



Cult books revisited: Ian Barbour's *Issues in Science and Religion*

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Abstract

The quiet 1966 publication of *Issues in Science and Religion* by Ian G. Barbour became the blueprint from which, now a half century later, an entire bridge discipline has been constructed. That discipline is known as 'Science and Religion' or, sometimes, 'Theology and Science'. Rather than see science and theology as in conflict or even independent from one another, Barbour built the bridge for dialogue and even integration. Today's scholars cross that bridge daily. So, in this article we ask: just how was that bridge constructed?

Keywords

Ian Barbour, critical realism, ecology, religion, science, theology, theology of nature

A door opened in 1966. That newly opened door permitted the sweet winds of dialogue between science and religion to blow throughout the house of public discourse. Even though Oxford's pariah Richard Dawkins and his minions of aggressive atheists have sought valiantly to slam it shut again, it remains open to this day.¹

It was Ian Graeme Barbour (1923–2013) who opened that door with the publication of his still informative and intriguing book, *Issues in Science and Religion*. Just prior, during the 1950s and 1960s, the subjects of science and religion were assumed to be as antithetical as communism and capitalism. A heavy door locked the two into separate hemispheres. Yet, this young professor at a remote institution, Carlton College in Northfield, Minnesota, wanted to show the world that science and religion are much more alike and much more compatible than commonly understood.

New philosophers of science had just begun demonstrating how scientific theories require so much more than merely collecting facts. Facts are always

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theory-laden; facts are always interpreted facts.² This observation oiled the hinges on Barbour's door, so Barbour could demonstrate how both scientists and theologians tacitly share an approach to reality which today we still call *critical realism* or CR. In contrast to naive realism which treats empirical facts literally, CR is critical – that is, it constructs theory out of the human imagination. In contrast to mere instrumentalism (or fictionalism), according to which only measurements count without any ontological commitment to objective reality, CR affirms the reality of the reference. '*Critical realism* acknowledges the indirectness of reference and the realistic intent of language as used in the scientific community... some constructs agree with observations better than others only because events have an objective pattern.'³

With this notion of critical realism in mind we observe, curiously, that both electrons and God are invisible. Both scientists and theologians affirm that their theories refer to an unseen reality and, even more curiously, accept without embarrassment that these theories are partially the result of imaginative construction. Both scientific and theological theories become revisable yet remain reality-reliant. Suddenly, with CR Barbour had opened the door to let fresh air both in and out. 'Critical realism,' comments Alister McGrath, 'offers considerable potential as a theoretical bridge between the two disciplines.'⁴

Approaching the fortieth anniversary of this breakthrough work, Robert John Russell wrote, Barbour's 'arguments provide what I call the 'bridge' between science and religion; more than any other scholar's work, these arguments, in my opinion have made possible the developments of the past five decades'.⁵

Theology of nature

Barbour read the Two Books. One book, nature, is the one scientists read and interpret. Something about God as creator can be learned by looking directly at nature. Because this is the case, to a limited degree scientists are able to reveal traces of God's mind present in the creation. But, this is not enough for making theological commitments. The theologian must first read the other book, Scripture, which reports a historical revelation. What we learn from Scripture is the story of redemption. The theologian begins with the holy book and then reads the book of nature in light of this historical revelation.

The implication is this: a natural theology based solely upon nature described by science is insufficient. Alternatively, a *theology of nature* which begins with special revelation yet takes science into account is what Barbour recommends. A theology of nature 'must take the findings of science into account when it considers the relation of God and [humanity] to nature, even though it derives its fundamental ideas elsewhere'.⁶ 'While theology must start from historical revelation and personal experience, it must also include a *theology of nature*'.⁷

Like a watch dog, Notre Dame's Celia Deane-Drummond guards the revelatory gate to a theology of nature: 'A theology of nature is appropriate as long as it is suitably qualified by proper attention to revealed theology'.⁸

Barbour's open door does not permit science to rush in like a gale and blow religious commitments into chaos. Rather, like a fan solidly fastened to the floor, theological reflection blows back with its own force. It's the resulting swirl on the threshold which invigorates the intellectual landscape with fresh air.

