Outline Notes for a Teaching Block on The Conflict Thesis in Science and Religion as an illustration of the range of understanding of science-religion interactions

Length: 3 contact hours Level: 5

Note: No specialist knowledge is required for delivery.

Resources include: teaching notes, videoed interviews, assessment suggestions, reading lists.

Aim: to introduce the 'Conflict thesis' and assess its use for understanding the interaction of science and religion both historically and contemporarily.

Objectives: By the end of the block students will be able to:

a) describe the conflict thesis by reference to historical and contemporary examples
b) provide an analysis of the strengths and shortcomings of the thesis
c) evaluate the alternative view of science-religion interactions proposed by Barbour and others

Source: Tom McLeish, Professor of Natural Philosophy, University of York

Relevant Modules:

2117 Selected Topics in Christian Doctrine; 2121 Topics in Christian Doctrine; 2131 Further Topics in Christian Doctrine.

In all of these our material could feed in under 'Study of primary theological texts and other sources'

2411 Mission and Apologetics in Contemporary Culture

Under 'intellectual, social and religious trends' and 'main approaches in contemporary apologetics'

Also 2661 Science, Ecology and Theology, or new module Issues in Science and Religion.

Resources include: teaching notes, Powerpoint slides which coordinate with teaching notes, assessment suggestions, reading lists (Could also fit in some talking heads videos?)

Pre-reading: Preface, The God Delusion – Richard Dawkins.

Teaching Notes

Slide 1: Title slide

INTRODUCTION

Slide 2: An introduction to the aims and outcomes of this teaching block.

Slide 3: Examples of the conflict thesis in the media and popular culture

The conflict thesis:

. science and religion have been in a state of perpetual conflict from their conception;
. science and religion are two opposing explanations for the world which come into conflict when they interact;
. popularly cited examples are the trial of Galileo and the Darwinian debates;
. popular with media and parts of the debates around faith in public life;
. but a complex scene: A new Pew Research poll in 2015 poll yields some fascinating insights into the perceived conflict between science and religion. The poll confirms previous findings that a majority of Americans (59%) think science and religion are “often in conflict.” – but less likely to see them in conflict if you go to church.

Slide 4: Two quotations: The God Delusion (Richard Dawkins) and God is not Great (Christopher Hitchens)

Discuss popular writers of New Atheism/militant Atheism, including Richard Dawkins, Sam Harris, Daniel Dennett and the late Christopher Hitchens.

Student discussion: What are the main arguments of the militant atheists (from slide quotations and own reading)? What are your experiences of the idea of conflict between science and religion? Have people made assumptions about your scientific beliefs based on your religious beliefs (or vice versa)? Why is the conflict thesis so attractive (e.g. it sells)?

SECTION A: THE CASE OF GALILEO (1564-1642)

Aim: to examine one historical example often used by proponents of the conflict thesis, and show that the real story is far more nuanced and complex than is often presented.

One of the seminal moments in the history of science and religion is the story of Galileo Galilei. Galileo published the idea that our solar system is centred on the sun (heliocentricism) rather than on Earth (geocentricism), which led to several trials and his eventual house arrest.

Slide 5 and 6: quotations for discussion

Student discussion: Look at writings from both Copernicus and Galileo on slides 5 and 6, and discuss these questions:

. For Copernicus: how are the theories to relate to reality and what do they mean? What is the source of the knowledge and how does he recommend that the best theory be chosen?
. For Galileo: where does he think we should get knowledge about the natural world, and what does he recommend should happen if it clashes with religious knowledge? What else should 'certainties in physics' be used for?

There follows teaching on the Galileo affair based on the following notes:

The Galileo myth/conflict thesis version

Galileo, the renowned scientist showed evidence that the sun, rather than the Earth, was at the core of the solar system. This was a theological problem, as for centuries human beings had been hailed as the pinnacle of God's Creation, placed on Earth at the centre of his Creation. To protect its ideas, the Church acted to suppress Galileo, hounding him down, torturing and imprisoning him, and forcing him to rescind his heretical beliefs, thus making him a martyr for science. Draper contends that Galileo was denounced by 'low and ignorant ecclesiastics'.

