrowing the language and apparatus of science in order to create the illusion that an essentially *scientific* question is being answered on the basis of what is declared to be “scientific data,” using a universal method that will arrive at a “scientific” answer. This inflated distortion of science does nobody any favors, least of all scientists themselves.

We all need help in thinking things through. My own thinking on this matter was helped enormously by a conversation with Professor Charles A. Coulson (1910–1974) sometime around 1973. Coulson was Oxford’s first professor of theoretical chemistry and was a fellow of Wadham College, Oxford, where I was an undergraduate. As a prominent Methodist lay preacher, it was natural that Coulson should from time to time preach in Wadham Chapel. I heard him preach on the fundamental coherence of nature and faith and why the idea of a “god of the gaps” was to be rejected. As a recently converted atheist who was still feeling my way in the mysterious realm of the Christian faith, I talked to him afterward about some of my questions.

Coulson helped me to see that my new faith did not call upon me to abandon my love of science, but to see it in a new way – indeed, to have a new motivation for loving science and a deepened appreciation for its outcomes. And he persuaded me utterly that the intellectual appeal of Christianity to a scientist did not lie in the location of explanatory gaps that could be

arbitrarily and unconvincingly populated with gods. For Coulson, this demanded an indefensible “dichotomy of existence” and “intellectual partitioning.”<sup>15</sup>

The solution lay rather in the Christian articulation of a luminous vision of reality that offered insight into the scientific process and its successes, while at the same time setting out a larger narrative that allowed engagement with questions raised by science yet lying beyond its capacity to answer. Coulson was both gracious and sagacious as we talked, and helped me grasp the idea of the ultimate coherence of science and faith,<sup>16</sup> which remains with me to this day and is set out in this book. Science, like faith, seeks to find and explore a coherent and satisfying understanding of the world in which we live. Might they not do so together, learning from each other’s strengths and weaknesses?<sup>17</sup>

## FAITH AND THE APPRECIATION OF NATURE

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But surely, some might reasonably object, faith is more likely to damage than to enrich our understanding of nature. Surely science needs to preserve itself from being contaminated by religion. It is certainly true that some believe any kind of belief in God impoverishes our appreciation of the beauty and wonder of nature. The evolutionary biologist and leading atheist apologist Richard Dawkins (1941–), for example, argues – rightly, in my view – that it is perfectly possible to have a sense of “awe” or reverence for nature without being religious or believing in God. Yet he spoils a perfectly reasonable point by his unevidenced assertion that a religious commitment actually *diminishes* this sense of awe through holding an aesthetically deficient view of the universe.<sup>18</sup> I cannot see the logic of this position, nor is it borne out by empirical research.

In my own experience, a Christian approach to nature deepened my appreciation of the beauty of nature. While I cannot speak for what others might have experienced, it seems to me that there are three ways in which a sense of awed wonder might arise in response to what we observe around us, ways which help us reflect on the possible influence of religious commitment on our experience of natural beauty.

To begin with, many of us have experienced an immediate sense of wonder evoked by the beauty or vastness of nature, such as I experienced as a young man in the deserts of Iran, or the “leap of the heart” that the poet William Wordsworth experienced on seeing a rainbow in the sky. Yet this sense of awe occurs *before* any conscious theoretical reflection on what it might imply or entail. To use psychological categories, this is about *perception* rather than *cognition*. It bypasses our conceptual schemes or mental maps, while at the same time motivating us to ask about the origins and goals of this sense of awed wonder. That is why Thomas Aquinas is right when he declares that “the cause of that at which we wonder is hidden from us,”<sup>19</sup> causing us to yearn to make sense of this heart-stopping experience of awe, which we see as a gateway to significance.

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This is followed by a derived sense of wonder at the mathematical or theoretical representation of reality that arises from this. Dawkins also knows and approves of this second source of “awed wonder,” but seems to think that religious people “revel in mystery and feel cheated when it is explained.”<sup>20</sup> But they do not. If anything, a new sense of wonder emerges at the ability of mathematics to represent the natural order in such beautiful ways, and at the spiritual implications of this insight. We will look at this in more detail later in the book.

