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48. Hull 1973, 55–66.
49. Whewell 1864, xv.
50. Cf. C. Darwin [1859] 1964, 137, 188.
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62. Mill 1874, 172.
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JOHN HEDLEY BROOKE

8 Darwin and Victorian Christianity

I THE DARWINIAN CHALLENGE

During his Cambridge years, Darwin was preparing to become a priest in the Anglican Church. Later in life he saw the irony: 'Considering how fiercely I have been attacked by the orthodox it seems ludicrous that I once intended to be a clergyman.'[1] Why he was attacked by the orthodox has never been difficult to explain. Offering a naturalistic account of the emergence of human beings from ape-like ancestors, Darwin offended religious sensibilities as well as common sentiment. His theory of evolution by natural selection reinforced doubts about biblical authority at a particularly sensitive time. It could easily be interpreted as an affront to human dignity and it called for a serious re-thinking – not necessarily a rejection – of traditional Christian doctrines.

Despite friction between competing Christian traditions, and despite political tensions in England between the established Anglican Church and socially disadvantaged dissenters, there were features of a Christian creed that transcended party lines. These were belief in an all-powerful, merciful God on whom the world depended for its creation and continued existence. Humankind had been made in God's image and had been granted the privilege of free will. The privilege extended to dominion over, and responsibility for, the rest of creation. The Christian God was an active, living God, to whom prayers were directed and whose providence was not confined to an original creative act. Central to most Christian belief was the doctrine that human nature had been tainted through Adam's disobedience and that in the life of Jesus Christ was a special revelation of the nature of God. Christ was envisaged as both human and divine, as the

Messiah whose coming had been prophesied in the Hebrew Scriptures. In evangelical preaching familiar to Darwin, Christ's death was an atonement for human sin, his resurrection a source of hope for all who trusted in his teaching, love and forgiveness.

Most Victorian intellectuals were not taking the *Genesis* creation narratives literally. Advances in the understanding of both earth history and the Bible had already called for symbolic readings of the *Genesis* 'days'.[2] There were even ancient precedents for non-literal readings of Scripture. Augustine had warned against taking the 'days' of creation literally. Nevertheless, among unsophisticated religious folk, Darwin was often seen as threatening a sacred text.[3]

To make matters worse, the historical nature of the creation narratives entailed other theological issues, such as the consequences of Adam's 'fall' and the biblical description of Jesus Christ as the 'second Adam' atoning for the sins of the first. Had Darwin not shown that man had risen, not fallen? And what of divine activity in the world? Even among Darwin's peers were some who believed that the origin of human beings would remain beyond the limits of science.[4] Darwin's contrary view challenged the picture, familiar from Milton's *Paradise Lost*, of a Creator who miraculously conjured new species into existence. Darwin did not close all the gaps. Unlike Robert Chambers, the anonymous author of *Vestiges of the Natural History of Creation* (1844), Darwin wisely refrained from speculating how the first few living forms had originated. Nor did he claim any insight into how the earth, much less the solar system and least of all the entire universe itself had come into being. Nevertheless, his account of species formation as resulting from the gradual accumulation of minor modifications was embarrassing for those who habitually found solace in the inexplicable. Darwin removed much of the mystery from what, following John Herschel, he called the 'mystery of mysteries', the origin of new species.

There were deeper questions, too. What did it mean for humankind to be made in the image of God if we shared ancestors with other primates? Had the human 'soul' been added during the evolutionary process, or was it more appropriate to speak of our *being* souls rather than *having* them? What was the ultimate ground of moral values if the evolution of the moral sense could be explained simply in terms of survival value, without reference to the transcendent? When Darwin wrote his *Descent of Man* (1871) he did not intend to

proclaim the relativity of moral values. He wanted to explain how the highest form of moral sensibility (that we should behave to others as we would have them behave towards us) had developed naturally. But it was easy to read his theory as disruptive of moral responsibility and, by implication, of the stability of society. Put crudely, if men and women were told that they were essentially no different from animals, would they not start behaving like them? That was a common fear, hardly diminished by references to a 'struggle for existence' that could easily be translated into aggressive individualism. Within the Christian traditions, might was not supposed to be right. It was the meek who would inherit the earth.

Darwin's emphasis on continuity between *Homo sapiens* and ape-like ancestors could be offensive even to those without Christian convictions. Cartoonists had a field day. Apes in their cages allegedly enquired whether they were their keeper's brother. Monkeys were depicted with their tails about to be shorn: 'cut it off short', says one, 'I can't afford to await developments before I can take my proper position in Society.' Darwin came close to saying that those who opposed his theory by snarling and baring their teeth only confirmed thereby their canine origins. Underlying the jokes were matters of deadly earnest. Victorian prudery and animal lewdness were not the best of bedfellows. But there was more to it than that. If Christian commentators were not amused, it was because they saw the new theory as a powerful tool for those wishing to wrest control of education from religious institutions.

As if this were not enough, Darwinism challenged natural theology – the attempt to infer the existence and attributes of a deity, independently of revelation. In England especially, confidence had often been placed in arguments for design, comparing intricate organic structures and their marvellous adaptive functions with the work of human artisans, as in the design of magnificent clocks. Such analogies pointed to the wisdom and power of God, the refinement of whose creatures far transcended anything mere mortals could make.[5] The inference to a Designer was not peculiar to Christian traditions. It appeared in antiquity and was sometimes embraced by critics of Christianity in their quest for an alternative and, in their estimation, more rational religion.

