

# Religion and the Challenges of Science

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## Introduction

# Rethinking Relations between Science and Religion

William Sweet

### Introduction

The scholarly discussion of the relations between science and religion, and particularly of whether religion and science conflict, is of long standing.<sup>1</sup> But it may not be obvious how wide-ranging and complex that discussion has been.

Initially, debate in the West took place within the religious (or the religious–political) sphere. To be precise, the issue was not the relation of religion and science as such, but rather that of the theories and experiments of individual scientists – to see how far these theories and discoveries were compatible with religious teachings or acceptable to religious and political authorities. To take one famous example, it was only once the conclusions of the heliocentric theory developed by Copernicus and Galileo were taken to challenge putative religious beliefs (and thereby entered into the religious sphere) that we can speak of a conflict between astronomical science and religion. During the last century, however, examination of the issues was somewhat broader, and discussions increasingly took place in the ‘public sphere’, where religion and science competed for the support of that public. Debates between, for example, those defending evolutionary theories and those appealing to creationist or direct divine design accounts were not so much within religion as within public education or within the law. Most recently, however, the locus of the discussion of these issues has shifted yet again, and it is scientific discourse – together with ‘popular’ scientists (such as Richard Dawkins and Stephen Jay Gould), scientifically informed philosophers (for example, Daniel Dennett), and religious believers who come to the debate with a strong scientific training (for example, John Polkinghorne and Arthur Peacocke) – that seem to set the parameters.

Clearly, then, the ways in which the issue of the putative conflict of science and religion has been engaged, the assessments of where the burden of proof lay, and intuitions of how a satisfactory resolution of the debate might be achieved, have changed significantly. It is not so clear, however, how far progress in discussion has been made. For example, the underlying assumptions that frame both the classical and contemporary debates need to be taken into account, but the understandings throughout these exchanges of what ‘science’ is, and what ‘religion’ is, are frequently either vague or altogether absent. In light of this, some might well wonder whether much fruitful discussion has even occurred.

This volume aims at surveying and discussing some of the principal ways in which science has been said to challenge religion – recognizing that religion and science have also been regarded as being in other relations to one another (for example, as

*not* being in conflict, but being fundamentally compatible) and also as being neither in conflict nor compatible (for example, as being of different logical orders). This volume also seeks to explore and explain ways in which religion and science have been understood. These two aims require a consideration of the historical background as well as looking specifically at areas in which the contemporary discussion is to be found – in cosmology and in the biological sciences. But they also require a clarification of some of the underlying assumptions and conceptual issues involved. Though the authors of the essays in this volume approach the central issue from different perspectives, through their work we can better see what kinds of relations between religion and science have in fact existed, what other relations might be possible, and how future discussion of this topic might be productively pursued.

## **Relations**

Today – though, of course, not just today – religion and science are often regarded as being in conflict. And when we hear of conflicts between religion and science, we find that they can occur (broadly speaking) in two ways – that science opposes religion, and that religion opposes science.

As an illustration of the former, consider the view that the world was created between six and ten thousand years ago – which, despite claims by some that it is a scientific hypothesis, has standardly been taken as a religious belief. Largely as a result of the science of archaeology and the technology involved in it (such as the development of tools used in locating and excavating fossil remains, and in carbon dating), this belief has been challenged and widely abandoned. One might conclude, then, that in this and in similar cases, science has enabled human beings to demonstrate the falsity of certain religious beliefs, and that it is only a matter of time before other – perhaps all other – religious beliefs suffer the same fate.

Now, there are many ways in which religion has been considered to be conflict with science – not merely as offering an opposed hypothesis for the explanation of what is, but as calling for restrictions on scientific research or activity. An example of this is the implicit appeal to religious belief or religious ethics that some have made in calling for limits on certain scientific projects and medical procedures. In the area of genetics, for example, representatives or adherents of a number of religious traditions have sought to regulate scientific or medical procedures – and, more broadly, to restrict research – on such projects as the stem cell and the human genome. In cases such as these, religion is regarded as attempting to provide or impose restrictions on how science is to be engaged and pursued, and thus constrain the autonomous activity of the scientific project itself.

Some hold, however, that in spite of such problems, the relation between religion and science has generally been a positive one. They point to the ways in which religion has contributed to science, and they note, as well, the number of religious believers throughout history who have engaged in scientific research.

Many scholars would insist, for example, that religions – and western religions in particular – have contributed to the manner and method according to which, in the past 500 years, science has been pursued. Religion, they say, lies at the historical

origin of the modern scientific project, and modern science began in a culture that was imbued with religious ideals. Roger Bacon, Copernicus, Gregor Mendel – but also Newton and even Darwin – were led to scientific study by their pre-existing religious commitments and the wish to understand something more of the creation around them. Alfred North Whitehead, in his Lowell Lectures at Harvard University (later published as *Science and the Modern World*<sup>2</sup>), maintained that ‘the Christian religion is the mother of science’<sup>3</sup> – that because ‘of the medieval insistence on the rationality of God,’ the founders of western science had an ‘inexpungable belief that every detailed occurrence can be correlated with its antecedents in a perfectly definite manner, exemplifying general principles. Without this belief the incredible labors of scientists would be without hope.’<sup>4</sup> Because of their conviction that God is rational, many scientists in the modern era have held that the world – God’s creation – is rational and ordered and, therefore, open and accessible to rational, law-seeking, investigation.

One might also say that there is a compatibility of science and religion in an indirect way – that science contributes to maturity in belief. For example, the results of scientific research may suggest to believers that religious beliefs cannot be simply straightforward descriptions or empirical explanations of events, and so remind them that, as adults, they cannot be and ought not to be satisfied with the level of religious understanding that they had as children. Thus, the development of evolutionary theories raised the issue of how believers should understand not only scriptural accounts, but the actual process(es) by which the world can be said to be a product of the divine. This, in turn, led to a refinement and a clarification of both the religious view of creation and the specific content of the scientific claims that initially seemed to challenge it.

Yet there are, as well, those who say that there is neither a genuine conflict nor a real compatibility between science and religion. While this claim can be – and has long been – developed in many ways, in recent years it has been presented in the form of what Stephen Jay Gould and Anthony O’Hear have called ‘non-overlapping magisteria’. This option is suggested by the remark (sometimes attributed to Galileo) that ‘The Bible tells us how to go to heaven, but not how the heavens go.’ Thus, in his 1995 book, *Rocks of Ages: Science and Religion in the Fullness of Life*<sup>5</sup>, Gould held that the reason for much of the alleged conflict between science and religion is that one or the other – or both – sometime overreach or overstep their respective boundaries. Science has, as its proper sphere, the realm of *fact* – that is, the nature of the material world and how certain states of affairs came to be (that is, what caused them). Religion, on the other hand, has as its proper sphere, what might be called the realm of *meaning* – that is, giving the inner significance of something – and seeks to show that there are important ideals or values that lie deep within and pervade all things.<sup>6</sup> Religion and science, this view holds, *need* not conflict, but they consistently *do* whenever one or the other takes itself as being a (or the) comprehensive explanation of what there is and why there is what there is – or, to put it simply, when one or the other oversteps its proper limits.

The roots of this view can be traced back to Pascal, if not Augustine<sup>7</sup>, and it is very close to the kind of fideism that has been found in theologians, such as Karl Barth, and in contemporary philosophers such as D.Z. Phillips and Peter Winch.<sup>8</sup>

Moreover, we see a similar approach in discussions of the relation of art or morality to science. Art and morality have long been considered to constitute spheres of activity entirely separate and distinct from science as science, and so it is not surprising that some see the same situation to apply to religion as well.

From the illustrations above, it is clear that arguments can be made for seeing the relations between religion and science in very different ways. And so one may be led to wonder whether it is possible to make *any* general statement concerning the relations between science and religion or concerning whether or how science poses challenges to religious belief. Is there any way to prefer one of the preceding accounts to the others?

## Challenges and Responses

To see how – or, at least, whether – science challenges religion, it is useful to look at those areas in which the conflict is said to be at its greatest today; these areas are biology and evolutionary theory; cosmology, complexity, and ‘fine-tuning’; and philosophical naturalism. The authors in this volume provide both a context for these current debates and discuss some of their central themes.

In the contemporary discussion of the relations of science and religion, much attention has focussed on the issue of evolution. Part I (‘History and Contexts in Biology and Evolutionary Theory’) reviews some of the background to modern evolutionary theory, as well as a few of the responses to it from both broadly religious and philosophical perspectives. Here, the issue is primarily that of explaining the origin and characteristics of human beings (though it also bears on all biological being and, ultimately, all life); the central question is, ‘How can we explain the complex, information-rich structures of biology?’ Religious believers usually answer that an intelligent creator, designer, and cause is necessary; others hold that there is simply no room for an appeal to the non-natural or the divine – that the existence of God or the gods ‘is utterly extraneous to evolution as Darwin and his modern successors have understood it’.<sup>9</sup> On this latter view, religious beliefs have no explanatory value, and evolutionary theory is so widely accepted that, in 1989, the current Oxford Professor for the Public Understanding of Science, Richard Dawkins, wrote in *The New York Times*: ‘It is absolutely safe to say that if you meet somebody who claims not to believe in evolution, that person is ignorant, stupid or insane (or wicked, but I’d rather not consider that).’<sup>10</sup> (When the charge of arrogance and intolerance was raised against him, Dawkins recently replied: ‘Examine the statement carefully and it turns out to be moderate, almost self-evidently true.’<sup>11</sup>) Similarly, in a popular book by Daniel Dennett, *Darwin’s Dangerous Idea*, the author calls Darwin’s theory of evolution by natural selection ‘the single best idea anybody ever had’<sup>12</sup> – adding that Darwinism is a ‘universal acid’ that eats through virtually all traditional beliefs, especially Christianity. The challenge of science here, then, is that evolutionary theory contradicts – or at least is generally incompatible with – religious faith.

Does evolutionary theory count against religion or religious belief in the way in which Dennett, Dawkins, and others suggest?

