

JOHN HEDLEY BROOKE

The Wilberforce-Huxley Debate: Why Did It Happen?*

It has to be one of the great stories of the history of science. The event we remember happened in Oxford on 30 June 1860 when the British Association for the Advancement of Science was in town. Seeking to score a point against Darwin's disciples, the Bishop of Oxford unwisely baited Thomas Henry Huxley by enquiring whether he would prefer to think of himself descended from an ape on his grandfather's or grandmother's side. According to legend he quickly had his comeuppance. Huxley whispered to a neighbour: "The Lord hath delivered him into mine hands". And replying to the provocation he said that he would rather have an ape for an ancestor than a bishop – or words to that effect. It was rumoured that Huxley said he would rather be an ape than a bishop; but Huxley denied ever saying such a thing. What he had said was bruising enough. He was not ashamed of a simian ancestry but "he would be ashamed to be connected with a man who used great gifts to obscure the truth." Writing in *Macmillan's Magazine* many years later, Isabel Sidgwick recalled that "no one doubted [Huxley's] meaning, and the effect was tremendous. One lady fainted and had to be carried out; I, for one, jumped out of my seat."

It was, it seems, a tremendous occasion. According to another report, "the room was crowded to suffocation long before the protagonists appeared on the scene, 700 persons or more managing to find places." And the report continues: "the very windows by which the room was lighted down the length of its west side were packed with ladies, whose white handkerchiefs, waving and fluttering in the air at the end of the Bishop's speech, were an unforgettable factor in the acclamation of the crowd." In yet another report Soapy Sam got what he deserved; for he had spoken for no less than half an hour with "inimitable spirit, emptiness and unfairness." Huxley's riposte was a victory for scientific professionalism over clerical interference. Or was it?

A legend in need of revision?

It is the kind of story that would have to be invented were it not true. Actually, it probably was invented – at least in part. One answer to the question why this celebrated exchange occurred at all is that it didn't – or at least that the

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legend is deeply misleading. Scholars who have tried to piece together what really happened have been frustrated by the paucity of contemporary comment and its lack of unanimity.

For example, on one account the Bishop's question had been rather different: it had been a joke to be sure and one that misfired, but the issue had been how far back one would have to go to trace one's animal ancestry. The image of a head-on conflict between science and the Anglican Church also turns out to be simplistic. How, for example do we account for the following fact recorded in Leonard Huxley's *Life* of his father? Close to a group of Huxley's sympathisers had been "one of the few men among the audience already in Holy orders, who joined in – and indeed led – the cheers for the Darwinians." At least some clerics were on Huxley's side.

One of the most distinguished of the Darwinians was Joseph Hooker, Assistant Director of Kew gardens. But to read his account of the proceedings is to meet the view that Huxley had caused hardly a stir. He had not even had the strength of voice for his stinging reply to carry. According to Hooker the person who really won the day for the Darwinians was... Hooker! In fact, the more closely we look at the legend the more suspect it becomes. The idea that Huxley won a famous victory was not even countenanced in Leonard Huxley's heroic *Life*. The result of the encounter, though a check to the anti-Darwinian sceptics, could not be represented as an "immediate and complete triumph for evolutionary doctrine". This was precluded by the "character and temper of the audience, most of whom were less capable of being convinced by the arguments than shocked by the boldness of the retort." One of Huxley's most recent and empathetic biographers, Adrian Desmond, agrees that talk of a victor is ridiculous. The *Athenaeum* put it rather well: the Bishop and Huxley "have each found foemen worthy of their steel, and made their charges and countercharges very much to their own satisfaction and the delight of their respective friends."

There is an additional, perhaps surprising, reason why we should not speak of victors. Instead of anti-Darwinians being converted by either Huxley or Hooker, we know that at least one Darwinian was de-converted in the debate. This was Henry Baker Tristram, one of the first to apply Darwin's principle of natural selection. Tristram had been fascinated by the phenomenon of camouflage – how the desert larks of North Africa, for example, were of a darker hue than those of more favoured districts. Competition between lighter and darker birds gave him the answer, as the darker would be less visible to desert predators. Tristram had been converted by another naturalist, Alfred Newton, whose own conversion to Darwinism reminds us that conversion is not an experience confined to the religious. Newton recalled that "it came to me like the direct revelation of a higher power; and I awoke next morning with the consciousness that there was an end of all the mystery in the simple phrase 'Natural Selection'." But Newton also tells us that his one convert, Tristram, soon sank into apostasy. The occasion was the Wilberforce-Huxley debate. Apparently Tristram "waxed exceedingly wroth as the discussion went on and

