



## ORDER: GOD'S, MAN'S AND NATURE'S

"Laws impressed on matter by the Creator"?

The *Origin* and the Question of Religion

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In November 1859, on the brink of publication and eagerly anticipating the reaction of the naturalists he most respected, Darwin confided to Alfred Russell Wallace: "If I can convert Huxley I shall be content" (*Correspondence*, 7: 375). A month later he had apparently succeeded, reporting that Huxley "says he has nailed his colours to the mast, and I would sooner die than give up, so that we are in as fine a frame of mind ... as any two religionists" (*Correspondence*, 7: 432).

The conversion to which Darwin referred was not to an atheistic or materialistic worldview. His goal had been more modest: to corroborate the view that species were mutable and that to explain their appearance it was unnecessary to invoke separate acts of creation. The use of religious language is, however, revealing and was not confined to the metaphor of conversion. Belief in the transmutation of species was described as heretical, as when Darwin thanked Huxley for being "my good and admirable agent for the promulgation of damnable heresies" (*Correspondence*, 7: 434 ). After receiving "unmerciful" admonition from his old Cambridge friend Adam Sedgwick, Darwin described himself as a "martyr" (*Correspondence*, 7: 430). As in religious communities, so in the scientific: Darwin exploited personal testimony. "Boastful about my book", he informed a French zoologist as early as 5 December 1859 that "Sir C. Lyell, who has been our chief maintainer of the immutability of species, has become an entire convert; as is Hooker, our best & most philosophical Botanist; as is Carpenter, an excellent physiologist, & as is Huxley; & I could name several other names". Reinforcing the rhetoric he added that these naturalists "intend proclaiming their full acceptance of my views" (*Correspondence*, 7: 415-16.). In a less boastful overture to American geologist James Dana, he wrote of "difficulties ... so great that I wonder I have made

any converts, though of course I believe in truth of my own dogmas”  
(*Correspondence*, 7: 462-3).

This stock of religious metaphor might be seen as nothing more than linguistic embellishment; but it points to something deeper. It underlines a difficulty Darwin faced in winning converts. His own conversion, as he explained to Oxford geologist John Phillips, had taken “many long years” (*Correspondence*, 7: 372). To Lyell he used a phrase that he would later apply to his religious views: “many & many fluctuations I have undergone” (*Correspondence*, 7: 353). Yet he had to hope that by staggering his readers with his alternative vision of the history of life, he could win converts quickly. He pleaded with them to read his text from beginning to end to grasp its force. The religious metaphors also indicate that two competing paradigms were in contention and that cautious, mediating positions would have the air of compromise. When Phillips sought to restrict the scope of “descent with modification” by confining it within each separate “essential type of structure”, he adopted a position for which Huxley already had a colourful slur. Darwin propelled it to Lyell: “Huxley says Phillips will go to that part of Hell which Dante tells us is appointed for those who are neither on God’s side nor on that of the Devil’s” (*Correspondence*, 7: 409-10).

This was a conspiratorial joke, but one that signals deeper layers of controversy. Those who believed that a theory of separate creation was fundamental to their religious faith saw an immediate threat from Darwin’s science. The *Origin of Species* was bitterly attacked, often by clerics with an amateur interest in the study of nature. Enduring his metaphorical martyrdom, Darwin was sustained by the belief that a theory that connected and explained so much that was otherwise inexplicable could not be off the rails.

### **Paradigms and laws**

The impression of two paradigms in contention has often been reinforced by anecdotes that have spiced popular accounts of religious reaction. Whether it is Disraeli proclaiming himself on the side of the angels rather than the apes, or the bishop of Oxford, Samuel Wilberforce, humiliated after baiting Huxley with the question whether he would prefer to think of himself descended from an ape on his grandfather’s or grandmother’s side, the image is of polarity between scientific credibility and religious obscurantism. Huxley’s famous retort at the 1860 meeting of the British Association for the Advancement of Science was that he would rather have an ape for an ancestor than a certain person who used his great gifts to obscure the truth.