In “‘The Declaration of Students of the Natural and Physical Sciences’, revisited: Youth, Science, and Religion, in mid-Victorian Britain’, Hannah Gay describes a debate which took place in the years following the publication of Darwin’s *Origin of Species*. What is particularly interesting about this debate was that it was within neither the scientific community nor the established church as such, but within the public sphere. In the 1860s, a group of young men associated with The Royal College of Chemistry (and favourable to the new ideas in biology, geology and the other natural sciences), were concerned about some of the putative consequences of these ideas for religious belief. ‘The Declaration of Students of the Natural and Physical Sciences’ – signed by some 717 individuals, including a number of leading scientists – stated that ‘if [a scientist] finds that some of his results appear to be in contradiction to the written word [of Scripture], or rather to his own interpretation of it, which may be erroneous, he should not presumptuously affirm that his own conclusions must be right, and the statements of Scripture wrong.’<sup>13</sup> Gay notes that there were many scientists who were sympathetic to the content of the Declaration, but who refused to sign because they feared it might be harmful to the cause of science. Gay also reminds us that many did not see any particular conflict between science and religion – and that some even allowed that science may not always have the right answer when its conclusions appear to conflict with religious belief.

Some scholars have pointed out that, if we examine carefully what is generally held to be the source text of evolutionary theory, Darwin’s *The Origin of Species* (1859), we will find no allegation of a conflict between science and religion. In ‘Theological Insights from Charles Darwin’, Denis Lamoureux argues that Darwin not only made a number of references to design in nature in his *Autobiography* and in his early notebooks,<sup>14</sup> but thought ‘theologically’ throughout his scientific career. In addition to the theme of intelligent design, Darwin discussed the problem of pain and the question of divine sovereignty over the world. Thus, a Darwinian could hold that there is intelligent design in nature without abandoning evolutionary theory. Not only that, Lamoureux maintains that ‘theological insights from Charles Darwin are valuable in the development of an evolutionary theology’.<sup>15</sup> Even in the one of the reputed fathers of contemporary religious scepticism, evolutionary theory and religious belief may not be as opposed as many people have been led to believe.

One significant response to evolutionary theory – and to the claim that there is a conflict between evolutionary theory and religion – was given in the early twentieth century by Pierre Teilhard de Chardin. A palaeontologist as well as a Jesuit priest, Teilhard approached the issue from a scientific perspective, situating his research within a wide vision of evolution that some have claimed anticipates the current debate in biology on complexity. In ‘A Model of Interaction between Science and Theology based on the Scientific Papers of Pierre Teilhard de Chardin’, Lodovico Galleni and Marie-Claire Groessens-Van Dyck describe the background to Teilhard’s attempt to bring together theories on the evolution of life and Christian theology. On Teilhard’s view, evolution is a peculiar way in which creation occurred – a way which has to be taken seriously by theology. But evolution is not a movement without direction; it is a movement towards complexity and the existence of ‘the Noosphere’. Biblical notions, such as covenant, salvation, and redemption, are to be placed inside the general evolutionary process. Teilhard also held that science and scripture together



tell human beings why and how to build the earth to reach the final evolutionary stage – what he called the Omega point, characterized by the second coming of Christ. Science – and evolutionary theory in particular – are, therefore, compatible with and can be accommodated within a broad metaphysical or theological view.

A more recent response to accounts of evolution can be found in the work of those such as Arthur Peacocke – a biochemist, theologian, and Anglican priest, and winner of the 2001 Templeton Prize for Progress in Religion. In the essay here on ‘Biology and a Theology of Evolution’, Peacocke argues that not only is there no fundamental conflict between evolutionary theory and religion, but the discoveries of science provide a stimulus to theology. Specifically, Peacocke holds that science provides a basis for a more encompassing and enriched understanding of the interrelations of God, humanity, and nature – one that requires believers to focus on God’s immanence. Admittedly, this view challenges classical theism and its notion of God as separate from and independent of the world, in favour of a panentheistic view of God as an immanent Creator, creating in and through the processes of the natural order. Yet this, Peacocke holds, also leads to a more robust notion of a Sacramental Universe – and to the view that evolution is ‘consummated in the Incarnation in a human person of the cosmic self-expression of God, God’s Word’.<sup>16</sup> Thus, not only does evolutionary science not conflict with religion, but it contributes to a more profound theological reflection.

The essays in Part I, therefore, maintain that one need not opt either for the incommensurability of science and religion or for the claim that science and religion directly conflict. Compatibility remains an option – though it may be an ‘open-ended’ compatibility, where the nature of religion and the nature of science are both open to revision and reinterpretation.

A second point where the relation between religion and science has frequently been discussed is in cosmology, and involves the results of mathematical physics. In Part II (‘Physics, Philosophy, and Fine-Tuning’), the authors focus on what conclusions might be drawn from the apparent order, complexity, and regularity in the universe.

Does such regularity and order need to be explained? Some have said that order is simply inherent in physical phenomena, or that the term is employed by scientists merely as a heuristic device in describing certain features of the physical universe. Others have replied, however, that the ‘Big Bang’ theory of the origin of the universe – that the universe sprang into existence from nothing and then expanded, continually cooling and attenuating, into its present state – gives us evidence for an *ex nihilo* creation and points to the need for a ‘starting principle’ (which some have called ‘God’).<sup>17</sup> Edmund Whittaker (1873–1956), famous for his work in celestial mechanics and the history of applied mathematics and physics, wrote that ‘There is no ground for supposing that matter and energy existed before and was suddenly galvanized into action. ... It is simpler to postulate creation *ex nihilo* – Divine will constituting Nature from nothingness.’<sup>18</sup> From a somewhat different perspective, Alfred North Whitehead – together with those of his disciples who have developed what is today referred to as ‘process philosophy’ and ‘process theology’ – have held that there needs to be some ‘first principle’, and that contemporary science (such as relativity theory) is compatible with basic religious beliefs such as the existence

of God. ‘Process’ theorists find that, at least on this point, science and religion do not conflict.

Are there good arguments for the existence of a ‘starting principle’ of the cosmos, and do they establish the harmony – if not the mutual support – of science and religion? In ‘Creation, Metaphysics, and Cosmology’, Lawrence Dewan argues that ‘creation’ is a doctrine of religion based on revelation, not a conclusion of science, and that we should not therefore be overly optimistic about the ‘Big Bang’ theory supporting the religious doctrine of a creation in time. Dewan holds that looking to science for proof of creation leads not only to a bad physics, but to a bad metaphysics and to a problematic view of religion. He notes as well that critics have pointed out that understanding ‘Big Bang cosmology’ in terms of ‘creation *ex nihilo*’ is not a strict conclusion of physics, but is a result of living in a culture heavily formed by religious doctrine. Nevertheless, Dewan allows that, even if the Big Bang hypothesis cannot provide evidence for *creation* – particularly for creation *ex nihilo* – science does provide important information concerning the age of the universe and what such a beginning could look like. To this extent, then, the probabilities of science can be consistent with the certainties of metaphysics and religion, and there is compatibility between science and religion.

In ‘Cosmological Theories and the Question of the Existence of a Creator’, John Bell notes that some scientific cosmologists have rejected the question of the origin of the universe altogether. Instead, they prefer a theory of the universe which denies that there ever was a time when the universe did not exist. Bell remarks, however, that this response leaves much unexplained. For example, some have argued that there are properties of the universe that show that it has been ‘finely-tuned’ – that many things need to be *exactly* as they are for life to exist – and that it is simply improbable that the universe is the result of chance. To reply that the ‘fine-tuning’ of the fundamental constants of nature was a brute fact would be, Bell points out, tantamount to an acknowledgment that the laws of physics were themselves brute facts. *Their* contingency, however, would make it plausible for the theist to suggest that these *laws* had been expressly selected from the spectrum of possibilities by divine choice. The only way to avoid this result would be to argue for a ‘metaphysical pluralism’ – that is, to hold that there are realms of being which are the products of, and are governed by, entirely different physical laws. But, a perspicacious reader might conclude, in the absence of any solid argument for such an alternative, there is at least some support for the existence of a designer and, thereby, a compatibility with religion.

Another way in which the conclusions of cosmology and mathematical physics might be understood in relation to religion is found in Whitehead. This approach is not, however, scientific or religious, but philosophical. In ‘Whitehead, God, and Relativity’, Richard Feist summarizes Whitehead’s attempt to construct a speculative philosophy that seeks to ‘... frame a coherent, logical, necessary system of general ideas in terms of which every element of our experience can be interpreted’.<sup>19</sup> If such a speculative philosophy can be developed, and since science refers to things that are among the elements of experience, then religion, science, and the relation between them will fall under speculative philosophy’s mandate. Feist considers Whitehead’s response to Einstein’s relativity theory, where Whitehead attempts to construct a

speculative philosophy that includes both God and the basic space–time framework of relativity – a project that has been continued by process theology. Feist argues that if we allow that there are two types of time in the metaphysics of Whitehead – one belonging to physics, where the investigations of science take place (‘physical time’), and another, ‘metaphysical’ sense (which would be the temporal perspective of God) – a speculative philosophy that brings science and religion together may indeed be possible.

A different approach that suggests a relation between the physical sciences and religion again draws its impetus from the ‘fine-tuning’ argument. In ‘Design Inferences, Fine-Tuning, and the Prior Probability of Divine Intelligent Agency: What the Fine-Tuning Argument Shows’, Kenneth Himma considers whether the existence of ‘fine-tuned properties’ provides epistemic grounds for preferring theism to atheism. Himma argues that we cannot, in fact, speak of the probability or non-improbability of the occurrence of ‘fine-tuning’ because we cannot express ‘probability’ here in a philosophically and mathematically rigorous way. He concludes, then, that even if we accept that some properties are ‘fine-tuned’, there are no *strong* grounds for preferring theism to atheism – although a comparison of the relative probabilities of the truth of theistic and atheistic ‘solutions’ may suggest that it is not unreasonable to hold a theistic hypothesis.