The widening door to dialogue and mutual interaction

Issues in Science and Religion opened the door from impasse to interaction; and Barbour's ongoing work widened the opening. Barbour himself widened the opening in follow-up books such as *Myths, Models, and Paradigms* in 1974; his Gifford Lectures published in two volumes, *Religion in an Age of Science* and *Ethics in an Age of Technology* in 1990 and 1993 respectively, which were re-edited as *Religion and Science* in 1997; and *When Science Meets Religion* in 2000.⁹

Barbour composed a paradigm – the famous 'Four Models' – which is now as familiar to religion and science scholars as 'God save the Queen' is to Britain's schoolchildren. Barbour's paradigm is sung to students by new instructors in the field of religion and science almost everywhere in the world. In four stanzas, the relation between science and religion can be described as *conflict*, *independence*, *dialogue* or *integration*.¹⁰ After a fair and even-handed rendering of each of these four, Barbour's own preferences became dialogue and integration. Dialogue has the advantage over either conflict or independence because it is more constructive; but it does not offer the conceptual unity claimed by advocates of integration. Even if integration is more favoured, it too requires caution: the danger is that either scientific or religious ideas might become distorted if pressed to fit a preconceived synthesis that claims to encompass all of reality.

In my own scholarly work, I have tried to refine Barbour's four models to gain specificity. I believe we should work with eight models divided into two blocs: warfare models and non-warfare models. Those armies who want to fight against either science or religion side with (1) *scientism*, which claims the only source of knowledge is science and that religion proffers strictly fictional beliefs; (2) *scientific imperialism*, which grants some wisdom to religious traditions but contends that science can explain religion better than theologians can; (3) *ecclesiastical imperialism*, according to which revealed dogma trumps scientific claims; and (4) armies fighting either for or against Darwin's theory of *evolution*. The peace-makers embrace one or more non-warfare models such as (5) the *Two Books* doctrine, according to which the book of nature reveals God as creator while the Scriptures reveal God as redeemer; (6) the *two languages* model (Barbour's independence model) where science speaks of fact, while religion speaks of meaning; (7) *ethical overlap* – we have seen scientists and religious leaders working together on the ethics of genetics and ecology; and (8) consonance or *creative mutual interaction*¹¹ where science influences theology while theology suggests research directions for science.¹² Despite my attempt to re-plough the field to grow a genetically modified crop, Barbour's nomenclature continues to yield the harvest in this field.

With his own cautions in mind, Barbour went beyond descriptive modelling to his own prescriptive integration by framing science and theology within process metaphysics. The school of process metaphysics begun by Alfred North Whitehead and developed by its University of Chicago disciples (such as Charles Hartshorne, Schubert Ogden, John Cobb and Daniel Day Williams) provided Barbour with a comprehensive conceptual architecture within which both science and theology could fit without conflict. In this inclusive conceptual scheme, the Carleton professor thought he could integrate objectivity and subjectivity, scientific fact and religious meaning, the world and God. Barbour cast his vote for process metaphysics; but, he did so in such a magnanimous way that non-Whiteheadian scholars could benefit from Barbourian research without coercion into the Whiteheadian process school.

The health of Planet Earth

Barbour widened the ethical frontier with his concern for the future of our planet in his 1970 book, *Science and Secularity*, along with his 1980 treatise, *Technology, Environment, and Human Values*.¹³ The journal, *Science*, had previously whispered a prophetic warning in 1967 with the publication of Lynn White's 'The Historical Roots of our Ecologic Crisis'.¹⁴ During the 1970s, secular futurists informed by science began prophesying that our beloved Earth is in peril due to population overgrowth, depletion of non-renewable natural resources, industrial and agricultural pollution, and the greenhouse effect which would eventually lead to climate change. Beneath Barbour's eirenic and reconciling spirit, he joined this band of prophets with Jeremiah's message: the Day of Judgement is nigh unless we Earthlings cooperate and take the action necessary to sustain a liveable environment.

