

Worldviews – a threat to Religious Education but ignored in science education?

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ABSTRACT

The possibility of Religious Education (RE) changing so that it explicitly includes non-religious worldviews, to the extent that the subject itself changes its name, is deeply contentious. It has unsurprisingly been welcomed by humanists (secularists) who have long been frustrated at their inability to colonise RE and has been seen by some within the RE community as a way of rescuing the subject from its perceived decline. Others, though, see the inclusion of non-religious worldviews as ‘selling out’ and have raised a number of objections to the proposal. In this chapter I examine why the proposal that worldviews play a much greater part within RE has been so contentious when comparable calls for worldviews to play a greater part within science education have had little influence, to the extent of frequently being ignored. I situate these debates within recent calls for school curricula to focus on Big Ideas both in science education (Wynne Harlen and colleagues) and RE (Barbara Wintersgill and colleagues). I conclude that the reasons for these differences between RE and science education with respect to the perceived importance of worldviews are primarily to do with how these two subjects see themselves and are seen in the school curriculum, and to the place that religion and science occupy more generally in society. I argue that both subjects would do well to pay attention to worldviews and to introduce this concept to students but that neither subject should envisage changing its name.

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Introduction

The possibility of Religious Education (RE) changing its character so that it explicitly includes non-religious worldviews, to the extent that the subject itself changes its name, is deeply contentious. It has unsurprisingly been welcomed by humanists (secularists) who have long been frustrated at their inability to colonise RE and has been seen by some within the RE community as a way of rescuing the subject from its perceived decline. Others, though, see the inclusion of non-religious worldviews as incoherent or ‘selling out’ and have raised a number of objections to the proposal, as discussed extensively in the other chapters of this book.

In this chapter I begin by providing an overview of the arguments concerning the place of worldviews in RE and then examine the argument that school science should take account of worldviews. I go on to discuss recent calls for a different change to school science and RE, namely that their curricula should focus on Big Ideas. I will argue that the reasons why Big Ideas have been advocated in school science and in RE are similar and the suggestion has been similarly received in the two subjects, whereas the suggestion that worldviews be incorporated within them has been received very differently by the two subjects. I end by suggesting why this might be the case and discuss the implications that this may have for each subject.

Worldviews within RE

All school subjects are debated with respect to their characteristics, their relationship with their ‘parent’ subject (RE with religion, school science with science, etc), their aims, their content, and how they might be taught and assessed. In RE, these debates have been long-lasting and have included such foci as the subject’s importance (Watson, 2012), its context-specific history (Barnes et al., 2012), the particular issues that attend faith schooling (Parker-Jenkins et al., 2005, 2014; Halstead, 2009; Chapman et al., 2014; Pring, 2018), its reception by students (Conroy et al., 2013) and its contribution to multicultural education (Smyth et al., 2013). More recently, other foci have been added, including the subject’s role in tackling extremism (Miller, 2013; Wilkinson, 2018) and the argument as to how RE should deal with what are sometimes referred to as ‘non-religious worldviews’. For a recent, official review of the state of RE in England, see Ofsted (2021).

The current debate around worldviews in RE has been given particular impetus in England by the final report, after its two years of evidence gathering, of the Commission on Religious Education (2018). The Commission (CoRE) concluded that “RE needs rejuvenating if it is to continue to make its important contribution; indeed if it is not to wither on the vine” (Foreword). The title of the final report was *Religion and Worldviews: The Way Forward – A National Plan for RE*, and it claimed:

We offer a new vision. The subject should explore the important role that religious and non-religious worldviews play in all human life. This is an essential area of study

if pupils are to be well prepared for life in a world where controversy over such matters is pervasive and where many people lack the knowledge to make their own informed decisions. It is a subject for all pupils, whatever their own family background and personal beliefs and practices. To reflect this new emphasis, we propose that the subject should be called *Religion and Worldviews*.

(Foreword)

The Commission took a worldview to be “a person’s way of understanding, experiencing and responding to the world. It can be described as a philosophy of life or an approach to life” (p. 4). It saw one of the core tasks of education as enabling “each pupil to understand, reflect on and develop their own personal worldview” (p. 5) and argued that:

Through understanding how worldviews are formed and expressed at both individual and communal levels, the ways in which they have changed over time, and their influence on the actions of individuals, groups and institutions, young people come to a more refined understanding of their own worldview – whatever this happens to be – as well as those of others.

