

## Chancellor's Lectures 2011

### Books that Shook the World - from the *King James Bible* to *Wealth of Nations*

*Lecture Three, Thursday 19 May*

Good evening, ladies and gentlemen, and welcome to the third in this year's series of Chancellor's lectures, *Books that Shook the World – from the King James Bible to Wealth of Nations*. In my first lecture we explored the making of the English Bible, with particular reference to William Tyndale, described by Thomas More as a 'Hell-hound in the kennel of the devil'. Last week it was the turn of the 'hyena in petticoats', as Horace Walpole called Mary Wollstonecraft, the author of *A Vindication of the Rights of Woman*. And so we turn to Charles Darwin and *On the Origin of Species*, and perhaps I will be able to turn up a choice insult for him, possibly involving another species of animal, before we are through this evening.

Tonight I'm planning to cover Darwin's life, and the major themes of his work. I'm also going to focus on an often neglected topic, Darwin's own religious development. Along the way I'm going to mention how his work was received at the time and subsequently, and touch on contemporary debates about evolution and religion. This is a lot for one lecture, so I'd better proceed straight to Darwin's life story:

Charles Robert Darwin was born on the 12<sup>th</sup> February 1809 in Shrewsbury, the fifth child of Shrewsbury's physician, Robert Darwin. Robert's father, Charles' grandfather, was Erasmus Darwin, also a doctor, and author of *Zoonomia*, a book on the evolutionary laws of life and health. His mother was Susannah Wedgwood, daughter of the potter Josiah Wedgwood. She died when he was eight, but he remembered his childhood with affection, reflecting great credit on his three older sisters, who cared for him. Boarding at Shrewsbury School was a less happy experience. The teaching was narrow and classical and did not agree with him at all. At home he'd enjoyed a chemistry lab set up by his brother in an outhouse; when he tried repeating experiments in the dormitories at school, he was publicly told off by the headmaster for wasting time. No doubt this was the view also of his inveterate collecting, whether bird's eggs, minerals or coins.

Darwin was considered a failure at school, and removed two years early, in 1825. This was a blow to his father's ambitions: Robert wanted both his sons to become physicians, like him. Later that year, nonetheless, he was sent to Edinburgh University, where the Darwins had studied medicine for three generations. Charles

did his best, but (like many students, some things don't change) he didn't like the early mornings, wasn't persuaded by the quality of the professors, and was repelled by the study of anatomy. In a letter home he recounted his memory of 'a whole, cold, breakfastless hour on the properties of rhubarb.' It became particularly clear that medicine was not for him, when he fled during an operation on a child in the Royal Infirmary.

Darwin later looked back on his Edinburgh years as unproductive, but he did attend lectures on what really interested him; subjects such as zoology, chemistry and geology. He joined the Natural History Society. He was taught *bird stuffing* by a freed slave from Guiana, and made friends with a Francophile sponge expert – honestly, I'm not making this up, and that's an authority on microscopic sea life, not cake making.

Young, homesick, hating medicine, Darwin left Edinburgh after two years, in April 1827. His father, fearing a wastrel living off the family fortune, decided that for Charles, ordination was the way forward. So it was in January 1828, having brushed up his schoolboy Greek at home, he began at Christ's College, Cambridge. The thought of a comfortable parish appealed, but the study of theology didn't inspire any more than medicine had. He much preferred beetle collecting on the fens, and was inspired by sessions led by a young botany professor, the Revd John Henslow. Their friendship was one of the most influential in his early life. It was in this period that he read William Paley's *Natural Theology; or Evidences of the Existence and Attributes of the Deity, Collected from their Appearances in Nature*. Remember Paley's name; we'll come back to him.

As I indicated earlier, some things in student life seem little changed from Darwin's time. For example he idled away much of his time, ran up bills, drank a lot, rode and gambled. Somehow he also passed his exams for the BA, finishing 10<sup>th</sup> out of 178. He did not, however, feel ready to enter the Church. The Revd Henslow came to the rescue. He arranged for Darwin to do a fortnight's geological fieldwork in Wales, and on his return, Darwin found a letter from Henslow offering him passage on a ship headed to Tierra del Fuego, and then home via the East Indies. The ship's captain, Robert Fitzroy, was looking for a companion – a well-educated gentleman with scientific interests who could make good use of such a voyage. Henslow recommended his friend, so enabling the formative experience of Darwin's life.