This is linked to a further level of wonder at what the natural world might point to. Unfortunately, Dawkins glosses over the rather important issue of the semiotics of nature – the way in which the natural world functions as a system of signs.<sup>21</sup> From a Christian perspective, the created order bears an elegant and eloquent witness to its creator: “The heavens are telling the glory of God!” (Psalm 19:1). It is a theme that resonates throughout Christian history – nature points to God, thus giving a fundamental religious motivation to the study and admiration of the natural world. The great theologian Augustine of Hippo set this out rather nicely in the fifth century.

Some people read a book in order to discover God. But there is a greater book – the actual appearance of created things. Look above and below you, and note and read. The God that you want to discover did not write in letters of ink, but put in front of your eyes the very things that he made. Can you ask for a louder voice than that?<sup>22</sup>

The natural world is thus appreciated and valued all the more because of its capacity to signify something still greater. The beauty of nature is seen as hinting at the greater beauty of God. That is why so many Christian theologians down the ages have commended the study of the natural sciences, affirming a fundamentally religious motivation for the study of nature.

Yet despite our differences, Dawkins and I agree on something of major importance to this discussion – the ability of a “grand theory” (such as Marxism, Darwinism [as Dawkins understands it] or the Christian faith), which proposes a larger vision of reality, to evoke awe. Recent work on the psychology of awe has shown how the human sense of awe at the vastness of the universe or the dramatic beauty of a natural landscape or feature (such as a rainbow) could be enhanced by grasping the theoretical foundations or implications of what was being observed.<sup>23</sup>

Theoretical representations of reality are thus beautiful in themselves, while being capable of evoking awe on account of their complexity or their capacity to invoke a “big picture” view of things. The philosopher Mary Midgley suggests that this may be a reason why Marxism and Darwinism – the “two great secular faiths of our day” – display “religious-looking features.”<sup>24</sup> They are based on ideologies, “large-scale, ambitious systems of thought,” which represent “explicit faiths by which people live and to which they try to convert others.”

Dawkins playfully suggests that a religious approach to the world misses out on something.<sup>25</sup> Having read him in some depth,<sup>26</sup> I still have not quite worked out what this is. A Christian reading of the world denies nothing of what the natural sciences tell us, except the trenchant naturalist dogma that reality is limited to what may be known through the natural

sciences. If anything, a Christian engagement with the natural world adds a richness which I have found to be quite absent from Dawkins' account of things, offering me a new motivation for the study of nature. We shall be exploring this theme throughout this book.

## THE GREAT MYTH: THE PERCEPTUAL "CONFLICT" OF SCIENCE AND RELIGION

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Some will doubtless be surprised at any suggestion that science and religious belief can be held together like this, when the cultural establishment of the West seems to have locked itself into a "science versus religion" groupthink, a narrow and dogmatic view of reality which holds that any thinking person must choose science over religion. Someone like myself who now sees them, when rightly understood, as having the potential to be mutually enriching is dismissed simply as mad, bad or sad – and possibly all three.

It is a most unfortunate development, which I dislike partly because I think it is inaccurate but more fundamentally because I detest dogmatism of any kind. It has no place in science, and it ought to have no place in religion. I can see how this misleading perception arises from the explicitly polemical agendas of the New Atheism. After all, Christopher Hitchens remarked that he was not an atheist so much as an "anti-theist."<sup>27</sup> Hitchens thus defines his atheism *oppositionally* as a polemical repudiation of theism, not as the simple absence of any theistic belief. This certainly helps us understand how the New Atheism often seems like a mirror of theism. Its leading representatives seem to be defined by an obsession with what it is *against*, like an ex-lover they just cannot stop talking about. Most atheists see a belief in the nonexistence of God as functional and unremarkable, and would not think of it as a defining characteristic of their lives. The New Atheism turns it into a fixation.