(p. 5)

The Commission noted that non-religious worldviews have become increasingly important in Western Europe and claimed “the distinction between religious and non-religious worldviews is not as clear-cut as one might think” (p. 6).

In response to the Commission’s Report, the Religious Education Council for England and Wales (which established the Commission) itself commissioned an independent team of researchers to undertake a literature review on the concept of ‘worldview’ (Benoit et al., 2020). The resulting report chose to present its conclusions as a series of questions, including: whether worldview is inclusive of religion and non-religion or used as an alternative term to religion; whether worldview is a Western and Christian construct; and whether worldview refers to consciously thought out and articulated approaches to life or includes un-reflected elements.

Of course, the debate around the place of worldviews in RE and education more generally was not initiated by the CoRE’s report – Clive Erricker’s ‘Children and Worldviews Project’ (Erricker et al., 1997) was influential and see Hand (2012) and Aldridge (2015) for critical discussions of the range of ways in which ‘worldview’ is used that predate Benoit et al. (2020). Nevertheless, the Commission’s report has given rise to a flurry of activity, of which this book is one instance. Somewhat unusually, autobiographic responses from members of the Commission or those who played a role in establishing the Commission have been provided by Cooling (2020) and Cooling et al. (2020).

Perhaps the most sustained critical examination of the CoRE’s report to date has been provided by Barnes (2021). Barnes’ article is wide-ranging; here, I concentrate on the parts of it to do with worldviews. Some of his criticisms of the Commission’s arguments about worldviews are to do with terminology – notably their distinction between ‘institutional worldviews’ and ‘personal worldviews’ and their identification of Humanism, secularism, agnosticism and atheism as worldviews, when it is clear that there is considerable overlap between them, while secularism:

is typically characterised as the view that public and political institutions should be independent of religion. It does not constitute a worldview as such, only that there should be strict limits to the public role of religions in society and that the state should be neutral between alternative religions and beliefs.

(p. 4)

Barnes also doubts that a study of agnosticism as a worldview will add much to a study of atheism, arguing that:

A plausible case can be made for regarding atheism, agnosticism and Humanism, not as constituting independent and separate worldviews, but instances of the broader category of a naturalistic worldview – a relationship of tokens to type, in philosophical parlance. In the same way, Protestantism and Catholicism are examples of a Christian worldview. What is common to atheists, agnostics and Humanists is the conviction that all religions are without epistemic warrant.

(p. 5)

For myself, this sounds convincing, though I would not be able to go as far as to agree with:

The distinction often employed by philosophers (Rowe, 2005) that atheism affirms the non-existence of God whereas agnosticism is the view that human reason is incapable of knowing whether God exists or not is for most people otiose; and certainly it is for most pupils in schools.

(p. 5)

One of the things we try to do in science education – though I admit that we do not always succeed – is to get students to appreciate the extent to which scientific knowledge develops over time so that some scientific knowledge, at any one point in human history, is more robust than other scientific knowledge. Indeed, even the scientific theories considered most robust nowadays (e.g., Wegener's theory of continental drift) were often considered tentative when first proposed. The cognitive demands we thus make on students in school science do not seem greater than would be expected for them to distinguish atheism from agnosticism – something, indeed, that is already covered in many RE courses.

A different point made by Barnes is his critique of the very notion of personal worldview, something that is core to the Commission's arguments:

The issue is not whether everyone has beliefs, values, experiences and commitments, it is whether it is helpful to think of these collectively as a *personal worldview*. People can hold a range of beliefs and values, not always consistent with each other or with some of their experiences or even with their professed self-identity: referring to a personal worldview may give the impression that what we believe and how we act possess a greater degree of coherence and unity than is the case for many. People are often not reflective or consistent in their beliefs. Whereas many will have an opinion about God and his existence and nature, few will have thought seriously or at length about this and about what constitutes human nature, the meaning of life and of human history, whether knowledge is available to us and how we distinguish what is morally right from what is morally wrong, and so on; and it is answers to these that philosophers tell us constitute a worldview. Many people and particularly the young and non-religious people do not espouse a worldview: they do not have a reflective

philosophical view of the nature of reality, of the kind that is properly described as a worldview.