This argument for design had often incorporated the latest science and had been reinforced by it. In the second half of the seventeenth

century the microscope had disclosed a new world of great beauty and precision in minute organic structures. For Robert Boyle the way the Creator had packed life into the merest mite was awe inspiring. The physical sciences had also testified to divine precision – in the exquisite calculations made by Isaac Newton's God to ensure that the planets had gone into stable orbits. Because the sciences had so often supported religious belief, the Darwinian challenge was particularly poignant. Darwin never denied the appearance of design in the wonderful adaptations he studied; but his causal process of natural selection enabled one to see, almost as in a conversion experience, how nature could counterfeit design. For the Princeton theologian Charles Hodge the conclusion was inescapable. In his book *What is Darwinism?* (1874) Hodge did not regard the idea of evolution as necessarily atheistic. Nor did he accuse Darwin himself of atheism. But, for Hodge, Darwin's theory of evolution by natural selection, through its emasculation of design, amounted to atheism.

To compound the problem, Darwin's emphasis on divergent lines of evolution from common ancestors, represented by the image of a branching tree or branching coral, made it difficult to believe in the unfolding of a divine plan. The only diagram in the *Origin of Species* depicted this repeated forking and branching, enabling Darwinians with atheistic leanings to say that we are the product of a process that never had us in mind.[6] Add to this the accidental features of the evolutionary process, for example the demise of the dinosaurs making our own evolution possible, and the full force of the Darwinian challenge can then be appreciated.[7]

Given the widespread use of Darwinism in secular critiques of religion, it is not surprising that some Christians feel threatened by it. Historically, however, the relations between Darwinism and Christianity have been more diverse than the idea of continuous conflict would suggest. There is a richer, more fascinating story to be told. Darwin himself began as a reformer, not a destroyer of natural theology. His biography is revealing because his eventual agnosticism was not simply a result of his science. Family tragedy crushed his faith as did moral objections to certain Christian doctrines. Examining religious responses to his theory in Victorian England we shall find that they were sometimes surprisingly positive. Many did see opposition between evolution and creation; but it was also possible to see evolution as God's method of creation. The variety of response

raises important questions about the models we use to describe the relations between science, religion and modernity. These will be discussed in the closing section.

II DARWIN AND NATURAL THEOLOGY

Within Christianity, knowledge of God was derived from two principal sources: revelation, which might include forms of religious experience, and natural reason. The precise relationship between the two had often been controversial. Eighteenth-century critics of Christianity had argued that knowledge of the deity derived from reason was more reliable than that based on the Scriptures or on Church tradition. For Christian writers a theology based on reason alone would always be deficient because it could never show that God had entered into a special covenant with humankind. Nevertheless, natural theology did have a place in defending the faith, providing arguments against atheism and for an immortal soul. Informally it helped to reinforce belief by evoking a sense of awe at the wonders of the natural world. In William Paley's popular *Natural Theology* (1802), it was argued that rational proof of a deity was a first step towards believing that, from the same deity, a revelation might be expected.

The Darwinian challenge to natural theology was expressed by Darwin himself: 'the old argument from 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'.[8] The contrast is such that it can be a profound existential experience when one first sees the world not as Paley saw it but through the eyes of Darwin. God's well-adapted creatures suddenly become nature's products that happen to be the survivors of a long, tortuous, bloodstained process. For Darwin himself the sheer volume of extinction was staggering; and if one had not been staggered one had not understood the theory.[9]

Had natural theology been completely sterile; had Darwin learned nothing from it? Opinion is divided on this question; but there certainly exists a revisionist literature in which Darwin's debt to natural theology is explored.[10] Through reading Paley, Darwin became fascinated by the intricate adaptations he would eventually ascribe to natural selection. It has been claimed that the only universe in which

natural selection could work was the universe Darwin inherited and then stole from the natural theologians.[11] Even his debt to Malthus' argument that, in the absence of checks, population growth would tend to outstrip food supply, was a debt to a work of natural theology; for Malthus had been defending a God-given natural order within which secular hopes of a social utopia were purely visionary.[12] For Malthus the laws of nature were designed to promote the Christian virtues of diligence, industry and sexual abstinence until one could afford marriage and a family. His famous essay on population focused Darwin's mind on a struggle for survival throughout nature.[13]

Opinions differ on the extent of Darwin's debt to natural theology because two contrasting views have emerged concerning his intellectual formation. In the first he is a peculiarly English reformer of the language of design that he had encountered in Paley. In the second he is a Romantic naturalist, excited by the travels of Alexander von Humboldt, eager to experience the flora and fauna of exotic landscapes. On the first view the reform that Darwin favoured was that of the astronomer John Herschel and adopted in part by the philosopher William Whewell. Their emphasis fell on beneficent laws of nature rather than divine intervention. In Whewell's account, design was visible in propitious *combinations* of laws rather than in anthropomorphic images of contrivance.[14] Darwin looks to be just such a reformer of natural theology in the 1830s. A notebook entry reads: 'the Creator creates by laws'. Darwin supposed that the 'end of formation of species & genera, is probably to add to quantum of life possible with certain preexisting laws'. He also referred to 'laws of harmony' in the system.[15] Design was to be seen in providential combinations of laws rather than in specific organic structures.