Darwin had a few months to get his equipment together, and visit naturalists at the British Museum and Zoological Society. He worried about the lack of space; the *Beagle* was a converted 10-gun brig, only 90 feet long, popularly known, not very encouragingly, as one of the 'coffin' class. The planned start date was delayed by

storms, but two days after Christmas in 1831, they finally set sail on what proved to be a five year voyage. Darwin was often seasick, but there was plenty of time and opportunity to make observations, and collect animals and plants, in some of the most beautiful, desolate and isolated places in the world – amongst them the Cape Verde islands, Brazil, Tierra del Fuego, the Falklands, Patagonia, the Galapagos, Tahiti, New Zealand and Australia, Mauritius, Cape Town, and St Helena.

Darwin collected a vast number of fossils, insects, birds, plants, etc, regularly shipping back whole crates to Henslow. What proved to be the most famous of his collections, birds from the Galapagos islands, was actually rather carelessly labeled. Although Darwin wondered about the relationship between the species on the sixty one different islands of the Galapagos, and between the island species and those on mainland South America, he didn't notice at the time what proved crucial later – the diversification of finches from one island to the next.

Darwin's longing for home grew as his skills as a naturalist matured. It was increasingly clear to him that his future lay not in the Church, but in the world of science. He disembarked at Falmouth on 2 October 1836, arriving at home in Shrewsbury two days later. His sister Caroline quickly realized he'd gained an 'interest for the rest of his life.'

The next step was to ask his old friend Henslow which experts he should consult about his *Beagle* specimens. Living on £400 a year from his father, he had the independence to follow his research interests without having to worry unduly about money. Henslow helped him get a £1000 Treasury grant to publish *The Zoology of the Voyage of the HMS Beagle* in nineteen parts. This covered a vast array of subject matter, but the heart the matter relates to those birds from the Galapagos.

On 4 January 1837, Darwin presented the Zoological Society with eighty preserved mammals and 450 birds. Within days the ornithological expert John Gould discovered that what had been thought to be a mixture of finches, wrens and blackbird relatives, were in fact a closely related group of specially adapted ground finches. Unfortunately Darwin hadn't labeled which island each specimen came from. He'd been more efficient with four mockingbirds, which were now identified as three different species. Their differences suggested birds originally from the South American mainland, that had changed to meet local island conditions. Another clue was the relation between fossils from Argentina, unlike anything seen before; except for specimens of armadillos from the same region. A group of extinct animals, and a group of living animals, that had developed body armour – but evidently part of the same South American group.

Despite all those years on the *Beagle*, Darwin realized he didn't have enough specimens to pursue his line of thinking, and those he did have weren't classified well enough. His solution was one he resorted to again and again for the rest of his life, seeking the help of others. He'd heard that Spanish sailors could tell which finch belonged to which island. He wrote to fellow crew members, and consulted a multitude of other scientists. The data slowly accumulated, more and more careful observations, systematized and reflected upon. He wrote as follows:

...it is the circumstance that several of the [Galapagos] islands possess their own species of tortoise, mocking thrush, finches and numerous plants, these species having the same general habits, occupying analogous situations... that fills me with wonder.

Individual species, it seemed, sharing a common ancestry, had changed and evolved in relation to circumstances. The working out of this fundamental insight would take place over the next twenty years of home-based research. But in that home, would he remain single, or share his home with another? He brought his analytical skills to bear on the topic, assessing the pros and cons of marriage: 'Children (if it please God) – constant companion (and friend in old age)... charms of music and female chit-chat – those things good for one's health – but *terrible loss of time*.' Not sure that Mary Wollstonecraft would have entirely approved of this, but Darwin went on: 'My God, it is intolerable to think of spending one's whole life like a neuter bee working, working and nothing after all... picture to yourself a nice soft wife on a sofa with a good fire and books and music perhaps... Marry, marry, marry. [Q.E.D.]'

I don't know if Darwin ever showed these musings to his cousin Emma Wedgwood, who became his wife. She'd been taught the piano by Chopin, so he got his music. She was also a devout Christian, but was not put off by the slenderness of Darwin's faith. They were married in 1839, and moved into Down House in Kent in 1842. With Darwin's annual allowance and the £15000 they received on their wedding day, they were a wealthy couple. They never moved from Down House, and to this day you can still see her grand piano in the drawing room there. Children also followed, ten of them, with three dying in childhood. With the demands of family life and his research, compounded by ill health, Darwin gradually withdrew from public life, devoting himself to correspondence, research and reflection. Eventually this would lead to the publication of *On the Origin of Species*, but that was many years away.

