

Topic 2.3 Science and religion in tension

Procedure

Charles Darwin and his context

Brainstorm: Who was Charles Darwin?
What theory is his name associated with?

Research Assignment: CHARLES DARWIN – HIS CONTEXT
SOURCES: Religion and Science – F. McCarthy & J. McCann etc.

Discuss: What would you pick as main features of the context in which Darwin's ideas emerged?

Take feedback and note main points on the chalkboard.

Darwin and evolution - Darwin's investigations
- the development of a theory of evolution

Read *Student Work*: DARWIN'S THEORY OF EVOLUTION

Discuss: How was Darwin's theory of evolution in conflict with religion?

Take feedback and conclude by reference to the ways in which evolution places in question both the providence and the goodness of God e.g.

1. Evolution, more than any other scientific theory posed a serious challenge to the Christian doctrine of creation, that God is the author of all life, and that human life has a privileged position as the masterpiece of God's creation. Darwin taught that the relative differences in organisms' adaptability are accidents, in the sense of being undirected by any guiding intelligence. This randomness of variation suggests that we live in a makeshift universe, one devoid of design or intelligent governance. This placed in question religious trust in divine providence. Darwin undermined Paley's argument for a Designer God by showing that adaptation could account for apparent design. Thus the theory of evolution appeared to be contrary to the idea of a Designer God who created the world for a purpose and whose hand could be discovered within it.
2. Darwin's idea of "natural selection" seems to dispute the notion of God's love, justice and compassion. The competitive struggle for survival between strong and weak organisms goes against a religious sense of compassion. Darwin challenged the unique status of the human species made in the image of God. Human beings could no longer be seen as set apart, the masterpieces of God's creation, but the product of chance and accidental forces. Not being exempt from the processes of nature, humans are descended from other life forms and are now dominant because of their superior ability to survive. Evolution implied that some higher primates and humans shared a common ancestor, rather than humans coming from a unique act of creation. The value and dignity of the human person as a moral being appeared to be denied by natural selection. Copernican astronomy had demoted humanity from the centre of the universe and now Darwinian evolution had threatened the uniqueness and special status of the human being in nature.
3. Darwin's theory challenged the literal interpretation of Genesis. The slow process of evolution over millions of years cannot be reconciled with the seven days of creation and a young earth. Lyell showed the earth is very old, so no literal reading of the Bible could

accord with the scientific account. As regard living things, Darwin undermined biblical ideas on fixed species and special creation. It could not account for ancient life forms within the fossil record. Creation was not a relatively recent once-for-all act that established a static and unchanging order of nature. Nature is evolving, dynamic and changing: some species, which exist today, did not in the distant past and many species which existed in the past, like the dinosaurs, no longer do so today.

(For background reading see *Responses to 101 Questions on God and Evolution* – J.F. Haught & *Religion and Science* – F. McCarthy & J. McCann)

the response of religions with particular reference to one of the following: Buddhism, Christianity, Hinduism, Islam, or Judaism.

Student Work: REACTION TO DARWIN

Discuss: What was the reaction of the Christian Churches to Darwin's theory?

Assessment Questions

Darwin's theory of evolution by natural selection offered an alternative explanation to the religious argument from design. Explain why this caused such controversy with particular reference to the reaction of one major world religion.

Outcomes:

As a result of studying this section, students should be able to:

- Explain the influences on Darwin's thought
- Outline Darwin's theory of evolution, and highlight the major areas of conflict with religion
- Describe the reaction of one major world religion to Darwin's theory at the time of its development.

Student Work: DARWIN'S THEORY OF EVOLUTION

Charles Darwin (1809-1882) began his career as a medical student in Edinburgh. Unable to cope with medical procedures like operations and body dissections he left for Cambridge, intending to study for ministry in the Church of England. During his time in Cambridge he read works of the theologian William Paley and was deeply impressed by "natural theology" with its argument that the Book of Nature could lead to God no less surely than could the Bible itself. In 1831 at the age of twenty-three, he was offered a place on board the HMS Beagle, as a naturalist, to explore wildlife in South America. From 1831-1836 he made an extensive study of nature collecting specimens of rocks, fossils and wildlife, especially from the Galapagos Islands, which he sent back to England. When he left on the voyage he accepted the common view of fixed species and special creation i.e. that God had separately created different species with characteristics suited to their environment. As part of his investigations on the Galapagos Islands Darwin collected a number of birds that looked like finches with different characteristics, from different islands. He was startled when told by an expert that the different samples belonged to different species. The only plausible explanation was that they derived from one species, blown across from mainland South America, where they developed separately on their different islands. This led him to the conclusion that one species must indeed develop out of another. His task over the next twenty years was to collect the evidence and develop a theory of how i.e. the mechanism by which this change took place.