In the alternative view, where the young Darwin is recast as a Romantic naturalist, he is entranced not so much by Paley's mechanistic anatomy as by an emotive response to the beauties of nature, enticed by the vision of tropical rain forests, intoxicated by what he reads of Humboldt's travels, desolated when his ship could not land on Tenerife.[16] This was the young man who would eventually breathe the word 'hosannah' when finally experiencing the Brazilian jungle for himself: 'Twiners entwining twiners, tresses like hair – beautiful lepidoptera – Silence, hosannah.'[17] On this interpretation the young Darwin found God *in* nature rather than deduced God's

existence *from* it. On neither view was nature bereft of religious meaning.

Darwin's reference to 'ends' in creation suggests that at the time his theory took shape he was not erasing divine purposes. In an early *Sketch* of his theory (1842) the divine laws leading to 'death, famine, rapine, and the concealed war of nature' were justified because they produced 'the highest good, which we can conceive, the creation of the higher animals'.[18] There were even hints of a theodicy – an attempt to rationalise the existence of pain, suffering and the uglier features of creation. Might something be gained by having the Creator create through intermediate processes? The deity would not then be directly responsible for what Darwin called a 'long succession of vile molluscous animals'. From this perspective, it was separate creation that he deemed 'beneath the dignity of him, who is supposed to have said let there be light and there was light'. To deny that God was capable of producing 'every effect of every kind' through 'his most magnificent laws' Darwin described, in strong language, as an act of profanity.[19]

Seeing Darwin as a reformer of natural theology may help us understand certain constraints on his theory of natural selection. If the laws of nature were of divine origin, one might expect the improvement of organic forms to reach such levels of perfection that a continuous action of natural selection would cease. If environmental changes subsequently produced new pressures, then (and only then) would natural selection cut in again. It has been argued that such a constraint on the continuous action of natural selection was not lifted until Darwin began to think in terms of relative rather than absolute or perfect adaptation.[20] Darwin admitted that other legacies from natural theology had also shaped his thinking. In his *Descent of Man* there was a frank confession: 'I had not formerly sufficiently considered the existence of many structures' which are 'neither beneficial nor injurious; and this I believe to be one of the greatest oversights as yet detected in my work'. What reason did he give for this oversight? 'I was not able to annul the influence of my former belief, then widely prevalent, that each species had been purposely created; and this led to my tacitly assuming that every detail of structure, excepting rudiments, was of some special, though unrecognised, service.'[21] Darwin corrects his former self, and we may recognise both Darwins in current evolutionary debates.

III DARWIN'S RELIGIOUS ODYSSEY

What were Darwin's private religious beliefs and how did they change? A possible *ending* of the story is contained in a letter from Julia Wedgwood to Darwin's son Frank: 'Everyone who feels Religion infinitely the most important subject of human attention would be aware of a certain hostility towards it in [your father's] attitude, so far as it was revealed in private life.' She continued with the arresting remark that he felt he was confronting some influence that adulterated the evidence of fact.[22] The strength of this remark suggests that in the course of his spiritual trajectory Darwin had reached some conclusions he was unlikely to renounce.

The standard view is of a neat linear progression: from his early Christianity, in which he would astonish members of the *Beagle* crew by quoting the Bible to settle a point of morality, to a deistic position when he wrote the *Origin*, to his later agnosticism.[23] This is an attractive formula because of another seemingly irreversible process at work: the loss of an aesthetic sensibility that Darwin confessed had been 'intimately connected' with his belief in a deity.[24] Such a neat progression also harmonises with standard models of secularisation. However, it has become less clear that Darwin can be pigeon-holed at each stage of his intellectual development. On reflection it would be surprising if the man who showed us that we cannot pigeon-hole pigeons could be pigeon-holed himself. He spoke of *fluctuations* of belief.[25] The materialism with which he flirted in the late 1830s, even if sustained, may not have precluded a Christian sensibility of sorts. There were certainly monistic models of mind and body within Unitarianism – that tradition within Christianity, exemplified by Joseph Priestley, which denies the orthodox doctrine that Christ is as divine as God.[26] Much later, when Darwin preferred to think of himself as an agnostic, he still insisted that there were days on which he deserved to be called a theist.[27] Even his atrophied sensibilities were perhaps not as deadened in later life as he pretended.[28]

Consequently we may need to revise our understanding of Darwin's loss of faith. There were many cultural resources on which he could have drawn for his eventual agnosticism. These included the scepticism of David Hume and the positivism of Auguste Comte.[29] We have long known of his early doubts about sacred texts and how

on the *Beagle* voyage he came to doubt whether an intuitive sense of God was a universal human characteristic. His cousin, Hensleigh Wedgwood, tried to persuade him that this innate sense of God differentiated us from the animals. Darwin disagreed. On his voyage he had discovered that a sense of God was not pronounced in a Fuegian or in an Australian.[30]

A radical hypothesis would be that Darwin's loss of faith had little or nothing to do with his science. This would be to go too far. Darwin emphatically did make connections *between* scientific and other reasons for his religious doubts. Extending the domain of natural law did make miracles more incredible.[31] The extent of human suffering threatened belief in a beneficent God but was consonant with his theory of natural selection.[32] Randomness in the production of variation was difficult to square with divine control. There was also the concern his wife Emma had expressed just before their marriage – that the critical, questioning mentality appropriate to a life in science might encourage scepticism on matters of faith.