Yet the problem with the New Atheism goes beyond this puzzling obsession with a God whom they believe does not exist. As Greg Epstein, humanist chaplain at Harvard University, writes, adopting anti-theism as a defining characteristic of the movement determines its stridently aggressive approach and dismissive tone.

Anti-theism means actively seeking out the worst aspects of faith in god and portraying them as representative of all religion. Anti-theism seeks to shame and embarrass people away from religion, browbeating them about the stupidity of belief in a bellicose god.<sup>28</sup>

The unrelenting hostility of the New Atheism toward religion of any kind is part of its rather dogmatic mindset and leads it to dismiss its opponents with an intellectual arrogance that has no relation to the quality of their arguments. It reminds me of Plato's criticism of the Athenian politics of his day, in which "rudeness is taken as a mark of sophistication."<sup>29</sup> It also makes dialogue impossible, in that conversations are framed in terms of defeat or compromise – especially when the New Atheism (unlike more congenial and undogmatic forms of atheism) has invested so heavily in the perennial truth of the conflict of science and faith as a core marker of its identity.

Yet as we shall see, this “science versus religion” narrative is stale, outdated and largely discredited.<sup>30</sup> It is sustained not by the weight of evidence but merely by its endless uncritical repetition, which studiously avoids the scholarship of the last generation that has undermined its credibility. When the historical myths are laid to rest, it is clear that there is a plurality of narratives for understanding the relation of science and faith, none of which have the privilege of being self-evidently true or intellectually normative. Furthermore, many of the case studies of the “warfare” of science and religion often turn out to have many dimensions – and often it is their political, social and institutional dimensions that are the most important.<sup>31</sup> The relationship between science and religion is thus *complicated*, and cannot be reduced to dumbed-down slogans that ultimately serve polemical cultural agendas – such as those evident in Thomas Paine’s *Age of Reason* (1794), which sought to minimize the social and cultural influence of Christian churches and leaders by portraying them as irrational. Yes, religion and science can be in conflict. But they do not *need* to be at war with each other, and usually have not been so in the past. Both sides of the science and religion “dialogue” value a quest for understanding and a love of learning, come into conflict with rival approaches and find themselves involved in “compromising entanglements with the power of the state.”<sup>32</sup>

The “conflict narrative” is essentially a social construction, invented to serve the needs and agendas of certain social groups. It is not a timeless truth we have to accept. It is an historical contingency that can be changed. We can choose how we see things. We can rebel against the tyranny of those who tell us what narrative we must adopt, thus forcing us to see history and determine our present possibilities in its light and on its basis. I offer an alternative approach. Like history itself, it is complicated and messy. But it does not try to force our past history or our present options into a narrow preconceived mold. It is about reappropriating an older and wiser approach that welcomes the confluence of science and faith while respecting their distinct identities and limits. It allows for an enriched narrative of life which weaves together facts, values, meaning and purpose.

Unfortunately, Western culture still tends to look at both history and present experience through this controlling lens of the story of a “warfare of science and religion” and sees what it wants to see – and does not see what it does not want to see. So how do these narratives become so influential, especially when they are so clearly flawed?

In his important work *A Secular Age*, the philosopher and cultural theorist Charles Taylor notes how certain “metanarratives” – that is, grand stories of explanation and meaning – come to assume social dominance, often for reasons that rest on somewhat flimsy evidential foundations.<sup>33</sup> To challenge or reject these dominant narratives is seen as a sign of irrationality. The “conflict” narrative is a classic example of a way of thinking that gained traction for cultural, not intellectual, reasons and is sustained by those with vested interests in ensuring its continued dominance. Yet to those who have given careful consideration to the historical evidence, as indicated earlier, this “science versus religion” narrative seems stale, outdated and largely discredited.

It is surely time to move on and frame the whole discussion about the relation of science and religion in a new way – or even reappropriate older ways of seeing their relationship, which fell out of favor for reasons that can now be seen as less than persuasive. Sure, it takes a long time for scholarship to filter down to the media. But we need to move on and deal with the way things really are, rather than resting content with a crass simplification of a complex situation. The “warfare” narrative is falling to pieces of its own accord, breaking apart under the strain of massive scholarly evidence of its shortcomings.