(p. 4)

A pragmatic (the term used by Cooling, 2020) or educational (the term preferred by Barnes, 2021) objection to the use of worldviews in RE is that this increases the volume of material to be covered in RE courses:

A careful reading of the CoRE Report suggests that by the end of Key Stage 4 a pupil could be obliged to study a minimum of ten or more different religions and worldviews – an onerous task, given that the law at present expects significant teaching about Christianity at each Key Stage (will the law have to be amended to accommodate this broader curriculum?). The requirement is also made that religious education takes account of ‘the complex, diverse and plural nature of worldviews’, i.e. ‘the . . . diversity within worldviews’ (2018, p. 5). How can teachers seriously do justice to so many traditions, while at the same time introducing pupils to their inner diversity? However charitably one interprets this broad-ranging and open-ended approach to content it ought to have been obvious to the authors of the Report that the religious education curriculum will inevitably become a summary review or a Cook’s tour of religious and non-religious worldviews that will necessarily result in superficial teaching, simplistic learning and confused pupils.

(Barnes, 2021, p.7)

This is an important objection to the inclusion of worldviews – though it could be argued that the force of this objection is vitiated by the point that Barnes himself makes about the extent to which RE courses already consider such issues, even if not necessarily under the heading of ‘worldviews’:

One aspect of the critical element in religious education is that objections and philosophical criticisms of religions or aspects of religions are considered. Typically, attention is given by religious educators to the ‘problem of suffering and evil’, non-religious accounts of the origins of the universe, the relationship of science to religion, particularly that of the debate on human origins, that of evolution and its denial, that of creationism, and to non-religious perspectives on contemporary moral issues. It should not be thought that those who are opposed to systematic teaching about non-religious worldviews on the same basis as religions, such as Christianity or Islam, wish to remove or lessen this critical element from current practice: the essential content of secular worldviews is already integrated into religious education as criticism of religion.

(p. 8)

Nevertheless, the point about courses being overladed is one that is common to RE, science and many other school subjects. In my consideration below of ‘Big Ideas’ in both science and RE, I indicate that one hope that educators who support the use of Big Ideas have is that this approach will slim down the curriculum, allowing the wood to be seen, as well as the most significant trees.

Worldviews within science education

The academic science education literature on why some students fail to understand certain aspects of science mainly concentrates on cognitive issues, including student misconceptions. A large part of school science education therefore consists of addressing these misconceptions – for example, the misconception that the natural state of affairs is for objects in motion to slow down (an Aristotelian notion, since, for Aristotle, the natural state of an object is to be at rest). This particular belief is in contradistinction to the way that science understands motion: since Newton it has been accepted that the natural state of affairs is for objects to continue to move with the same velocity (i.e., at the same speed and in the same direction) that they have unless acted on by a net force. To give one more example of a misconception that school science tries to correct, most people presume that a growing terrestrial plant gets most of its mass from the soil. The scientific understanding is that a growing plant gets most of its mass from the atmosphere via the process of photosynthesis, whereby carbon dioxide is captured, reacted with water (a very difficult chemical reaction, yet one that all plants manage) and used to synthesise sugars such as glucose and sucrose. Some of a growing plant’s mass does come from the soil, including minerals that provide elements such as nitrogen, iron, phosphorus and sulphur that enable the plant to make proteins and other large molecules, but this contribution to a plant’s mass is far less than that provided by the atmosphere.

For many years, science educators happily presumed that all that was needed for successful science education was to ensure that students understand science. In an oft-cited paper in the science education literature, Bill Cobern (1996) characterised the assumption that if students can see that scientifically orthodox conceptions are more intelligible, plausible and fruitful than other conceptions, they will come to accept these scientific conceptions. as a ‘rationalistic view’. In recent decades, however, an additional perspective has come into view, particularly within biology. It has increasingly been acknowledged that students, even if they *understand* certain topics, may *reject* them because these topics may not mesh with their worldviews. The classic instance is evolutionary biology, which students from fundamentalist religious backgrounds not infrequently reject; other instances include anthropogenic climate change, vaccination advocacy and the use of animals for human ends.