Historical timeline Of Galileo affair

1610 – Galileo published the Starry Messenger (observations of the phases of Venus and the moons of Jupiter)

1612/3 – Letters on Sunspots (containing his oberservations)

1615 – Writes Letter to Grand Duchess Christina and it is widely circulated. In it, he responded to questions about heliocentricity. In his defense of the theory, he did not talk about his observations, but rather he concentrated on a biblical defense of heliocentricity. Galileo used the method/idea of biblical accommodation to defend his heliocentricity.

1616 - Pope Paul V requested the opinion of theologians on heliocentricity, and they concluded that it contradicted Scripture and therefore was heretical. A decree was issued that Copernicus' idea was to be condemned and that his work On the Revolutions of the Heavenly Spheres should be prohibited until minor corrections were made. Galileo was instructed to abandon his ideas about heliocentricity and to stop teaching and defending the doctrine, or else he would face imprisonment.

1632 – Published Dialogue concerning the Two Chief World Systems defending heliocentrism.

1633 – Second trial for heresy and going against edicts of the first trial because of the publication of Dialogue. Galileo was found guilty, 'vehemently suspected of heresy, namely, of having held and believed a doctrine which is false and contrary to the divine and Holy Scripture'. In this trial, he accepted his sentence, swore obedience to the Church, and

declared that he had committed the ‘errors and heresies’ of which he was accused. He was sentenced to imprisonment and held under house arrest.

1642 – Died

Contemporary scientific scene

The prevalent view since Greek times and the one held by the Church was of an Aristotelean worldview. For Aristotle the Earth (which included everything from the moon downwards), was made up of four elements: earth, fire, water and air, arranged in shells around the core. The heavenly bodies (everything from the moon upwards) were perfect and so could not be subject to the same forces and decay of Earth. Heavenly bodies were fixed upon crystalline spheres, which moved in perfect circles and never changed. Later, the Greek philosopher Ptolemy (c. 100–178AD) set down the mathematics for Aristotle’s model. The mathematics were used to make predictions, which the church needed to calculate the date of Easter. They worked very well. Geocentricism was also popular because some biblical texts supported the idea that the Earth is stationary and that the heavens move around it (Genesis 1;Joshua 10.12; Psalm 19.4–6; Psalm 96.10; Ecclesiastes 1.4–6.)

In 1543, the mathematician and astronomer Nicolaus Copernicus (1473–1543) published De revolutionibus orbium celestium, On the Revolutions of the Heavenly Spheres, which challenged the Aristotelian world view with a much more elegant idea. In this popular book, he suggested that the sun is at the centre of the universe (heliocentricity), and that all planets rotate on their own axes. He was not the first to do so; Aristarchus of Samos in the fourth century BC had written about heliocentricism, and both Copernicus and Galileo knew that Nicholas Cusa, a fifteenth-century Cardinal, discussed whether the Earth might move. At the time of publication, Copernicus’ writings were largely accepted and even encouraged by the Church, which found that his mathematical model worked as well as the Ptolemaic mathematics for calculating Easter.

The development of the telescope allowed, for the first time, detailed observations such that the Ptolemaic and Copernican systems might be distinguished. Galileo observed that the surface of the moon was covered with craters and mountains, and that the surface of the sun had spots both suggested that the universe was less perfect than Aristotle’s model suggested. Geocentricity and the idea of a static Earth were also both challenged by observations of the phases of Venus’ and Jupiter’s moons which suggested that planets orbit the sun. These were not conclusive observations, but enough to raise questions. Galileo began to publish: 1 The Starry Messenger in 1610 and Letters on Sunspots in 1612/3, where Galileo made clear his heliocentricism.

Scientific establishment was slow to accept heliocentricism. There is good evidence against the idea including common sense, the ‘Tower argument’, apparent lack of stellar parallax, biblical passages and the authority of Aristotle.

Contemporary political scene

For an institution which had dabbled in heliocentricity in a benign way, which had not previously worried about the writings of Copernicus and which was familiar with the idea

of biblical accommodation, the result of this trial of 1616 seems a bit of an overreaction. Historians point to the effects of the Protestant reformation and sensitivity around issues of authority and biblical interpretation. ref: Council of Trent (1545–63),

Galileo the man

Noted for his arrogance. For example, in Dialogue the character 'Simplicio' is a follower of Ptolemy and Aristotle, and Galileo puts into his mouth words and arguments used by Pope Urban VIII.