declared himself more and more anti-Darwinian.” So much for Huxley’s victory. Far from any lasting significance, the event almost completely disappeared from public awareness until it was resurrected in the 1890s as an appropriate tribute to a recently deceased hero of scientific education. That delicious remark, “the Lord hath delivered him into mine hands”, was probably a retrospective invention of that decade. There is, to my knowledge, no reference to it in the few contemporary reports. Once the story began to gather momentum as a result of the *Life and Letters* (of Darwin and Hooker as well as Huxley) it took on the aspect of a foundation myth – one of the defining moments of an emerging scientific professionalism.

The question of speaking out

Does this mean we are dealing with a damp squib? Not exactly because, whatever the precise terms of the debate, there were serious issues involved. There were questions of cultural authority and questions of etiquette. There were questions about the autonomy of the sciences and about the freedom to speak one’s mind. Leonard Huxley denied that his father had scored a victory, but he concluded his account with an up-beat message:

The importance of the Oxford meeting lay in the open resistance that was made to authority, at a moment when even a drawn battle was hardly less effectual than acknowledged victory. Instead of being crushed under ridicule, the new theories secured a hearing, all the wider, indeed, for the startling nature of their defence.

Consider for a moment this business of speaking out. There is reference to it in a letter Darwin wrote to Huxley some three weeks after the event. “From all that I hear from several quarters, it seems that Oxford did the subject great good. It is of enormous importance, the showing the world that a few first-rate men are not afraid of expressing their opinion.” There is a certain poignancy in that remark given Darwin’s own reluctance to go public. In their absorbing biography, Adrian Desmond and James Moore point out that much of Darwin’s illness may have stemmed from the psychological burden of harbouring a theory he could not release. To have published during the early 1840s, when a draft of the theory had already been written, would have been painful to members of his family. It might have tainted a growing scientific reputation with materialism and political radicalism. By the Summer of 1860 he had, of course, gone public, but he was to remain grateful when others fought his battles for him. Darwin to Huxley, 3 July 1860: “I honour your pluck; I would as soon have died as tried to answer the bishop in such an assembly”. Darwin would as soon have died many times before he eventually did.

We do sometimes forget the social pressures that could lead to repression. It was not merely that to speak out on matters of religion was to risk ostracism. It was part of the culture of a scientific gentleman – certainly earlier in the century – that one would not press one’s heterodoxy if by so doing one injured the

faith of more sensitive brethren. The risks were still real in 1860. Here is Hooker writing to Darwin in 1865:

“It is all very well for Wallace to wonder at scientific men being afraid of saying what they think... Had he as many kind and good relations as I have, who would be grieved and pained to hear me say what I think, and had he children who would be placed in predicaments most detrimental to children’s minds...he would not wonder so much.” On the subject of human antiquity the balance was still so delicate in the early 1860s that Hugh Falconer could find relief in the reflection that it was he, and not the likes of Soapy Sam who had exposed the modernity of an Abbeville jaw: “had the exposé been made by the enemy”, Falconer wrote, “the whole subject would have been put back quarter of a century.”