We shall return to this event, which has assumed mythic status in the annals of scientific professionalism. It must, however, be stressed that Darwin's theory was published at a time when the established Church in England was seeking to cope with multiple crises. These included the challenge from historical criticism of the Bible, on which Wilberforce expressed an even greater dismay when condemning *Essays and Reviews* (1860). Among contributors to this collection were Oxford clergy who were suggesting that the Bible should be read like any other book, its authors men of their times, inspired but fallible in their understanding. The Anglican Church was also on the defence because of the vitality of dissenting Christian denominations and a dispiriting loss of members to the Church of Rome, following the lead of John Henry Newman. Most of Wilberforce's close relatives were defectors. Initially at least, the Darwinian challenge was of lesser moment, though it undoubtedly added to a sense of crisis when serious thinkers were questioning the foundations of the Christian faith.

The impression of one cultural paradigm fading as another, secular in spirit, gained the ascendancy can also be reinforced by the poignant remarks of Darwin's scientific contemporaries. Harvard's Professor of Geology and Zoology, Louis Agassiz, favoured an idealist account of the history of life in which there had been an unfolding of a plan conceived in the mind of God. He once wrote "there will be no scientific *evidence* of God's working in nature until naturalists have shown that the whole creation is the *expression of thought* and not the *product of physical agents*" (Roberts 1988, 34). This was not what Darwin had shown! Following a scientific meeting in Boston, British physicist John Tyndall recalled how Agassiz, "earnestly, almost sadly" had confessed that he had not been "prepared to see Darwin's theory received as it has been by the best intellects of our time". Its success, Agassiz conceded, "is greater than I could have thought possible" (Tyndall 1879, 2: 182). It was as if an older, more spiritual understanding of nature was passing away.

Some of Darwin's own observations resonate with a feature of paradigm change that Thomas Kuhn would stress in his influential book *The Structure of Scientific Revolutions* (1962). Kuhn argued that because of a degree of incommensurability between competing scientific paradigms, the triumph of the new over the old may not flow from a clinching disproof of the one from within the framework of the other. Rather, the newer explanatory scheme gradually displaces its predecessor as a younger generation of scientists adopts it and explores its greater possibilities. In the last chapter of the *Origin* Darwin anticipated such an eventuality: "A few naturalists, endowed with much flexibility of mind, and who have already begun to doubt on the immutability of species, may be influenced by this

volume; but I look with confidence to the future, to young and rising naturalists who will be able to view both sides of the question with impartiality" (*Origin*, 482). This was hardly music to the ear of an older naturalist, Adam Sedgwick, who duly chastised his former student for the "tone of triumphant confidence in which you appeal to the rising generation" (*Correspondence*, 7: 397.).

Not surprisingly, then, the Darwinian "revolution" is routinely interpreted as the triumph of a secular scientific paradigm over a religiously inspired natural theology, over a philosophy of nature in which Sedgwick had found evidence of "ten thousand creative acts" (Brooke 1997, 54) as new species first appeared in the fossil record. It is certainly possible to streamline the history with such an interpretation; but it is not the whole story. From the pages of the *Origin* itself, it is clear that Darwin could not dismiss questions that were of fundamental importance to anyone who thought deeply about the order of nature and why it should be as it was. Defending his analogy between the birth of individuals and the birth of new species, Darwin introduced a theological reference: "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" (*Origin*, 488). This reference to "laws impressed upon matter by the Creator" remained through all six editions. What did it mean?

This is an important question because it meant different things to different thinkers, depending on their particular religious convictions. The image was both conventional and powerful, reflecting what for some pioneers of European science had been an uncontroversial assumption – that one could not have *laws* of nature without an external *legislator*, whose will had been impressed on the world at its inception. For natural philosophers such as Robert Boyle and Isaac Newton, the basic properties of matter were as they were not out of any necessity, but because they had been bestowed by a deity who, according to Newton, was "very well skilled in mechanics and geometry" (Newton 1692, 49).

This way of understanding physical laws had repeatedly found expression in the literature of natural theology. The law metaphor did not have to be taken literally. During the Enlightenment there had been less God-laden accounts of laws of nature, as when David Hume argued that for an understanding of causal connection one need look no further than the constant conjunction of cause and effect in human experience and expectation. Nevertheless, in the discourse of natural theology, which Darwin had assimilated in Cambridge, William Paley's view that "a law supposes an agent" was often echoed.