Conclusions of Section A

. There was conflict in this affair but it was conflict not between 'science' and 'religion'. There was conflict:

- between real human beings in a complex and turbulent environment;
- between religious individuals. For Galileo faith was of paramount importance, as he understood what he was doing as discovering God's order in the universe and it is clear that he saw no internal conflict about what he was doing;
- conflict between Galileo and the Catholic Church was about the authority to perceive truth; the threatening thing that Galileo did was attempt to defend his scientific views biblically. He was condemned not for his views but because he would not toe the line over the Church's teaching ban;
- between two competing scientific theories—Copernican vs. Ptolemaic/Aristotelian;
- between two conceptions of religious authority—Catholic vs. Protestant.

. A conservative, post-Reformation, defensive Church was trying to assert its authority against a layman who was trying to insist on his interpretation of the Bible;
. There was scientific opposition to Galileo's ideas - there was good evidence against heliocentricism and no conclusive proof of the truth of the Copernican system;
. Galileo's own lack of diplomacy contributed to his fate;
. In 1983, a pontifical commission was set up for reconsidering Galileo's case, especially in light of his views on biblical interpretation, inviting scientists, philosophers and theologians to work together. One of their conclusions was that the dispute was primarily over biblical interpretation, which had to be reconsidered in the light of the discovery of heliocentricism.

SECTION B: THE HISTORY OF THE CONFLICT THESIS

Aim: to show the complexity of origin of the conflict thesis and to identify it as a relativity modern phenomenon

Slide 7: quotations from the books mentioned below.

In the nineteenth century, two influential books were published. Both argued that

theologians had a history of opposing scientific progress to protect church dogma.

John William Draper (1811–82) was born in England but worked in America as a scientist, philosopher and historian. In 1874, Draper published History of the Conflict between Religion and Science, where he argued that humanity must be liberated from the oppression of religion. He especially focused on Roman Catholicism, and what he perceived to be its ongoing struggle for power.

Andrew Dickson White (1832–1918) was a co-founder of Cornell University in 1865 and its first president. Cornell was established without denominational ties and instead sought to be for all denominations and none. White announced that Cornell would be 'an asylum for Science. In 1896, White published A History of the Warfare of Science with Theology in Christendom.

In both books, there are the beginnings of the Conflict Thesis: when religion is faced with scientific advancements, it responds with censorship. For example, White's view was that Christianity had got in the way of science for over fifteen hundred years and had imposed myth, ignorance and superstition to dilute and discourage true science.

These books emerged into a milieu where they would be well received. Since the seventeenth century, Enlightenment rationalists had been building the case against religion. Darwin's ideas about evolution had largely been accepted in the late Victorian society in which the books of White and Draper were published. So, despite their poor grasp of history, their publications were very influential and played an important part in a wider movement where other significant institutions such as the Church and monarchy were being critiqued extensively and where science, previously the pastime of gentlemen(and often gentlemen clergy), was attempting to professionalize.

Thomas Henry Huxley, who famously clashed with Bishop Wilberforce at a debate over Darwin's theory of evolution, was a British naturalist who coined the term 'agnostic' to describe his own position. He was called 'Darwin's Bulldog', and he particularly resented the place of Anglican clergy in scientific circles. In 1864, Huxley founded the 'X-Club', a dining club for men who encouraged one another to promote science and work to stop religious interference. They wished to secularize science and to make it a new profession by omitting from its boundaries any metaphysical questions, thereby reducing amateur and clerical influence. Some scholars argue that it was in this process that the conflict myth came to the fore as an important political tool in the advancement of their cause. It is this period of history which critically informs the debates and the polemics today, despite the questionable history on which Huxley and his contemporaries based their mission and notwithstanding contemporaneous religious scientists such as Michael Faraday (1791-1867) and James Clerk Maxwell (1831-1879).

Student discussion: The term 'science' emerged in the 19th century. Previously, the pursuit of knowledge of the natural world was called 'natural philosophy'. 'science' comes from the Latin meaning 'I know', but 'philosophy' is from the Greek for 'love of knowledge'. In what way did the change of title reflect a change in what people were doing?

Conclusions section B:

. The Conflict thesis emerged in the 19th century into a complex philosophical, social and political milieu which provided fertile ground for the idea that religion has always opposed scientific progress;
. Previous to this, ‘science’ and religion had a complex but largely positive interrelationship;
. Historical cases such as the Galileo affair show that the conflict thesis is not nuanced enough to encapsulate well happened;
. The proponents of Conflict thesis today (especially the militant atheists) have to be critiqued on their knowledge of history and theology. There are many subtle and theologically/philosophically rigorous ways to understand the possible interaction of science and theology.