As with Wollstonecraft's work last week, it's important to realize Darwin's famous book didn't emerge out of nowhere. In 1809, for example, the French soldier,

naturalist and academic Jean-Baptiste Lamarck published *Philosophie Zoologique*, arguing that organisms underwent adaptation in relation to their needs. His understanding of the process involved, however, was distorted by his acceptance of a time-scale based on the work of the Archbishop of Armagh, James Ussher. John Lightfoot, the seventeenth century vice-chancellor the University of Cambridge, also influenced by Ussher, famously pronounced that ‘Men were created by the Trinity on October 23<sup>rd</sup> 4004 BC at nine o’ clock in the morning.’ Even Stephen Hawking wouldn’t dare be so precise!

In 1844 Robert Chambers published *Vestiges of the Natural History of Creation*, arguing that all living creatures had evolved from a single form. Chambers used fossil evidence, but was ridiculed for his concept of the ‘monstrous birth’, from which a new species might instantly arise. Critics suggested this implied a pig could give birth to a woodpecker. Darwin took note of this kind of public scorn!

There were many other theories, all of which would in due time be surpassed by the comprehensive nature of Darwin’s theories, and the sheer weight of evidence he produced to support them. Darwin continued to be reluctant to go public. He wanted the respect of the establishment; as conservative in their ideas about changing species, as they were about changes in society. In the end, however, his hand was forced by correspondence from Malaya. The naturalist Alfred Russell Wallace had arrived at very similar conclusions to Darwin’s. The thought of someone else stealing his thunder, finally provoked him into publication.

His publisher, John Murray of Edinburgh, needed some persuading. An amateur geologist, he thought the central argument as absurd as the possibility of ‘a fruitful union between a poker and a rabbit.’ He received a second opinion suggesting Darwin rewrite his book, focusing on pigeons, as pigeons were popular and this would guarantee sales. Darwin was not amused! In the end, he and his influential friends prevailed. In November 1859, a 502 page volume appeared, *On the Origin of Species by Means of Natural Selection, or, The Preservation of Favoured Races in the Struggle for Life*. The first print run, only 1250, was oversubscribed, and Darwin immediately began collating corrections for a second edition.

Here is a flavour of what Darwin wrote:

Natural selection... leads to divergence of character; for more living beings can be supported on the same area the more they diverge in structure, habits, and constitution... Therefore during the modification of the descendants of any one species, and during the incessant struggle of all species to increase in numbers, the more diversified will be their chance of succeeding in the battle of life... On

these principles, I believe, the nature of the affinities of all organic beings may be explained.

The key idea Darwin proposed was adaptation, or evolution, by natural selection. This enabled him to demonstrate the processes whereby organisms, living things, change in response to their environment. Because animals tend to reproduce in greater numbers than their environment can sustain, not all their offspring will survive. Those that live, will do so because they're best adapted for the conditions in which they find themselves: hence that phrase 'survival of the fittest', which enters the text of the fifth edition. The word 'evolution' appears from the seventh edition onwards.

Darwin was certain his theory of natural selection was correct, but knew it wasn't proveable in the way Isaac Newton could demonstrate the existence of gravity. The changes in organisms took place over millions of years, not thousands as Lamarck had thought, and because living things are complex there is no neat equation to capture this. In the words of one writer, Darwin could offer neither 'the clean precision of Newton, nor the reassuring comfort of Genesis'. He reconciled himself to the need for 'one long argument'. Hence the length of *On the Origin of the Species*, which is full not of formulae but of examples – including lilies, barnacles, bees and, yes, pigeons. The one species he did leave out was human beings; just once making the suggestion that the same principles applied to people also.

The division of opinion in 1859, and subsequently, was not straightforwardly along religious lines. The Revd Charles Kingsley, author of *The Water Babies* (a Darwinian influenced story) wrote to Darwin, 'It awes me. If you be right I must give up much that I have believed... 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 things needful.' On the other hand the geologist Adam Sedgewick, an old friend of Darwin's, wrote in the *Spectator* that the book's argument 'would sink the human race into a... grade of degradation...'.