For religious thinkers the matter did not end there. This was because several different constructions could be placed on this relationship between God as lawgiver and the order of nature. One could envisage a deity who, having impressed laws upon matter at Creation, ceased to have anything further to do with the world. Nature on this view would be autonomous once it had been created and structured. This interpretation is often described as “deistic” in contrast to a “theism” in which the laws continue to be effective only because they are constantly sustained by the power of their Creator. This concept of divine sustenance has been important in the Christian tradition; but it does not dictate either way whether divine power might intervene in special ways, in the working of a miracle for example. This means that, conceptually at least, there is space for an even richer theology of nature in which the laws simply express how the deity *normally* acts in the world but without prejudice to the question whether there might be *additional* forms of divine activity, in miracles or other forms of self-disclosure. For conservative Christians the view expressed by the eighteenth-century evangelical reformer John Wesley has often been compelling: surely a deity with the power and wisdom to create such a universe as this cannot be considered incapable of lesser miracles? These possibilities by no means exhaust the range of options. There were semi-deistic positions in which nature had full autonomy except when there might be intervention by a *deus ex machina* – as, for example, in the origination of new species.

This last position Darwin clearly contested, but in other respects his reference to “laws impressed upon matter by the Creator” had an ambiguity that could lead to alternative deistic or theistic readings. Given that in his early transmutation notebooks he had referred to a Creator who creates “by laws”, it becomes important to ask which gloss Darwin would have placed on his formulation in the *Origin*. His old Cambridge mentor John Henslow had no doubt, declaring that Darwin “believed he was exalting & not debasing our views of a Creator, in attributing to him a power of imposing laws on the organic World by which to do his work, as effectually as his laws imposed upon the inorganic had done it in the Mineral Kingdom” (*Correspondence*, 8: 200).

### **Darwin before the *Origin***

When Darwin had first studied with Henslow, he had been preparing for the life of a priest in the Anglican Church. In the intervening years, that intention had been displaced by the lure of a life in science, which had become all-absorbing during the *Beagle* voyage. Although Darwin scholars have disagreed over the precise date by which he abandoned Christianity, he had certainly done so by the time he composed

the *Origin*. The primary reasons did not emanate from his science. True, he saw the sciences contributing to a worldview in which miracles were increasingly incredible. It is also true, as his wife Emma had anticipated before their marriage, that the high standards of evidence required by rigorous science could induce a sceptical frame of mind when appraising evidence for other forms of belief. But the triggers for his loss of faith largely came from elsewhere.

In common with other early-Victorian intellectuals, Darwin had experienced a moral aversion to Christian teaching on heaven and hell. The notion that those outside the fold of Christian orthodoxy (and this applied to his atheist brother Erasmus and his free-thinking father) were destined for *eternal* damnation he considered a “damnable doctrine” (*Autobiography*, 87). He recounted later that he had always considered the presence of so much suffering in the world one of the strongest arguments against belief in a beneficent deity. Tellingly, he added that pain and suffering were what one would expect on his theory of natural selection. Early in 1851 he had been devastated by the death of his young daughter Annie, finding it incomprehensible how a God of love could allow such an innocent child to suffer. At the same time he had been reading books by religious thinkers, notably Francis Newman’s *Phases of Faith*, whose pilgrimage into unbelief had features in common with his own (Desmond and Moore 1991, 376-8). Add to these considerations that, as early as March 1838, he had flirted with a materialist account of the workings of the mind, even suggesting that love of the deity might simply be an effect of the brain’s organisation (Kohn 1989), and it becomes clear that we should not look in the *Origin* for a Christian theism.

### **Theological language in the Origin**

Darwin’s reference to “laws impressed upon matter by the Creator” was one of few theological remarks in the first edition of the *Origin*. There are, however, several reasons why theological implications would be read into his text. Central to his rhetorical strategy was the antithesis between the explanatory power of natural selection and the sterility of what he called the “theory of creation”. In his last chapter he re-emphasised that the geographical distribution of species could be perfectly understood if there had been migration of species, followed by gradual modification - as in the striking case of the Galapagos fauna, which most closely resembled, but also deviated from, the species of mainland South America. How could one *explain*, on the basis of separate creation, why some oceanic islands were teeming with life similar to that on a nearby continent, while others, equally habitable but distant from major landmasses, were dismally populated by a few bats? To invoke the will of a

deity would simply shut down the enquiry. Evolutionary biologists today with Christian convictions would simply say that the Christian doctrine of creation does not require belief in what Darwin called a “theory of creation”. And they would be correct in saying that, in its classic formulation, it is a doctrine about the ultimate dependence of all that exists (including evolutionary processes) on a transcendent power. But Darwin certainly had readers who felt that their faith was being challenged by the severity with which he denounced the model of “independent acts of creation”.

