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Essay Review

Reconstructing Nature: the Engagement of Science and Religion, Glasgow Gifford Lectures, by John Brooke and Geoffrey Cantor (T. & T. Clark, Edinburgh, 1998, xii + 367 pp. ISBN 0-567-08600-3). £24.95.

When Adam Gifford, Lord of Session in Scotland, founded his Lectureships in the late nineteenth century his intentions were crystal clear. They were to be about Natural Theology, the determination of facts about God from a study of nature. His will of 1885 made clear that rational enquiry, even experiment, should be used, but not revelation. Since then a succession of distinguished lecturers has addressed the problem, though with increasing freedom to interpret Lord Gifford's intentions as broadly as possible. Theologians and scientists have had their voice, but rarely has the honour fallen to professional historians of science, the only exception before 1995 being the eminent Dutch scholar Reijer Hooykaas. Now, however, history of science has again been called in to illuminate the changing relationships between religion and science, the 1995/6 lectures being shared by John Brooke and Geoffrey Cantor, each having done notable work in the subject from their chairs in northern England.

This is a long book, being revised and expanded versions of the original lectures. We are left guessing which author was responsible for each chapter, though for those familiar with their writing the puzzle is not a difficult one to solve. In any case these final versions presumably represent a general consensus of view. The ten chapters are self-standing and each will have its own distinctive appeal. Although there is not a cumulative argument the overall impression is clear: that history of science *does* have some extremely important things to say to all concerned with a science/religion relationship, however defined, and without its insights enthusiastic proponents of controversial views are likely to go quickly off the rails. That point is made cogently in the first chapter and recurs again and again in the book.

After two introductory chapters on the value of a historical approach and some of the problems involved, there is an excellent essay (Ch. 3) 'against the self-images of the New Age'. It has some telling things to say about the evolution of many constituent ideas of this 'modern' phenomenon, including a masterly critique of Fritjof Capra's *The Tao of Physics*, above all for its failure to employ the results of recent historical research. He, like other proponents of New Age ideals, completely misrepresents Greek science, for example, in ascribing to it views of a living cosmos with purpose and intelligence. Such quasi-panteism might be attributed to neo-Platonic writers but emphatically not to the atomists or even Aristotle. The New Age tendency to see Descartes as the villain of the piece, foisting on posterity a purely mechanical universe, is a vast historical

over-simplification. The next chapter (4) on 'The contemporary relevance of the Galileo affair' relates much material familiar to historians of science, though in a refreshingly clear way. It gives the author opportunity to reflect on the uses of history, the multiplicity of historiographical traditions, and subsequent reactions to the whole sordid affair by persons as far apart in time (and ideology) as John William Draper and Pope John Paul II.

The next three chapters devote themselves to a central concern of Lord Gifford: natural theology. Chapter 5 concentrates on certain high-profile cases of natural-theological argument, arguing that each had been a response to external stimuli, such as the growth of extremism in Islam (*Al-Ghazali*), divisions in Christendom (Boyle), moral decline (Wilkins), the dire effects of the Scottish Disruption (Miller) and so on. Wisely the author avoids the well-known though extreme case argued by Margaret Jacob that natural theology was promoted by the political upheavals associated with the Glorious Revolution which deposed James II and welcomed William of Orange to the English throne. The multifarious uses for natural theology in the promotion of both religion and science lead (inevitably) to a consideration of the Darwinian challenge to its supremacy. Here the provocative 'death of God' phraseology is used, though the author eventually concedes that what had 'died' was rather a succession of inadequate images of God as 'magician' and 'artisan'. Instead there is 'a re-birth perhaps of God the artist'.

It is, of course, strictly within the terms of reference of a Gifford Lecturer that revelation is to be ignored, so all one should discuss is the response to nature and opinions about nature. However this limitation is too constricting for any approach that is to be truly historical. For, as both authors would surely concede, science does not operate in a social vacuum and cannot be separated from other influences, notably religion. Indeed they speak approvingly of views that stress the changing boundaries between the two. Therefore to speak of a 'death of God' *in whatever sense* is actually to isolate a (minority?) opinion among certain philosophers from wider streams of thought, particularly from those giving weight to Biblical and other 'non-scientific' data. Moreover, there is always an implication of finality in any 'death' notice, and history would warn us against accepting too readily the idea that the last word on a given topic had been spoken. That this is not so is manifest in a stream of works from (say) Brewer to Behe, or from Gifford to Templeton. These surely need to be placed *alongside* the sceptical essays in order to give a balanced account. Some of the projects associated with John Templeton even employ experimental approaches in order to learn from creation. Lord Gifford would have been delighted!