Already by 1970 Barbour was sounding the prophetic alarm:

The redirection of technology, in sum, is the crucial challenge of this decade. Man can still decide his future before it is too late. He can act to fulfill the promise: 'Earth shall be fair, and all her people one'. Technology can yet be man's servant rather than his master.¹⁵

Theology editor Robin Gill sought to clarify the implications of Barbour's challenge in this way:

There is no conviction in Barbour's writings that man in fact will fulfil this promise: he only states that man can still fulfil it. The very fervour of his plea for a redirection of technology, indicates at least a concern about the current directions of technology, a concern, that is, for the very survival of man.¹⁶

At that time, Ian Barbour belonged to a small minority of mainline Christian thinkers whose ears were open to the prophetic voice coming from the scientific

community. However, Latin American liberation theologians and feminist theologians repudiated the nascent school of eco-theologians for being too cosy with science and technology. After all, they argued, it was science and technology, which had been pressed into the service of white, patriarchal, European colonialism. In addition, the planetary perspective of the eco-scientists and eco-theologians conflicted with those who sought advocacy on behalf of specific segments of society: the poor, the marginalized, the colonized, the oppressed. With all the *Sturm und Drang* clamour stirred up by liberation advocates, only a handful of leading theologians – Ian Barbour, John Cobb, Jürgen Moltmann and the World Council of Churches – actually listened to the still small voice of the ecologically minded scientists.¹⁷

With the spread of radioactivity from the cloud sent on a world tour by the Chernobyl atomic reactor in 1986, theologians of liberation saw that the ecological crisis would affect the colonized as well as the colonizers. Leading theologians such as Rosemary Radford Ruether, Sallie McFague and Gustavo Gutiérrez began to voice shared responsibility with the scientized sectors of society in a common mission to rescue our planet from the loss of its life-giving capacity. Barbour's own voice may be forgotten by the present generation of theology students, but it still echoes in the voices of younger professors in today's classrooms.

Among my non-warfare models, recall, is ethical overlap between scientists and religious leaders. The invitation for an ethical partnership in eco-ethics came initially from the science side, even if mainline Christian theology turned down this invitation for two decades before accepting it.

Dean of the new school of science and religion

Barbour indirectly set the agenda for the subsequent half century of research and dialogue in the new field of his making. From then on scholars would have to ask and re-ask his questions: Are physical cosmology and the doctrine of creation compatible? Does indeterminism in quantum physics make room for human freedom or even non-interventionist divine action? Are Darwinian evolution and God's continuing creation reconcilable? Can purpose be discerned within a mechanistic interpretation of nature? Can methodological reductionism be overcome by the idea of emergence?

Through this door marched Arthur Peacocke, biologist turned theologian and Director of the Ian Ramsey Centre at Oxford University, with his 1978 Bampton Lectures, *Creation and the World of Science*, plus his comprehensive work, *Theology for a Scientific Age* in 1993.¹⁸ John Polkinghorne, physicist turned theologian, Master of Queens College at Cambridge University, author of books such as *The Faith of a Physicist* in 1994, has become one of the globe's most popular spokespersons for the theology and science dialogue.¹⁹ Systematic theologian Philip Hefner took over editorship of the prominent journal in theology and science, *Zygon*, and in 1994 published *The Human Factor*,²⁰ which integrated creation theology with evolutionary theory.

This quartet – Barbour, Peacocke, Polkinghorne and Hefner – composed the melodies which the next generation of scholars would continue to sing even though improvising: Robert John Russell at the Center for Theology and the Natural Sciences in Berkeley; Wentzel van Huyssteen at Princeton Theological Seminary; Philip Clayton at the Claremont Graduate School; Antje Jackelén and Willem Drees at ESSSAT (the European Society for the Study of Science and Theology); Niels Henrik Gregersen at Copenhagen University; Christopher Southgate at Exeter University; John Haught at Georgetown University; Nancey Murphy at Fuller Theological Seminary; along with others too numerous to name.