Let’s be clear about this. Despite what overenthusiastic New Atheist polemicists may say, science is intrinsically neither for nor against religion, any more than it is for or against politics. It rightly objects when religion (or politics) gets in the way of scientific advance and rightly applauds when religion (or politics) encourages scientific enquiry and engagement. In the same way, science is neither religiously atheistic or theistic, nor politically liberal or conservative, although it can easily be accommodated within such perspectives. And science is entirely right to challenge religious or political beliefs when these present themselves *as science*.

Some people, for example, improbably argued on *religious* grounds that the Apollo moon landings never took place. A leader of the Hari Krishna movement, Bhaktivedanta Swami Prabhupada, insisted that the Vedic literature taught that “the Moon is 100,000 *yojanas*, or 800,000 miles, above the rays of the sunshine.” So how could anyone travel to the moon? Not only was the moon too distant; the sun was closer to the earth than the moon. Modern scientific calculations of the moon’s distance from earth were unreliable, and the Vedic literature got it right.<sup>34</sup> Prabhupada therefore declared that the so-called moon landings were nothing but an elaborate hoax. Now this is just rambling pseudoscience, and everyone knows it. When religion starts behaving as if it were a science, scientists have every reason to protest against it – and correct it!

It is certainly true that science, if it is to be science and not something else, is committed to a method that is often styled “methodological naturalism.” That is the way that science works. That is what is characteristic of science, and it both provides science with its rigor and sets its limits. Science has established a set of tested and reliable rules by which it investigates reality, and “methodological materialism” is one of them.

But science is about setting rules for exploring reality, not limiting reality to what can be explored in this way.<sup>35</sup> It does not for one moment mean that science is committed to some kind of philosophical materialism. Some materialists argue that the explanatory successes of science imply an underlying ontological materialism. Yet this is simply one of several ways of interpreting this approach, and there are others with widespread support within the scientific community. Eugenie Scott, then director of the National Center for Science Education, made this point neatly back in 1993: “Science neither denies nor opposes the supernatural, but *ignores* the supernatural for methodological reasons.”<sup>36</sup> Science is a *non-theistic*, not an *anti-theistic*, way of engaging reality. As the philosopher Alvin Plantinga so rightly observes, if there is any conflict between “science” and “faith,” it is really between a dogmatic metaphysical naturalism and belief in God.<sup>37</sup>

Certainly some – but *only* some – atheist scientists present science as intrinsically atheistic. But maybe that is because they are primarily atheists, not because they are scientists. Virtually all my colleagues who are both scientists and atheists would have no time for the myth that science entails atheism. The great intellectual virtue of science is its radical openness; only frauds and fanatics want to close it down and force it to endorse their own dogmatic worldviews. We all owe it to science to protect it from people like that.

One of the less welcome outcomes of this “conflict” narrative is the late Stephen Jay Gould’s idea of “non-overlapping magisteria,” which treats science and religion as hermetically sealed compartments that never interact with each other.<sup>38</sup> This approach is little more than a retrospective validation of the political realities of modern American academic life, which encourages intellectual isolation and conceptual complacency. We need something better than this bipolar field of discourse, protecting intellectual borders at the price of preventing creative interaction and dialogue.

A solid body of scholarship has gradually built up in recent years, forcing revision of older understandings of the relation of science and faith. It is now clear that the boundaries of “science” and “religion” are increasingly recognized to be shaped by historical contingencies. Their respective territories can be mapped in multiple manners and are open to multiple interpretations.<sup>39</sup> Why should we have to put up with an outdated and discredited map of their interactions when this has no privileged claim to truth? We need to call time on this discredited myth. The “warfare of science and religion” narrative has had its day. We need to draw a line under this and explore better ways of understanding their relationship.