As for natural theology itself, there is now a view abroad that an apparently 'designer universe', full of beauty, purposive function and elegant contrivance, by no means implies a designer. It just happened. Such are the lengths to which some modern philosophers may come in their frenzied desire to escape from the rational demands of any kind of theism. Such eccentricities are reported by the author who does not, however, reveal whether or not he believes them.

Two further chapters deal, respectively, with the language of natural theology and with the role of aesthetics in science. The study in chapter 6 of linguistic structures owes much to George Campbell's *The Philosophy of Rhetoric* (1776) and alerts us to the possibility of being taken in by statements that are simply meant rhetorically to accomplish certain immediate goals. The account of aesthetic arguments (Ch. 7) reminds us that ideas of beauty, simplicity and economy are often – if not always – present in the processes of scientific investigation. Again, some of the examples are very familiar but the stories are usually worth retelling: Copernicus' insistence on simplicity and regularity, Hooke's astonishment at the intricate beauty disclosed through his microscope, and Miller's admiration of the structure of rocks. Strangely, though, there is no reference to the work by Marjorie Hope Nicholson and others on the concept of the 'sublime' in nature and its profound effects on literature, travel and geology.

At this point the dangers are displayed of jumping to theological conclusions from a scientist's delight in the beauty of nature. As the author splendidly shows it is most unwise to parade such cases as part of a religious apologetic. Statements about aesthetic appreciation may be mere rhetoric; they may stem from an alternative secular philosophy; or they may be aesthetic and no more. He observes 'the pages of history are littered with beautiful delusions'! However when Heisenberg remarked to his wife that 'I was lucky enough to look over the good Lord's shoulder while He was at work' it is entirely reasonable to make that statement a tool for theistic apologetics, provided always that it is properly checked and contextualised. The fact that elsewhere Heisenberg spoke in aesthetic terms does not in principle disqualify him from providing evidence for a theistic belief. On the other hand, the point is shrewdly made about the tendency of post-Darwinian apologetics to major on a self-organising universe. It is all too easily forgotten that in the 17th century such a concept would have been tantamount to a declaration of atheism.

A chapter (8) on scientific biography focuses on a genre of writing that is coming back into fashion. Seeing people 'whole' offers an alternative to the old emphasis on ideas, with human brains merely serving as their receptacles. It is also much better than the opposite tendency of regarding people as merely objects of social dynamics. Taking 'snapshots' of four very different Victorians the author shows how Tyndall, Mivart, Carpenter and Sedgwick reacted to the Darwinian 'crisis of faith'. In so doing he illustrates the richness of a truly biographical approach, some of his subjects demonstrating more than one of the classic 'stances' advocated by Ian Barbour. One may, of course, disagree with some of the details. Queenwood College was not a 'Socialist college' when Tyndall taught there – rather a Quaker one. To remark that 'despite his evangelical leanings Sedgwick emphasised toleration' is to ignore the kind of evangelicals with whom Sedgwick was most at home: they were not an intolerant bunch at all. Visitors to modern Dentdale may be surprised to learn that the dale of Sedgwick's childhood has 'been largely swept away by industrialisation', and so on. However the virtues of biographical writing are clearly displayed in this chapter. For a fuller example of honest and honourable biography, meticulously

researched and utterly fair, one need look no further than the life of Michael Faraday by Geoffrey Cantor himself.

A chapter (9) on the role of Quakers in the Royal Society will surprise no one aware of the strong scientific tradition among the Friends, but has some useful information on the responses of Quakers to Darwin and on the special importance to them of botany. The book's conclusion (Ch. 10) addresses the intriguing question as to why chemistry has had so little to do with theological issues. Among the answers is the suggestion that the sheer utilitarian ambitions of chemists, and their visual and tactile appreciation (aesthetics again!) of chemical manipulation left them with little inclination to religious discourse. Exceptions are suggested, including Humphry Davy. Although some recent writing has suggested that Davy was motivated by a theologically inspired hatred of materialism the evidence is thin. It is much more likely that a secular Romanticism, tinged with an occasional touch of pantheism, inclined him to seek for unity and simplicity in nature. In that spirit he was able to combine electricity and chemistry into the new unified science of electrochemistry. There are better examples of a Christian inspiration for chemistry, and many more chemists who maintained a Christian faith but saw no reason to let it determine the structure of their science.