Nevertheless, the most sensitive accounts of Darwin's doubts have stressed their origins in experiences and traumas common to the human condition. There was the death of his infidel father, forcing him to confront once again that 'damnable doctrine' of eternal damnation. 'I can hardly see how anyone ought to wish Christianity to be true', he would later write in a passage that his wife considered so 'raw' that she wished to have it excised from his *Autobiography*.[33] Excised because, in her opinion, Charles' characterisation of Christian doctrine had become a caricature. Then there was the tragedy of his daughter Annie's death in 1851 – the cruel death of an innocent ten-year-old, which marked for Darwin the crucifixion of all his hopes.[34]

Many of the ingredients of Darwin's agnosticism sprang from incidents easily missed if one looks only to his science. An important step was his realisation that the radical friends with whom he associated in his London years – members of the circle of Harriet Martineau – could lead an exemplary moral life without embracing the Christian religion.[35] This challenged a common cultural assumption that atheists could not be trusted because any oath they might take would not be binding. Darwin's religious slide was perhaps not so different from that of Francis Newman, brother of the more

famous, and much more orthodox, John Henry Newman, and one of the 'honest doubters' whom Darwin studied in the early 1850s.[36]

What of Darwin's public utterances? It has become increasingly clear how carefully they must be read. From his notebooks we know that he had to calculate what he should *not* say.[37] It was also expedient to keep what he said about religion to a minimum. 'Many years ago', he reminisced, 'I was strongly advised by a friend never to introduce anything about religion in my works, if I wished to advance science in England.'[38] There may have been expediency, too, in protecting himself from censure. But it is a complex matter because he also shared the belief that it was ungentlemanly to disturb the faith of others. This means there can be a greater ambiguity in his public remarks on religion than in private. Here is Darwin confiding to Joseph Hooker in March 1863: '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.'[39]

Because he regretted having used biblical language it does not follow that he was admitting to atheism. It is even possible he was truckling to Hooker! But it is indisputable that he lost a specifically Christian faith. He could write that science itself had 'nothing to do with Christ, except in so far as the habit of scientific research makes a man cautious in admitting evidence'. But that very caution, just as Emma had feared, took its toll: 'For myself I do not believe that there ever has been any revelation.'[40] It has been suggested that Darwin's evidentialist view of Christianity goes back to another work of Paley, his *Evidences of Christianity*. If that is correct there is a subtle irony. The Anglican Church itself had taught him to test the rationality of faith through the study of evidence – a lesson that he so took to heart that it cost him the beliefs he had earlier espoused.

Writing to the American botanist Asa Gray, Darwin confessed that he could not see evidence for design in nature as clearly as Gray apparently could. Whereas Gray supposed that the variations on which natural selection worked were led by providence in propitious directions, Darwin interpreted them as appearing at random without any prospective use in mind. For Darwin the case was like that of a builder who might use stones to build a house but where it would be impossible to claim that the stones had come to be as and where they were for that purpose. In a revealing reply, Gray conceded that

he had no answer to such an argument – except that the perception of design in nature was, after all, based on faith and not reason alone.[41] In his private correspondence Darwin exulted in his victory.[42] Yet, even for Darwin himself, the issue was not transparent. On several occasions he said that he could not believe so wonderful a universe is the product of chance alone. He was attracted to the formula that it was the result of designed laws, with the *details* left to chance. But then the distinctiveness of his agnosticism shines through. He had convictions that the universe in its main lines of development was not the product of chance. Convictions of that sort were what agnostics were not supposed to have. Yet, disarming as ever, Darwin asked whether he should trust his own convictions – especially if his own mind was the product of evolution: 'Can the mind of man, which has . . . been developed from a mind as low as that possessed by the lowest animals, be trusted when it draws such grand conclusions?'[43]

In Darwin's *Descent of Man* (1871) a naturalistic account was given of the moral sense and its origin. This could be deeply wounding for his contemporaries. In an age that experienced a crisis of faith, belief in moral absolutes had sometimes been a lifeline. Darwin's account certainly wounded his wife. To her son Francis she spoke frankly: 'your father's opinion that *all* morality has grown up by evolution is painful to me'. The offending suggestion was that a child's belief in God might be compared with a monkey's fear of a snake – inculcated until it almost became an instinct.[44] Because Darwin's work could be so wounding, we should turn to its reception.

IV RELIGIOUS RESPONSES TO DARWIN'S THEORY

Darwin's theory was bound to be a divisive issue within the Churches because it was so easily transformed into a naturalistic worldview, in which references to a deity were marginalised or excluded. Scholars have spoken of a clash between positivism and creationism, between chance versus design, between contending appeals to authority, the scientific versus the clerical.