The notion of worldviews is increasingly being employed in science education (Reiss, 2018). For example, in the edited volume *Science, Worldviews and Education* (Matthews, 2009), a number of philosophers, scientists and science educators use the thinking behind worldviews to explore a range of issues including whether science itself is a worldview and whether science can test supernatural worldviews. As other chapters in this volume discuss, the term ‘worldview’ is conceptualised in a number of ways. In *World Views: From Fragmentation to Integration*, Diederik Aerts *et al.* (1994) state that “A world view is a coherent collection of concepts and theorems that must allow us to construct a global image of the world, and in this way to understand as many elements of our experience as possible” (p. 17). If one accepts such a definition, it makes sense to talk of a ‘scientific worldview’, though quite a number of scientists do not much like the phrase, because it suggests that a scientific perspective might not necessarily be superior to other perspectives. In science education, the notion of worldviews has increasingly been explored as a way of helping conceptualise why, despite the best efforts of many science teachers, so few students leave their schooling with the sort of scientific understanding and disposition that most science teachers wish they had. The principal conclusion is that school science fails to enable most students to see the world from a scientific perspective (Reiss, 2011).

Nevertheless, for all that I (e.g., Reiss, 2009) and a number of other science educators (e.g., Cobern, 1996; Keane, 2008; Taber, 2013) are keen on the potential contribution of worldviews for science education, it cannot be said that most science educators, nor those responsible for science curricula, have been persuaded. This is not to say that the arguments for consideration of worldviews in science education have been furiously debated and rebutted; it's more that they are seen as less important than other considerations. Specifically, worldviews are likely to be alluded to only as explanations as to why students fail to understand what the designers of science courses want them to understand – whether we are talking about the theory of evolution, as discussed below, or such topics as climate change (where worldviews are used to explain climate change denial) or vaccine hesitancy (where, again, worldviews are used to explain why some people reject standard science). This is therefore in marked contrast to the reception accorded to the notion of worldviews in RE.

Evolution

The concept of worldviews can be illustrated by examining the ways in which science and religion each attempt to explain how the Earth came to have the tremendous biodiversity that we see today.

The scientific understanding of this issue is far from complete but the narrative is a powerful one (Reiss, 2009). Around 3.8 billion years ago, the earliest life evolved on Earth. Rather little is known with any great confidence about this early history, far less than is known, for example, about how stars form, grow and die. But scientists agree that by the time of the earliest fossils, life was unicellular and bacteria-like. Over the ages, natural processes, particularly natural selection (as discovered independently by Charles Darwin and Alfred Russel Wallace), eventually resulted in the 10 million or so species, including our own, that we find today.

The key point is that the scientific worldview that is associated with this standard scientific understanding is materialistic in the sense that it is neither idealistic nor admits of non-physical, and thus supernatural, explanations. There is much about the history of life on Earth that remains unknown. How precisely did the earliest self-replicating molecules arise? What caused the membranes that are essential for cellular life to exist? How key were the earliest physical conditions – temperature, the occurrence of water and so forth? Where did life evolve – in a little warm pond (as Darwin speculated), on clays (Cairns-Smith's suggestion), in a hydrothermal vent, deep on the sea floor, or elsewhere? Despite this uncertainty, the scientific presumption is either that these questions will be answered by science or that they will remain unknown. Although scientists sometimes grudgingly admit that science cannot disprove supernatural explanations, scientists do not employ such explanations in their work, whatever their personal views; the few exceptions only attest to the strength of the general rule, though it needs to be admitted that a non-trivial number of scientists have adopted Intelligent Design theory, in which it is held that the complexity of life is such that it cannot have arisen by natural processes alone (Meyer, 2009).

Religious understandings of the history of life and today's biodiversity are, of course, more diverse. Many religious believers, including many scientists (e.g., Ecklund, 2012), are perfectly comfortable with the scientific account, either on its own or accompanied by a belief that evolution in some sense takes place within God's holding, whether or not God is presumed to have intervened or acted providentially at certain key points (e.g., the origin of

life or the early evolution of humanity). But many other religious believers adopt a perspective that is not wholly concurrent with the scientific position. Creationism exists in a number of different versions but many people (about 40% of adults in the USA, fewer in other Western countries) believe that the Earth 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 (Miller *et al.*, 2006). For a creationist, it may be perfectly possible that the various species (about 350 extant) of parrots had a common ancestor (the scriptures are not concerned with contemporary definitions of biological species) but this would not be held to be the case for parrots, herons and falcons, still less for birds and reptiles, or monkeys and humans, or fish and flowering plants.

