

## **SHOULD WE TEACH CREATIONISM AND INTELLIGENT DESIGN THEORY IN SCHOOLS?**

**Michael J Reiss** is Professor of Science Education and Assistant Director at the Institute of Education, University of London and a priest in the Church of England. For further information see [www.reiss.tc](http://www.reiss.tc).

### **THE YEAR 2009 IS SEEING AN AVALANCHE OF BOOKS, LECTURES, TELEVISION PROGRAMMES AND ARTICLES ON CHARLES DARWIN.**

It is 200 years since he was born and 150 years since he was pushed to publish his monumental *On the Origin of Species* earlier than would otherwise have been the case due to the unexpected arrival of a letter from Alfred Russel Wallace in 1858. Wallace, a young ornithologist, independently proposed a theory of natural selection that nearly replicated Darwin's own. This shocked Darwin and prompted him to write up the research he had been carrying out for the previous 20 years and publish his own theory.

Since Darwin wasn't alone in thinking up the theory of natural selection or in assembling evidence in support of evolution, are we right to make such a song and dance of his anniversary? The short answer is 'yes'. *On the Origin of Species* is the most important biology book ever written and Darwin has done as much as anyone to change how we see ourselves.

### **THE IMPORTANCE OF DARWIN FOR THEOLOGY**

So why do I, with a fairly conventional Christian faith, albeit someone with an academic background in evolutionary biology, believe that a Darwinian worldview matters more than ever?

Above all, Darwin decentres humanity. In this he completes the work that Copernicus and Galileo began. We are not the centre of the universe. The universe existed long before we came on the scene; though it is we, so far as we know, who are the only species capable of considering such matters.

This decentring does not, of course, mean that we matter any the less. Rather, it helps us appreciate that we do not sit in a distinct category from the rest of creation. The great apes that are heading towards extinction in the wild and are still used in some countries for medical research really are our relatives.

Darwin was more than a little apprehensive about how his work would be received, realising that it would be controversial. In the event, the reception was generally positive. Even the established Church of England soon accepted its message, partly because the evidence was overwhelming and the logic of the central argument convincing, and partly, perhaps, because it had little wish to box itself into a corner as the Roman Catholic Church had over Galileo some two centuries earlier. When he died, Darwin received a state funeral and was buried in Westminster Abbey.

However, there are, of course, many with a religious faith who find a Darwinian view of life incompatible with their understanding of God's action in the world. In my opinion, the Darwinian worldview is not just compatible with religious faith; it also deepens faith and makes aspects of belief more intelligible.

Consider the age old but still vital question as to why God allows suffering. A way

of answering the question seems clearer if one sees God as giving creation the ability to evolve itself, including the capacity to feel pains and pleasures. Perhaps there is no other or better way.<sup>1</sup> Perhaps, just as it is no use our complaining that the square root of two is irrational, natural selection, as Richard Dawkins has argued,<sup>2</sup> really is inevitably written into the fabric of the world.

## THE RISE OF CREATIONISM

To some people's bewilderment and alarm, and others' thankfulness, creationism is growing in extent and influence, in both the UK and elsewhere. Definitions of creationism vary, but about 40% of adults in the USA and perhaps over 10% in the UK believe that the Earth is only some 10,000 years old, that it came into existence as described in the early parts of the Bible or the Qur'an and that the most that evolution has done is to change species into closely related species.<sup>3</sup> For a creationist it is possible that the various species of zebra had a common ancestor but this is not the case for bears and antelopes – still less for monkeys and humans, for birds and snails, or for palm trees and flesh-eating bacteria.

At the same time, of course, the overwhelming majority of biologists consider evolution to be the central concept in biological sciences, providing a conceptual framework that unifies every disparate aspect of the life sciences into a single coherent discipline. Equally, the overwhelming majority of scientists believe that the universe is of the order of 13–14 billion years old.

## THE RELATIONSHIP BETWEEN SCIENCE AND RELIGION

It is possible to examine the relationship between science and religion in a number of ways. For example, we can investigate the effects of the practical and ritual dimension of religion, albeit rather narrowly, by scientific studies which examine such things as the efficacy of prayer and the neurological consequences of meditation. There have been a number of scientific attempts to explain the evolutionary origins of religious beliefs. The narrative/mythic dimension of religion clearly connects with scientific accounts of such matters as the origins of the cosmos and the evolution of life. The doctrinal and philosophical dimensions can lead to understandings that may agree or conflict with standard scientific ones (e.g. about the status of the human embryo); and the ethical and legal dimensions can lead to firm views about such matters as euthanasia.

There is now a large amount of literature on the relationship between science and religion. Indeed, a number of journals specialise in this area. John Hedley Brooke provides a thorough historical study of the relationship between science and religion. He aims 'to reveal something of the complexity of the relationship between science and religion as they have interacted in the past'.<sup>4</sup> Brooke's work sits alongside Ian Barbour's in his Gifford Lectures.<sup>5</sup> Barbour identified four ways in which science and religion could be seen to relate: conflict, independence, dialogue and integration.