Darwin was persuaded by Lyell's arguments for an ancient earth, that a natural process of gradual change formed the earth's rocks over long periods of time. Thomas Malthus essay on the *Principle of Population* (1798) influenced Darwin's thinking on species. Malthus argued that struggle and competition in nature is the key to the survival of a species. Populations increase faster than available resources such as food and space. Competition meant that those species that are best adapted to their environment are more likely to survive. Darwin now had the mechanism he needed, 'natural selection', which could explain the apparent chance variations in characteristics within a species: those variations, which helped survival, would be preserved, those which did not would be gradually wiped out. Those who survive will pass on these characteristics to the next generation. Natural selection could explain the extinction of species in the fossil record and the formation of new ones, without the need for divine intervention. Darwin proposed that evolutionary change does not occur through passing on acquired characteristics but through passing on inherited characteristics.

Darwin's theory of evolution simply consists of two points:

1. All forms of life descend by way of gradual modification over the course of time from a common ancestor
2. This gradual modification, including the emergence of new species is explained by natural selection i.e. those organisms most able to adapt to their environments will be selected by nature to survive and produce offspring, while nonadaptive (and therefore reproductively unsuccessful) organisms will perish.

Darwin was the first to give a convincing account of the mechanism, natural selection, by which the great varieties of life forms have come about. He argued that all species, including the human species, result from a long process of biological evolution. In 1859 Darwin produced his book *The Origin of the Species* in which he set out his theory of the evolution of species by means of natural selection, with a wealth of supporting evidence. Darwin sets out his main arguments in the second and third chapters of the book as follows:

- **Competition:** All living species produce too many offspring to survive to maturity and reproduce. There is competition and struggle for scarce resources and to avoid predators. What factors affect survival?
- **Variation:** Offspring are not exact copies but differ from their parents, for example, colour, shape of beak or length of legs. Some random variations may give a competitive advantage (taller, quicker, stronger) in the struggle for survival. 'nature selects', the better adapted survive and reproduce.
- **Heredity:** Many of these favourable characteristics are passed on, inherited from one generation to another. The longest living will reproduce the most; so unfavourable characteristics are gradually eliminated. Darwin defined natural selection as 'the preservation of favourable variations and the rejection of injurious variations'.
- **New Species:** The process of natural selection can lead over time to new species, through the accumulation of a number of tiny improvements. More and more of the population will possess such characteristics, resulting in a gradual change or 'evolution'. Darwin called this change 'descent with modification'. The variations that lead to different species are completely random suggesting the workings of nature are accidental and irrational. Today the source of these variations is known as genetic mutations that can be attributed to chance.

The implications for the human species of this theory of evolution became clear in Darwin other major work *Descent of Man* (1871). This made it clear that there were no fixed species or special creation. The human was not set apart from the rest of nature and was not an exception to biological laws. No fundamental biological distinction could be made between humans and animals in terms of their origin and development. Darwin himself believed that God designed the laws of the evolutionary process, but not the detailed structures of each organism, leaving the details to chance. At the end of *Origins* he expressed a sense of wonder at the grandeur of the natural order 'breathed by the "Creator" which could be seen as a form of natural religion. Despite the controversies caused by his theory, Darwin was greatly respected by his peers, and his ideas formed the focus for the scientific and intellectual excitement of his day. Darwin realised that his theory had flaws. For example Darwin had no idea how characteristics are inherited. Knowing nothing of the mechanisms of heredity he had a theory of blending inheritance. He thought parental characteristics were inherited in the blood, so rare variations could be diluted out, the way red colour mixed with water becomes pink. This contributed to the lack of acceptance of Darwin in the late nineteenth century. It was Gregor Mendel (1822-1884), a monk from Moravia, who published a paper on the inheritance of characteristics in the garden pea, showing that inherited characteristics were transmitted as units; each higher organism had a pair of units (now called genes) for each inherited characteristic. A particular gene (e.g: brown eyes) may be expressed or lie dormant, but is not diluted out. Changes in genes, called mutations, occurred randomly and were the source of novelty, which allowed for the possibility of evolutionary change.

Darwin died in 1882 and was buried a short distance away from Isaac Newton in Westminster Abbey.

*(Adapted from Responses to 101 Questions on God and Evolution – J.F. Haught
& Religion and Science – F. McCarthy & J. McCann)*

Question: How was Darwin's theory of evolution in conflict with religion?

Student Work: REACTION TO DARWIN

Although Darwin's theory of evolution disturbed many church officials, even in his own time the idea got a great variety of reactions both from scientists and public alike and there were many conflicting interpretations of its implications e.g.