To place the clash of ideas in a social and political context, two theses have become prominent. Frank Turner has seen the Darwinian debates as symptomatic of a profound social change in which scientific amateurs (epitomised by clerical naturalists) were displaced by a younger generation of professional scientists (typified by Thomas

Henry Huxley) eager to assert their rigorous standards and cultural authority.[45] Not without provocation, advocates of scientific naturalism sometimes went on the offensive, as when the physicist John Tyndall at the 1874 Belfast meeting of the British Association for the Advancement of Science declared that 'we shall wrest from theology the entire domain of cosmological theory'.[46]

The second thesis is that of Adrian Desmond and James Moore who ask from where Darwin derived his predilection for causal explanations of animal distribution. They point to the influence of scientific mentors: Robert Grant, Charles Lyell, John Herschel. But, they add, 'all these were particulate influences within a much wider and deeper sea-change. The tide was running towards naturalism in an age rejecting Oxbridge Anglicanism for Dissenting industrialism. Nature was being reformed – purged of miracles, subjected to law – and the message was rife in radical literature around the time of the first Reform Act.'[47]

As with all such general theses there is room for nuance. In the physical sciences of Darwin's era, one could be a thoroughly professional scientist, wedded to rigorous standards in one's work, and still prefer a theistic worldview to one purged of design. This would be true of James Clerk Maxwell and William Thomson (Lord Kelvin), of whom it has recently been said that they 'not only embedded their new natural philosophy in the cultures of Presbyterianism but had also been ready to deploy that natural philosophy in the service of a Christianity suitable to the wants of Victorian Britain'.[48] Energy sources were conceived as gifts analogous to the spiritual gift of grace, which when accepted carried an obligation to ensure they were not wasted. There were physicists who suspected that secular thinkers were falling for Darwinism because it suited their purpose, not for solid reasons.[49] It is a mistake to assume that the scientific community was united behind Darwin, just as it would be a mistake to imagine that all Christian theologians lined up against him.

As a qualification to the thesis of Desmond and Moore, it has been suggested that the politics of evolution may have been less radical – at least in England and Scotland – than these authors imply.[50] There was no lack of evolutionists or fellow-travellers in the late 1830s: Baden Powell, William Carpenter, Robert Chambers and Francis Newman would be examples. Darwin may have felt that to confess his 'murder' (admitting the mutability of species) would have led to his being

stigmatised along with artisan radicals; but the suggestion is that he might have been mistaken in that belief. How one was treated depended on who one was, not simply on what one said.

To impose social and political dichotomies on the Darwinian debates can be misleading if no space is left for intermediate positions. A large space was created by Baden Powell, Oxford's Professor of Geometry, who wished to protect the autonomy of both science and theology by giving to men of science all the freedom they needed to investigate nature, at the same time assigning jurisdiction over moral issues to the theologian.[51] Even Darwin's advocates often preferred to see their science as a-theological rather than anti-theological. T. H. Huxley referred to the sciences as neither Christian nor un-Christian but extra-Christian.[52] He found nothing in Darwinian evolution to exclude the possibility of an original design in a primordial state of the universe.[53]

Some modern writers suggest that, by destroying Paley's argument for design, Darwin deprived Christianity of its rational foundation. This is a serious mistake because there were theological perspectives from which the design argument was of minor importance. It was seen by some High Church Anglicans as little more than the ideological construct of a scientific community seeking to promote itself by claiming that the sciences were spiritually edifying. This scientific rhetoric found little favour with John Henry Newman, one of the most influential theologians of the mid-nineteenth century, who famously deserted the Anglican Church for the Church of Rome. In his vision of an ideal university Newman conceded that the design argument may teach God's power, but 'What does Physical Theology tell us of duty and conscience? Of a particular providence and, coming at length to Christianity, what does it teach us even of the four last things, death, judgment, heaven and hell, the mere elements of Christianity?' Newman's conclusion was that 'it cannot tell us anything of Christianity at all'.[54] There is a sense in which he was more critical of Paley than he was of Darwin.

For religious thinkers who focused on evolutionary progress there were ways of integrating the physical development of humankind with a spiritual development that crowned the process. Such evolutionary schemes were often facile. Henry Drummond, minimising the waste and carnage in nature, shifted attention from the struggle for existence to an altruistic struggle for the life of others. And in

his immortal words it was better to have lived and been eaten than not to have lived at all! It may, however, be too easy to ridicule the theologians who minimised the nastiness of natural selection. Even among Darwinian biologists, natural selection remained highly controversial. Darwin himself acknowledged that he probably gave it too much prominence in the first edition of his *Origin*, while Huxley always thought new species arose by 'saltations' (large sudden changes). If natural selection was eclipsed by other evolutionary causes even among naturalists themselves, we should exercise caution before accusing the theologians of distortion. Scientific disagreement over the relative importance of natural selection and the inheritance of characteristics acquired by use and disuse created the space for schemes of theistic evolution in which teleological factors were retained.[55] Reconstructing the fossil record to display independent lines of convergence towards a few archetypal structures (rather than Darwin's process of increasing divergence), one could argue, as did J. H. Newman's protégé St George Mivart, that the evolutionary process was indeed under divine control.[56]

Because religious sensibilities depended on location as well as tradition, it is impossible to generalise about Christian responses. Even within the same Christian denominations there was diversity. Whereas the Anglican bishop of Oxford, Samuel Wilberforce, thought he could demolish Darwin's theory on scientific and philosophical grounds, another Anglican divine, Frederick Temple, was receptive to the new science as early as 1860. Whereas in Belfast a traditional Calvinism was used to refute the precepts of evolution, at Calvinist Princeton, under the leadership of James McCosh, biological evolution was accepted.[57] One reason for the contrast was the legacy in Belfast of John Tyndall's 1874 address as President of the British Association. His aggressive remarks that we noted earlier encouraged the view that Darwinism, atheism and materialism went hand in hand.