What can we conclude from these discussions of cosmology and of design or ‘fine-tuning’? As with much of the current debate in cosmology, the question of the relation between religion and science remains unresolved. The results of cosmology do not obviously provide a basis for arguing for religious belief, but neither do they show that there is a conflict between religion and science or a radical distinction or incommensurability of the two. It is, therefore, not implausible to hold that there is a compatibility – if only an ‘open-ended’ compatibility – of science and religion. But it is important to recognize that such a conclusion presupposes that what counts as science and what counts as religion are clearly understood and have been carefully defined.

Present throughout the preceding discussions is the assumption that the relation between religion and science is something that can be determined simply by the quality of arguments for which the standards of proof are clear. Yet this assumption itself presupposes that what is to count as evidence is not in dispute: that such evidence has to be empirical, and that naturalistic explanations are *prima facie* more plausible than non-naturalistic ones. Further, it also seems to be assumed that if whatever needs to be explained – including what has been long held to be *distinctively* religious – has a naturalistic explanation, then there is little room for reasonable religious belief, and even some justification for holding a positive incompatibility between science and religion. In Part III, ‘Naturalism and the Non-Natural’, then, the authors raise and respond to some of the challenges that naturalism as such poses for religious belief.

As an illustration of these challenges, Jerome Gellman (‘On Scientific Explanations of God-Experiences’) examines the phenomenon of reports of experience of contact with the divine. In recent years, the ‘argument from perception’ (which draws an analogy between experiences of God and sense-perception<sup>20</sup>) and the ‘doxastic practice approach’ of William Alston<sup>21</sup> have been used to defend the view that religious experience can properly serve as evidence for the existence of the

object of that experience. But are such experiences veridical? While some scientists have claimed that, as far as neuroscience is concerned, ‘it can neither be proved or ruled out on empirical grounds’ that God (for example) really does appear to people, Gellman maintains that – in principle, at least – neuroscientific findings could make it quite unreasonable to believe that God-experiences were veridical. Thus, so far as science can provide a naturalistic explanation of alleged God-experiences, it challenges the claim that the object of these experiences exists and, by extension, the truth of theism.

The possibility of such a confrontation presupposes, of course, that there is commensurability between empirical science and religious experience. It is because they are on a par that the results of science can count against religion. But it would also seem to follow that the results of science could count *for* religion and, further, that religion could count *against* science. It also seems to presuppose that a naturalistic explanation is not only a sufficient, but a more probable, explanation than a religious, non-natural one.

Another illustration of the challenge of naturalism arises in contemporary research in biology. In ‘The Human Genome Revolution, Society, and Religion’, Job Kozhamthadam provides some of the background and history to the ‘Human Genome Project’, established in 1990 by the US Department of Energy and the National Institutes of Health, and completed in 2003. He also discusses some of the philosophical, moral, religious, and scientific implications of the Project. Kozhamthadam notes that developments in science affect not only what science does, but our understanding of what science is. Thus, the many advances in the natural and applied sciences in the last century have gradually changed our understanding of the nature of science in significant ways; science as ‘the activity of the genius in isolation’ has now become ‘the activity of a community’. The Human Genome Project has, moreover, provided further support for arguments for the unity in diversity of the living world, for the unity of scientific enquiry, and for evolutionary theory. Nevertheless, Kozhamthadam points out that while the results of the Project may be used by some as a means of justifying discriminatory policies, these results also show the limits of a naturalistic reductionism. He insists that despite the strength of a naturalistic approach to science, this is still not sufficient to establish a naturalistic view overall. Contemporary biological research, then, is not only consistent with religion, but may even provide positive support for religious belief.

That there is a close relation between religion and the natural is indeed plausible; traditionally, many religious traditions have had room for ‘natural theology’, and several have what we may call a theology of nature. But modern science is, without a doubt, naturalistic in a strong sense. And, as noted earlier, the results of science certainly appear to have had an impact on religion and religious belief.

Where does this leave us with regard to naturalism? In ‘Partner of the Sciences or Object of Study? Theology and Religion in Relation to the Sciences’, Willem Drees considers the place of naturalism in the discussion of ‘religion-and-science’. Drees argues that efforts to establish a ‘consonance’ or ‘harmony’ between religion and science, or to treat religious views as comparable to scientific explanations, fall short on both epistemic and moral grounds. Nevertheless, Drees allows that we may still engage in a research programme in ‘religion-and-science’ that is naturalistic

(acknowledging that human existence, including human cultures, moralities and religions, are the fruit of, or even part of, nature) while, at the same time, holding ‘anti-naturalist’ attitudes (acknowledging that humans are able to go beyond and against that which has been handed down by nature to them). Thus, ‘creation’ is not to be understood simply as the production of an effect by an efficient cause, but as an event that also brings with it a sense of ‘redemption’ – which Drees argues is theologically more adequate. The statement that there is a relation between science and religion, Drees concludes, is not so much a descriptive claim as a ‘constructive project’. Science and religion should not be seen as offering competing explanations or hypotheses, but as creating a tension *within a theology*, whereby religion is ‘explored in relation to successes and limitations of a naturalistic understanding of the world’.<sup>22</sup> Naturalism need not lead to refuting, and it may lead to rethinking, religious belief.

A second response to the challenge of naturalism has been to distinguish between methodological naturalism and ontological naturalism. In ‘Beyond Naturalism: Scientific Creativity and Theological Knowledge’, Paul Allen discusses the claim that philosophers and theologians should embrace naturalism because science has succeeded in providing an explanatory framework for natural reality and because evidence supports the conclusion that there is only one order of existence – the natural. Allen notes that moving to such an ontological or ‘religious’ naturalism would be fatal to theological claims concerning divine creation, providence, and salvation. In any event, Allen argues, such a move is unnecessary. Contemporary theology focuses on more exclusive existential, historical or ethical issues that do not involve metaphysical or epistemological challenges with science. We can, then, allow naturalism where it is *methodologically* appropriate – for example, in the sciences – without being logically required to allow it where it would be inappropriate – for example, in religion.

It is possible, therefore, to employ a naturalist approach in science, and yet not be committed to an ontological naturalism that would, arguably, entail conflict between science and religion. Indeed, despite the naturalistic character of science, it is still plausible to claim that there is compatibility between religion and science. One can conclude, then, that whatever differences there may be between the two, there is neither a general conflict between nor an incommensurability of science and religion.

The challenges of science to religion are not based just on ‘matters of fact’ and empirical data; as we have seen, they involve methodological and metaphysical assumptions as well. It is for this reason that it is rather difficult to say what the relations are between science and religion. There are, arguably, other issues to be considered. For, in raising the question of the relations between science and religion, we also have to ask how the terms ‘science’ and ‘religion’ are to be understood, whether they have been consistently understood in these ways in the past, and whether those participating in the debates are themselves agreed on what they mean. What, then, is science? And what is religion? Several responses to these questions have been proposed, and, in Part IV (‘Conceptual Issues’), the authors explore two recent possibilities.

What is it to do science? In ‘Can Science Provide Evidence for Metaphysics?’, Leslie Armour notes that both the natural and the social sciences acknowledge that reality needs interpretation – that there is no neutral account of reality, and that our studies of it always refer to a larger theory. As Armour puts it, the world is ‘not simply a bunch of hard stuff out there’, but ‘a book to be read’ – and there is an indefinitely large number of ‘readers’. Armour does not mean that there is no objective reality and that all is a matter of interpretation. ‘The world’ is that which must be interpreted and, so far as we recognize that *something* is being interpreted, there is an objective reality. But this approach also means that there is more to the real than just ‘the material’. Intelligence is characteristic of ‘the world’ and, because there are a potentially infinite number of persons, there are a potentially infinite number of readings; in this sense we can speak of a pluralistic world. Moreover, one can speak of an intelligence in the universe that goes beyond human subjectivity (though it is expressed through us). Armour argues that contemporary physics and cosmology provide evidence for such a view – that reality is ‘a set of symbols that can be interpreted in a way that makes some interpretations better than others, but that they do not yield a univocal reading’.<sup>23</sup> Science and religion, then, are readings. For Armour, however, religion is *not* just another reading, but is – as it were – the conclusion of the search for a complete reading.

How are we to understand the concept of religion? In ‘Science and Religious Belief: Some Conceptual Issues’, William Sweet uses the example of the ‘Evolution versus Intelligent Design (ID)’ debate to see what the alleged conflict between science and religion assumes about the nature of both. Sweet argues that both sides in the ID debate in fact share certain presuppositions about the character of religious and scientific claims – and that it is because of this that both find a conflict between ID theory and evolutionary theory. But Sweet argues that these presuppositions are mistaken. Religious beliefs have a distinctive character that sets them apart from the hypotheses of science. Religious beliefs and the results of science bear on one another, but if we fail to understand the differences between them, we cannot make any progress on understanding their relation either.

The essays in Part IV tend to the view that, if we understand religion and science in ways that reflect how they are engaged in or practised, there is no fundamental conflict between them. Yet neither is there a straightforward compatibility, such that the results of science or scientific investigation prove religious belief. Science can establish or challenge empirical claims, and these may in turn confirm or raise doubts concerning corresponding metaphysical or religious beliefs. This does not mean, however, that science refutes or demonstrates these beliefs. It may simply entail that, as our knowledge progresses, we will be called to reread, review, and rearticulate the specific content of both our religious and our scientific views. And in rethinking these views, the questions and concerns which motivate them must also be considered before one can expect any results concerning the relations between religion and science.



**Directions**

What can we conclude about the contemporary discussion of science and religion – and particularly about the consequences or implications of evolutionary theory, cosmology, and naturalism for religious belief? How might further discussion of these issues be pursued? It is clear that, today, many would say that religion is under fire from science – and that science is under fire from religion as well. As noted above, this has occurred at the ‘micro’ level, in biology, at the ‘macro’ level, in cosmology, but also at the ontological and epistemological levels, when questions of scientific method, empirical evidence, and naturalism are raised. Yet while the discussions have sometimes been heated, they are not obviously intractable.