Underlying all these Lectures is a conviction of the relevance of a sophisticated historical analysis and at the same time the conclusion that such analysis eliminates the possibility of a 'master narrative' which offers 'a definitive historical account of how science and religion have been (and are) related'. Pragmatism rules instead. To approach the past with a foregone conclusion as to how it should illustrate this or that theory is to invite disaster.

A familiar *bête noire* is the 'conflict thesis', advocated by A.D. White, J.W. Draper and many others to our own day; it is part of the folk-lore of popular culture. Science and religion, it asserts, are more or less permanently at war. This book contains many examples of the gross inadequacy of such a crude generalisation and offers far more sensitive (and sensible) interpretations of celebrated cases like those of Galileo and Darwin. Equally, however, it challenges an apparently opposite thesis, advocated by Foster, Oakley, Hooykaas and others, that science is the offspring of a Biblical doctrine of creation. Yet this thesis is of a fundamentally different kind. It concerns not a timeless relationship between science and religion but a very specific process of interaction. Hooykaas said he was writing about 'a certain attitude to nature', not the whole gamut of scientific thought. And to accuse him of viewing science and religion as unchanging entities is little short of parody; for he made continual distinction between (say) Catholic theology and the reformed faith that emerged from it, between Anglican and Puritan attitudes, Anabaptists and Presbyterians etc. His work on the development of the corpuscular theory, for instance, illustrates his awareness of continual changes in science. What for him did not change was the anti-authoritarian and essentially experimental and observational nature of science. Who can deny that he was right? It simply is not the case that each of these writers 'tends to assume that "science" and "religion" can be given timeless

definitions and that there is some inherent, some essential, relationship between them'[21]

It is the polar opposite of the 'conflict thesis' that comes in for the strongest attack. This lies in a statement in this journal by Colin Humphreys [1995, 7, 2] that 'there is no conflict between science and religion, when both are properly understood'. This author (curiously referred to in the text only as 'a senior academic') is severely taken to task for his boldness. His last five words are said not to resolve the issue but merely to raise further problems. It may be replied they do not resolve the issue for the simple reason that that was not the immediate purpose of the article in question. It goes without saying that we need to understand as clearly as possible the essential nature of the entities we are studying; of course we cannot ignore the fact that some people give different answers to the same questions. Any working scientist does this kind of thing every day. The empirical fact is that very many scientists indeed have come to the same conclusion as Humphreys, often after addressing the very problems the Gifford Lecturer raises. Nor is it fair to claim that for this 'senior academic' science and religion have to be wedded into a unity (66). He never said they did.

The real problem for the authors is what they call 'the subservience of history to partisan interests' (17). Although this remark was called forth by a blatantly historical assertion by Richard Dawkins, they see the danger in the opposite camp also, from Christians who wish to use history of science for apologetic purposes. Elsewhere they ask 'Can an impartial history be written, or a consensus achieved, when the issues still carry an emotional charge?' [107] If the answer is 'no' there seems little point in continuing historical enquiries. The fact that they have produced a large book on the topic seems to suggest that they believe that the answer may be 'yes'. The clue to their optimism perhaps lies in their confession that they 'are not seeking to support any particular theological position' (x). Seemingly this releases them from the charge of partisanship and liberates them for the purposes of dispassionate and rational enquiry. They seem to believe this, and to admit that truth in history is possible. Despite occasional references to 'reconstructions' of history as well as of nature, they do not hesitate to castigate opponents, to condemn certain images as 'untrue' and give every impression that, sensible people as they are, they are striving towards a genuine objectivity just as much as their scientific colleagues.

Yet it may be argued that such a neutralist stance has its own perils. For one thing, a disinclination to support a particular theological position does not mean that the authors do not have their own religious views. Whether these exert an unconscious influence is perhaps a moot point, but it is surely true that there is no such thing as absolute neutrality. None of us is quite as dispassionate as we might like to think! Further, to distance oneself from specific theological positions *may* lead to the almost inarticulate belief that all such positions are untenable. It *may* incline one to an inflated valuation of one's own rationality. And it *may* create another 'partisan interest', that of the disinterested scholar who has to mistrust all those known to start from specific theological positions.