A second implication of the text was that it was no longer necessary to regard each species as specially designed and adapted for its particular niche. The argument for design based on intricate anatomical contrivances such as the human eye, in which Paley had so delighted, was rendered nugatory if, as Darwin was proposing, nature could counterfeit the design. If natural selection worked for the gradual improvement of each species, it was not surprising that there was the *appearance* of design, albeit illusory.

Readers would, however, find towards the end of Darwin’s book some theological remarks that were far from atheistic. He did not only refer to a Creator who had impressed laws on matter. His language when discussing the original primordial forms incorporated a biblical image. This was the breathing of life into them: “I should infer from analogy that probably all the organic beings which have ever lived on this earth have descended from some one primordial form, into which life was first breathed” (*Origin*, 484). And the image was repeated in the last sentence of the book: “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 cycling on 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” (*Origin*, 490).

Although Darwin had rejected Christianity and would eventually become an agnostic, at the time of writing the *Origin* there is still a sense in which he wishes to persuade his readers that their God is too small. Surely, it was beneath the dignity of the deity to have to produce each species separately as in so many conjuring tricks! In his third transmutation notebook he had addressed precisely this issue. Was not the notion of God’s creating by law “far grander” than the “idea from cramped imagination that God created ... the Rhinoceros of Java & Sumatra, that since the time of the Silurian he has made a long succession of vile molluscous animals. How beneath the dignity of him, who is supposed to have said let there be light and there was light” (Brooke 1985, 47). In the first Sketch of his theory, completed in 1842, he had insisted that the existence of laws governing the origin of new species did not

diminish but “should exalt our notion of the power of the omniscient Creator” (Brooke 1985, 47).

This strand in Darwin’s thinking, coupled with his reference in the *Origin* to the laws stemming from a Creator, lends plausibility to the view that in 1859 he was a deist – one who had rejected revelation as a source of knowledge but who was unwilling to regard the laws of nature as either self-explanatory or accidental. As becomes clear from his correspondence with the American botanist Asa Gray, he had not yet dropped the belief that the laws governing variation and natural selection might themselves be designed. There is no indication in the *Origin* of belief in a deity providentially supervising every detail of the evolutionary process; but the possibility of a higher purpose behind the order of nature is not excluded. Indeed, as Robert Richards argues in this volume, Darwin’s language encourages that construction.

On this interpretation Darwin held a perfectly consistent position in 1859. Acts of creation from an intervening deity were unnecessary to understand the sequences of species in the fossil record. At the same time the word ‘creation’ still had fundamental meaning when reserved for the ultimate origin of the universe and the laws that had made possible what Darwin saw as the highest good – the production of the higher animals. In the first edition of the *Origin* he did still use the word ‘creation’ when referring to nature’s productivity, even while ascribing it to secondary causes. This practice was particularly striking in the context of the first primordial form. Here he contemplated the vast “ages which have elapsed since the first creature, the progenitor of innumerable extinct and living descendants, was created” (*Origin*, 488). There was clearly an ambiguity here, which Darwin eventually resolved in the fifth edition by replacing “was created” with “appeared on the stage” (*Variorum*, 757). One might see in this change evidence of his growing agnosticism, or simply an attempt to avoid misleading language.

The first changes, however, that he made to his book were to add to, rather than subtract from, references to a Creator. He evidently wished to offer reassurance that his theory did not contravene a sophisticated understanding of what ‘Creation’ might mean. To the sentence that referred to “one primordial form, into which life was first breathed”, he added the three words “by the Creator”, repeating the same move in the book’s last sentence. Nor were these the only additions for his second edition. In the first, he had conspicuously placed quotations from Francis Bacon and William Whewell at the head of his text, carefully chosen to legitimate, both scientifically and theologically, his enquiry into the secondary causes of species production. As Master of Trinity College Cambridge, Whewell was a deeply respectable figure who had written extensively on natural theology and the history



and philosophy of science. From his *Bridgewater Treatise* (1833), Darwin extracted the statement that “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” (*Origin*, ii). There was opportunism in Darwin’s appropriation of this passage since Whewell would have balked, and did so (Snyder 2006, 195), at its application to the creation of human beings. But, from Darwin’s perspective, here was a theologically respectable endorsement of his explanatory programme. From Bacon’s *Advancement of Learning* (1605), he extracted a statement to the effect that it was not sacrilegious, but rather a religious duty, to improve one’s proficiency in understanding the book of nature, the book of God’s works (*Origin* ii). For his second edition, when it was clear he should do still more to pre-empt religious objections, he found the perfect theological precedent in a classic work of Christian apologetics, Joseph Butler’s *Analogy of Religion* (1736).