The essays in this volume remind us that, as we consider the challenges of science to religion, we must be specific and precise about what the challenges are – for example, whether they are empirical or rooted in method – and about exactly what conclusions are to be drawn from them. We must consider, for example, that the fact that much of the current debate is taking place within a discourse permeated by science may itself influence the options that we think are available to us.

Many of the essays here reflect the view that science and religion both seek to explain, that science *can* challenge religion on matters concerning which truth is possible, that religion cannot ignore nature and the results of empirical science, but that the tensions between science and religion are not as great as often thought. Taking refuge in the claim that the science and religion debate is irresolvable is not a viable option for either the believer or the sceptic. For example, it seems to be agreed by many of the authors that religion provides at least added value (such as an interpretive structure or worldview) to the data of empirical science. And the authors tend to hold that truths of religion are commensurable with truths of science.<sup>24</sup> Nevertheless, these views are far from settled. Does giving priority to empirical evidence undercut religion? And does seeing religion as something that provides added value not place it in a permanent ancillary role, subordinate to both scientific fact and scientific theory? We should not hesitate to question the terms or the framework of the debate.

The precise relations between religion and science are, undoubtedly, complex. This is not in the least because of the different ways in which the terms ‘science’ and ‘religion’ have been used in debate and, in general, of how science and religion have been engaged in. A fruitful discussion of these relations, then, requires awareness of from whence the challenges of science have come, of the place of proof and where the burden of proof lies, and particularly whether the terms involved have been properly, unambiguously, and consistently understood. Before we can go further on these issues, we have to look very closely at the nature of religion and science.

The preceding point reminds us that making further progress requires returning to, and clarifying the underlying conceptual issues involved. More needs to be said, for example, on what it is about religion and science that leads to this apparent tension or conflict. Is the conflict simply one of ‘overlapping magisteria’ (to use Gould’s expression) – where one or the other party makes claims that are outside its realm of competence? Or is it something that goes to the core of religious belief, on the one hand, and scientific method and practice, on the other? How is it that

religious belief (or what is fundamental to it) might be affected by contemporary science and technology? What is religious belief, and what is its relation to empirical phenomena, or to evidence, or to ‘the natural world’? Possible differences in methodology are relevant here as well. Much recent debate has also focused on naturalism, how theists need to respond to it, and whether a scientific commitment to naturalism precludes non-natural (for example, religious) entities or activities. Thus, an ongoing line of investigation has been to consider whether one can clearly distinguish kinds of naturalism and what this entails for religion. As noted earlier, it may mean reconsidering the meaning of key terms. We may have to understand religion differently – as involving not just a set of propositions, but sets of commitments, trusts, and practices.<sup>25</sup> And we may also have to understand science differently – as involving different kinds of practices and trusts.

Raising the question of how science might challenge religion – or of how religion and science are related – need not, of course, imply that one believes that there is a single, comprehensive answer. Instead, it may be that, as we carry out investigations and analyses, we will find that there are a number of different specific ways in which they are related, and that we will see how this or that religious institution, or this or that religious practice, or this or that religious belief fits with this or that scientific institution, or scientific practice, or scientific claim. (This would suggest that, if we are successful, we might even be able to carry out similar ‘comparisons’ among other sets of normative and descriptive institutions and practices, such as science and ethics, ethics and religion, aesthetics and religion, and so on.)

The debates concerning science and religion are powerful ones, but it is important to remember that they are not issues of science or religion as such, but philosophical issues. The authors in this volume contribute to these debates, but they also show that the issues are often far from settled. Their essays, then, leave us with a challenge. As these debates continue, not only must we be attentive to what is presupposed and to what has motivated – and motivates – the various critiques, but, most of all, we must take care not to yield to the passions, the polemics, and the too-easy answers that this issue has often inspired.

## Notes

- 1 The term ‘religion’, here, is taken to refer to systems of belief, including beliefs about non-natural beings, and so would include theology. Of course, religion refers to much more than this; this is a matter that will be dealt with later in this Introduction, and discussed in the essays in this volume.
- 2 Whitehead, *Science and the Modern World* (New York: Macmillan, 1925).
- 3 *Ibid.*, p. 18.
- 4 *Ibid.*
- 5 *Rocks of Ages: Science and Religion in the Fullness of Life* (New York: Ballantine, 1999).
- 6 See Holmes Rolston, III, ‘Scientific and Religious Logic’ (from *Science and Religion: A Critical Survey* (New York: Random House, 1987)) in Michael



Peterson et al (eds), *Philosophy of Religion: Selected Readings* (New York: Oxford University Press, 1996), pp. 467–8.

- 7 Augustine writes, for example: ‘In the matter of the shape of heaven, the sacred writers did not want to teach man facts that would be of no avail for their salvation.’ *St. Augustine: The Literal Meaning of Genesis*, trans. John Hammond Taylor (2 vols (Ancient Christian Writers vols. 41–42), New York: Newman, 1982), vol. 2, ch. 9.20.
- 8 For D.Z. Phillips see, for example, ‘Belief, Change, and Forms of Life: The Confusions of Externalism and Internalism’, in Frederick Crosson (ed.), *The Autonomy of Religious Belief* (Notre Dame: University of Notre Dame Press, 1981) and *Belief, Change and Forms of Life* (Atlantic Highlands, NJ: Humanities Press, 1986). For Peter Winch see his ‘Discussion of Malcolm’s Essay’ in Norman Malcolm, *Wittgenstein: A Religious Point of View?* (Ithaca, NY: Cornell University Press, 1994); see also my review of Malcolm in *The American Catholic Philosophical Quarterly*, 71/1 (1997): 126–30.
- 9 Frederick Crews, ‘Saving Us from Darwin’, *The New York Review of Books*, 4 and 18 October 2001.
- 10 ‘Put Your Money on Evolution’, *The New York Times* (9 April 1989) section VII, p. 35.
- 11 See his ‘Ignorance Is No Crime’, *Free Inquiry*, 21/3 (2001): 7–8.
- 12 *Darwin’s Dangerous Idea: Evolution and the Meanings of Life* (New York: Simon & Schuster, 1995).
- 13 See Gay, this volume, pp. 19–38.
- 14 See, for example, Charles Darwin, ‘M Notebook (July 1838 – October 1838)’, discussed in Lamoureux, below.
- 15 Lamoureux, this volume, pp. 39–54.
- 16 Peacocke, this volume, pp. 73–88.
- 17 This seems to be the conclusion of some recent books, such as Simon Singh’s *Big Bang: The Origins of the Universe* (New York: Harper Collins/Fourth Estate, 2004). Singh quotes Robert Jastrow, who was Chief of the Theoretical Division of the National Aeronautics and Space Administration (1958–61): ‘[The big bang theorist] has scaled the mountains of ignorance; he is about to conquer the highest peak; as he pulls himself over the final rock, he is greeted by a band of theologians who have been sitting there for centuries.’ See Robert Jastrow, *God and the Astronomers* (New York: W.W. Norton, 1978; 2nd ed. 2000).
- 18 E.T. Whittaker, *The Beginning and End of the World* (London: Humphrey Milford, 1952), quoted by Robert Jastrow, *God and the Astronomers*, Chapter 6, p. 102.
- 19 See Feist, this volume, pp. 121–130.
- 20 See, for example, Alvin Plantinga, ‘Is Belief in God Properly Basic?’, *Nous*, 15 (1981): 41–52; see also his *Warranted Christian Belief* (Oxford: Oxford University Press, 2000).
- 21 William P. Alston, ‘A “Doxastic Practice” Approach To Epistemology’ in Marjorie Clay (ed.), *Knowledge and Scepticism* (Boulder: Westview Press,

- 1989), pp. 1–29. See also his *Perceiving God: The Epistemology of Religious Experience* (Ithaca, New York: Cornell University Press, 1991).
- 22 See Drees, this volume, pp. 169–184.
- 23 See Armour, this volume, pp. 199–216.
- 24 Recall R.G. Collingwood’s example of an artist and a scientist observing a sunset: ‘The scientist “sees” in the sunset a concrete embodiment of certain scientific laws; the artist “sees” in it a harmonious pattern of colours.’ (*Speculum Mentis* (Oxford: Clarendon Press, 1924), p. 62).
- 25 See, for example, my ‘Religious Belief, Meaning and Argument’, *Studies in Religion/Sciences religieuses*, 36/1 (2007): 41–64.

## Chapter 2

# Theological Insights from Charles Darwin<sup>1</sup>

Denis O. Lamoureux

In his acclaimed best-seller *The Blind Watchmaker* (1986), the inimitable Richard Dawkins writes, ‘I could not imagine being an atheist before 1859, when Darwin’s *Origin of Species* was published. ... Darwin made it possible to be an intellectually fulfilled atheist.’<sup>2</sup> Many people today would agree with Dawkins in suggesting that the father of the theory of biological evolution is the chief apostle of atheism. However, is this actually the case? Or is the association of Darwin with unbelief a popular cultural myth that has been thoughtlessly propagated throughout modern society?

This paper is a brief review of the central religious beliefs of Charles Darwin. In particular, it presents evidence from the primary historical literature dealing with his theological reflections on evolutionary theory. To the surprise of many, Darwin not only contributed to science a brilliant outline of the theory of biological origins, but his thoughts regarding the religious implications of evolution are profound and provide valuable insights to theology.

Charles Darwin was born on 12 February 1809 and raised in a comfortable British setting surrounded by a variety of religious and philosophical beliefs. His physician father Robert was a ‘free thinker on religious matters’ and at best a ‘nominal’ Anglican.<sup>3</sup> Darwin’s mother Susannah came from a devout Unitarian family and attended church with her children. Regrettably, she died when Charles was only 8 years old. Thereafter, his older sisters assisted in raising him and brought him to Anglican services.<sup>4</sup> Darwin received an education from an Anglican day school, and in his Autobiography refers to religious beliefs that are typical of a child. He writes:

I remember in the early part of my school life [1818–1825] that I often had to run very quickly to be in time, and from being a fleet runner was generally successful; but when in doubt I prayed earnestly to God to help me, and I well remember that I attributed my success to prayers and not to my quick running, and marvelled how generally I was aided.<sup>5</sup>

As a teenager, Darwin read his grandfather Erasmus’s *Zoonomia, or the Laws of Organic Life* (1794-6), a book which presented the notion that God created life through an evolutionary process.<sup>6</sup> Though he notes that it had little effect on him at that time, Darwin later believed that its positive appraisal opened the way for serious consideration of this view of origins.