- The Anglican churchman Charles Kingsley, suggested that a creation unfolding gradually from primal forms points us to a more noble concept of the Creator than would a non-evolving world. Kingsley said it was as noble of God that he created creatures capable of self-development as to think that God needed to intervene in order to produce new species. Darwin included his comment in the last chapter to the second edition of *Origins*. Kingsley also thought that evolution allows us to think of God as more deeply involved in nature than previous scientific thought had allowed. In the words of Frederick Temple, later to become Archbishop of Canterbury, speaking of the evolution of living creatures, "God made them make themselves".
- Many saw the evolutionary model as a healthy corrective to the flawed Deism of the previous century. A fundamental difference between Darwin and the deists was that he could no longer accept the argument from design, since his theory of natural selection took away the need for an external designer. Evolution emphasised the immanence of God, the indwelling of God in Creation, stressing God's continuous activity, not the infrequent winding of a clock as in the Deists' clockmaker model. Many churchmen of the time in the Church of England saw no necessary conflict between evolution and Christian faith.
- Fundamentalist and evangelical Protestantism found evolution especially offensive. The evolutionary picture of nature obviously conflicts with the literalist reading of scripture and the idea of our descent from more primitive forms of life seems to contradict the doctrine of our special creation "in the image and likeness of God." Conservative Christians defended the literal truth of the Bible and so rejected all forms of evolution e.g.
A debate on *Origins* took place in Oxford on June 30, 1860 between the Bishop of Oxford, Samuel Wilberforce, and Darwin's friend and champion, T. H. Huxley. The story goes that Wilberforce ridiculed evolution when he asked Huxley whether he was descended from an ape on his grandfather's or grandmother's side? Huxley supposedly replied that he would rather have an ape for a grandfather than a bishop! Huxley, known as "Darwin's bulldog" resented ecclesiastical intrusion into science and saw clericalism as the enemy of science. The exchange between Wilberforce and Huxley reinforced the "warfare" model of the relationship between religion and science, showing the so-called triumph of atheistic science over a backward Church. Similarly Ernest Haeckel, in *The Riddle of the Universe* (1899) popularised Darwin's theory of evolution and celebrated it as the triumph of science over the superstition of religion. He promoted a view known as 'scientific materialism' i.e. that all knowledge and reality are the products of the material world and are absolutely determined by the laws of nature.
- Evolution became a symbol of the Victorian belief in the inevitability of progress; competition in business reflected the natural outworking of competition in nature. Herbert Spencer used the phrase "survival of the fittest" to describe the application of natural selection to moral and social questions, known as "Social Darwinism" i.e. the belief that in human social life the strong and wealthy have nature's endorsement, no matter how many others lose out in the struggle for success. The "survival of the fittest" was imported from biology into the moral and social order and used to justify economic competition and colonial aggression. In opposition to Spencer many argued that appealing to evolutionary ideas to justify ethical and political systems was deriving an "ought" from an "is". The evidence of evolution pointed to what in fact did happen, but that did not imply it could be used as a basis for what ought to happen.

→ The Catholic Church in the nineteenth century reacted negatively to evolution, seeing it as an example of the materialist and secularist agenda of the age e.g.

A letter of Pius IX in 1877 expressed the suspicion that Darwinism is a "mask of science" behind which there is a materialist vision of nature.

The Pontifical Biblical Commission of 1909 insisted on the historical character of the earlier chapters of Genesis giving it a literal interpretation so it teaches scientific truth.

In the course of time as the Church gradually assimilated the new methods of Biblical research Catholic theologians and Church officials had no serious difficulties with the topic of evolution e.g.

In his encyclical *Providentissimus Deus* (1893), Pope Leo XIII instructed that Catholics should not look for scientific information in the pages of scripture.

Pope Pius XII, in his encyclical *Humani Generis* (1950), granted that the human body may have evolved naturally over a period of time, but he insisted that God creates each human soul directly.

In 1981, Pope John Paul II rejected creationist literalism in an address to the Pontifical Academy of Sciences: "The Bible itself speaks to us of the origin of the universe and its make-up, not in order to provide us with a scientific treatise but in order to state the correct relationships of man with God and with the universe. Sacred scripture wishes simply to declare that the world was created by God, and in order to teach this truth it expresses itself in the terms of the cosmology in use at the time of the writer...."

Pope John Paul II in a Message to Pontifical Academy of Science on Evolution November 14th 1996 agreed that the evidence for biological evolution is convincing. Pope John Paul II's statement decisively revokes previous misgivings about evolutionary science, and it implicitly encourages the development of an evolutionary theology. This statement gave an official endorsement of the view long held by Catholic scientists and theologians that evolution is not contrary to Christian faith.

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Question: What was the reaction of the Christian Churches to Darwin's theory?