SECTION C: OTHER TAXOMETRIES FOR SCIENCE AND RELIGION INTERACTIONS.

Aim: to introduce Ian Barbour’s modes of interaction, and to use them to examine Christian theology interacting with Big Bang cosmology.

In 1966, Ian Barbour published a seminal text: Issues in Science and Religion. He suggested a fourfold typology of science and religion interactions, three of which are alternatives to the
conflict model: Independence, Dialogue and Integration.

Independence

The Independence Model holds that science and religion can coexist at a safe distance and, because of that distance, there is no conflict between them. Science and religion are understood to relate to different areas or kinds of truth, hold different functions in human life and use very different languages when presenting their respective realities: science deals with facts, religion deals with values and ultimate meaning. This means that they only come into conflict when these distinct boundaries are crossed or disregarded.

Features of the Independence Model:

- Science and Religion use different methods, language, answers different questions;
- Ethics and morality are left to religion;
- Doctrinally attractive model for those favouring a literal interpretation of the Bible, emphasizing the sovereignty of God and the immanence of the future Kingdom;
- Barthian world view supports this position;
- Work of Stephen J. Gould and his ‘principle of respectful noninterference’. NOMA: Non-Overlapping Magisteria. The magisterium of science covers the facts of the universe and theories about how the universe operates, while the magisterium of religion covers questions of ultimate meaning and value. (Biblical creationism would violate NOMA because creationists use their interpretation of the Bible to answer questions about the physical world).

Dialogue

The Dialogue Model of interaction places science and religion side by side in conversation. These tend to concentrate on certain topics, namely common assumptions held by both, shared methods, and whether within each magisterium there are mutual ideas. Each of these becomes a place of fruitful exchange, providing some intellectual satisfaction for the enquirer who wishes to explore our world as one reality, albeit with different levels of understanding. The Dialogue Model of interaction is based on various understandings of the doctrine of Creation. If God is allowed into the world, then we can learn about God from the world. The Dialogue Model highlights the importance of personal experience in discerning information and bringing into science the role of human experience, and into religion the observables of this world. In its mystical and wonder-filled approach to seeing the divine in the natural world, it is very attractive, although it is not without its critics who see it as a rather piecemeal solution to a more complex situation.

Features of the Dialogue model:

- John Polkinghorne: 'important points of kinship between the two disciplines';
- Universe appears contingent, rational and intelligible – this leads into dialogues;
- Dialogical approach based in the Doctrine of Creation (Goodness of creation, nature not holy, role of human beings, Continua creation)
- Central question for a dialogue: how is it possible that the eternal and changeless God made a universe which is subject to change and bound by time?
- Theological and philosophical areas of importance in the dialogue:
- Aquinas – Primary and secondary causation
- Panentheism
- Karl Rahner
- Mysticism

- Dialogue tends to happen around the edges of scientific theory, for example, cosmology, quantum mechanics, human consciousness;
- Dialogue can inform ethics – e.g. environmental ethics

Integration

The Integration Model suggests that conversations between religion and science can go deeper and further. Indeed, at its extreme, science and religion merge into one all-encompassing world view. Science reformulates theology and remains open to the possibility that God truly is 'behind the curtain' of all that we see and hear.

Features of the Integration Model:

- Natural theology (design arguments), eg. Richard Swinburne (b. 1934),
- A theology of nature – holds that because of what science tells us about the world, religious doctrine or religious ways of living needs to be reformulated. For example, science tells us that nature is a dynamic, evolutionary process with a long history, and that it involves both chance and law. If nature is like this, maybe it can also teach us how God relates to the world and how the beings created in God's likeness might also relate to the natural world. Lead to strong environmental ethic, cf St Francis.

- Arthur Peacocke (1924–2006) religion is about community; it is as a community that we come to and hold knowledge of God, and it is together that the community understands what God means today. But he writes that he is willing to redefine his theology, sometimes quite radically, with respect to modern science: for example, he conflates God and evolution in an idea called theistic evolution, Peacocke's theological view of the world is central to how he handles new scientific theories. He is a panentheist, which means he believes that God 'contains' the cosmos within the Divine Being.
- Systematic Synthesis sees religion and science moving together towards convergence in a complete union. A key example of this is Process Theology, associated with the work of philosopher Alfred North Whitehead (1861–1947) amongst others. It demands that science is opened up to allow such theological musings. It presents significant challenges to mainstream theology, but at the same time it might be a model that offers an explanation of the purpose of life that reflects both science and the promises of the Christian faith.
- The paleontologist and Jesuit Pierre Teilhard de Chardin (1881–1955) held an integrative view. He sought a complete harmonization between his work as a paleontologist and his faith as a Christian, which was particularly influenced by the theory of evolution and the redemption and salvation of humankind.