After a failed attempt at studying medicine in Edinburgh and upon the insistence of his father, Darwin enrolled in theology at Christ’s College, Cambridge University, in 1828. His father’s intent was not religious, but practical. His son lacked direction and this way he would at least receive an education fitting a proper British gentleman.

There is little evidence to suggest Charles had a passionate faith at that point in his life, though he reveals that ‘I did not then in the least doubt the strict literal truth of every word in the Bible.’<sup>7</sup> Darwin completed the divinity programme in 1831 but decided not to be ordained as a minister. Yet, Cambridge gave him a purpose – he fell in love with science. His views on origins were typical of the early nineteenth century. He accepted that the earth was old, though catastrophic events like floods still played a part in geology for understanding surface features. Darwin was also a progressive creationist<sup>8</sup>, believing in the immutability (unchangeability) of species, and maintaining that God intervened to create life at different points in geological history.

More specifically, Darwin’s view of nature was steeped in the categories of the British naturalist–theologian William Paley. His *Evidences of Christianity* (1794) and *Natural Theology* (1802) were required reading at Cambridge in the early 1800s, and Darwin claimed that studying these works were the only valuable part of his education. Well known for the watchmaker argument<sup>9</sup>, Paley argued that the universe features: (1) Intelligent Design<sup>10</sup> – the beauty and complexity of nature ultimately reflect the mind of the Creator, (2) Perfect Adaptation – each and every detail found in the world fits perfectly in its place, and (3) Beneficence – creation is very good. Looking back on his life, Darwin wrote:

I did not at that time trouble myself about Paley’s premises; and taking these on trust I was charmed and convinced by the long line of argumentation. ... I was not able to annul the influence of my former belief, then almost universal, that *each* species had been purposely created; and this led to my tacit assumption that *every detail* of structure, excepting rudiments, was of some special, though unrecognized, service.<sup>11</sup>

It is important to note that Paley’s understanding of design is both static and fused to the notion of perfect adaptability. That is, *each* and *every detail* in the world had some specifically designed purpose. Consequently, there was no room for maladapted structures or creatures, including evolving ones, in God’s good and perfectly ordered creation.

Darwin boarded HMS *Beagle* with these assumptions about nature on 27 December 1831. He also came with Christian beliefs and recalled:

Whilst on board the *Beagle* I was quite orthodox, and I remember being heartily laughed at by several of the officers (though themselves orthodox) for quoting the Bible as an unanswerable authority on some moral point. I suppose it was the novelty of the argument that amused them.<sup>12</sup>

More significantly for the development of his science, Darwin boarded with the first volume of Charles Lyell’s recently-published *Principles of Geology* which, as part of a three volume series (1830–1833), set down the foundations of modern geology. Soon after arriving in South America, his field experience of the region led him to embrace uniformitarian geology.<sup>13</sup> However, uniformitarianism did not extend to Darwin’s biology. Late in the voyage he was still an anti-evolutionist, arguing in a perfect Paleyan fashion, that evolution was ‘a supposition in contradiction to the fitness which the Author of Nature has now established’.<sup>14</sup> Nine months before returning to England, Darwin remained a progressive creationist. He writes,

‘The one hand has surely worked throughout the universe. A Geologist perhaps would suggest that the periods of Creation have been distinct & remote the one from the other; that the Creator rested in his labour.’<sup>15</sup> In the last entry of the *Beagle Diary*, Darwin’s acceptance of intelligent design in nature is obvious:

Amongst the scenes which are deeply impressed on my mind, none exceed in sublimity the [Brazilian] primeval forests ... [for they] are temples filled with the varied productions of the God of Nature. No one can stand unmoved in these solitudes, without feeling that there is more in man than the mere breath of his body.<sup>16</sup>

Clearly, throughout the famed trip, Darwin believed in a Creator. Not only did nature profoundly impact him by reflecting intelligent design, but Darwin’s God intervened to create life at different points in geological history.

Darwin set foot on English soil after his five-year voyage around the world on 2 October 1836. During the next two years he entered his first period of intense theological reflection. As Darwin recalls, ‘I was led to think much about religion.’<sup>17</sup> It was also at this time that he formulated the theory of evolution. To be sure, evolutionary theory has significant religious implications and Darwin recognized it. In this period, he rejected his Christian faith. Regarding the Old Testament, he remarks:

I had gradually come by this time, to see that the Old Testament, from its manifestly false history of the world, with the Tower of Babel, the rainbow as a sign, etc., etc., and from its attributing to God the feelings of a revengeful tyrant, was no more to be trusted than the sacred books of the Hindoos, or any barbarian.<sup>18</sup>

With a growing appreciation for the regularity in the laws of nature, Darwin also dismissed the New Testament and its record of miracles. He argues, ‘The more we know of the fixed laws of nature the more incredible do miracles become ... the men at that time were ignorant and credulous to a degree almost incomprehensible by us.’<sup>19</sup> As a result, Darwin concludes, ‘I came to disbelieve in Christianity as a divine revelation.’<sup>20</sup>

Though Darwin rejected the personal God of Christianity, he remained a firm believer in a Creator. More specifically, he renounced theism and espoused deism.<sup>21</sup> During the late 1830s, Darwin outlined a theory on the origin of life, including humanity, that did not require the dramatic Divine *interventions* of progressive creation, and based his model on *providential* natural laws.<sup>22</sup> That is, he envisioned God creating through physical processes. Excerpts from his personal scientific notebooks reveal this distinction in God’s activity:

Astronomers might formerly have said that God ordered [i.e., Divine interventionism] each planet to move in its particular destiny – In the same manner God orders each animal with certain form in certain country. But how much more simple & sublime power [to] let attraction act according to certain law; such are inevitable consequences; let animals be created, then by the fixed laws of generation [i.e., Divine providentialism]. ... Man in his arrogance thinks himself a great work worthy of the interposition of a deity [i.e., interventionism], more humble & I believe truer to consider him created from animals [i.e., providentialism].<sup>23</sup>

Darwin at this time began formulating the foundations of evolutionary psychology, and he cast his theory within a theological framework. For example, he argues that a ‘philosopher’ (that is, natural philosopher, or better ‘scientist’) errs if he ‘says the innate knowledge of creator [is] has been/implanted in us (?individually or in race?) by a separate act of God, & not as a necessary integrant part of his most magnificent laws. which we profane in thinking not capable to produce every effect of every kind which surrounds us.’<sup>24</sup> According to Darwin, not recognizing God’s ‘sublime power’ and the ‘inevitable consequences’ of the ‘magnificent laws’ of evolution was to ‘profane’ the Creator.

Darwin scratched out in his personal notebooks a deistic theory of evolution during the late 1830s, but it would take twenty years before he made his view of origins public, and a dozen more years after that before Victorian England would read that humanity was also created through evolution.<sup>25</sup> In November 1859, *On the Origin of Species* was released. It included seven unapologetic and positive references to the ‘Creator.’<sup>26</sup> Staunchly opposed to the ‘science-of-the-day’ (progressive creation), Darwin defends:

Authors of the highest eminence seem to be fully satisfied with the view that each species has been independently created. To my mind it accords better with what we know of the laws impressed on matter by the Creator, that the production and extinction of the past and present inhabitants of the world should have been due to secondary causes like those determining the birth and death of the individual.<sup>27</sup>

Darwin’s rejection of interventionism and acceptance of providentialism in this passage is clear.<sup>28</sup> God creates life, both in the womb and on the earth, through natural laws that he ordained. In other words, Darwin’s view of evolution in the famed 1859 work was *teleological*.<sup>29</sup> This natural process had a goal or final outcome – it had plan and purpose. Darwin did not espouse the popular understanding of evolution (atheistic/dysteleological) seen in modern society today, of a process run by merely chance and irrational necessity.

God’s part in the evolutionary process is further seen in the well-known final sentence of the *Origin of Species*:

There is grandeur in this view of life, with its several powers, having been originally breathed into a few forms or into one; and that, whilst this planet has gone on cycling according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved.<sup>30</sup>

This passage – appearing in the second edition of the *Origin of Species* the following year, and right up until the sixth and final edition in 1872 – is even more specific. It includes the phrase ‘originally breathed by the Creator.’<sup>31</sup> Interestingly, Darwin somehow failed to recognize his own interventionism in the origin of the first few forms or form of life.<sup>32</sup> Moreover, clearly, the evolutionary laws were God’s laws, and there is even a hint of their revelatory character in that the world created by evolution has a ‘grandeur’ since life is ‘most beautiful and most wonderful.’ It is, then, simply a popular myth that Darwin’s *Origin of Species* is necessarily atheistic. For those who have actually read the famed book, such a belief is mere fantasy.<sup>33</sup>

Soon after the publication of the *Origin of Species*, Darwin entered a second period of intense theological reflection. His professional colleagues raised important issues, and he dealt directly with the religious themes of intelligent design in nature, the problem of pain, and Divine sovereignty over the world. Regarding design, Darwin confessed to Harvard botanist Asa Gray (in a series of letters written during 1860):

This [issue of design] is always painful to me. I am bewildered. *I had no intention to write atheistically.* But I own I cannot see as plainly as others do, and as I should wish to do, evidence of design and beneficence *on all sides of us.* ... On the other hand, I cannot anyhow be contented to view this wonderful universe, and especially the nature of man, and to conclude that everything is the result of brute force. ... I grieve to say that I cannot honestly go as far as you do about Design. I am conscious that I am in an utterly hopeless muddle. I cannot think that the world, as we see it, is the result of chance; and yet I cannot look at *each* separate thing as the result of Design. ... Again, I say I am, and shall ever remain, in a hopeless muddle.<sup>34</sup>

Darwin is clearly not an atheist at this point in his career. Of course, ‘evidence of design ... *on all sides of us*’ and ‘*each* separate thing as the result of Design’ was William Paley still speaking through him. His muddle, pain and bewilderment over the issue of design can be understood in the light of these categories ingrained in him during his education at Cambridge.