It can be hard to talk to people we disagree with and to take their ideas seriously. But intellectual integrity demands it. That is how we find out if we need to redirect or recalibrate our own ways of thinking. We need to open our minds, not close them down – and that means talking to people with different perspectives. To its many critics, that is why the New Atheism prefers to ridicule religious people rather than engage seriously with religious ideas. Its rhetoric of dismissal allows it to present its ignorance of religious ideas as an intellectual virtue, when it is simply an arrogant excuse to avoid thinking. And, as we shall see throughout this book, the new scholarship that has emerged over the last twenty years makes it clear that there is a lot of rethinking that needs to be done.

This book is an invitation to journey along another road. I have spent the last forty years exploring this road and want to tell you about the questions I have faced and what I have found helpful as I travel along it. I am asking you to explore another way of thinking about science and faith – a way that may seem strange to some, but which I believe holds them together in a way that is both rationally satisfying and imaginatively exciting. Science and faith can thus provide us with different yet potentially complementary maps of human identity. I cannot prove it is right, but I can assure you it is deeply satisfying and well worth exploring.

The way of thinking that I shall be describing is not new. It can be tracked back to the Renaissance, before the modern (and very limiting) sense of the words “science” and “religion” had emerged. It has simply been forgotten or suppressed, drowned out by the noisy and

overheated rhetoric of the New Atheism on one hand and a lack of familiarity with the rich pasturelands of our cultural heritage on the other. If anything is new, it is the “conflict” narrative, which swamped the more measured, informed and engaging approaches of the past.

Science and religion are two of the greatest cultural forces in today’s world. When rightly framed, a mutual conversation can be enriching and elevating. When rightly constructed, a “bigger narrative” of reality creates intellectual space for divergence and disagreement while affirming the intelligibility and coherence of our world.

And that conversation needs to happen. Religion is back in public life and public debate. Despite all the predictions from armchair philosophers and media pundits, God has not gone away, nor has interest in the realm of the “spiritual.” If anything, it is now the New Atheism that sounds stale and weary. It may have raised some good questions about God and religion; its answers, however, are now seen as glib and superficial. Slick slogans like “God is a delusion” or “faith is a mental illness” made great headlines, but they ultimately failed to satisfy either the minds or the hearts of many looking for deeper answers.

This book offers both a correction of outdated perceptions and a remapping of imaginative possibilities. I want to explore a way of seeing things that is enriched by both science and religion at their best and that I have found to be both intellectually coherent and imaginatively engaging. Let me emphasize the importance of that word, *seeing*. Both scientific theories and theological doctrines can be viewed as invitations to see things in a certain way, to imagine the world in a certain manner – a manner that is believed to be both warranted and truthful, and whose truthfulness is to be measured in part by the degree of intelligibility and coherence it allows us to perceive.

Along the road, we will interact with some of the great issues that arise, many of them fascinating and important in their own right. We will engage with some of the most interesting voices on all sides of the debate – scientists such as Richard Dawkins, Stephen Hawking and Carl Sagan and philosophers such as Mary Midgley and Roger Scruton. And whether you end up agreeing with me or not, I hope that you will find this journey of exploration of a new way of looking at things interesting and rewarding.

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Posted by Alister E . McGrath on February 16, 2016

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## FOOTNOTES

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<sup>1</sup> Albert Einstein, "Religion and Science," in *Ideas and Opinions*, New York: Crown Publishers, 1954, pp. 6-40; quote at p. 38.

<sup>2</sup> Johann Peter Eckermann, *Gespräche mit Goethe in den letzten Jahren seines Lebens*, 3 vols., Leipzig: F.A. Brockhaus, 1836, vol. 2, p. 50.

<sup>3</sup> Aristotle, *Metaphysics*, 982b. See also Plato, *Theaetetus*, 154b-155c. For useful reflections on this theme, see Jerome Miller, *In the Throe of Wonder*, Albany: State University of New York Press, 1992, pp. 11-52.