There is irony perhaps in that Butler had been battling with the deists of his day, arguing that obscurities in the meaning of Scripture (on which the deists pounced) might, with further research, be clarified – just as obscurities in nature yielded to scientific research. The passage that worked for Darwin was this: “The only distinct meaning of the word ‘natural’ is *stated, fixed, or settled*; since what is natural as much requires and presupposes an intelligent agent to render it so, *i.e.* to effect it continually or at stated times, as what is supernatural or miraculous does to effect it for once” (*Variorum*, ii). Butler was renowned as a subtle apologist and here was a subtle self-defence for Darwin: the appeal to natural causes in species production was not ultimately to negate the action of an intelligent agent.

The view of another clergyman entered the second edition. Darwin was grateful to the Revd. Charles Kingsley for a letter in which he stated what Darwin had certainly once believed and was glad to hear: “I have gradually learnt to see that it is just as noble a conception of Deity, to believe that he created primal forms capable of self development into all forms needful ... , as to believe that He required a fresh act of intervention to supply the lacunas which he himself had made. I question whether the former be not the loftier thought” (*Correspondence*, 7: 380). With Kingsley’s permission, Darwin reproduced this affirmation, which he described to his friends as “capital” (*Variorum*, 748).

That Darwin had to avail himself of such remarks in the hope of placating hostile critics has sometimes led to the supposition that his references to a Creator were *merely* placatory and not to be taken seriously. This is not a straightforward matter. He was certainly anxious to minimise offence. He was also incensed by

reviews (of which the very first in the *Athenaeum* was an inauspicious omen) that ignored the cogency of his argument, dwelling instead on its supposedly damaging implications for religion. Darwin fulminated against the *Athenaeum* reviewer: “the manner in which he drags in immortality, and sets the priests at me, and leaves me to their mercies is base” (*Correspondence*, 7: 387). Moreover, in a letter to Hooker, written in March 1863, he claimed that he had “long regretted” having “truckled to public opinion, and used [the] Pentateuchal term of creation” (*Correspondence*, 11: 278). This was a reference again to those first primordial forms into which life had been breathed. By 1863 he could tell Hooker that what he had really meant was nothing more than “appeared” by some wholly unknown process. A naturalistic account of the origin of life was, however, perfectly consistent with his deistic outlook and the reasons for his regret are more complicated than one might first imagine. Because of his biblical language he elicited sympathy from some religious writers who seized the opportunity to plug the gaps with their gods. But he also created an opening for fellow naturalists to accuse him of a less than fully naturalistic account.

Prominent among them was his critic Richard Owen, who claimed to have advanced an evolutionary theory before Darwin. Prior to Darwin’s publication, Owen had hinted at natural causes in species development but in exceedingly veiled language (Owen, 1849). In his review of the *Origin*, he objected that Darwin had prematurely jumped to a mechanism of change (Owen, 1860). But Owen was insistent on a complete continuity of secondary causes in the history of life and had been paining Darwin with the insinuation that, because he had failed to achieve that in the context of the origin of life, he was unworthy of the crown that Owen reserved for himself. So when the “Pentateuchal term” was deleted (though not, interestingly, in the last sentence) from the third edition, the motivation in part was to protect himself and to deflate Owen (*Correspondence*, 11: 278).

Darwin’s remarks on the role of a Creator are often ambiguous. But statements made in response to social pressures are not necessarily disingenuous. As we have seen, Darwin held a consistent position in 1859 in which there was space for both a naturalistic science of species production and for a Creator whose laws made the process possible. As he confided to Asa Gray in May 1860, “I can see no reason, why a man, or other animal, may not have been aboriginally produced by other laws; & that all these laws may have been expressly designed by an omniscient Creator, who foresaw every future event & consequence” (*Correspondence*, 8: 224). This was a philosophy of nature that, with its emphasis on divine laws, he hoped theists could share with him. He could see “no good

reason why the views given in this volume should shock the religious feelings of any one" (*Variorum*, 748). But they did.