On the one hand, Darwin’s theory of evolution undermined Paley’s account of static perfection and adaption in each and every corner of the universe. Indeed, the dynamic evolutionary process was by definition incommensurable with the perfectly designed Paleyan world. As Darwin later wrote, ‘The old argument of design in Nature, as given by Paley, which formerly seemed to me so conclusive, fails, now that the law of natural selection has been discovered.’<sup>35</sup> Yet on the other hand, Darwin continued to experience nature’s beauty and complexity as a scientist and to sense what most people perceive – that there is some sort of teleological reality behind the world, like a God or Supreme Force.<sup>36</sup> In other words, Darwin was trapped between his Paleyan understanding of intelligent design and his experience of design in nature.<sup>37</sup> One wonders why Darwin did not seriously consider a view of intelligent design that was not suffocated by Paley’s strict categories of design in each and every detail of the world<sup>38</sup> – but, of course, it is easy to say this in hindsight.

Darwin also dealt with the greatest challenge to theism – the problem of pain. Concisely stated, why would the all-loving and all-powerful God of theism allow suffering in the world? In a letter to Gray he complains:

But I own I cannot see as plainly as others do, and as I should wish to do, evidence of design and *beneficence* on all sides of us. There seems to me too much misery in the world. I cannot persuade myself that a *beneficent* and omnipotent God would have designedly created the Ichneumonidae with the express intention of their feeding within the bodies of Caterpillars, or that a cat should play with mice.<sup>39</sup>

Again, a Paleyan category of nature is evident in his understanding of religion – beneficence everywhere throughout nature. Most feel the weight of Darwin’s complaint. Why would the theistic God allow a wasp (Ichneumonidae) to lay its



eggs in a caterpillar so that, as they develop, they slowly consume the host's internal organs until its death? In an earlier letter to J.D. Hooker, Darwin was even more explicit regarding the lack of beneficence in the living world: 'What a book a Devil's chaplain might write on the clumsy, wasteful, blundering low & horridly cruel works of nature!'<sup>40</sup>

Darwin was also intimately familiar with pain. Shortly after his *Beagle* voyage, he contracted a condition that saw him suffer bouts of nausea, vomiting, dizziness, chest pains and palpitations for the rest of his life.<sup>41</sup> And, as many modern Darwin scholars have speculated, the suffering and eventual death of his beloved ten-year-old daughter Annie in 1850 deeply traumatized him.<sup>42</sup> Indeed, nature was not at all as Paley had envisioned, and it was only late in life that Darwin came to terms with the pain suffered by living creatures.

Finally, during his second intense period of theological reflection, Darwin wrestled with the question of Divine sovereignty over world. In a letter to Charles Lyell, he writes:

The view that *each* variation has been providentially arranged seems to me to make Natural Selection entirely superfluous, and indeed take the whole case of the appearance of new species out of the range of science. It seems to me that variations in the domestic and wild conditions are due to unknown causes, and are without purpose, and in so far accidental; and that they become purposeful only when they are selected by man for his pleasure, or by what we call Natural Selection in the struggle for life, and under changing conditions. I do not wish to say that God did not foresee everything which would ensue; but here comes very nearly the same sort of wretched imbroglia as between freewill and preordained necessity.<sup>43</sup>

Again, Darwin's argument is steeped in Paley's notion of perfect adaptability. But more significantly, a dysteleological element is clearly developing in his understanding of evolution at this time: biological variations 'are without purpose, and in so far accidental'. However, Darwin does not embrace an entirely dysteleological world view. He remains a deist, affirming the existence of God and his sovereignty over nature and the evolutionary process. His use of Divine foresight to 'baptize' evolutionary theory in this passage reflects theological sophistication.

Many of Darwin's theological notions expressed in private correspondence during this second period of religious reflection eventually appeared in his major scientific books. In the closing pages of *The Variation of Animals and Plants Under Domestication* (1868), he is still being influenced by Paleyan notions of nature, but comes to an uneasy resolution, employing his Divine foresight argument. The final sentences of this scientific work are:

If we assume that *each particular* variation was from the beginning of all time preordained, then that plasticity of organization, which leads to many injurious deviations of structure, as well as the redundant power of reproduction which inevitably leads to a struggle for existence, and, as a consequence, to the natural selection or survival of fittest, must then appear to us superfluous laws of nature. On the other hand, an omnipotent and omniscient Creator ordains everything and foresees everything. Thus we are brought face to face with a difficulty as insoluble as is that of free will and predestination.<sup>44</sup>



Clearly, Darwin still believed in the existence of a ‘Creator’ who was both ‘omnipotent’ and ‘omniscient’. However, he struggled with this belief and those features in his evolutionary theory which pointed away from a world created by God, that is, ‘injurious deviations’, ‘redundant reproduction’, ‘natural selection’, and ‘survival of the fittest’. Undoubtedly, remnants of Paleyan beneficence still tugged at Darwin’s theology.

In *Descent of Man* (1871), Darwin finally put before the eyes of Victorian England his view that humanity was included in his evolutionary theory. As noted previously, human evolution was an integral part of his science from the earliest notebooks in the late 1830s. But Darwin only hinted at it in the famed *Origin of Species*; his only remark on the subject was:

In the distant future I see open fields for far more important researches. Psychology will be based on a new foundation, that of the necessary acquirement of each mental power and capacity by gradation. Light will be thrown on the origin of man and his history.<sup>45</sup>

*Descent of Man* offered a comprehensive theory of evolutionary psychology, and it even included an account of the evolution of religious belief.<sup>46</sup> Anticipating criticism from religious individuals, Darwin writes:

I am aware that the conclusion arrived at in this work will be denounced by some as highly irreligious; but he who denounces them is bound to shew why it is more irreligious to explain the origin of man as a distinct species by descent from some lower form, through the laws of variation and natural selection, than to explain the birth of the individual through the laws of ordinary reproduction. The birth both of the species and of the individual are equally parts of that grand sequence of events, which our minds refuse to accept as the result of blind chance.<sup>47</sup>

Unquestionably, Darwin saw evolutionary psychology as neither atheistic nor dysteleological. For that matter, the preceding passage could be seen as a defence of the existence of the creator of the embryological and evolutionary processes, which together reflect a ‘grand’ picture of nature.

Darwin’s mature theological views appear in his *Autobiography* (1876) in a section entitled ‘Religious Belief’. He deals directly with the classic arguments both for and against God’s existence, and examines these in the light of evolutionary theory. Beginning with the problem of suffering, Darwin argues:

A being so powerful and so full of knowledge as a God who could create the universe, is to our finite minds omnipotent and omniscient, and it revolts our understanding to suppose that his benevolence is not unbounded, for what advantage can there be in the suffering of millions of lower animals throughout almost endless time? This very old argument from the existence of suffering against the existence of an intelligent first cause seems to me a strong one.<sup>48</sup>

But interestingly, Darwin is quick to answer this objection. He addresses the issue of suffering by his observation that:

According to my judgment happiness decidedly prevails [in the natural world] ... all sentient beings have been formed so as to enjoy, as a general rule, happiness ... most sentient beings experience an excess of happiness over misery, although many occasionally suffer much.<sup>49</sup>

For Darwin, this is not the world of Paley, dripping with beneficence, but it nevertheless is a good world. Life would never have evolved if creatures suffered most of the time. The bite of the Ichneumonidae from Darwin's second period of theological reflection seems to have lost its sting if viewed from an evolutionary perspective. According to Darwin, the problem of pain is no longer a conclusive argument against God's existence.

Darwin then turns to two arguments for God's existence; the centrality of intelligent design in each is evident. In the first, Darwin affirms what he calls a 'religious sentiment'. He writes:

At the present day the most usual argument for the existence of an intelligent God is drawn from the deep inward conviction and feelings which are experienced by most persons. ... Formerly I was led by feelings such as those just referred to, ... to the firm conviction of the existence of God, and of the immortality of the soul. In my Journal I wrote that whilst standing in the midst of the grandeur of a Brazilian forest, 'it is not possible to give an adequate idea of the higher feelings of wonder, admiration, and devotion which fill and elevate the mind'. I well remember my conviction that there is more in man than mere breath of his body.<sup>50</sup>

However, Darwin writes off this experience as merely psychological and claims:

But now the grandest scenes would not cause any such convictions and feelings to rise in my mind. It may be truly said that I am like a man who has become colour-blind, and the universal belief by men of the existence of redness makes my present loss of perception of not the least value of evidence.<sup>51</sup>

From Darwin's perspective, then, 'religious sentiment' is not an argument for God's existence.

In the second argument for the existence of God in Darwin's *Autobiography* the appreciation for the reflection of intelligent design in nature is more substantive. Darwin writes:

Another source of conviction in the existence of God, connected with the reason and not with the feelings, impresses me as having much more weight. This follows from the extreme difficulty or rather impossibility of conceiving this immense and wondrous universe, including man with his capacity of looking backwards and far into futurity, as a result of blind chance or necessity. When thus reflecting I feel compelled to look to a First Cause having an intelligent mind in some degree analogous to that of man; and I deserve to be called a Theist.<sup>52</sup>

Sensitive Darwin scholars note the present tense of the verb 'feel' in the final sentence of this passage.<sup>53</sup> That is, in 1876, late in his life, Darwin feels compelled to look for a First Cause with an intelligent mind, and he even says that he deserves to be called a 'Theist'.<sup>54</sup> But like all the other arguments dealing with God's existence, Darwin

has a rebuttal. He claims that though his belief in intelligent design was ‘strong’ at the time he wrote the *Origin of Species*, it ‘has very gradually with many fluctuations become weaker’.<sup>55</sup> In particular, Darwin is deeply troubled with this belief because ‘the horrid doubt’ arises, ‘Can the mind of man, which has, as I fully believe, been developed from a mind as low as that possessed by the lowest animal, be trusted when it draws such grand conclusions?’<sup>56</sup> According to Darwin, this powerful rational argument for God’s existence is not trustworthy.