To add to the diversity there were prominent scientists who doubted whether the development of the human mind could be reduced to the action of natural selection. Darwin's mentor Charles Lyell is one example: a convert to evolutionary theory who nevertheless held back when it came to the uniqueness of the human mind. Darwin's co-founder of the theory of natural selection, Alfred Russel Wallace, is another. Wallace had rejected an evangelical Christianity

early in life but later became enthralled by a spiritualist philosophy, even seeking to test it experimentally.[58] To Darwin's regret, Wallace insisted that certain attributes of the human mind, notably its aesthetic, musical and mathematical powers, defied explanation by natural selection.

Neither Lyell nor Wallace was orthodox in his religious beliefs. By contrast there were respectable Christian clerics who encouraged Darwin with their support. One of the first was the Christian socialist Charles Kingsley; another was Frederick Temple, whose advocacy did not prevent him from becoming Archbishop of Canterbury. Both decided that it required more wisdom in a deity to make all things make themselves than to make all things directly. Kingsley's point was that, on Darwin's view, one could safely reject the image of an interfering deity – a magician who had conjured new species, as it were, out of a hat. There was now the prospect of emancipation from such a childish vision and that would strengthen a mature Christianity. Temple held a similar view, rebuking those theologians who had so often built on the shifting sand of what science could not yet explain. He welcomed the extension of natural law because this made it more probable that the world was also governed by moral law.[59]

Other advantages were seen in a Darwinian theology. Asa Gray, who championed natural selection in America, argued that the problem of suffering, so difficult for Christian theologians, was mitigated rather than magnified by Darwin's theory. His point was that, if pain and suffering were necessary concomitants of a struggle for existence that was itself a precondition of the emergence of complex beings like ourselves, then this was the price that had to be paid for a truly creative process. The argument could be given another twist, in keeping with Darwin's early speculations. A process in which the laws were designed but the details left to chance might explain nature's more repulsive products without having to ascribe them directly to divine action.

A different move was made by some Oxford theologians towards the end of the nineteenth century when they reasserted the Christian doctrine of the Incarnation – that God had taken human form in the person of Jesus Christ. This led them to stress divine participation in an evolving world rather than the interfering *deus ex machina* of a clockwork universe. One of their number, Aubrey Moore, insisted that under the guise of a foe Darwin had done the work of a friend.

Instead of an absentee deity who occasionally intervened, one had to choose now between a God who was in all or in nothing.[60] By using evolutionary theory as a theological resource, writers such as Kingsley, Temple and Moore baptised it in Britain.

V DARWINISM AND RELIGION IN BROADER PERSPECTIVE

Because evolution could be regarded as a creative process, the damage inflicted by Darwin on open-minded Christian believers can easily be exaggerated. The Victorian crisis of faith had other roots, extending back to the Enlightenment. In France Voltaire had attacked the morality of a faith grounded in Old Testament conceptions of a partisan and vengeful deity. Other voices, too, had protested against the intolerance, especially of the Catholic Church, towards any form of religious dissent. In England Joseph Priestley had stood up for 'rational dissent', a philosophical position from which he attacked Calvinist theology, the doctrine of the Trinity, the duality of matter and spirit and the idea that the Deity could directly influence the human mind.[61] From Germany had come methods of biblical criticism that in their most radical forms stripped Christ of his miracles. While David Strauss' *Das Leben Jesu* [*Life of Jesus*] (1835) did not outright accuse the gospel writers of deliberate falsification, it argued that they had written after the events they described, and within a tradition of prophetic literature that associated the Messianic era with signs and wonders. This did not have to mean that these biblical writers lacked special inspiration; but it implied that they had been ordinary, fallible men, whose beliefs reflected their own times. One could still argue, as liberal Anglican Christians did, that the Bible should not be understood as the unmediated word of God but as an inspiring record of a developing spirituality, of progressive religious discernment. Nevertheless, when advocated in *Essays and Reviews* (1860), this thesis angered conservative churchmen.

Other forces had thrown the English Church on the defence. Urbanisation and industrialisation had encouraged the spread of new secular values. An expanding literacy and a voracious demand for reading matter had created a situation in which, by 1853, one clergyman estimated that 28.5 million publications were appearing annually from secular presses against 24.5 million from religious

publishers.[62] It looked as if the devil was winning. Adding to the concern, intellectuals within the Church were among the honest doubters – at least on certain points of doctrine. When, in his *Theological Essays* (1853), F. D. Maurice criticised the doctrine that the spiritually unregenerate would endure eternal damnation, his liberalism cost him his Chair at King's College London. His courageous expression of doubt acted as a catalyst for others who wished to reform the Christian faith. Charles Kingsley, for example, was as receptive to Maurice's teaching as he was to Darwin's. He told Maurice that he 'was utterly astonished at finding in page after page things which I had thought, and hardly dared to confess to myself, much less to preach'.[63]

These were trends that owed little to Darwin, who on eternal punishment shared the moral repugnance of others. In an important respect, however, Darwin's science reinforced the impact of biblical criticism. Darwin made the same assumptions as Strauss about the continuity of nature and the incredibility of miracles. 'The more we know of the fixed laws of nature', Darwin wrote, 'the more incredible do miracles become'.[64] Darwin's science also contributed to what for many Victorians became a substitute religion – a religion of human perfectibility and technological progress, consonant with Darwin's belief that natural selection worked only for the improvement of species.[65]