Barbour is no Pied Piper. Most of Barbour's disciples were not of his own making; they simply walked through Barbour's open door under their own steam. One protégé is an exception: Robert John Russell. Beginning in 1978 Barbour and Russell together planted the seed that would sprout into the Center for Theology and the Natural Sciences (CTNS) at the Graduate Theological Union (GTU) in Berkeley, California. Today, Professor Russell holds the Ian G. Barbour Chair in Theology and Science at the GTU, supported in large measure by a major gift by Ian Barbour from money gained when winning the 1999 Templeton Prize. The Center has been recently renamed the Francisco J. Ayala Center for Theology and the Natural Sciences, due to the added effort of this world class biologist to support the creative mutual interaction between science and theology.

From 1987 to 2002, Barbour and Russell and colleagues from the Vatican Observatory – then directed by George Coyne SJ – gathered in conference biennially at the invitation of Pope John Paul II to discuss divine action in the natural world. These meetings have produced an exquisite set of scholarly volumes published by the Vatican in cooperation with the University of Notre Dame Press.²¹

The moving frontier

The air exchange between science and religion in the twenty-first century brings new scents, whiffs of new agendas not fully anticipated by Barbour or any of the first-generation leaders. One such current is the growing need to account for the diversity of practices and commitments of spiritual people adhering to differing religious perspectives. Peter Harrison lays down the challenge: 'Discussions of the relation of science and religion cannot be considered in isolation from the issue of religious pluralism.'²² Multiple religious voices should be invited into the dialogue, or multi-logue. Even though conversation partners begin from within differing horizons of self- and cosmic-understanding, over time the multi-logue should seek a merging of horizons shared by adherents of differing religious points of departure as well as scientists of differing academic disciplines. After all, there is but one reality we are trying to grasp.

The dive into the future requires a spring board provided by the past. This is what Ian G. Barbour's 1966 book, *Issues in Science and Religion*, provides us. Over the half century that people have been reading this and other Barbour works, the

quiet Carleton professor has elicited much less criticism than praise. In the citation nominating him for the 1999 Templeton Prize, theologian John B. Cobb Jr wrote:

No contemporary has made a more original, deep and lasting contribution toward the needed integration of scientific and religious knowledge and values than Ian Barbour. With respect to the breadth of topics and fields brought into this integration, Barbour has no equal.²³

Let me close with the testimony of Christopher Southgate, who says what I think:

For that gift of mapping the terrain, for his philosophical skill which did so much both to ground the science-religion conversation and to give it a wider audience, and for his breadth of interest, which has kept ecological concern alongside debates with metaphysics and with quantum theory, for all this we owe Ian Barbour a great debt, which it is a privilege to be able to acknowledge here.²⁴

Notes

1. Dawkins's military objective is clear. He says he is not attacking any specific divine figure such as Yahweh, Jesus, Allah, Baal, Zeus or Wotan. Rather, he is attacking all of them at once. All belief in such divinities can be swept up into a single 'God Hypothesis', which he attempts to falsify. 'I shall define the God Hypothesis more defensibly: *there exists a super-human, supernatural intelligence who deliberately designed and created the universe and everything in it, including us.*' Dawkins advocates 'an alternative view: *any creative intelligence, of sufficient complexity to design anything, comes into existence only as the end product of an extended process of gradual evolution*' (Richard Dawkins, *The God Delusion*, Boston and New York: Houghton Mifflin, 2006, p. 31). Some theologians fight back. For example, 'Dawkins shows himself up as one who expresses almost complete ignorance of theology. The atheism expressed here is the mirror image of the outmoded theism that is claimed to be a threat' (Celia Deane-Drummond, *Christ and Evolution: Wonder and Wisdom*, Minneapolis: Fortress Press, 2009, pp. 88–9).
2. Nancey Murphy affirms yet criticizes Barbour for postulating that Thomas Kuhn's description of paradigm changes applies to both science and theology. Ian Barbour 'argued that religions are like Kuhnian disciplinary matrices: Jesus is the paradigm for Christian life. I have argued that it is a mistake to compare religions as a whole to disciplinary matrices... A better approach is Hans Küng's thesis... that there are paradigms in theology such as Augustinianism and Thomism.' (Nancey Murphey, 'Anglo-American Post-modernity and the End of Theology-Science Dialogue' in *The Oxford Handbook of Religion and Science* ed. Philip Clayton and Zachary Simpson, Oxford: Oxford University Press, 2006, pp. 472–87 at p. 483).
3. Ian G. Barbour, *Issues in Science and Religion* (New York: Prentice Hall & Harper, 1966), p. 172.
4. Alister E. McGrath, *The Foundations of Dialogue in Science and Religion* (Oxford: Blackwell, 1998), p. 164; see Ted Peters with Carl Peterson, 'The Higgs Boson: An Adventure in Critical Realism', *Theology and Science*, Vol. 11, no. 3 (2013), pp. 185–207.