The *conflict* model of the relationship between science and religion exists most straightforwardly when science is seen as swallowing religion, or vice versa. As Barbour puts it, 'In a fight between a boa constrictor and a warthog, the victor, whichever it is, swallows the vanquished.'<sup>6</sup>

The *independence* understanding of the relationship between science and religion sees each enterprise as having its particular worth and existing distinct from the other. In Barbour's view, independence might occur because science and religion

use contrasting methods or employ different languages.

When science and religion are seen in *dialogue*, there may be questions about the boundaries between them or the methods of the two fields. One line of argument within the Judaeo-Christian tradition has been that the orderliness of the universe is contingent, rather than necessary. In other words, God could have made the universe unintelligible, thus precluding science. The fact that the universe is ordered has encouraged many scientists to feel that in studying 'the book of nature' they are attempting to understand something of the mind (or at least the workings) of God.

Finally, science and religion may be seen to be capable of *integration*. There are a number of models of integration, one of which sees science and religion contributing as partners to a comprehensive metaphysical worldview. Process theology attempts to do just this.

## WHAT SHOULD WE DO IN SCHOOLS?

With regard to the issue of origins, whether of the universe, of life or of humans, which of these four understandings of the relationship between science and religion is best depends on the precise questions being asked. If one is asking about whether dinosaurs and humans coexisted, that is manifestly a scientific question (to which the correct and scientific answer is 'no'), and any religious attempt to answer the question differently is bound to lead to conflict. If, though, one is asking about why the universe has precisely the values of the various physical constants that it does (values which, if only minutely different, would preclude the evolution of any life, let alone life sufficiently intelligent to be asking this question), then this is more of a metaphysical question, so that conflict is less likely to be seen as inevitable.

Most of the literature on creationism (and/or intelligent design) and evolutionary theory puts them in stark opposition. Evolution is consistently presented in creationist books and articles as illogical,<sup>7</sup> contradicted by the scientific evidence,<sup>8</sup> the product of non-scientific reasoning,<sup>9</sup> the product of those who ridicule the word of God, and a cause of a whole range of social evils (from eugenics, Marxism, Nazism and racism to juvenile delinquency).<sup>10</sup>

Largely, creationism has received similarly short shrift from those who accept the theory of evolution. Philip Kitcher argued that 'in attacking the methods of evolutionary biology, Creationists are actually criticizing methods that are used throughout science'.<sup>11</sup> Kitcher concluded that flat Earth theory, the chemistry of the four elements and medieval astrology have as much claim to rival current scientific views as creationism does to challenge evolutionary biology.

Many scientists have defended evolutionary biology from creationism. The main points frequently made are that evolutionary biology is good science since not all science consists solely of controlled experiments where the results can be collected within a short period of time; that creationism (including 'scientific creationism') isn't really a science, in that its ultimate authority is scriptural and theological rather than the evidence obtained from the natural world; and that an acceptance of evolution is fully compatible with a religious faith.

There are two key issues fuelling the evolution/creationism controversy: one is to do with understandings of reality and the role of the supernatural, the other to do with evidence and authority. Although it is always desperately difficult to generalise, most religions hold that reality consists of more than the natural world, and many

religions give weight to institutional authority in a way that science generally strives not to. For example, there is a very large religious and theological literature on the world to come, whereas science, strictly speaking, has little or nothing to say about the issue.

In the past, school science has all too often exacerbated this evolution/creation conflict by appearing to dismiss the legitimacy of religious ideas and the validity of personal beliefs. It seems possible that a more open position, one that would promote cultural tolerance and individual autonomy, might also have a better chance of ensuring that students opposed to the theory of evolution at the very least learn about the concept.

## **CLASSROOM SPECIFICS**

So how might one teach about origins in school? There is scope for students to discuss beliefs about the origins of the Earth and living things in religious education. In England, the DCSF (Department for Children, Schools and Families) and QCA (Qualifications and Curriculum Authority) have published a non-statutory national framework for religious education and teaching units which include a unit asking 'How can we answer questions about creation and origins?' This unit focuses on creation and the origins of the universe and human life, as well as the relationships between religion and science.<sup>12</sup>

After months of behind-the-scenes meetings and discussions, the DCSF Guidance on Creationism and Intelligent Design received Ministerial approval and was published in the summer of 2007.<sup>13</sup> It is particularly geared towards science teachers. As one of those who helped put the Guidance together, I am relieved it seems to have been broadly welcomed. Even the discussions on the RichardDawkins.net forum have been pretty positive, while *The Freethinker*, 'The Voice of Atheism since 1881', described it as 'a welcome breath of fresh air' and 'a model of clarity and reason'.