The assumption of inevitable conflict between 'science' and 'religion' pervades modern Western culture. It has sponsored a view of history in which Christian clerics are the villains seeking to suppress, as in the case of Galileo, the well-founded knowledge of scientific heroes. Darwin's theory and the negative responses to it might seem to corroborate the model. Yet the conflict thesis was largely a product of the nineteenth century, its champions having personal reasons for mocking ecclesiastical authority. John Draper's *History of the Conflict between Religion and Science* (1875) was a diatribe against the Roman Catholic Church, prompted by recent proclamations that public institutions teaching literature and science should not be exempt from the Church's authority and that the pope was infallible when speaking *ex cathedra* on matters of faith and morals. Andrew White's *A History of the Warfare of Science with Theology in Christendom* (1896) was written in reaction to stinging criticism he received from Christian clerics when his charter for Cornell

University placed it under the control of no one religious sect. Both Draper and White projected a 'conflict between science and religion' backwards in time, using categories that were anachronistic.[66] They were not alone in constructing sweeping narratives in which science was defeating dogmatic theology. In France Auguste Comte had already advertised his three-stage model for the progress of human civilisation – from a theological stage, when natural phenomena had been ascribed to gods, to a metaphysical stage when abstract concepts (such as Newton's force of gravitation) had been explanatory resources, to the present scientific or 'positive' stage represented by verified facts and laws. Comte had his reasons: he wished to set up a 'religion of humanity' to displace that of the Catholic Church in France.[67]

Religious battles over evolution seemed to support these master narratives. Draper observed that there was a controversy raging over the method of divine government of the world – whether this was by direct intervention or through the rule of law. This was one of the primary issues in debates over evolution. White saw in clerical opposition to Darwin the last throes of the Church in a battle she was destined to lose. Darwin may have perceived himself as ushering biology into Comte's 'positive' stage, leaving metaphysical and theological concerns behind.

There are, however, problems with the 'conflict' model. It conceals the fact that many scientists have had deep religious convictions and that within religious traditions there have usually been liberal as well as conservative forces. Conflicts in the past have sometimes arisen because religious thinkers have embraced new science too enthusiastically, only to find themselves stranded when their sanctified science becomes obsolete. A conflict model also conceals the efforts of mediators to achieve harmony or integration. In the case of the Darwinian debates it would conceal men of science, such as Richard Owen and St George Mivart, who argued for evolution as an unfolding of a divine plan, just as it would conceal advocates of theistic evolution among the theologians.

If the conflict model is defective, are there other ways of relating science and religion? Some scholars have gone to the other extreme, arguing that a doctrine of Creation positively contributed to the rise of modern science.[68] This may sound implausible, but pioneers of Western science, such as Copernicus, Kepler and Newton certainly

thought of themselves as uncovering a mathematical harmony in nature that had been the product not of chance but of divine choice. The rationality of science required that nature be orderly and intelligible. These two assumptions were reasonable if an intelligent Creator had prescribed the laws of nature. Physical scientists to this day sometimes speak as if they are privy to the mind of God, echoing Kepler's belief that, through the language of mathematics, he could think God's thoughts after Him. The quest for elegance, symmetry and harmony in scientific theories can be understood theologically. Einstein once said that when asked to evaluate a physical theory he would always ask himself whether, if he had been God, he would have made the world that way.[69]

A revisionist historian might observe that, in his *Origin of Species*, Darwin spoke of 'laws impressed on matter by the Creator'. In private correspondence Darwin declared that he had never been an atheist in the sense of denying the existence of a deity. His confidence that his theory disclosed hidden realities behind the mask of nature was conceivably a legacy from a theistic position in which the human mind was privileged to know such things.[70] On the revisionist view, one would focus on the Christian thinkers who have insisted on compatibility rather than conflict between Darwinian science and their faith.

Just as the conflict thesis ignores many instances of harmony between science and religion, the revisionist response tends to minimise the dissonance.[71] There are certainly popularisers of Darwinian evolution today who, reconstructing the tortuous path by which humans have evolved, would say that, had they been God, they would not have made the world this way. However, no unanimity exists on such metaphysical questions. Among evolutionary biologists there are Christians who recognise that a religious faith can answer a person's moral and existential concerns in ways that scientific knowledge alone cannot.

Responses to Darwinian evolution have varied from context to context and still do. We saw something of this in the previous section when examining the range of early reactions. The anti-Darwinian lobby in North America has been more vociferous in some states than others. One of the appealing features of a postmodern approach to issues in science and religion is that it invites the careful study of local contexts and what differentiates one from another. In the

famous Scopes trial [1925], William Jennings Bryan came to Dayton, Tennessee, to defend the power of local majorities to enact a law – in this case a law against teaching human evolution in public schools. Recent research has shown how far the historical reality differed from the legend. One reason why Bryan wished to ban the teaching of human evolution was that it had come to be associated with what he saw as a distasteful commitment to eugenics.[72]

Does this mean that any reputable account of the impact of Darwin's theory on religious sensibilities has to fragment into many disconnected stories? Yes and no. To escape from the crude master-narratives and to appreciate the diversity of response, it is essential to undertake comparative studies of different national and local contexts.[73] More work needs to be done on contrasts between North America and Britain, where an anti-Darwinian right-wing Christianity has never been a serious political force. Still more needs to be done on responses to Darwin in other world religions.[74] On the other hand, it is possible to identify recurring metaphysical and theological issues wherever Darwinism is discussed – whether, for example, nature is fully autonomous; whether there are identifiable and perhaps even convergent trends in evolutionary processes; whether there might be design in the laws governing evolution; whether all mental capacities, even religious sensibilities themselves, can be fully explained by natural selection; and whether the quintessentially Darwinian concept of natural selection can be applied to the development of other systems, including entire universes. Such questions will continue to produce disparate answers; but it would be difficult to deny that Darwin contributed decisively to an intellectual trend, in both Europe and America, which led to the exclusion of God-talk from technical scientific texts.