Huxley himself was not insensitive to the subject of what it was appropriate to say in public. There was part of him which cautioned restraint. On June 28, two days before his encounter with Wilberforce, Huxley had been present at another session of the “British Asses” as they were affectionately called. He had heard Oxford’s Professor of Chemistry, Charles Daubeny, deliver a paper on “the final causes of the sexuality of plants, with particular reference to Mr. Darwin’s work on the *Origin of Species*.” Huxley had been invited to enter the discussion but had shown no enthusiasm to do so on the ground “that a general audience, in which sentiment would unduly interfere with intellect, was not the public before which such a discussion should be carried on.” But there was also a part of Huxley that could not be suppressed – especially when provoked by Richard Owen. More on Owen later, but at that Thursday meeting he had expressed his view that the brain of a gorilla was so different from the brain of a man that a continuity premised on the action of natural selection had to be suspect. Not so for Huxley whose brain had been making a special study of brains. He had found himself, after all, on his feet, flatly contradicting the superintendent of the natural history departments at the British Museum. This battle over brains was to become fiercely acrimonious over the next couple of years. Perceptions of what happened on the Saturday meeting of the British Association cannot be detached from what had occurred on the Thursday. Among the inner circle of Darwinians, it was supposed that Owen and Wilberforce were in league and that the bishop had been coached by England’s Cuvier. “Hooker tells me”, Darwin wrote to Huxley, “Hooker tells me you fought nobly with Owen...and that you answered the B. of O. capitally.” Note that Huxley had *answered* the bishop but that his *fight* had been with Owen. We shall see later that the confrontation between Huxley and Wilberforce cannot be reduced to a simple clash between science and religion. The bishop enrolled eminent scientists of the day in his critique of Darwin’s theory. He was talking to the scientists and listening to them. Darwin’s mentor, the geologist Charles Lyell, reported that he had had “a good half hour’s argument with the Bishop of Oxford” who thought Darwin’s book “the most unphilosophical he had ever read.”

One thing does emerge from these primary sources. Whatever construction we place on the event there was clearly a commotion of a kind. Let us look at some deeper reasons for it.

Tensions and trends in the background

To understand the events of the foreground, it is usually necessary to go behind the scenes. There were trends and developments in early Victorian society that make the whole affair more comprehensible. Five of these deserve special note. Each in a different way illuminates the story:

The formation of science as a profession

The Yale historian Frank Turner pointed out some years ago that the Victorian conflict between science and religion was in an important respect an epiphenomenon. It reflected a social transformation in the organisation and practice of the sciences. Whereas natural history and the life sciences had often been a favourite study of the English clergy, their essentially amateur approach was being overtaken by new standards of professionalism. In the eyes of the young professionalisers, the Oxbridge clerical scientists epitomised the old guard, whose science was coloured by a natural theology in which nature was redolent of divine design. One of Wilberforce's tutors in Oxford had been William Buckland, who had fought bravely to secure a place for geology in the curriculum. This was the Buckland who littered his lodgings at Christ Church with dusty fossils, who carried a blue bag to dinner parties in order to take home his fish-bones, whose empiricism extended to thrusting strange meats before his own guests, hedgehog and crocodile to name but two. It is the same Buckland who explored a hyena den in Yorkshire and found in it proof of a universal flood: the absence of hyena bones he ascribed to the fact that the hyenas had been out hunting when the flood waters rose and were cut off from their retreat. Actually, Buckland's geology should not be derided. Having given a diluvial account of the smooth U-shaped valleys we now ascribe to glaciation, he was in fact one of the first to accept Agassiz's glacial hypothesis. Nevertheless, his science had an explicit Christian tone. In Oxford's Holywell Music Room, he once kept his audience almost to midnight as he expatiated on the wonderful design of the giant sloth – a creature whose grotesque forelimbs one might think did not show the Creator at His best!

The problem with being a clerical scientist was pointed out by another of Buckland's students, Charles Lyell. It was simply too much to expect that one could combine two demanding loyalties. As the sciences moved rapidly towards specialisation it was too much to expect that an enthusiast, whose primary responsibilities lay elsewhere, could find time to keep up to speed. There is a sense in which Wilberforce himself fell into this long established but now threatened category of the clerical naturalist. He was emphatically not a scientific ignoramus. Ten years before his *faux pas* he had been attending Richard

Owen's celebrated Hunterian Lectures, Owen himself noting his assiduity: "I could give the Bishop of Oxford a certificate for the most regular attendance", Owen had written in 1850.