The DCSF Guidance points out that 'Creationism and intelligent design are not part of the science National Curriculum programmes of study and should not be taught as science. However, there is a real difference between teaching "x" and teaching *about* "x". Any questions about creationism and intelligent design which arise in science lessons, for example as a result of media coverage, could provide the opportunity to explain or explore why they are not considered to be scientific theories and, in the right context, why evolution is considered to be a scientific theory.'

This seems to me a key point. Many scientists, and some science educators, fear that consideration of creationism or intelligent design in a science classroom legitimises them. However, when teaching evolution, there is much to be said for allowing students to raise any doubts they have (hardly a revolutionary idea in teaching) and doing one's best to have a genuine discussion. The word 'genuine' doesn't mean that creationism or intelligent design deserve equal time with the theory of evolution. However, in certain classes, depending on the comfort of the teacher in dealing with such issues and the make up of the student body, it can be appropriate to address them. If questions or issues about creationism and intelligent design arise during science lessons they can be used to illustrate a number of aspects of how science is undertaken by scientists.

Having said that, I don't believe that such teaching is easy. Some students get very

heated; others remain silent even if they disagree profoundly with what is said. The DCSF Guidance suggests, 'Some students do hold creationist beliefs or believe in the arguments of the intelligent design movement and/or have parents/carers who accept such views. If either is brought up in a science lesson it should be handled in a way that is respectful of students' views, religious and otherwise, whilst clearly giving the message that the theory of evolution and the notion of an old Earth/universe are supported by a mass of evidence and fully accepted by the scientific community.'

I believe in taking seriously and respectfully the concerns of students who do not accept the theory of evolution while still introducing it to them. While it is unlikely that this will help students who have a conflict between science and their religious beliefs to resolve the conflict, good teaching – in science and in religious education, as well as potentially in certain other subjects such as citizenship, history and geography – can help students to manage such conflict and learn more about the nature of science and the nature of religious belief. Creationism can profitably be seen not as a simple misconception that careful science teaching can correct, as careful science teaching might hope to persuade a student that an object continues at uniform velocity unless acted on by a net force, or that most of the mass of a plant comes from air. Rather, a student who believes in creationism can be seen as holding a non-scientific worldview, which is a very different way of seeing the world. One very rarely changes one's worldview as a result of a 50 minute lesson, however well taught.

## NOTES

1. E.g. C Southgate, *The Groaning of Creation: God, Evolution and the Problem of Evil* (Westminster John Knox: London, 2008).

2. R Dawkins, *The Extended Phenotype* (Oxford University Press: Oxford, 1982).

3. L Jones & MJ Reiss (eds), *Teaching about Scientific Origins: Taking Account of Creationism* (Peter Lang: New York, 2007).

4. JH Brooke, *Science and Religion: Some Historical Perspectives* (Cambridge: Cambridge University Press, 1991), p. 321.

5. Ian G Barbour gave two series of Gifford Lectures in Aberdeen, the first published as *Religion in an Age of Science* (London: SCM, 1990) and the second as *Ethics in an Age of Technology* (London: SCM, 1993). The first series was revised and three historical chapters added in *Religion and Science: Historical and Contemporary Issues* (London: SCM, 1998).

6. Barbour, *Religion in an Age of Science*, Chapter 1 'Ways of Relating Science and Religion'. Available online at [www.giffordlectures.org](http://www.giffordlectures.org).

7. E.g. natural selection cannot, on account of the second law of thermodynamics, create order out of disorder; mutations are always deleterious and so cannot lead to improvements.

8. E.g. the fossil record shows human footprints alongside animals supposed by evolutionists to be long extinct; the fossil record does not provide evidence for transitional forms.

9. E.g. the early history of life would require life to arise from inorganic matter – a

form of spontaneous generation rejected by science in the nineteenth century; radioactive dating makes assumptions about the constancy of natural processes over aeons of time whereas we increasingly know of natural processes that affect the rate of radioactive decay.

**10.** MJ Reiss, 'Imagining the World: The significance of religious worldviews for science education' in *Science & Education* (forthcoming).

**11.** P Kitcher, *Abusing Science: The Case Against Creationism* (Milton Keynes: Open University Press, 1982), pp. 4–5.

**12.** The QCA unit can be downloaded from [www.qca.org.uk/qca\\_12176.aspx](http://www.qca.org.uk/qca_12176.aspx).

**13.** DCSF (2007) Guidance on creationism and intelligent design. Available at [www.teachernet.gov.uk/docbank/index.cfm?id=11890](http://www.teachernet.gov.uk/docbank/index.cfm?id=11890) (last accessed 1 January 2009).

All rights reserved. Permission is given for a single copy to be made for private and personal use. Beyond this, no part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying or otherwise without prior permission from Bible Society.

For permission requests, please email [permissions@biblesociety.org.uk](mailto:permissions@biblesociety.org.uk) or telephone Bible Society on 01793 418100.