NOTES

1. C. Darwin 1958, 57.
2. Rudwick 1986.
3. Ellegård [1958] 1990, 155–73.
4. Gillespie 1979, 19–40.
5. Brooke and Cantor 1998, 207–35.
6. Simpson 1967; Dawkins 1986.
7. Gould 1989.
8. F. Darwin [1888] 1969, I, 309.

9. F. Darwin [1888] 1969, II, 218.
10. Ospovat 1980 and 1981; Brooke 1985.
11. W. Cannon 1961.
12. La Vergata 1985, 957.
13. Browne 1995, 385–90.
14. Yeo 1979 and 1993.
15. Brooke 1985, 46–7.
16. Sloan 2001.
17. Desmond and Moore 1991, 122.
18. Darwin and Wallace 1958, 87.
19. Brooke 1985, 47.
20. Ospovat 1981.
21. C. Darwin [1871] 1981, I, 152–3.
22. Brooke 1985, 41.
23. Burch Brown 1986; Mandelbaum 1958; Brooke 2009.
24. F. Darwin [1888] 1969, I, 311–12.
25. F. Darwin [1888] 1969, I, 304.
26. Brooke 1990; Desmond and Moore 1991, 7–9.
27. F. Darwin [1888] 1969, I, 312–13.
28. Sloan 2001.
29. Manier 1978.
30. Barrett *et al.*, 1987, *Charles Darwin's Notebooks, Notebook* C, MS p. 244; C. Darwin [1871] 1981, 65–9.
31. C. Darwin 1958, 86.
32. F. Darwin [1888] 1969, I, 311.
33. C. Darwin 1958, 87.
34. Desmond and Moore 1991, 375–87.
35. Erskine 1987.
36. Desmond and Moore 1991, 376–8.
37. Kohn 1989, 224.
38. Brooke 1985, 41.
39. Gillespie 1979, 134.
40. F. Darwin [1888] 1969, I, 307.
41. J. R. Moore 1979, 276.
42. F. Darwin [1888] 1969, I, 314.
43. F. Darwin [1888] 1969, I, 313.
44. C. Darwin 1958, 93.
45. Turner 1978 and 1993.
46. Tyndall [1874] 1970, 474–5.
47. Desmond and Moore 1998, 159
48. C. Smith 1998, 307.
49. D. B. Wilson 1984.

50. Corsi 1998, 135.
51. Powell 1861, 127–8; Corsi 1988, 218–19.
52. Dixon 1999, 322.
53. F. Darwin [1888] 1969, II, 201–2.
54. Rupke 1983, 271.
55. Gregory 1986, 374.
56. Desmond 1982, 183.
57. Livingstone 1992.
58. Kottler 1974.
59. Elder 1996.
60. Peacocke 1985, 110–11.
61. Brooke 1990.
62. Fyfe 2000, 80.
63. Kingsley 1883, 146.
64. C. Darwin 1958, 86.
65. Passmore 1970, 239–40.
66. Brooke 1991, 33–42.
67. Brooke and Cantor 1998, 47–57.
68. Jaki 1978; Klaaren 1977; Milton 1981.
69. Chandrasekhar 1990, 68.
70. Gillespie 1979, 144–5.
71. Gruner 1975; Brooke 1991, 42–51.
72. Larson 1998, 6 and 28.
73. Cantor 2001.
74. Bezirgan 1974; Killingley 1995; Swetlitz 1999.

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9 Darwin, social Darwinism and eugenics

I AMBIVALENCES AND INFLUENCES

How does Darwin's Darwinism relate to social Darwinism and eugenics? Like many foes of Darwinism, past and present, the American populist and creationist William Jennings Bryan thought a straight line ran from Darwin's theory ('a dogma of darkness and death') to beliefs that it is right for the strong to crowd out the weak, and that the only hope for human improvement lay in selective breeding.[1] Darwin's defenders, on the other hand, have typically viewed social Darwinism and eugenics as perversions of his theory. Daniel Dennett speaks for many biologists and philosophers of science when he characterises social Darwinism as 'an odious misapplication of Darwinian thinking'.[2] That perspective is also reflected in the 2005–6 blockbuster Darwin show curated by the American Museum of Natural History, where the section on 'Social Darwinism', subtitled 'Misusing Darwin's Theory', claims that all uses of Darwin's theory to justify particular social, political, or economic principles 'have one fundamental flaw: *they use a purely scientific theory for a completely unscientific purpose*. In doing so they misrepresent and misappropriate Darwin's original ideas'.[3] Few professional historians believe either that Darwin's theory leads directly to these doctrines or that they are entirely unrelated. But both the nature and significance of the link are passionately disputed.

This chapter examines the views held by Darwin himself and by later Darwinians on the social implications and impact of his theory. More specifically: section II discusses the debates about human evolution in the wake of Darwin's *Origin of Species* (1859).[4] Sections III and IV analyse Darwin's ambiguous contribution to these debates.