### **Religious responses to the *Origin***

To say that Darwin shocked the religious sensibilities of his contemporaries, and in some constituencies still does so today, is almost a truism. To construct a balanced account of the religious responses is, however, a major challenge and one that has given rise to a massive literature, including a recent evaluation of the Darwinian impact on Jewish tradition (Cantor and Swetlitz 2006). A fuller account than can be given here is available in *The Cambridge Companion to Darwin* (Brooke 2003). It is easy to list the issues that worried religious commentators, particularly those concerning human dignity, the authority of sacred texts and the erasure of Providence and design. But what for one thinker was of fundamental concern and a reasonable ground for rejection was, for others, of less significance. We have already seen that Kingsley delighted Darwin with his sympathetic response. The same was true of Asa Gray, Harvard's devoutly Presbyterian Professor of Botany, who not only impressed Darwin with his grasp of natural selection but also suggested that if severe competition for limited resources was the motor of the evolutionary process, without which the highest forms of life would never have developed, then this insight might assist the theologians in their wrestling with the problem of pain and suffering.

Darwin and Gray would part company on whether design was still discernible in the structures and adaptation of living organisms but this issue was not of universal concern to religious minds. It was a concern for Charles Hodge at Princeton, whose Presbyterian theology could accommodate the reality of evolution but not the specifically Darwinian mechanism of natural selection – a position he made clear in his book *What is Darwinism?* (1874). By contrast, for the Anglican turned Catholic, John Henry Newman, the fact that Darwin had undermined one of Paley's arguments for God's existence was of little consequence because Newman had already decided that arguments for design contributed nothing to the basic doctrines of Christianity.

Objections based on Scripture, and the book of *Genesis* in particular, were voiced from the outset. The clerical naturalist Leonard Jenyns informed Darwin early in January 1860 that he doubted whether the image of man as an even "*greatly* improved orang" would find general acceptance: "I am not one of those in the habit of mixing up questions of science and scripture, but I can hardly see what sense or meaning is to be attached to *Gen*: 2.7. & yet more to vv. 21. 22, of the same chapter,

giving an account of the creation of woman, - if the human species at least has not been created independently of other animals" (*Correspondence*, 8: 14). For Jenyns, and many others including Darwin's wife, it was difficult to see how the moral sense could have developed from "irrational progenitors". By contrast, one attraction of evolutionary ideas for some Christian theologians was that a process of cultural evolution could be superimposed on the biological, permitting the argument that human understanding of the deity (and of consequential moral obligations) had been progressively refined and that this trajectory was discernible in successive books of the Bible. To renounce a literalistic reading of *Genesis* was not necessarily to renounce the belief that human beings ultimately owed their existence to a transcendent God.

However, the sense in which Darwin had seemingly placed the deity at arms length, deleting the necessity for divine intervention in the natural order, worried those who cherished a more intimate relationship between God and the world and who looked to the sciences, as well as to history, for support. The question was whether, despite Darwin's reserve, evolutionary processes could be combined with belief in a God who had providential control over their consequences. There is irony here because Darwin's metaphor of natural *selection* was sometimes seized by Christian theists to legitimate a providentialist interpretation. Darwin had chosen the metaphor with reference to the selection practised by breeders when seeking to accentuate particular features of animals and birds in captivity. The analogy played a crucial role in the rhetoric of the *Origin* because it helped him to collapse an absolute distinction between species and varieties. Thus he observed that even well trained ornithologists would be tempted to regard the different varieties produced by the pigeon fanciers as separate species if they did not already know they all derived from the common rock-pigeon. But if human intelligence and purpose were involved in the selection of the most propitious individuals for breeding under domestication, might not the analogy support the mediation of a divine intelligence and purpose in the natural order? This was a sufficiently common response for it to take the sting out of the theory for those so minded and for Darwin to feel it necessary to scotch the misunderstanding of his position. In later editions of the *Origin*, he gave even greater emphasis to the unconscious and unwitting features of the breeders' activity. The metaphysical ambiguity associated with the metaphor of selection also encouraged him to follow Wallace's advice and to introduce the "survival of the fittest" as a synonym for natural selection.

Darwin's theory was a divisive but not necessarily destructive force within Christendom. One reason it was valued by Asa Gray was the support it could lend to

the ultimate unity of the human species. The subtitle of the *Origin*, “The Preservation of Favoured Races in the Struggle for Life” could easily be used to sanction the persecution of one race by another that considered itself superior. In New Zealand, for example, Darwinism was invoked to justify the suppression and even extermination of the Maori (Stenhouse 1999). For Darwin, however, and indeed for Wallace, the implications of the theory were otherwise. There was no justification for racial subjugation or for the practice of slavery because all humans had ultimately derived from a common ancestor. It was this support for monogenism that Gray found so attractive and a welcome contrast to the polygenism of Agassiz.

