

## Book Review

**E. Brian Davies, *Why Beliefs Matter: Reflections on the Nature of Science*, Oxford University Press, 2010 (paperback ed. 2014), 250pp., \$29.95, ISBN 9780198704997**

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*Why Beliefs Matter* is a book of philosophy, science, and religion written for a lay audience. Comprised of five loosely connected chapters dealing with a plethora of interesting themes, the book is principally a polemic against inserting metaphysical assumptions into mathematics, science, and religion<sup>1</sup>. The book focuses on the metaphysical worldviews of philosophers, scientists, mathematicians, and religious thinkers. Though for reasons I elaborate on later, I would not recommend this to experts in those fields, but rather to non-professionals.

The book opens by describing the relevance of worldviews, especially those held by some key figures of the “new astronomy” and “mechanical philosophy” of the scientific revolution. It continues with a wide ranging discussion of some topics in the philosophy of science, especially those that relate to the role of humans in shaping scientific understanding. Davies discusses for example, how what counts as a scientific explanation really depends on the category of details we happen to be interested in. For example, if you wanted to explain bird flight, you may be interested in migrating and nesting strategies, evolutionary mechanisms that select for flying, or the aerodynamic properties of feathers. The process you want to understand determines the explanation that satisfies you. The chapter also explains that reductionistic views of science may be true on some levels though they have little ability to explain the world to us and that scientific determinism is false. The relationship between consciousness and the brain is assessed as mysterious and we are reminded that the human brain interprets the world using its innate capacities while unavoidably projecting some of itself onto the world. The chapter concludes

“that a logically straightforward reductionist account of reality cannot enable us to say everything that we want to (40).”

The next chapter is largely a polemic against mathematical Platonism. It argues instead in favor of a conception of mathematics as a biologically rooted human practice that is in some ways constrained by its internal logic and in other ways taken by mathematicians on faith. Platonism, as the idea that objects that mathematicians use, like numbers, sets, and functions are real things and actually inhabit an ideal realm, is deemed unnecessarily metaphysical and irrelevant despite the fact that many physicists and mathematicians take it seriously.

The penultimate chapter glosses a medley of ideas in contemporary science, most of which we are urged to reject as nonsense. For example we are asked to abandon the idea that the constants of the universe are deliberately designed, that there is a multiverse, or that we live in a simulation. We are encouraged to accept, however, that machines will indeed think at some point in the future.

The final section deals with religion. It begins by succinctly encapsulating the biographies of a few scientists, which indicate that some are believers while others are not. Among those who believe, Davies explains that they do so in very different ways. Davies then argues that religious reasoning in science is mistaken, anthropic reasoning is in no way certain, arguments for God’s existence do not hold up to scrutiny, and some religious beliefs are merely superstitions.

The book's topics are wide-ranging and philosophical. But this is not a book for those with an advanced background in philosophy and the author is aware of this. He cautions in the Introduction that it is "directed more at the educated public than at philosophers. In general, philosophers seem to think in linguistic categories, whereas many scientists and mathematicians, including myself, rely on intuitive visualization - without being able to explain quite what that means. (vi)" The book then plainly substitutes philosophical arguments with impressions about philosophical topics. There are situations where this can be appropriate. But a sophisticated book with five chapters - one on mathematical platonism, one on the philosophy of science, one largely on the nature of mind, and one on the relation of science to religion - dismisses philosophical method and its canon at its own peril. (I hope it does not surprise mathematicians that philosophers expect a significant amount of rigor and argument when writing on philosophy.)

What this means for the book is that most of the topics, which are all worth developing and have indeed all been developed by others, are given short shrift. For each topic covered, Davies ruminates a bit, gives a small amount of background perhaps, and sometimes offers a quick reason behind some of his thinking. But there is almost no sustained argument for his positions or serious consideration of the authors he (sometimes severely) criticizes, nor does the author spend much time making clear or developing the positions he holds or opposes.