Many academics were dismayed by a book aimed at the general public; why, it was even on sale to commuters at Waterloo station! As its popularity increased, so did both the praise and opprobrium. Soon *the Origin* was popularly known as the 'monkey theory.' The cartoonists, satirists and advertisers had a field day. Just one example of many possible: a New York firm advertised its gargling oil with an ape singing the following ditty: 'If I am Darwin's grandpa, it follows don't you see, That what is good for man and beast, is doubly good for me.' And then there was the famous Oxford debate in 1860, in which Bishop Wilberforce supposedly asked T.H. Huxley, a supporter of Darwin, if he was descended from an ape on his

mother's or his father's side. The accounts of this meeting were only written up years later, so should be treated with caution, but Huxley is said to have replied that he'd rather be descended from an ape than a bishop, especially one opposed to proper scientific debate.

Darwin continually revised *the Origin*, while also working on other books, perhaps most significantly the *Descent of Man*, published in 1871. Here he applied evolutionary theory to human evolution. He argued that each of the human faculties considered to distinguish us from animals—such as moral reasoning, sympathy for others, beauty, and music—can be seen to some extent in other animal species (usually apes and dogs). This inspired the famous image, used on posters for this lecture series, of Darwin with a human face, but a hairy monkey's body. His later writings are mainly about plants – safer ground, perhaps.

In June 1881, on holiday in the Lake District, angina was diagnosed after an attempt at a mountain walk left him feeling faint. A period of illness and enforced rest followed, which he hated. At Christmas that year he had a minor heart attack, and in March and April 1882 he had a series of seizures, eventually dying on the 19 April at the age of seventy-three.

Darwin's legacy is complex and manifold. His account of life on earth transformed and challenged previous ideas, both biological and theological, and inspired further research and reflection that goes on to this day. He has many disciples, some writing for the same popular market; in our day Steve Jones and especially Richard Dawkins are the best known. Dawkins puts it like this: '[Darwin] discovered a principle that with hindsight looks enormously simple; it is hard to believe that anybody did not think of it before, but nobody did, not really.'

Darwin's theories have been interpreted in various ways, some of them rather distasteful. For example, I understand that the subtitle to *the Origin* was the idea of the publisher John Murray – the subtitle referring to the 'preservation of favoured races'. I'm sure Darwin didn't think his writings justified authoritarianism and a 'might is right' approach, but it's open to powerful oppressors to see themselves as the natural outcome of a 'survival of the fittest' struggle. W.G. Sumner, an American academic, reputedly said to Andrew Carnegie that 'millionaires are the result of natural selection.' I hardly need mention the most notorious misuse of Darwinism, but it was there in the mix of nationalism, racialism and anti-semitism in inter-war Germany, giving Nazi rhetoric about master races a veneer of scientific authority. Hopefully the practice of eugenics and forced sterilisation, used at that time, is now considered abhorrent, even if such methods are still prevalent in the breeding of animals.

In fact 'survival of the fittest' was not Darwin's own phrase, but borrowed from the economist Herbert Spencer. Perhaps it would have better to've stayed with 'natural selection', but all great ideas are open to being misappropriated. If one is looking to explore the social consequences of Darwin's thought, it might be more accurate to describe it as pointing us to the common origins of all life, and celebrating the diversity and richness that emerges through the evolutionary process.

From a contemporary perspective, it's intriguing to consider that Darwin had a limited knowledge of genetics. Progress in this area since Darwin, has only served to confirm his discoveries. Contemporary popularisers like Richard Dawkins now express and develop Darwin's theory of evolution primarily in genetic terms. Dawkins is famously the author not only of *The Selfish Gene*, but also *The God Delusion*. So it is that the uneasy relationship between some scientists, and some religious adherents, has continued from Darwin's time to this day. I deliberately express the matter this way, for reasons which I hope will become clear.

There are those who want to use Darwin and evolution to dismiss Christianity, and those who find in their religion the grounds for rejecting Darwin. In some quarters this has become a polarised shouting match. I propose now to examine Darwin's own reflections on his faith, and the way these changed; or, dare I say it, evolved. In doing so, we will find much to undercut both 'sides' in this dialogue, not least in Darwin's hesitant, respectful, self-critical approach. 'Why should you be so aggressive?' he asked the atheist Edward Aveling in 1881. In a letter to John Fordyce he said it was perfectly possible to be 'an ardent theist & an evolutionist'. On the other hand, it's also true that he grew up within the Christian faith, but ended his life an agnostic. He didn't share the orthodox Christian faith of the missionary David Livingstone, although they were laid to rest within yards of each other in Westminster Abbey.

A brief word on the context of Darwin's development: I've already said that evolution was in the nineteenth century air before Darwin published anything. In the world of the church, natural theology ruled the roost. The slaughter of the thirty years war, amongst other things the culmination of the large-scale religious bloodshed that had begun with the Reformation, had disillusioned many about institutional religion. Religious experience, and biblical revelation, were shied away from in favour of safer ground. This 'safer ground' was thought to be provided by God's 'book of works', the natural world.