In the diversity of religious response there is an important qualification to popular treatments of the Wilberforce/Huxley debate, which sometimes suggest that Wilberforce typifies the religious reaction. At the 1860 Oxford meeting were other Christian clergy more open to Darwin’s extension of scientific naturalism. One was Frederick Temple who later became Archbishop of Canterbury. The divisiveness of the Darwinian theory is particularly poignant here because Temple had been one of Wilberforce’s ordinands, deeply upsetting the bishop with his liberal contribution to *Essays and Reviews*. In his review of Darwin’s *Origin*, Wilberforce did, however, put his finger on the most sensitive subject: the question of human uniqueness: “Man’s derived supremacy over the earth; man’s power of absolute speech; man’s gift of reason; man’s free will and responsibility; man’s fall and ... redemption; the incarnation of the Eternal Son; the indwelling of the Eternal Spirit,- all are equally and utterly irreconcilable with the degrading notion of the brute origin of him who was created in the image of God and redeemed by the Eternal Son.” (Wilberforce [1860] 1874, 1: 94) Such a reaction raises many questions that have been debated in theological circles to this day. It was, however, recognised as an over-reaction at the time – not least because in all such disparagement was the assumption that there could be no special human uniqueness if humans were derived from brutes. Darwin himself relished that continuity between animal and human, believing it to be a humbler and more authentic view than was displayed by those arrogantly claiming knowledge of their Maker. It was nevertheless possible to argue that, irrespective of origins, humans did have capacities that had advanced beyond those of their simian relatives. A heightened responsiveness to other beings, an ability to imagine the thought-world of others, a sense of moral obligation, an aesthetic response to the beauties of nature and, for some, a grateful responsiveness to a supposed Creator of that beauty, still remained facets of human experience. Darwin had been no stranger to them. In his *Journal of Researches*, he had reflected on the sublimity of the Brazilian forests and the desolation of the Tierra del Fuego, both “temples filled with

the varied production of the God of Nature". No-one, he wrote, "can stand in these solitudes unmoved, and not feel that there is more in man than the mere breath of his body" (Darwin [1839] 1910, 473).

### **St. George Mivart and the sixth edition**

There was one response to Darwin's theory that, despite the protestations of its author, was seen by Darwin's inner circle, and Huxley in particular, as insidiously and religiously motivated. This was a critique from St. George Jackson Mivart, a convert to Roman Catholicism and, initially at least, a convert to Darwinian evolution. Mivart, who had been a student of Huxley, remained an advocate of evolution; but during the 1860s began marshalling arguments against the primacy and sufficiency of natural selection. These were published in his book *The Genesis of Species* (1871) and were principally directed against the gradualness of change that Darwin so stressed. Mivart argued that extremely small variations and modifications would be so slight as to confer negligible advantage. He also exploited gaps in the fossil record, suggesting they were more in line with sudden discontinuous change than with Darwin's gradualism. Darwin was angered by what he considered the unfairness of Mivart's attack because whereas he had tried in the *Origin* to give a balanced account of the arguments for and against natural selection, Mivart dwelled only on the difficulties (*Variorum*, 242). The mechanism Mivart preferred involved an internal drive, a complexifying and progressive force, at work in evolutionary development that operated irrespective of changes in external conditions. Whereas Darwin had stressed repeated divergence from common ancestors in a branching and seemingly undirected manner, Mivart looked for evidence of convergence towards recurrent structural forms that could be interpreted as goal-directed (Desmond 1982, 140; 176-80). Huxley was particularly embarrassed by Mivart's critique because he considered it impossible to be a good soldier for science and a loyal son of the Church. Here was one of his own academic progeny purporting to show that it was not impossible – as long as evolution was interpreted differently from Darwin. It was not difficult for Huxley to impugn Mivart's motives because the appeal to an inner drive pushing the evolutionary process in specifiable directions cohered with a belief in divine immanence. Was this not a blatant case of religion interfering with science?