The person who perhaps best epitomises the arrival of a younger generation of professional scientists was Thomas Henry Huxley – and professional in the sense of aspiring towards earning a living from science as well as seeking to ring-fence new standards of rigour that the clergy would soon be unable to meet. There was no privilege in Huxley's background and he was so impecunious that he had to defer his marriage for five years. In a much quoted lament he had protested that "I can get honour in Science, but it doesn't pay." He had got honour: a FRS before the age of 26, recognition for his papers and a Royal Medal in 1852. But it had all been a dreadful struggle. It was when seeking funds to promote his research that we get a glimpse of an early encounter with Owen. He had asked Owen for a reference, which had not shown up; so he had pestered him further. Then they had met in the street. "I was going to walk past, but he stopped me, and in the blindest and most gracious manner said, 'I have received your note. I shall *grant* it'." The phrase and the implied condescension were quite "touching". So much so that "if I stopped a moment longer I must knock him into the gutter." Owen's scientific and political ascendancy on the one hand and Oxbridge privilege on the other were twin irritants. In retrospect we can see that the trend was indeed towards the exclusion of clerics from the sciences. In the period 1831-65 no fewer than forty-one Anglican clergy had presided over the various sections of the British Association. Wilberforce himself had been a Vice-President of the organisation. Between 1866 and 1900 the number fell to three. In the collision between Wilberforce and Huxley we see a collision not so much between science and religion as polarised *entities* as between two styles of science. One of the reasons why Darwin's theory was so attractive to Huxley is that it could be adduced in support of a naturalistic worldview that would make a clerical natural theology obsolete.

An uphill struggle in Oxford

We should not lose sight of the fact that the collision did occur in Oxford. To some extent Huxley's irritation may reflect an awareness of the uphill struggle the scientific fraternity had experienced in gaining a hearing within the University. 1860 was not the first time the British Association had been to Oxford. It had first come in June 1832, just after the Third Reform Bill had become law. And its machinations had been viewed with suspicion, not least because Cambridge men were among its luminaries. This invasion from Cambridge coincided with the University's decision to award Doctor of Civil Law degrees to four dissenters, among them the Quaker John Dalton. John Henry Newman, never sympathetic to the physico-theology of the Association's apologists, would look back on that 1832 meeting with regret: "it seems to me ominous, that Meeting of the British Association in Oxford; it took place before, just before the Whig attempt to throw open the University to Dissenters, and was in part the cause of it." The evangel-

ical Frederick Nolan had accused the Association of encouraging a preoccupation with the study of secondary causes in nature, thereby fostering materialism and atheism. "My poor husband", wrote Mary Buckland, "could he be carried back half a century, fire and faggot would have been his fate, and I daresay our Bampton Lecturer would have thought it his duty to assist at such an Auto da Fé." John Keble, in a letter to Edward Pusey, complained of a "bowing of the knee to Baal" and declared that Buckland "ought really to be shown up publicly" for speeches that were "plain idolatry."

The Association had come again in 1847 to lesser hostility, despite Roderick Murchison's fear that Oxford was "lost in her tracts". At that meeting, Henry Acland with his plans for a museum was disappointed to find that Buckland would not give his support, now believing that the cause of science in Oxford was utterly hopeless. Two years later the plan did get off the ground. Among its supporters in 1849 was Samuel Wilberforce. Another was the Professor of Geometry, Baden Powell. I introduce Baden Powell because his advocacy of the sciences in Oxford has been told in fine detail by Pietro Corsi. His uphill struggle and the personal animosity he experienced led him to a high degree of disillusionment with Oxford theology. It drove him to the radical position that the natural scientists should have complete freedom and autonomy in exploring the causes of natural phenomena; but with the proviso that the moral sphere should remain the preserve of the theologian. It was an elegant way of avoiding further retrenchment in territorial squabbles. But there was irony in his religious odyssey because his ultra-liberal theology came to resemble the Unitarianism he had vigorously contested in his youth. Powell, like Huxley, was censured by Wilberforce for views the bishop described as "scarcely-veiled atheism". This was Wilberforce's response to an essay by Powell in *Essays and Reviews* – that volume which rocked the Church in 1860 more than Darwin's *Origin*. There is a much more complex story to be told about the gains by men of science in Oxford, but their uphill struggle is part of the background to that other controversy of 1860 that we are considering. There had been reactionary voices in Oxford, all too familiar to the scientific savants. Edward Pusey stands out among them – to such an extent that when Richard Owen was vilified for advocating the creation of new species through secondary causes he would refer to "Puseyite reptiles" who kept crossing his path. And that was Owen, let alone Huxley. There was a point to be made in Oxford.