The conclusion Darwin draws in ‘Religious Belief’ is that arguments either for or against the existence of God ultimately fall short. He then confesses, ‘I cannot pretend to throw light on such abstruse problems. The mystery of the beginning of all things is insoluble by us; and I for one must be content to remain an Agnostic.’<sup>57</sup>

Darwin’s agnosticism and fluctuating theological beliefs also appear during the last years of his life. In a letter addressed to James Fordyce in 1879 regarding his beliefs, he writes:

What my own [religious] views may be is a question of no consequence to any one but myself. But, as you asked, I may state that my judgment often fluctuates. ... In my most extreme fluctuations *I have never been an Atheist* in the sense of denying the existence of a God. I think that generally (and more and more as I grow older), but not always, that an Agnostic would be the more correct description of my state of mind.<sup>58</sup>

It is important to note that this letter was written two years before Darwin’s death in 1882, and he is stating quite explicitly that he has ‘never been an Atheist’. Indeed, there is no evidence that, throughout his professional career, Darwin ever embraced an atheistic or dysteleological view of biological evolution. Moreover, if Darwin had ‘never been an Atheist’ and ‘generally, but not always’ an agnostic, then there must have been times when he was a ‘theist’ – as he had earlier acknowledged in the *Autobiography*.

Finally, in the last year of Darwin’s life in 1882, the Duke of Argyll raised with him the issue of intelligent design in nature. Writing about this conversation, he recalls:

I said to Dr. Darwin, with reference to some of his own remarkable works on the ‘Fertilization of Orchids’ and upon ‘The Earthworms’, and various other observations he made of the wonderful contrivances for certain purposes in nature – I said it was impossible to look at these without seeing that they were the effect and the expression of mind. I shall never forget Mr. Darwin’s answer. He looked at me very hard and said, ‘Well, that often comes over me with overwhelming force; but at other times,’ and he shook his head vaguely, adding, ‘it seems to go away.’<sup>59</sup>

This is an fascinating passage – especially for one who only six years earlier in his *Autobiography* claimed to have become ‘colour-blind’ to the revelatory message in nature, writing that ‘the grandest scenes would not cause any such convictions and feelings to rise in [his] mind.’ Undoubtedly, the impact of ‘the expression of mind’ seen in nature served as a source fuelling Darwin’s ‘not always’ belief in a God.

The historical record, then, clearly reveals that Charles Darwin was never an atheist. Throughout his career, the father of modern evolutionary theory gave

serious consideration to the religious implications of his science. For that matter, he often integrated these beliefs into his evolutionary theory, as seen in his scientific notebooks, private correspondence and professional publications. Darwin offers valuable theological insights worth examination regarding intelligent design reflected in nature, the problem of pain, and Divine sovereignty over the world.

## Notes

- 1 An earlier version of this paper appeared in *Perspectives on Science and Christian Faith*, 56 (2004): 2–12. I am grateful for the permission of the editor to use this material here.
- 2 Richard Dawkins, *The Blind Watchmaker* (London: Penguin Books, 1991 [1986]), pp. 5–6.
- 3 Charles Darwin, *The Life and Letters of Charles Darwin*, Francis Darwin (ed.), 3 vols (London: John Murray, 1888), vol. 2, p. 178.
- 4 Charles Darwin, *The Autobiography of Charles Darwin, 1809–1882*, Nora Barlow (ed.) (London: Collins, 1958), p. 22.
- 5 Darwin, *Autobiography*, p. 25.
- 6 Darwin, *Autobiography*, p. 49.
- 7 Darwin, *Autobiography*, p. 57.
- 8 The term ‘creationist’ carries a variety of nuances and requires qualification. *Young Earth Creation* is popular understanding of the creationist position. It rejects all the modern sciences dealing with origins and suggests that the world was created in six literal days less than 10,000 years ago and that all of geological stratification was the result of Noah’s global flood. *Progressive Creation* (or Old Earth Creation) accepts the standard geological dating of the earth (4.6 billion years), but rejects biological evolution maintaining that God created life in stages over the eons of time. *Evolutionary Creation* (or Theistic Evolution) asserts that the personal God of the Bible created the universe and life through evolutionary processes. *Deistic Evolution* (also Theistic Evolution) has an impersonal God begin the evolutionary process and never enter the universe thereafter. *Dysteleological Evolution* (or Atheistic Evolution) is the popular understanding of the evolutionist position. It rejects the existence of God and believes that the world evolved entirely by chance and irrational necessity.
- 9 Concisely stated, Paley argued that if a watch is found in a field, then it is logical to conclude the existence of a watchmaker. So too with nature. Complexity, contrivance and design in the world point to a Creator with a purpose. See William Paley, *Natural Theology*, in Robert Lynam (ed.), *The Works of William Paley*, 6 vols (Edinburgh: Baynes and Son, 1825), vol. 4, pp. 1–12.
- 10 The notion of ‘intelligent design’ has gained much attention in recent years due to the so-called ‘Intelligent Design Movement’. However, it is important to distinguish this modern understanding of design from the traditional position. For intelligent design theorists like Phillip Johnson, Michael Behe and William Dembski, design is associated with biological structures (termed ‘irreducibly

complex’) that purportedly could not evolve by natural processes. However, the traditional interpretation of design focuses on the beauty and complexity in nature and does not deal with the mechanisms by which these features arose. The historical view of design simply acknowledges that the world powerfully impacts most everyone into believing that it reflects the mind of an Intelligent Being.

- 11 Darwin, *Autobiography*, p. 59; Charles Darwin, *The Descent of Man and Selection in Relation to Sex*, New Edition, Revised and Augmented (New York: D. Appleton, 1886 [1871]), p. 62. My italics.
- 12 Darwin, *Autobiography*, p. 85.
- 13 Darwin writes, ‘I am proud to remember that the first place, namely, St Jago, in the Cape Verde Archipelago, which I geologised, convinced me of the infinite superiority of Lyell’s view over those advocated in any other work known to me.’ Darwin, *Autobiography*, p. 101.
- 14 Quoted in Sandra Herbert, ‘The Place of Man in the Development of Darwin’s Theory of Transmutation’, *Journal of the History of Biology*, 7 (1974): 233 note 50. Darwin MSS, vol. 42, ULC (Feb 1835).
- 15 Charles Darwin, *Diary of the Voyage of H.M.S. Beagle*, Nora Barlow (ed.), vol. 1 in *The Works of Charles Darwin*, Paul H. Barrett and R.B. Freeman (eds), 29 vols (London: William Pickering, 1986), vol. 1, p. 348. (18 January 1836).
- 16 *Diary*, vol. 1, p. 388. (24 September 1836).
- 17 Darwin, *Autobiography*, p. 85.
- 18 Darwin, *Autobiography*, p. 85. Interestingly (or ironically!), this passage reveals that Darwin was a strict biblical literalist, similar to today’s Christian fundamentalists.
- 19 Darwin, *Autobiography*, p. 86.
- 20 Darwin, *Autobiography*, p. 86.
- 21 According to *theism*, God is all-loving and all-powerful. He is personally involved in the lives of people and answers their prayers in miraculous ways. On the other hand, *deism* states that God is impersonal and never enters the universe, having little to do with humanity. It is important to note that 40 per cent of first-rate American scientists are theists. See Edward J. Larson and Larry Witham, ‘Scientists Are Still Keeping the Faith’, *Nature*, 386 (3 April 1997): 435–6.
- 22 An important theological distinction needs to be made regarding Divine action. *Interventionism* is dramatic supernatural activity. For example, prior to the acceptance of Copernicus’ view of astronomy, many believed that God moved planets off their normal west-to-east courses causing them to make short east-to-west loops (known as ‘retrograde motion’). Darwin refers to this type of Divine action in the next passage. *Providentialism* is God’s subtle activity. An example would be the Creator employing natural laws to create life. This is the type of Divine activity Darwin envisioned during the years he formulated his evolutionary theory, and it was clearly included in his famed *Origin of Species*. In the light of this categorical distinction regarding Divine action, a well-known comment by Darwin can be better understood. One of the first people he revealed his evolutionary views to was J.D. Hooker in 1844.

