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George Kattawar
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Practicing Science, Living Faith

Interviews with 12 Leading Scientists

**Edited by Philip Clayton
and Jim Schaal**
Columbia U. Press, New York, 2007.
\$29.50 (250 pp.).
ISBN 978-0-231-13576-4

Quantum Physics and Theology

An Unexpected Kinship

John Polkinghorne
Yale U. Press, New Haven, CT, 2007.
\$26.00 (112 pp.).
ISBN 978-0-300-12115-5

The relationship between science and religion is the subject of ongoing discussion, and sometimes contentious debate. *Practicing Science, Living Faith:*

Interviews with 12 Leading Scientists, edited by Philip Clayton and Jim Schaal, and *Quantum Physics and Theology: An Unexpected Kinship*, by John Polkinghorne, contribute to the discussion from two somewhat different perspectives.

Each chapter of *Practicing Science, Living Faith* begins with a short biographical sketch of each scientist that includes, among other things, professional specialty, geographical location, and internationally recognized scientific achievements. That information is followed by the interview. The original oral narrative has been edited with the goal of preserving as much as possible the scientist's personality and style. The editors' difficult task has been carried out quite well, though occasionally what an interviewee is trying to say remains a bit obscure.

A significant part of each interview is a discussion, in nontechnical terms, of the researcher's work. I always found that part interesting. It is followed by questions about the scientist's religion or spiritual and moral values and how those values relate to his or her work. In some cases the responses are quite compelling, but in others, they are somewhat bland. Although the interviews vary a lot in length and in overall qual-

ity, the reader always catches some glimpse of the scientist as a human being involved in much more than just technical issues. The scientists come from a variety of fields, from astrophysics to zoology, with a strong representation from the biological sciences. Psychology and linguistics are included, while the other social sciences are not. There are an equal number of men and women, with most from Europe and North America; however, scientists from Africa and Indonesia are also interviewed.

The religions represented in the book include Baha'i, Buddhism, Christianity of different sorts, Islam, and Judaism. Scientists with no formal religion are also represented. Given the broad diversity, do any common themes emerge in the text? In the concluding chapter, Clayton asserts that each scientist is involved in serious reflection on matters of science and faith, the latter understood in a very broad sense; and despite occasional conflicts, each has succeeded in integrating the two. As a consequence, the interviews serve to undercut a widely held stereotype that science demands complete neutrality and objectivity, which can be achieved only by people with no

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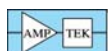


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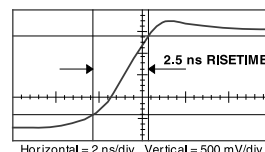
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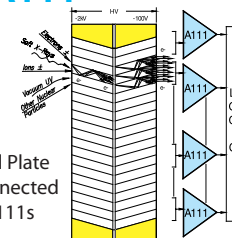
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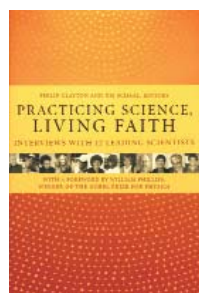
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religious commitment or who are hostile to religion. Although I agree with Clayton that the interviews undermine that stereotype, I wonder if they do not, at least implicitly, reinforce another: Although religion and spirituality provide some people with a motivation and a moral basis for their scientific work, there is no counterpart on the religious or spiritual side to the serious examination and discussion of claims to truth that are characteristic of good science. Faith is an individual choice that can never be checked for its veracity.

However, in *Quantum Physics and Theology*, Polkinghorne shows that need not be the case. Instead, he finds interesting parallels between two disciplines that are often thought to have nothing in common. Polkinghorne is a physicist and an Anglican priest; he has published a number of books on the relationship between science and Christian belief and a popular account of quantum mechanics. Hence, he is well qualified to address both topics. Although the book is intended for nonspecialists, Polkinghorne's own expertise shines through in the quiet confidence with which he cites examples to back his main theses.

The author does not attempt to support or defend Christian theology on the basis of quantum mechanics, nor does he try to find theological precursors to quantum theory. Instead, Polkinghorne regards both theology and quantum physics as serious searches for truth that, despite their very different domains of inquiry, employ similar methodologies. One can properly view his book as a contribution to the philosophy of science, using "science" in the broad sense it once possessed. Polkinghorne describes his philosophical position, with reference to physics and theology, as critical realism: There is a real something "out there" to which our knowledge applies, and that is genuinely, albeit imperfectly, reflected in our understanding of the world.

Polkinghorne's theology is historic orthodox Christianity. For example, the resurrection of Jesus is not an embarrassment to be explained away but a historical event central to theological reflection. But he does not regard theology as a static body of truths already contained in sacred texts, which are important as witnesses to historical events that cannot be repeated (in contrast to physics, where the reproducibility of experiments reduces the importance of history). Instead, theology requires hard intellectual work to develop an

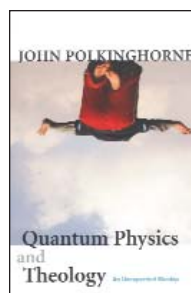


adequate theoretical framework within which key historical events and the ordinary experiences of the community can be understood and interpreted. He finds an interesting parallel between, on the one hand, the devel-

opment of Christology—the Christian understanding of the person and work of Jesus, in particular his humanity and deity—from the first century to the Council of Chalcedon in the fifth century; and, on the other hand, the development of quantum mechanics from Max Planck's 1901 discovery to the modern formulation by Erwin Schrödinger, Werner Heisenberg, and others between 1925 and 1926. But Chalcedon was not the final and definitive answer. Modern theology continues to wrestle with these matters, just as physicists continue to seek a better understanding of quantum mysteries.

To support his main thesis that truth-seeking strategies in science and in theology have significant similarities, Polkinghorne uses a set of 14 analogies discussed in the three central chapters of the book. These analogies include such issues as techniques of discovery, toy or *gedanken* experiments, the role of geniuses, and the "tides of fashion." In each case he provides both an example from the history of quantum physics and another from the history of Christian theology, and he draws parallels between them. One or two of the comparisons may seem somewhat forced, but on the whole I think Polkinghorne makes a good case for many interesting similarities.

One reason for taking Polkinghorne's opinions seriously is that unlike many who publish or pontificate on the subject of science and theology, he has been an active participant in both communities. Thus he knows from experience how they function and what their strengths and weaknesses are. I suspect that the relationship—his term is "cousins"—that Polkinghorne sees between the two disciplines can actually be applied much more generally than his book indicates. The examples drawn from quantum physics could, in many cases, have been taken from prequantum or current " $\hbar = 0$ " branches of physics, or from chemistry, or from other sciences. And would the analogies not hold if theology were replaced with, say, history? Polkinghorne does not discuss this possibility; but it seems plausible that similar strategies are used



whenever a community of scholars wants to find out what things are really like in the spirit of critical realism rather than in the pursuit of arguments to support a particular ideology for its own sake, or to generate random philosophical speculations untested by observation.

In any case, *Quantum Physics and Theology* helps counteract the stereotype that comes up all too often in religion and science controversies: Science has to do with indubitable truths while religion is nothing more than speculation, personal opinion, or uncritical acceptance of tradition. Such misguided scientific fundamentalism, like its religious counterpart, tends to poison the science and religion dialog by changing the goal of searching for truth to that of winning arguments with the help of lawyers.

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