Darwin himself hit back in a new chapter for his sixth edition, which allowed him to assess the main criticisms he had received - Mivart's in particular. It is instructive to examine his reply because Mivart's version of theistic evolution set a precedent for many during a long period when it remained unclear, even to experts in the life sciences, whether natural selection could be the primary or a sufficient

mechanism (Bowler 2000). Darwin could not stomach Mivart's sudden mutations and innate tendencies towards perfectibility (*Variorum*, 241) yet he had to address a worry that weighed with "many readers" (*Variorum*, 242-3). This was the alleged impotence of natural selection to account for the incipient stages of useful structures. There were latent theological issues here because Darwin described Mivart's sudden abrupt changes as verging on the miraculous (*Variorum*, 266-7). His really telling point, however, referred to the power of his own gradualistic mechanism to explain the phenomenon so beloved by earlier natural theologians – the beautiful adaptedness of living organisms to the conditions of their existence (*Variorum*, 266-7). To suppress the perfecting power of natural selection was to sacrifice an explanation for the very thing that natural theologians, such as Paley, had correctly identified as in need of explanation.

Whether Mivart's alternative account of evolution had been motivated by, shaped by, or simply produced congruously with his Catholic spirituality it is difficult to gauge. Human motivation is notoriously difficult to determine. It is, however, noteworthy that his emphasis on convergence in separate evolutionary lines does have contemporary resonance in the discussion of anatomical structures, such as the human eye, the type of which has appeared many times (Conway Morris 2003).

### **Darwin's agnosticism.**

Towards the end of his life Darwin became increasingly agnostic about religious claims. His cousin Julia Wedgwood even referred to a "certain hostility" in his attitude towards religion "so far as it was revealed in private life". She told Darwin's son Frank that he felt he was confronting an influence that "adulterated the evidence of fact" (Brooke 1985, 41). The resistance of religious minds and the machinations of Mivart contributed to that feeling. Insofar as his attempts to pacify committed theists were successful, he could still be discomfited by the confessional superstructures they erected on his statements. His correspondence with William Harvey, an expert on South African flora, would constitute an example (*Correspondence*, 8: 322-32 and 370-74).

Along with his deistic metaphysics, the roots of his agnosticism were already in place when he wrote the *Origin*. He knew that whatever one postulated as the cause of the Universe would invite questions about *its* cause. There were also certain issues, such as the apparent contradiction between necessity and free-will, and questions concerning the origin of evil, which he considered "quite beyond the scope of the human intellect" (*Correspondence*, 8: 106). He felt much the same about the question of design in nature, holding the conviction that so wonderful a

universe could not be the result of chance alone, yet also finding it impossible to see intelligent design in the details. In 1860, he had still hoped to hold the contending elements together, asking Gray, "Does not Kant say that there are several subjects on which directly opposite conclusions can be proved true?!" (*Correspondence*, 8: 274). In the ensuing years, this Kantian solution ceased to satisfy him. During an absorbing correspondence, in which he assessed Gray's opinion that variations could be under the control of a superintending Providence, Darwin became convinced that this was no way out of his "hopeless muddle". The problem was the lack of evidence to support Gray's intimation that the variations (however caused) appeared with their prospective use ordained. They surely appeared randomly and many were detrimental to the species. The analogy Darwin used to articulate his position concerned the building of a house by a builder who used stones that happened to be available in the vicinity. Surely, Darwin argued, no-one would say that the stones had come to be there in order that the builder could build his house. Gray's revealing concession that the perception of design had to be through the eye of faith was hardly likely to bring Darwin round (Moore 1979, 275-6).

The word "agnostic" is, by itself, not especially informative. Everything depends on the particular beliefs one is agnostic about (Lightman 1987). A certain kind of agnosticism has been an intrinsic feature of Christian theology itself in contexts where discourse about God is understood to be discourse about the incomprehensible and ineffable. Even during his later years Darwin denied ever having been an atheist "in the sense of denying the existence of a God" (*Letters*, 1: 304). While admitting that his judgement often fluctuated, he was still prepared to say that he deserved to be called a theist. The image of a Creator who "creates by laws" still endured, but by the end he had relinquished the belief that the *order* of nature necessitated an inference to purpose. To the feelings of "wonder, admiration, and devotion" that had once filled his mind, he was now anaesthetized (*Letters*, 1: 311). He could still find it inconceivable that the universe was the result of chance alone. But – and with Darwin there is so often a nuance – if the human mind was itself the product of evolution, what confidence could one place in any metaphysical or theological conviction – even one's own?



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