- In a letter Darwin writes, ‘I am almost convinced (quite contrary to the opinion I started with [i.e., progressive creation]) that species are not (it is like confessing a murder) immutable.’ Darwin to Hooker (11 January 1844) in Francis Darwin (ed.), *More Life and Letters of Charles Darwin*, 2 vols (London: John Murray, 1888), vol. 1, pp. 40–41. Also found in Frederick Burkhardt and Sidney Smith (eds), *The Correspondence of Charles Darwin*, 11 vols (Cambridge: University Press, 1987 [1985–1999]), vol. 3, p. 2. Some skeptics argue that this is evidence for Darwin’s atheism in that God is the murdered victim. However, qualification is necessary. If it was Darwin’s intention in this letter to confess to his murdering God with the theory of evolution (and that can be debated), then it is important to underline that it was the theistic and *interventionistic* God of progressive creation whom he slew. As this paper will further reveal, Darwin firmly believed in a deistic and *providentialistic* God during this early part of his career.
- 23 Charles Darwin, ‘B Notebook (February 1837 to January 1838),’ in Gavin de Beer (ed.), ‘Darwin’s Notebooks on Transmutation of Species’, *Bulletin of the British Museum (Natural History)*, 2 (1960): 101 and 106. Note that excerpts from the notebooks are exactly that – rough notes that are not grammatically sound or stylistically proper. In this paper they will be presented as they appeared originally with words occasionally added in brackets [ ] to make the passage more accessible.
- 24 Charles Darwin, ‘M Notebook (July 1838 to October 1838),’ in Howard E. Gruber, *Darwin on Man: A Psychological Study of Scientific Creativity Together with Darwin’s Early and Unpublished Notebooks*, Paul H. Barrett, transcriber and ed., (New York: Dutton & Co., 1974), p. 292. (# 136).
- 25 For the sake of brevity, I will not examine the numerous theological passages that Darwin composed in the years between his early notebooks (late 1830s) and the *Origin of Species* (1859). During this period he began with unpublished and private synopses of his theory, ‘Sketch’ (1842; 35 pages) and ‘Essay’ (1844; 213 pages), and later started a major work, ‘Big Species Book’ (1856–1858) known today as *Natural Selection*, which was abbreviated to become the famed *Origin of Species*. The religious beliefs expressed in these works are in principle outlined in the notebooks and then repeated (sometimes almost verbatim) in the *Origin of Species*. See Charles Darwin, *Foundations of the Origin of Species: Two Essays Written in 1842 and 1844*, Francis Darwin (ed.) (Cambridge: University Press, 1909), pp. xxviii, 51–2, 253–5; Charles Darwin, *Charles Darwin’s Natural Selection; Being the Second Part of His Big Species Book Written from 1856 to 1858*, R.C. Stauffer (ed.) (London: Cambridge University Press, 1975), pp. 224–5.
- 26 See Charles R. Darwin, *On the Origin of Species. A Facsimile of the First Edition* (1859), introduced by Ernst Mayr (Cambridge: Harvard University Press, 1964), pp. 186, 188, 189, 413 (twice), 435, 488.
- 27 Darwin, *Origin of Species*, p. 488. In Darwin’s ‘Big Species Book’, he adds, ‘By nature, I mean the laws ordained by God to govern the universe.’ Darwin, *Natural Selection*, p. 224.
- 28 An epigraph in the *Origin of Species* (taken from William Whewell’s *Bridgewater Treatise*) depicts Darwin’s rejection of interventionism: ‘But with regard to the



material world, we can at least go so far as this – we can perceive that events are brought about not by insulated interpositions of Divine power, exerted in each particular case, but by the establishment of general laws.’

- 29 For the etymology of the term, see *Liddell and Scott Greek–English Lexicon* (Chicago: Follett Publishers, 1954), p. 697; W.F. Arndt and F.W. Gingrich, *A Greek–English Lexicon of the New Testament and Other Early Christian Literature* (Chicago: University Press, 1979), p. 811.
- 30 Darwin, *Origin of Species*, p. 490.
- 31 Morse Peckham (ed.), *‘The Origin of Species’ by Charles Darwin: A Variorum Text* (Philadelphia: University of Pennsylvania, 1959), p. 759.
- 32 Similar to the *Origin of Species* (1859), Michael Behe’s *Darwin’s Black Box* proposes that the ‘irreducible structures’ of the cell were put together ‘in one fell swoop’ in a ‘first cell’ from which all life evolved. See Michael J. Behe, *Darwin’s Black Box: The Biochemical Challenge to Evolution* (New York: Free Press, 1996), pp. 39, 227–8. Also see my response to a paper by Behe, ‘A Box or a Black Hole? A Response to Michael J. Behe’, *Canadian Catholic Review* (July 1999): 67–73.
- 33 Critics of this view claim that in the *Origin of Species* Darwin was simply hiding his true beliefs in order to have his book accepted. A letter to J.D. Hooker is often cited to defend this position: ‘I have long regretted that I truckled to public opinion, and used the Pentateuchal term of creation, by which I really meant ‘appeared’ by some wholly unknown process.’ Darwin to J.D. Hooker (29 March 1863) in Darwin, *Life and Letters*, vol. 3, p. 18; *Correspondence*, vol. 11, p. 278. However, if this is the case, then Darwin’s regret is short-lived. In the three editions of the *Origin of Species* (1866, 1869, 1872) following this letter to Hooker, he made no effort to remove the ‘Pentateuchal term of creation’ from his work. But more importantly, a review of Darwin’s *personal* scientific notebooks, which were never intended to be public, reveal his theological views are the same as those expressed in the *Origin of Species*. See note 25 above.
- 34 Darwin to Gray (22 May 1860). Darwin, *Life and Letters*, vol. 2, pp. 311–12; *Correspondence*, vol. 8, p. 224. Darwin to Gray (26 Nov 1860) Darwin, *Life and Letters*, vol. 2, pp. 353–4; *Correspondence*, vol. 8, p. 496. My italics.
- 35 Darwin, *Autobiography*, p. 87.
- 36 Interestingly, even Richard Dawkins states, ‘The complexity of living organisms is matched by the elegant efficiency of the apparent design. If anyone doesn’t agree that this amount of complex design cries out for an explanation, I give up. ... Our world is dominated by feats of engineering and works of art. We are entirely accustomed to the idea that complex elegance is an indicator of premeditated, crafted design. This is probably the most powerful reason for the belief, held by the vast majority of people that have ever lived, in some kind of supernatural deity.’ *Blind Watchmaker*, pp. xiii, xvi. My italics. Furthermore, a 1996 Princeton University study of the beliefs of Americans reveals that 96 per cent accept the existence of ‘a God or universal spirit’. See ‘Religion Index Hits Ten-Year High’, *Emerging Trends: Journal of the Princeton Religion Research Center* (March 1996), p. 4. Also see Darwin’s comment cited in note 50 below.

- 37 This categorical entrapment in Paleyan categories and the frustration it produced for Darwin is further seen in a letter to J.D. Hooker nearly ten years later: ‘My theology is a simple muddle; I cannot look at the universe as the result of blind chance, yet I can see no evidence of beneficent design, or indeed of *design of any kind, in the details*. As for *each* variation that has ever occurred having been preordained for a special end, I can no more believe in it than that the spot on which *each* drop of rain falls has been specially ordained.’ Darwin to Hooker (12 July 1870). Darwin, *More Life and Letters*, vol. 1, p. 321. My italics.
- 38 Darwin considered this view of design in his correspondence with Asa Gray: ‘I am inclined to look at everything as resulting from designed laws, with the details, whether good or bad, left to the working out of what we may call chance. Not that this notion *at all* satisfies me.’ Darwin, *Life and Letters*, vol. 2, pp. 311–12; *Correspondence*, vol. 8, p. 224. Regrettably, Darwin never develops the notion, nor does he explain why it never satisfied him.
- 39 Darwin to Gray (22 May 1860), Darwin, *Life and Letters*, vol. 2, pp. 311–12; *Correspondence*, vol. 8, p. 224 [my emphasis].
- 40 Darwin to Hooker (13 July 1856), Darwin, *More Life and Letters*, vol. 1, p. 94; *Correspondence*, vol. 6, p. 178.
- 41 For a concise review of Darwin’s medical condition and possible diagnosis see Lybi Ma, ‘On the Origin of Darwin’s Ills’, *Discover* (September 1997), p. 27.
- 42 See James R. Moore, ‘Of Love and Death: Why Darwin “Gave Up Christianity”’ in his *History, Humanity, and Evolution: Essays for John C. Greene* (Cambridge: Cambridge University Press, 1979), pp. 195–229.
- 43 Darwin to Lyell (2 August 1861). Darwin, *More Life and Letters*, vol. 1, pp. 191–2; *Correspondence*, vol. 9, p. 226. My italics.
- 44 Charles Darwin, *The Variation of Animals and Plants Under Domestication* (London: John Murray, 1888 (1868)), vol. 2, p. 428. My italics. Darwin seems to have abandoned his Divine sovereignty argument. First evidence of this appears in a letter two years later to J.D. Hooker where he writes: ‘Your conclusion that all speculation about preordination is idle waste of time is the only wise one; but how difficult not to speculate!’ Darwin to Hooker (12 July 1870). Darwin, *More Life and Letters*, vol. 1, p. 321. Moreover, this argument does not appear in Darwin’s mature theological position found in his *Autobiography* (1876).
- 45 Darwin, *Origin of Species*, p. 488.
- 46 See the section entitled ‘Belief in God – Religion’ in Darwin, *Descent of Man*, pp. 93–6.
- 47 Darwin, *Descent of Man*, p. 613.
- 48 Darwin, *Autobiography*, p. 90.
- 49 Darwin, *Autobiography*, pp. 88, 89–90.
- 50 Darwin, *Autobiography*, pp. 90–91. Darwin is referring to the passage in his *Beagle Diary*. See the quotation referred to in note 16 above. Darwin’s comment that this ‘religious sentiment’ is ‘experienced by most persons’ complements the view expressed in note 36 above.
- 51 Darwin, *Autobiography*, pp. 91. Darwin’s ‘colour-blindness’ seems to be somewhat temporary or intermittent as the quotation referred to in note 58 will reveal.



- 52 Darwin, *Autobiography*, pp. 91–2.
- 53 See Frank Burch Brown, ‘The Evolution of Darwin’s Theism’, *Journal of the History of Biology*, 19 (1986): 28. Brown argues cogently that Darwin’s statement should not be understood as simply a reminiscence.
- 54 The question arises as to whether Darwin incorrectly uses the term ‘theist’ in this passage when in fact he means ‘deist’. In defence that he does employ the term properly is the following assertion three pages earlier in this section on ‘Religious Belief’. Darwin states, ‘I did not think much about the existence of a *personal* God until a considerably later period of my life.’ Darwin, *Autobiography*, p. 87. My italics.
- 55 Darwin, *Autobiography*, p. 93.
- 56 Darwin, *Autobiography*, p. 93. As an aside, one must ask, ‘Is Darwin not using a mind ‘evolved from lower forms’ to make this argument?’ There seems to be a problem here with self-referential incoherence.
- 57 Darwin, *Autobiography*, p. 94.
- 58 Darwin to Fordyce (1879). Darwin, *Life and Letters*, vol. 1, p. 304. Italics added.
- 59 Darwin, *Life and Letters*, vol. 1, p. 316.