<sup>4</sup> Thomas Aquinas, *Summa Theologiae*, Ia-II ae q. 32, a. 8. For discussion, see Reinhard Hütter, *Dust Bound for Heaven: Explorations in the Theology of Thomas Aquinas*, Grand Rapids, MI: Eerdmans, 2012, pp. 244-46.

<sup>5</sup> Peter Medawar, *The Limits of Science*, Oxford: Oxford University Press, 1987, p. 66.

<sup>6</sup> José Ortega y Gasset, "El origen deportivo del estado," *Citius, Altius, Fortius* 9, no. 1-4, 1967, pp. 259-76; quote at p. 259.

<sup>7</sup> John Dewey, *The Quest for Certainty*, New York: Capricorn Books, 1960, p. 255.

<sup>8</sup> On wisdom, see William G. Compton and Edward Hoffman, *Positive Psychology: The Science of Happiness*, 2nd ed., Belmont, CA: Wadsworth, 2013, pp. 199–228.

<sup>9</sup> C.S. Lewis, *Essay Collection*, London: HarperCollins, 2002, p. 21. For further reflection, see Alister E. McGrath, "The Privileging of Vision: Lewis's Metaphors of Light, Sun, and Sight," in *The Intellectual World of C.S. Lewis*, Oxford: Wiley-Blackwell, 2013, pp. 83–104.

<sup>10</sup> Letter to L.T. Duff, 10 May 1943, in *The Letters of Dorothy L. Sayers: Volume II, 1937 to 1943*, ed. Barbara Reynolds, New York: St. Martin's Press, 1996, p. 401.

<sup>11</sup> Letter to William Temple, Archbishop of Canterbury, 7 September 1943, in *ibid.*, p. 429.

<sup>12</sup> Salman Rushdie, *Is Nothing Sacred?*, The Herbert Read Memorial Lecture 1990, Cambridge: Granta, 1990, p. 8.

<sup>13</sup> Albert Einstein, letter to Heinrich Zangger, 10 March 1914, in Martin J. Klein, A.J. Kox and Robert Schulmann (eds.), *The Collected Papers of Albert Einstein, Volume 5: The Swiss Years: Correspondence, 1902–1914*, Princeton, NJ: Princeton University Press, 1993, p. 381.

<sup>14</sup> Eugene Wigner, "The Unreasonable Effectiveness of Mathematics," *Communications on Pure and Applied Mathematics* 13, 1960, pp. 1-14.

<sup>15</sup> For these phrases, see C.A. Coulson, *Science and Christian Belief*, London: Oxford University Press, 1955, pp. 19–20.

<sup>16</sup> *Ibid.*, pp. 97-102.

<sup>17</sup> I later found a similar line of argument in Sir Peter Medawar's famous 1968 Romanes Lecture at Oxford. Peter Medawar, "Science and Literature," *Encounter*, January 1969, pp. 15–23.

<sup>18</sup> Richard Dawkins, "A Survival Machine," in *The Third Culture*, ed. John Brockman, New York: Simon & Schuster, 1996, pp. 75–95.

<sup>19</sup> Thomas Aquinas, *Disputed Questions about the Power of God*, q.6, a.2.

<sup>20</sup> Richard Dawkins, *Unweaving the Rainbow: Science, Delusion and the Appetite for Wonder*, London: Penguin Books, 1998, p. xiii.

<sup>21</sup> For this important theme, see Kalevi Kull and Claus Emmeche (eds.), *Towards a Semiotic Biology: Life Is the Action of Signs*, London: Imperial College Press, 2011. On its philosophical and theological aspects, see Luigi Giussani, *Il Senso Religioso*, 2nd ed., Milan: Jaca Books, 1977, pp. 29-40; C. Stephen Evans, *Natural Signs and Knowledge of God*, Oxford: Oxford University Press, 2010, pp. 26–46.

<sup>22</sup> Augustine of Hippo, *Sermons* 68, 6.

<sup>23</sup> For example, see Dacher Keltner and Jonathan Haidt, "Approaching Awe, a Moral, Spiritual and Aesthetic Emotion," *Cognition and Emotion* 17, 2003, pp. 297-314.