The challenges of infidelity and popular science

To understand Wilberforce's concern we need to be sensitive to a range of problems the established Church was facing – challenges to its authority coming from both without and within. In readjusting to an industrial age, it recognised that an increasingly literate public was exposed to organs of secular knowledge that would threaten their sense of the sacred. Writing on *Infidelity* in 1853, the Revd. Thomas Pearson observed that "if the press be a powerful agency for good, it is unquestionably a powerful agency for evil also... We can very well

hold that the press does more good than evil, and yet maintain that the evil is fearfully great. [It] is powerfully employed on the side of infidelity". Pearson actually did the calculation. Of religious publications he counted 24.5 million a year. From the atheistic and corrupting presses the total was 28.5 million. The devil was winning.

An interesting strategy for dealing with the threat was developed by one of the evangelical publishing houses, the Religious Tract Society. Its aim was to reach the working classes with the gospel. But during the 1840s and 1850s it began to publish secular material framed by the gospel of salvation. The idea was to minimise the damage inflicted by the secular periodicals by presenting edifying knowledge in a Christian tone. The author of a recent Cambridge doctoral thesis, Aileen Fyfe, has shown that this edifying knowledge included astronomy and natural history – disproving the cliché that evangelicals in general were opposed to the sciences. The challenge of an expanding secularism was not, however, easily met. The more one attacked a subversive text the more one drew attention to it.

This applied to one of the most notorious works of popular science to appear before Darwin's *Origin*. In 1844 there had appeared an anonymous book arguing for the development of organic forms through natural causes. Its title was *Vestiges of the Natural History of Creation*. Its author (though this was a tantalising secret) was the Edinburgh publisher Robert Chambers. It was widely perceived as damaging to faith because of the continuity it proposed between animals and humans. So incensed was Darwin's old Cambridge tutor, the Revd. Adam Sedgwick that he devoted some ninety pages to a thrashing review. Sedgwick complained of "base materialism", "rank infidelity"; if this book be true "religion is a lie"; morality is "moonshine". In desperation and resorting to Shakespeare's *Lear*, he cried out for "an ounce of civet good apothecary to sweeten my imagination." He didn't like it. Half-baked science in the wrong hands could be part of the secular challenge. Wilberforce knew that. Less obviously perhaps, it could be a challenge to serious science. It was not only the clerical scientists who had let fly at *Vestiges*. It had been rubbished by none other than Huxley himself. This is important. There had been a precedent set in the 1840s for using serious science to attack "science falsely so called". We shall find Wilberforce adopting that strategy in 1860, as he appealed to his scientific allies.

The force of Darwin's theory as a challenge to Christian belief hardly needs spelling out. This is how Wilberforce himself perceived it:

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 man's 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.

As the Bishop of Oxford on his home turf he doubtless felt a heavy responsibility to defend the faith as he understood it.

Divisions within the Church

There were internal as well as external threats to the unity of the established Church that also placed it on the defence. I referred earlier to Baden Powell's contribution to *Essays and Reviews* published in 1860, the year we are remembering. We remember *Essays and Reviews* because it contained divisive essays from Oxford divines among others on how the scriptures should be read. They were divisive because they reflected advances made in the contextualisation and historical criticism of the sacred text. A presupposition common to most if not all of the contributors was that the Bible had been written by ordinary men whose beliefs reflected the age in which they had lived and who were fallible in their understanding of nature. Wilberforce was to be angered and saddened in almost equal measure because one of his own ordinands, Frederick Temple, now headmaster of Rugby school, was a contributor. When Wilberforce wrote his review of the book, he could not contain himself: "that men holding such posts should advocate such doctrines; that the clerical head of one of our great schools,... two professors in our famous University of Oxford, one of whom is also tutor of one of our most distinguished colleges,...that such as these should be the putters forth of doctrines which seem at least to be altogether incompatible with the Bible and the Christian Faith as the Church of England has hitherto received it" – this was all too much to swallow. It was a paradox, "rare and startling"; it was not Anglicanism but capitulation to German metaphysics. "The English church", he continued, "needs in her posts of trust such men as his past career has made us believe Dr. Temple to be. We lament with the deepest sorrow the presence of his name among these essayists". Wilberforce even pleaded with Temple to renounce the association. His review was published in January 1861, after his skirmish with Huxley; but it exposes a deep division between conservative forms of Anglicanism and the liberalising trends that Temple now personified. This division is also part of the context, part of the background tension against which the Darwinian debates were played out. It is often said that Darwin called into question the historicity of the Adam and Eve narrative. The truth, as Wilberforce knew, is that the biblical critics had got there first. He wanted *Essays and Reviews* condemned in the Convocation of Canterbury.