The key figure here is William Paley, Archdeacon of Carlisle. In 1802 he published *Natural Theology; or Evidences of the Existence and Attributes of the Deity, Collected from their Appearances in Nature*. From what he perceived to be design

in nature, he deduced the existence of a designer – God himself. Paley's book came out in the Napoleonic era, and proved hugely popular; not least because it portrayed a benign and ordered God, underpinning the way things were. Threats to the social order there may have been, but that order was underpinned by Christianity, which in turn was secured on the foundation of Paleyan natural theology.

At Edinburgh, Darwin encountered a very different way of thinking. There, anti-clerical freethinkers associated ideas of change and transmutation in species, with radical political ideas. If 'lower order' life forms could develop into higher forms of life, the established order, guaranteed by God and secured by the earthly authorities, could be displaced. Here we see, yet again, that scientific exploration always has a social context, and some will want to make political use of scientific theories. In Darwin's context, the direction his science took him was associated in his mind with anti-establishment, anti-religious perspectives. With the benefit of hindsight, this association was arguably not only unfortunate and unhelpful, but also unnecessary.

As we heard earlier, it was intended that Darwin train for the Anglican priesthood, but motivation was lacking. A letter from his sister Caroline encouraged him to read the Bible, which he appears to have done for a period: but not even the majesty of the King James Bible could make this more than a duty for him. In his *Autobiography* he wrote, 'I do not think that the religious sentiment was ever strongly developed in me.'

The Church of England at the time has been described as 'fat, complacent and corrupt'. Deeply held conviction did not *bar* you from ordination, but then neither did its absence! Ironically, when Darwin began at Christ's College, Cambridge, his first rooms had once been occupied by Paley. And indeed at this time Darwin read and enjoyed Paley's work. He related to this kind of ordered, rational faith; the fact that major themes such as suffering and injustice were almost entirely ignored never occurred to him. When his time on the *Beagle* began, his faith was a set of Paleyan propositions which had his intellectual assent, and also a civilising force - he approved of the moral effects of the Tahitian missionaries, and his first published writing was a defence of missionary work in the Cape of Good Hope.

In his years on the *Beagle*, Darwin witnessed the destructive power of a volcano, an earthquake and a tsunami; he also saw a mission in Tierra del Fuego fail through the hostility of the locals. He also read and loved Charles Lyell's *Principles of Geology*, with its insistence that geological change was not directional - that is, not occurring in line with some greater purpose. All of these helped to amend his assumptions about the world, human beings, and faith.

On returning to England, Darwin set to work on writing up his time on the *Beagle*, analysing his specimens, and considering their significance. He also courted, as we've heard, his cousin Emma Wedgwood, whose Christian faith was heartfelt and devout. Against the advice of his father, Darwin shared his scepticism with Emma. Her letters to him survive, and are fascinating. She suggests to him that the sort of scientific proof he works with, is not directly applicable to matters of faith. She points out that his mind is so full of his own discoveries, that considering religious questions has become an unnecessary interruption.

None of this prevented their marriage, but nor did it prevent the slow evaporation of his faith. There was no spiritual crisis for Darwin, as faith had never had a fundamental role in his life in the first place. Although he now had problems with accepting biblical accounts of such things as miracles, the flood and the Tower of Babel, he still had a general belief in God, and the importance for society of Christian morality.

The years 1837-1839 were crucial years of study and reflection. A series of notebooks from that time capture some of this. In particular Darwin decided he couldn't accept the idea of special creation - that God had created every species in its current form, just as it now was. Nor could he accept the uniqueness of human beings in relation to other animals. However Nick Spencer, in his recent book *Darwin and God*, argues that of greater significance for what remained of his religious beliefs, was the perennial 'problem of suffering'. He refers to the profound impact of the death of his daughter Anne, who had never fully recovered from scarlet fever. Anne was an affectionate and sensitive girl, devoted to her father, and he was particularly fond of her. Shortly after her tenth birthday, her health worsened, and Darwin sent her to Malvern for treatment by a doctor who had helped him. Emma was expecting their eighth child, and so stayed in Kent. It fell to Charles to keep a long and painful vigil at Anne's bedside. 'It is much bitterer and harder to bear than I expected,' he wrote to Emma.