Student Discussion – Break into groups to discuss the three modes of interactions. Which are you most attracted by?

The scientific theory of the big bang contends that the universe began 13.7 billion years ago in an huge explosion. It might be seen as a direct contradiction of a literal interpretation of Genesis 1. Discuss slide 8 which summaries how it might be considered by the taxometries of interaction suggested by Barbour.

Post reading: Ian Barbour, John Polkinghorne and Arthur Peacocke.

Assessment ideas:

. Essay: Is Ian Barbour's four-fold typology of science and religion a helpful way of understanding the historical relationship between science and religion?
. Essay: What is the 'Conflict thesis'? Is this account of history completely fallacious or does it contain important elements of truth?
. Essay: Is it possible to believe in both science and miracles?
. Portfolio: examine modern media to find evidence of the conflict thesis. What is the role of apologetics in responding to the Conflict thesis? (if you feel confident, engage with the media and see what happens when the conflict thesis is challenged.)

FURTHER READING:

Gillian Straine, *Introducing Science and Religion; a path through polemic* (London: SPCK, 2014)
Joshua Moritz, *Science and Religion: beyond warfare and toward understanding* (Winona,Mn. Anselm Academic 2016)

also

Gary Ferngren (eds). Science and Religion: A Historical Introduction (Baltimore: John Hopkins, 2002)
David C Lindberg and Ronald L. Numbers, When Science and Christianity Meet, (Chicago: University of Chicago Press, 2003)
John Brooke, Science and Religion: Some Historical Perspectives, (Cambridge: Cambridge University Press, 1991)
Peter Machamer (ed), The Cambridge Companion to Galileo (Cambridge: Cambridge University Press, 1998)
Ernan McMullin (ed.), The Church and Galileo (Indiana: Notre Dame, 2005).
Maurice Finocchiaro, Retrying Galileo, 1633-1992 (Berkeley: University of California Press, 2007)
Geoffrey Cantor and Chris Kenny, 'Barbour's Fourfold Way: Problems with his taxonomy of Science-Religion Relationships', Zygon, 36 (2001), p.765-81
Ian G. Barbour, 'Response: Ian Barbour on Typologies', Zygon, 37 (2002), p.345-60
John F. Haught, Science and Religion: from Conflict to Conversation (New Jersey: Paulist Press, 1995)
Alice Gribbin, 'Preview: The Four Horsemen of New Atheism Reunited', New Statesman, 22 December 2011
Alister McGrath, Dawkins' God: Genes, Memes, and the Meaning of Life (Oxford: Wiley-Blackwell, 2004).
Daniel Dennett, Breaking the Spell: Religion as a Natural Phenomenon (London: Allen Lane, 2006).
Sam Harris, The End of Faith: Religion, Terror, and the Future of Reason (London: Free Press, 2005).
John Ian G Barbour, Religion and Science: Historical and contemporary Issues, (New York: Harper Collins, 1997)
Stephen J. Gould, Rocks of Ages: Science and Religion in the Fullness of Life (London: Vintage, 2002)
Polkinghorne, One World: The Interaction of Science and Theology (London: SPCK, 1986).
Pierre Teilhard de Chardin, Hymn of the Universe, trans. Gerald Vann (London: Collins, 1970)
Michael Polanyi, Personal Knowledge: Towards a Post-Critical Philosophy (Chicago, IL: University of Chicago Press, 1974)
A. Peacocke, Creation and the World of Science: The Re-Shaping of Belief (Oxford: Oxford University Press, 2004).

WEBSITES

The Galileo Project – source material on the life and work of Galileo Galilei:
http://galileo.rice.edu/
The Trial of Galileo – source materials:
http://www.law.umkc.edu/faculty/projects/ftrials/galileo/galileo.html
Website with good demonstrations of the difference between Ptolemaic and Copernican astronomy:
http://www.lasalle.edu/~smithsc/Astronomy/retrograd.html