We can perhaps begin to see how in the battle of wits between Wilberforce and Huxley there might be churchmen happy to see the bishop put down. We have already heard reference to one person in Holy orders rooting for the Darwinians.

The Vice-Chancellor of the University certainly took the view that the bishop got no more than he deserved. When Joseph Hooker claimed that he had been more effective than Huxley he said that he had been "congratulated and thanked by the blackest coats and whitest stocks in Oxford."

New scientific methodologies

Before leaving the background tensions, we need to note one trend within the sciences themselves. In England especially, the rhetoric of Francis Bacon had informed many accounts of scientific method. Dispensing with preconceived ideas, it was the glory of science to start with the facts and, by a process of induction, ascend to an explanation. Originally directed against the arrogance of scholastic philosophy Bacon's empiricism had been given a Christian gloss. An experimental philosophy would foster the virtue of humility. By the middle of the nineteenth century, new theoretical structures were appearing within the sciences. In atomic theories of matter, in the wave theory of light, in the kinetic theory of gases, in Darwin's theory of evolution, the methodology was not so much inductivist as hypothetico-deductive. On the hypothesis of atomic combination one could explain the laws of chemical composition. On the hypothesis of molecular motions one could explain the behaviour of gases. On the hypothesis of natural selection one could unify a range of biological phenomena that had previously been disparate: the fossil record, the phenomenon of extinction, the geographical distribution of species, and (by treating varieties as incipient species) the difficulties of classification.

These hypothetico-deductive structures were very effective, but they transgressed a popular perception of Baconian science. It meant that Darwin's theory would be attacked, and not just by clergymen, for its philosophical licence. This is a vital point because Wilberforce undoubtedly felt that he had sound philosophy on his side. In his *Origin of Species*, Darwin repeatedly wrote that natural selection "could explain", "might explain" phenomena previously inscrutable. This laid him open to the objection that he was launching a speculative programme rather than providing rigorous science. Less sympathetic than John Henry Newman to Darwin's theory, Edward Pusey had a neat way of dealing with science and religion. The scientist should not deal with the unprovable. That was an issue. Huxley himself once conceded that if there were a weak point in Darwin's armour it was that the transformation of one species into another could not be directly observed. For Wilberforce there were many weak points. Darwin had introduced his assertions with statements like "I do not doubt", "it is not incredible", "it is conceivable". "What new words are these", Wilberforce asked, "for a loyal disciple of the true Baconian philosophy?" When dealing with difficulties, such as the elaborate structure of the human eye, Darwin had chosen his words carefully: "if it could be demonstrated that any complex organ existed, which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down." Wilberforce was not impressed. What kind of logic was it that asked leave to advance "as true any theory which cannot be demonstrated to be actually impossible"? This was why Wilberforce could say to Lyell that he found Darwin's book so unphilosophical. It contained what he described as a "new wantonness of conjecture".

Wilberforce on Darwin

The Huxley-Wilberforce debate: why did it happen? There is another respect in which it didn't – or rather nearly didn't! Huxley had planned to return to his wife on the Saturday, having little appetite for what was on the British Association menu. He had got wind of the bishop's intention to use the occasion. He also knew that Wilberforce "had the reputation of being a first-class controversialist." Consequently, "I was quite aware", he later told Francis Darwin, "that if he played his cards properly, we should have little chance, with such an audience, of making an efficient defence". It had been a chance meeting with Robert Chambers that had kept him in Oxford, Chambers remonstrating with him that he must not desert the cause. The immediate trigger on the day was of course the bishop's jibe, whatever precisely that was. And that, too, reminds us of the contingency of the event. Like many off-the-cuff jokes this one misfired. But, as Adrian Desmond has insisted, it was just a bit of ad-libbing to try to brighten two hours in a stuffy room.