5. Robert John Russell (ed.), *Fifty Years in Science and Religion: Ian G. Barbour and His Legacy* (Aldershot, UK: Ashgate, 2004), p. 45.
6. Barbour, *Issues*, p. 415.
7. Barbour, *Issues*, p. 453.
8. Deane-Drummond, *Christ and Evolution*, p. xvi.
9. *Myths, Models, and Paradigms* (New York: Harper, 1974); *Religion in an Age of Science* (San Francisco: Harper, 1990); *Ethics in an Age of Technology* (San Francisco: Harper, 1993); *When Science Meets Religion* (New York: Harper, 2000).
10. Ian G. Barbour, *Religion and Science* (San Francisco: Harper, 1997), Chapter 4; Barbour, *When Science Meets Religion*, Chapter 1; Barbour, *Wissenschaft und Glaube* (Göttingen: Vandenhoeck und Ruprecht, 2003), Chapter 4; Christian Berg, *Theologie im technologischen Zeitalter: Das Werk Ian Barbours also Beitrag zur Verhältnisbestimmung von Theologie zu naturwissenschaft und Technik* (Stuttgart: Kohlhammer, 2002), pp. 71–84.
11. Robert John Russell, *Cosmology from Alpha to Omega* (Minneapolis: Fortress Press, 2008), pp. 22, 132.
12. Ted Peters, *Science, Theology and Ethics* (Aldershot, UK: Ashgate, 2003), Chapter 1; Mikael Stenmark revises both Barbour and Peters in 'Ways of Relating Science and Religion' in *The Cambridge Companion to Science and Religion*, ed. Peter Harrison (Cambridge: Cambridge University Press, 2010), pp. 278–95.
13. *Science and Secularity* (New York: Harper, 1970); *Technology, Environment, and Human Values* (New York: Praeger, 1980).
14. Lynn White, Jr, 'The Historical Roots of Our Ecologic Crisis', *Science*, Vol. 155, no. 3767 (10 March 1967), pp. 1203–1209.
15. Barbour, *Science and Secularity*, p. 142.
16. Robin Gill, 'From Progress to Survival: Changes in Social Ethics', *Modern Churchman*, Vol. 17, no. 4 (July 1974), pp. 198–210 (at 201).
17. Ted Peters, *Futures: Human and Divine* (Louisville, KY: Westminster John Knox Press, 1976).
18. *Creation and the World of Science* (Oxford: Clarendon Press, 1979); *Theology for a Scientific Age* (London: SCM Press, 1993).
19. *The Faith of a Physicist* (Princeton NJ: Princeton University Press, 1994); *Scientists as Theologians: A Comparison of the Writings of Ian Barbour, Arthur Peacocke, and John Polkinghorne* (London: SPCK, 1996).
20. *The Human Factor* (Minneapolis: Fortress Press, 1994).
21. Ian G. Barbour, 'Ways of Relating Science and Theology' in *Physics, Philosophy, and Theology: A Common Quest for Understanding*, ed. Robert John Russell, William R. Stoeger and George V. Coyne (Vatican City: Vatican Observatory, 1988); Robert John Russell with Nancey Murphy and William R. Stoeger SJ (eds), *Scientific Perspectives on Divine Action: Twenty Years of Challenge and Progress* (Vatican City and Berkeley, CA: Vatican Observatory and CTNS, 2008).
22. Peter Harrison, 'Science and Religion: Constructing the Boundaries', *The Journal of Religion*, Vol. 86, no. 1 (January 2006), pp. 81–106 (at 104).
23. See <http://www.templetonprize.org/news_barbour.html>.
24. In Russell, *Fifty Years*, p. 246.

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