Despite the best efforts of the doctors, Anne died. Darwin was absolutely devastated, and Spencer thinks it was this that really finished off Darwin's relationship with orthodox Christianity. He cannot conclusively show this from Darwin's writings, however, although it's a plausible speculation. What *is* clear from Darwin's writings is his continued willingness to debate the theological implications of his work with a whole host of correspondents, among them Professor Asa Gray at Harvard, the philosopher William Graham and the botanist Joseph Hooker, director of the Royal Botanic Gardens at Kew. For example, in a letter to Hooker of 12 July 1870, he wrote, 'My theology is a simple muddle: I cannot look

at the Universe as the result of blind chance, yet I see no evidence of beneficent Design.’

This was a ‘muddle’ Darwin never resolved, and it’s to his credit that he was content to live with this uncertainty, rather than prematurely ‘solve’ it one way or the other. Though a rationalist, Darwin was cautious in expressing his religious views lest he offend or be offended in turn. While acknowledging in a letter in 1880 ‘I do not believe in the Bible as a divine revelation, & therefore not in Jesus Christ as the Son of God’, Darwin also confessed that he had ‘never been an atheist in the sense of denying the existence of a God’, and ‘that generally (& more & more as I grow older), but not always, that an agnostic would be the most correct description of my state of mind’

Thus Edward Aveling's request in 1880 to dedicate a book to Darwin was turned down on the grounds that: ‘...though I am a strong advocate for free thought on all subjects, yet it appears to me (whether rightly or wrongly) that direct arguments against christianity & theism produce hardly any effect on the public; & freedom of thought is best promoted by the gradual illumination of men's minds, which follow[s] from the advance of science.’

With his considered agnosticism, I think Darwin would have despaired of the angry tone that is often heard nowadays, as the so called ‘new atheists’ harangue creationists and sometimes, by association, all religious believers; inevitably calling forth ill-tempered broadsides from the creationist camp. I’m tempted to apply a well-known swimming pool analogy to this one: that in much contemporary debate about science and religion, all the noise is coming from the shallow end.

I suspect the vast majority of Christians do *not* think they have to choose between evolution and their faith. They know that the Bible is not a proto-scientific document; that in fact the Bible in fact has little on the creation of all that is, and that the opening chapter of the book of Genesis is about the *why*, not the *how*. The real focus of Scripture is elsewhere: to help human beings to love, to forgive, to be reconciled, to work for justice, to glorify God. Christians do not follow Christ to learn about evolution, or physics, or geology, but because in him is found the healing of our hurts and hearts, and the ‘more excellent way’ of faith, hope and love.

And when Christians do reflect on creation, God remains the ultimate explanation of why there is anything at all, including the laws of physics and the unfolding of evolutionary processes, rather than nothing. Neither Darwin, nor Dawkins, or for that matter Stephen Hawking, has yet shown us that the so-called ‘cosmological argument’ for God’s existence, in which God is the ultimate cause or explanation of

there being something rather than nothing, has been disproved. But as I've said, the foundation of Christianity and other world faiths is not a Paleyan discernment of God in the natural world. Christianity, for better, for worse, stands or falls on the figure of Christ.

Personally I find Darwin a likeable figure as well as a great man. I'm not surprised I've failed to turn up any biting insults about him, although perhaps drawing him with an ape's body was intended as such. But I also think his wife Emma was on to something, when she pointed out that his mind was so full of his own discoveries, that considering religious questions became an unnecessary interruption. In his *Autobiography* Darwin writes of the cost of his single minded focus: 'My mind seems to have become a kind of machine for grinding general laws out of large collections of facts, but why this should have caused the atrophy of that part of the brain alone, in which the higher tastes depend, I cannot conceive.' He is referring to his regret that he's no longer moved as he once was by poetry, music or art. A side effect of his scientific achievements, it seems, was being unable to appreciate that truth could be discovered in ways beyond tangible empirical evidence, vital as that is. Christianity and other faiths are not just about propositional arguments, important as these are: music, stories, worship, art, poetry, work for reconciliation, all that forms the religious imagination and behaviour, are part of the complex phenomenon of faith.

I'm done for this evening. Next week, in my final lecture, we turn to Adam Smith and the *Wealth of Nations*; perhaps we'll learn whether millionaires really are the result of natural selection! Smith's book is much more than economics textbook; it's also about the struggle for individual liberty and general prosperity in history. And who knows, I may even dare to touch on the so-called 'banking crisis' and its continued implications for our day to day lives. But for now, thank you for your attention.