What is clear is that the bishop's main speech, and intention to make it, had been premeditated. This brings us, at last, to the heart of the matter. Wilberforce was confident that the best science and the best philosophy were on his side. And we can see this in one of the most revealing texts of the day: his formal review of Darwin's *Origin* for the *Quarterly Review*. This was published a matter of days after the debate, so when he spoke he had all the resources of that review on which to draw. It makes interesting reading. It contains that succinct account of Darwin's threat to Christianity that we heard earlier. Towards the end he does go over the top, making the kind of extravagant remark that has allowed scientific rationalists to caricature him. He does say or at least imply that there is something flimsy and fanciful about the Darwinian hypothesis, as if it were "the frenzied inspiration of the inhaler of mephitic gas." That line is good for a laugh; but there is much more to the review. The first forty pages contain no theologising, admittedly as part of a deliberate strategy. What do they contain?

Initially at least, a courteous and pretty fair exposition of Darwin's main contentions. Darwin is not set up for ridicule. His writings are said to be "unusually attractive"; the book is "most readable", its language so "perspicuous" that it sparkles. He is evidently impressed by the interdependence of all of nature as Darwin has described it. Indeed it is a wonder Wilberforce has not been hailed as a new age prophet! He speaks of the "golden chain of unsuspected relations which bind together all the mighty web which stretches from end to end of this full and most diversified earth." Darwin's argument is then contested; but to be fair the bishop identified moves made by Darwin that could easily produce incredulity. It was one thing to argue that all living things might have descended from a few original forms; but Darwin had been lured further by the quest for unity: "Analogy would lead me one step further, namely, to the belief that all animals and plants have descended from some one prototype." For Wilberforce that extra step would strain credulity even if no other did.

We might expect him to cavil at Darwin's references to self-acting powers in nature. They could surely be taken to imply the autonomy of a natural order? But no: Wilberforce is content to say that there is a self-acting power in nature, continuously working in all creation. What is this power? Surprisingly perhaps, it turns out to be natural selection. Darwin is even said to have *established* the law of natural selection. To be sure the bishop assigned limits to its action; but he did not deny there were real effects of a struggle for life. Such a struggle, he wrote, "actually exists, and that it tends continually to lead the strong to exterminate the weak we readily admit."

But then we detect the limits of his tolerance. It is in this law of natural selection that we see a "merciful provision against the deterioration, in a world apt to deteriorate, of the works of the Creator's hands." Natural selection prevents the deterioration of existing species rather than effecting new ones.

Two critical difficulties were often raised in discussions of Darwin's theory. Wilberforce was too clever to miss them. One concerned the analogy Darwin had drawn between the selective breeding of domesticated species and what nature could ostensibly do over extensive periods of time. The problem was that, although the domestic breeder could accentuate and accumulate variation to produce fancy pigeons and the like, the evidence suggested that, once released into the wild, their progeny would soon return to the original type. This was not a ridiculous objection. It had been used by Charles Lyell against the evolutionary hypothesis of Lamarck. A second difficulty was the seeming absence of transitional forms in the fossil record.

To deal with that, Darwin had appealed to Lyell's principle that the fossil record was necessarily incomplete. He had also suggested that transitional forms, precisely because they were transitional, were less likely to leave a record than stabilised species. But was that not a bit like using the theory to explain why there was no direct evidence for the theory? One adjective might describe such logic and Wilberforce used it: "unsatisfactory". We should also note that Darwin himself had been worried about the degree to which he was exploiting the imperfection of the fossil record, seeking reassurance from Lyell on that very point.

There are, then, surprises in this clerical review, especially if one is expecting an ignorant riposte. There is even one delicious moment when Wilberforce becomes almost more Darwinian than Darwin. The context is Darwin's discussion of the blackbird and why its young, like the young of other birds, were spotted. No-one, Darwin had written, would suppose that the stripes on the whelp of a lion or the spots on the young blackbird "are of any use to these animals, or are related to the conditions to which they are exposed." Their prevalence and their very lack of utility were an indication of common descent. But not for Wilberforce, who chose to give Darwin instruction in natural history. Every observant field naturalist knew that this alleged uselessness of colouring was "one of the greatest protections to the young bird, imperfect in its flight,... sitting unwarily on every bush through which the rays of sunshine

dapple every bough to the colour of its own plumage.” In his book *Evolutionary Theory and Christian Belief* (1957), David Lack also noted this intervention. Well known for his work on Darwin’s finches, Lack was not generally impressed by Wilberforce’s scientific grasp. But on this particular issue of the young blackbird’s spots, he conceded that Wilberforce’s remark was the shrewder. The belief that every feature of an organ or organism had to have some use was more strongly held within a Christian natural theology than by Darwin. In his *Descent of Man* Darwin said as much, explaining the difficulty he had experienced in emancipating himself from that presupposition.