In this sense, creationism can be considered an alternative worldview to the scientific worldview when it comes to accounting for the diversity of life we see on the Earth today. One of the key points about worldviews is that it can be difficult for someone who has never inhabited a particular worldview to imagine what it is really like to do so – one reason, in my experience, why atheistic scientists are sometimes very patronising about creationists. In Christianity, of course, a creationist is also likely to think that the world will soon be coming to an end, very possibly in their lifetime, that there is a world to come and that the eternal fate of each and every one of us in that world depends on whether or not in this world we accept the teachings of scripture.

Big Ideas in science education and in RE

It is widely agreed among science educators that school science too often consists of teaching isolated facts instead of attempting to develop an understanding of core ideas (Olson 2008). Osborne (2007) has argued that concentrating on isolated facts distracts students from seeing the beauty of science. In this sense, positive attitudes towards science could decrease because science is shown simply as atomistic events, so that students “may miss the big picture” (Reiss, 2014, p. 9).

In an attempt to address these problems, there has been a growing move among curriculum developers to argue that science education should consider ‘Big Ideas’ as ideas that are able to explain a wide range of scientific facts and phenomena (Metz, 2012). These “ideas enable learners to see connections between different scientific ideas” and when these are connected, it is easier to use them in new scenarios than other, unconnected ones (Harlen, 2015a, p. 97).

The Big Ideas movement – for so it may validly be called – in science education had modest beginnings: a two-and-a-half-day residential seminar for 12 participants in a remote venue on the shore of Loch Lomond was paid for by Wynne Harlen using the money she was awarded for winning the 2009 Purkwa Prize. The resulting document *Principles and Big Ideas of Science Education* (Harlen, 2010) was followed by a companion document *Working with Big Ideas of Science Education* (Harlen, 2015b). Within a decade it had been incorporated into curricula in South Korea (Choi *et al.*, 2011), Australia (Mitchell *et al.*, 2016) and Chile (Bravo González & Reiss, 2021) and influenced science curricula in a number of other countries.

The effects of the Big Ideas movement in science education have spread to other subjects, facilitated in England by advice given to the National Curriculum Review group by Tim Oates (2010) that students should study fewer things but in greater depth in order to secure

deeper learning in subjects. In RE, Barbara Wintersgill organised a three-day symposium at a remote farm on Dartmoor (there seems to be something about Big Ideas that means that they grow best in modestly funded writing workshops undertaken in remote locations), the fruits of which resulted in *Big Ideas for Religious Education* (Wintersgill, 2017).

Big Ideas for Religious Education begins with a table that identifies ‘Principles of Religious Education’. This is not unlike comparable lists in other RE curricular documents, addressing the overall aim of RE, its specific purposes and goals, as well as issues to do with progression, learning and assessment. The document then moves to identify four big questions that arise in RE:

- If the content of the RE curriculum is to be reduced, on what principles or criteria should we decide what content is included?
- On what principles or criteria should we decide how the selected content should be sequenced for ages 5-18?
- How might the RE curriculum be presented in a more coherent way?
- How might we make RE more engaging for young people growing up in the 21st century?

(p. 6)

After extensive discussion as to what Big Ideas are (including the idea that they provide criteria for the selection and prioritising of subject knowledge in the curriculum, are transferable to events outside the classroom, are memorable, and capable of differentiation so that they may become the basis of progression) and are not (including that they do not provide a philosophy of education, do not presume any particular pedagogy, do not prescribe any specific content, are not themes or concepts found in individual subjects, are not intended to be a prescriptive programme, and do not assume which or how many religions and non-religious worldviews are being studied), six Big Ideas are identified:

- Big Idea 1 Continuity, Change and Diversity
- Big Idea 2 Words and Beyond
- Big Idea 3 A Good Life
- Big Idea 4 Making Sense of Life’s Experiences
- Big Idea 5 Influence, Community, Culture and Power
- Big Idea 6 The Big Picture