<sup>24</sup> Mary Midgley, *Evolution as a Religion: Strange Hopes and Stranger Fears*, 2nd ed., London: Routledge, 2002, pp. 17-18.

<sup>25</sup> Dawkins, *Unweaving the Rainbow*, p. xii.

<sup>26</sup> See Alister E. McGrath, *Dawkins' God: From "The Selfish Gene" to "The God Delusion,"* 2nd ed., Oxford: Wiley-Blackwell, 2015.

<sup>27</sup> Christopher Hitchens, *Letters to a Young Contrarian*, New York: Basic Books, 2001, p. 55.

<sup>28</sup> Greg M. Epstein, "Less Anti-theism, More Humanism," *Washington Post*, 1 October 2007.

<sup>29</sup> Plato, *Republic*, 560e-561a.

<sup>30</sup> See especially Ronald L. Numbers (ed.), *Galileo Goes to Jail and Other Myths about Science and Religion*, Cambridge, MA: Harvard University Press, 2009. For the specific social origins of the "conflict" model in the late nineteenth century, see Frank Miller Turner, "The Victorian Conflict between Science and Religion: A Professional Dimension," *Isis* 69, 1978, pp. 356-76. For a good survey of the main historical issues involved, see J.B. Stump and Alan G. Padgett (eds.), *The Blackwell Companion to Science and Christianity*, Malden, MA: Wiley-Blackwell, 2012, pp. 3-60.

<sup>31</sup> See the excellent general survey in Thomas Dixon, *Science and Religion: A Very Short Introduction*, Oxford: Oxford University Press, 2008, pp. 1-17.

<sup>32</sup> *Ibid.*, p. 3.



<sup>33</sup> Charles Taylor, *A Secular Age*, Cambridge, MA: Belknap Press, 2007. For an excellent series of essays exploring these themes, see Michael Warner, Jonathan Van Antwerpen and Craig J. Calhoun (eds.), *Varieties of Secularism in a Secular Age*, Cambridge, MA: Harvard University Press, 2010.

<sup>34</sup> <http://www.krishnaconsciousnessmovement.com/moonlanding.html>. Accessed 21 October 2014. The reference is to *Shrimad Bhagavatam* 5.22.8. This view should not be seen as representative of the complex interaction of science and religion within Hinduism. For important assessments, see David L. Gosling, *Science and the Indian Tradition: When Einstein Met Tagore*, London: Routledge, 2007; C. Mackenzie Brown, *Hindu Perspectives on Evolution: Darwin, Dharma and Design*, London: Routledge, 2012; Jonathan B. Edelman, *Hindu Theology and Biology: The Bhagavata Purana and Contemporary Theory*, Oxford: Oxford University Press, 2012.

<sup>35</sup> Barbara Herrnstein Smith, *Natural Reflections: Human Cognition at the Nexus of Science and Religion*, New Haven, CT: Yale University Press, 2009, pp. 121-149.

<sup>36</sup> Eugenie C. Scott, "Darwin Prosecuted: Review of Johnson's Darwin on Trial," *Creation/Evolution Journal* 13, no. 2, 1993, pp. 36-47; quote at p. 43 (emphasis in original). The *Creation/Evolution Journal* became a part of *Reports of the National Center for Science Education* in 1997.

<sup>37</sup> Alvin Plantinga, *Where the Conflict Really Lies: Science, Religion, and Naturalism*, New York: Oxford University Press, 2011, pp. 168–74.

<sup>38</sup> Stephen Jay Gould, "Nonoverlapping Magisteria," *Natural History* 106, March 1997, pp. 16-22.

<sup>39</sup> See especially Peter Harrison, *The Territories of Science and Religion* (Chicago: University of Chicago Press, 2015). Harrison rightly notes that our concepts of science and religion are recent, having emerged only in the last three centuries, and that it is those categories themselves (rather than their underlying ideas) that now shape our thinking about science, faith and God.