Darwin’s own reaction to Wilberforce’s review is worth recording: “it is uncommonly clever; it picks out with skill all the most conjectural parts, and brings forward well all the difficulties. It quizzes me quite splendidly.” Darwin told Hooker that he detected Owen’s hand in it, leaving Owen’s name as a derisive blank. Now, I do not wish to be misunderstood. It is not my brief to defend Wilberforce, or to suggest that he was more sympathetic to Darwin than he was. His review was, and was meant to be, scathing. He refers to an “utterly rotten fabric of guess and speculation”. But it does have another feature that undercuts the crude polarities between science and religion that are so often invoked. This is his appeal to eminent scientists of the day to buttress his attack: Charles Lyell on the limits of organic variability; Roderick Murchison on evidence that was missing for the Silurian life Darwin was assuming; Richard Owen on the caution that should be exercised before admitting any possible mechanism for the transformation of species. It was precisely that caution that allowed Wilberforce to upset Darwin by upholding Owen as “a far greater philosopher”.

Polarities and their complexity

In conclusion I should like to give three examples to underline the complexity of the polarities. Each marks a different way of saying that there were middle positions.

Popular anecdotes about apes and angels play on the polarity but rarely do justice to figures such as Richard Owen or Frederick Temple who saw in the evolutionary process the unfolding of a divine plan. Owen is my first example because, more than Wilberforce, he was willing to see secondary causes at work in the production of new species. He even sought approbation for having been in the vanguard of that openness. But for Owen it did not follow that one had to subscribe to Darwin’s hypothesis of natural selection. His refusal to commit himself to any one mechanism cost him dearly when Darwin’s theory began winning converts; but it is important to recognise that he had a philosophical position from which he could argue for theistic evolution. This relied on the conception of continuous creation. There had been a skeletal archetype in the mind of the Creator whose work in creation consisted in the instantiation of that archetypal structure in as many and diverse forms as possible.

For my second example, I return to Frederick Temple who caused Wilberforce so much heartache. During the Oxford meeting of the British Association, the sermon preached in the University Church on the first of July was given not by the Bishop but by Temple. It had a topical theme: the present relations of religion and science. In contrast to Wilberforce, Temple created space for Darwin. He criticised churchmen of the past for their god-of-the-gaps. Too often they had found refuge in what the sciences could not explain. But this had been a serious mistake. The expansion of the domain of natural *law* was rather to be welcomed. Why? Because it increased the plausibility of the belief that there were also *moral* laws governing the universe. One of Darwin's earliest converts was the clergyman and Christian socialist Charles Kingsley. Temple shared Kingsley's view that a God who could make all things make themselves was so much wiser than one who simply made things.

My third example may seem paradoxical because it is Huxley himself. He was not a liberal in every respect. On women's rights Lyell thought he looked embarrassingly like the Bishop of Oxford. True he coined the word "agnostic" in reaction to the presumption of those churchmen who behaved like gnostics, arrogantly claiming a privileged knowledge. True, it can be said of him that he was looking for a new Protestant reformation in which science would be venerated and Britain prosper; true, perhaps, in one biographer's words, that "he oozed Puritan self-righteousness" in making the scientific man seem "more principled, more earnest". And yet, on the touchy subject of design in nature, which Darwin's theory had placed in the limelight, Huxley had something surprising to say. When he wrote on the reception of Darwin's theory, he felt that there had been far too much song and dance about design and its supposed dissolution. "It is necessary", he wrote, "to remember that there is a wider teleology which is not touched by the doctrine of Evolution. This proposition is that the whole world ... is the result of the mutual interaction, according to definite laws, of the forces possessed by the molecules of which the primitive nebulosity of the universe was composed. If this be true, it is no less certain that the existing world lay potentially in the cosmic vapour, and that a sufficient intelligence could, from a knowledge of the properties of the molecules of that vapour, have predicted, say the state of the fauna of Britain in 1869, with as much certainty as one can say what will happen to the vapour of the breath on a cold winter's day." What was his conclusion? Simply that the doctrine of evolution "does not even come into contact with Theism, considered as a philosophical doctrine."

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