(p. 15)

As the person who chaired the working party, I’ll leave it up to readers to determine whether these meet the above-mentioned criterion of being memorable! To put some flesh on these bones, here are the suggestions for ages 5-7 and 14-16 for Big Idea 5 – Influence, Community, Culture and Power:

5–7

There are signs of religious and non-religious worldviews all around us and lots of evidence of their influence on our communities. Many local and national holidays are held at the time of religious or other festivals, and religious leaders are often important people locally. Several well-known traditional stories and songs reflect the ideas of religious traditions present in the community. Religions are not equally influential everywhere. Some places are more religious than others; some families are more religious than others. Most schools have children from different religions and

non-religious worldviews and may have many who do not identify with any religion or worldview.

14–16

Religions and non-religious worldviews exist at several levels. Most people encounter religions at local level where they can make a difference to communities and individuals. At national level, everyone is affected when a religious or non-religious group influences the country's political and legal systems, its education system or the times of national holidays. Religious and non-religious groups also influence people's ideas about what is right and wrong and affect the way they respond to ethical issues. Some people see their role as one of offering a critique of prevailing social attitudes and practices. Religions and non-religious worldviews influence culture and community in places where they had power in the past and may still have it. Consequently, around the world countries and communities have very different relationships with religions and non-religious worldviews, from theocracies, where God is seen as the source of all authority, to secular states, which may claim to be neutral in matters of religion and belief. Many communities have become more diverse and have responded to this diversity in different ways. Changes in community are also reflected in the arts, which in most communities continue to remind people of their traditional religious identities while also being affected by contemporary religious and non-religious ideas. Most religions have a global presence and respond to the hardship that results from natural disasters, war, prejudice or disability. The relationship between religions, cultures and communities is both complex and controversial, since it can be peaceful and harmonious or can lead to conflict and disagreement. The appeal to ideas about a superior authority or vision represented by God, an authoritative text, a powerful leader or a compelling vision of the future may be used to justify social and political actions. This may lead to social and spiritual improvement, but it may lead to intolerance and violence.

Advocates of the approach of *Big Ideas for Religious Education* might argue that such an approach allows non-religious worldviews to be incorporated within RE without leading to an impracticable expansion of content or to study of religions being diminished to 'make space' for study of Humanism, secularism, agnosticism and atheism.

Conclusions

As someone whose primary expertise is in science education, I find it fascinating that while both RE and school science are currently exploring the possibility of Big Ideas playing a greater role in each subject (though see Freathy & John, 2019), the reception that the two subjects have given to the suggestion that worldviews play a more central role has been very different. In science education, this suggestion has been enthusiastically adopted by a relatively small proportion of the community. Indeed, in my experience it is science educators who are particularly sensitive to issues to do with indigenous science and the rubbishing of religion by some scientists who are most likely to see the positive affordance of the notion of worldviews in science education. In RE the situation seems rather different. Whilst there are a number of objections to the introduction of worldviews, here it seems that there is a widespread fear that to include worldviews, particularly non-religious worldviews, within the subject is to let the wolf into the sheepfold. In science, the idea of worldviews is often received with apathy; in RE, often with fear and trembling.

Why this difference? It seems very possible that this is related to the general position of each subject in the school curriculum and in society more generally. For all that the classic work of Paul Hirst might envisage a place of near equality for science and RE in the school curriculum (as for other forms of knowledge), one does not need to be a fully-fledged Bernsteinian (cf. vertical and horizontal discourses) to acknowledge that RE is in a much weaker position in schools than is science. It is not surprising therefore that science typically reacts to suggestions that it should change with the indifference that the powerful can afford, whereas RE reacts with angst, even defensively. The relative strengths of the two subjects in school, at least in England, are, of course, reflections of the relative strengths – and the on-going direction of change in these strengths – of the two disciplines in public discourse.

I therefore support the argument in both RE and science education (Billingsley & Nassaji, 2021; Pearce et al., 2021; Stones & Fraser-Pearce, 2021) that there is value in students acquiring greater epistemic literacy during their school studies. However, while both subjects would do well to pay attention to worldviews and to introduce this concept to students, there seems no need for either subject to envisage changing its name.

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