These dangers are for readers as well as authors. To their great credit the present Gifford Lecturers seem mostly to have stepped adroitly round them.

What, then, may be said to those who do support a particular theological position (evangelicalism, Catholicism etc.) and yet want to engage in history of science? Is there such a thing as a 'Christian' history of science? Or must such scholars be permanently relegated to the sidelines just because they have a theological as well as a historical agenda? The reply might perhaps be that there is no such thing as a 'Christian' history of science any more than there is 'Christian' science. But there surely is a sense in which history of science can be done in conformity to Christian ideals and within a Christian world-view. If so, what would it be like?

In the first place there would have to be a scrupulous fairness to opponents, even to those who seek to undermine the faith itself, and a humble view of our own human limitations. Christians have no monopoly in such matters, of course, but they are under orders to be very strict with themselves. Their commitment to Christ and his ethic is absolute. Secondly, and as a result, such an approach would seek to test with all possible rigour hypotheses that place Christianity in a 'good' light as well as those which seek to diminish it. Thirdly, it will acknowledge the temporality and limitations of all our knowledge. Hence any 'master narrative' is at best a crude approximation, perhaps a dimly perceived aspect of a much greater 'Master-plan'.

Thus far our Gifford Lecturers would presumably agree with the agenda. That may not be so for a fourth characteristic of a history of science inspired by evangelical theology: an openness to possibilities of miracle and Divine action in the world that originated not from a God-in-the-gaps but from a loving and omnipotent Lord of creation. Alleged phenomena as dreams and visions, even healings and other spectacular events, would not automatically be ruled out as inconsistent with a scientific world view. Nor, of course, would the resurrection of Christ. A high view of the Bible would be to acknowledge it as a revelation from God that demands to be taken seriously. Finally, a Christian approach to the subject could permit a recognition of certain phenomena that might not be so obvious to the agnostic or sceptic. Relevant insights might be generated from surprising sources. Reijer Hooykaas (to mention him again) could see the importance of Calvinist theology for science not chiefly because it was his personal credo but because his whole life of reading, meditation and debate had given a deep understanding and familiarity with that confessional tradition. He was, in a sense, 'conditioned' to perceive with great alacrity correlations between Calvinism and science. Then, of course, these correlations had to be put to rigorous historical test, but to spot them more quickly is an undeniable asset to a scholar. In the same kind of way those accepting the doctrine of original sin will have much less difficulty in acknowledging all manner of human peccadilloes, from the Machiavellian schemings of Galileo's opponents to the conspiracies for power in the scientific institutions of Victorian England. They no longer need to be explained away.

A history of science of this kind should meet most of the criteria laid down by Brooke and Cantor and yet could, on occasion, have a genuine apologetic function. It is, for example, quite legitimate to draw attention to the importance of religion for the development of modern science, and to point to the theological convictions of many eminent scientists. At very least this can be a 'ground-clearing' operation in which classic objections like the 'conflict thesis' can be readily refuted. Detailed studies of individual lives, or of episodes like the varied reception of Darwinism, can provide much useful ammunition for those engaged in argument with unbelievers or 'creationists' alike. However effective apologetics are much less likely to be in the direction of natural theology. As the Gifford Lecturers affirm, in the words of John Hick, there is 'a religious ambiguity about the universe' and one cannot derive inevitable theological conclusions from the facts of nature alone. If Lord Gifford really set his agenda for purposes of apologetic argument, then in literal terms it was doomed from the start. Of the many insightful statements in the book we cannot improve on one at the very end of Chapter 7:

Arguments drawn from nature, and from nature as reconstructed from the sciences, simply cannot decide the question between theism and naturalism. The choice has to be made on other grounds but, once made, may affect in the deepest way possible the meaning seen in nature's powers.[235]

Indeed it does, as every christian should know. For that, and much else in a book so rich in ideas and challenge, we are deeply grateful. These Gifford Lectures should be read, not uncritically but with discernment and a genuine openness to the multitude of insights they offer. For all those inclined to use history of science in discussion of wider issues of science and religion they will be a valuable guide for years to come.

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