For example, Davies advocates for a conception of mathematics that dismisses Platonism, accepts constructivist as well as classical mathematics (which I find puzzling as constructive mathematics is a proper subset of classical mathematics), and is a human phenomenon. But what he does not mention is that Platonists have a respectable reason for the claims they make. Platonists claim that there is some metaphysical reality behind mathematics because (among other things) they require this reality to explain such exceptional phenomena as the objectivity of mathematics. After all, if mathematics is real in some way, it makes sense that we all have the same version of it. So if one jettisons Platonism in favor of some other account and claims that mathematical objects are not real in the way Platonists think they are, he is now burdened with the requirement to clarify how the new account explains why we all believe the same version of math-

ematics. But the book fails to give anything but the most cursory glances at such problems. And without these details spelled out, we do not really have a complete conception of mathematics, rather merely some disjointed details that do not add up to an account of what mathematics is and how it works. More importantly, beyond the fact that Davies presents Platonism as unappealing, we have no positive reason to accept his conception over other competitors. The sophisticated reader is entitled to more than she gets here. Each problem such as "is the universe deterministic?," "is scientific reductionism useful?," "what is causation, explanation, or the mind-body problem?" is settled in a mere three or four pages and similarly lacks fleshing out to tell us why Davies' view is worth taking seriously.

Accordingly, the book does not acknowledge much of the scientific or theological literature. When it does, it is responding to a specific person, idea, or text and only rarely to a central figure or a synoptic conception of any debate. So, for example, while there is a huge literature on causation, the author considers little of it, even those who might be sympathetic to a more developed version of Davies' view.

I do not want to give the impression that the author does not think it worthy to read what others have to say. Davies does take some writers seriously, especially (mostly Oxbridge) scientists and theologians such as Rowan Williams, Keith Ward, John Polkinghorne, John Barrow, Peter Atkins, Nick Bostrom, Charles Coulson, Roger Penrose, Richard Turnbull, Richard Dawkins, and Richard Swinburne, who loom large in this book. They are however discussed largely out of proportion to their impact on the philosophical and theological debates that they have participated in and to the exclusion of many who have had great impact in the respective fields that are the various foci of the book. Other thinkers are acknowledged, but not nearly as prominently proportional to their contributions.

On the positive side this speaks to a vibrant British intellectual culture where scientists and theologians read each other's books and respond to and critique their colleagues across disciplinary boundaries. It is refreshing to watch a secular mathematician take a theologian like Keith Ward seriously enough, even if only to offer a rebuttal. I hope history will look back on books like this and remember the eminent scientists and mathematicians who took the trouble to

familiarize themselves with their counterparts in theology and philosophy and take public and sometimes unpopular stances regarding weighty intellectual matters of their time.

Such interaction, moreover, between a mathematician and his scientific, religious, and philosophical colleagues can tell us much about the currently heated relationship between science and religion.

To start, we see that at least for some, a worldview is more than just a stance about religion. It is a comprehensive position on the nature of mind, the universe, mathematics, and theology simultaneously. Similar metaphysical assumptions manage to interject themselves into many domains of human study. There is no logical bar to accepting metaphysics in some domains (e.g. science or religion) and rejecting it in others, but it is a useful datum about mathematical psychology that Davies rejects metaphysics in all domains. Davies has a nice knack for detecting when someone is sneaking an unwarranted metaphysical assumption into their work regardless of what they are thinking about, and I enjoyed watching Davies point this out (e.g. on p 214). Scientists all do have philosophical worldviews regardless of how theoretically neutral they think their work is. They should be as aware of this as theologians are when metaphysically laden presumptions creep into their work.

Davies' book makes plain that there can sometimes be a relationship between what some believe about religion and what they believe about other domains of human thought. Such thinking can provide evidence useful for historians, psychologists, and philosophers of mathematics about the nature of metaphysical thinking in general. Perhaps there is a common source for all the intuitions shared by scientists who believe in the multiverse, mathematicians who think numbers are Platonic Ideals, and theologians who countenance angels. Perhaps there is also a corresponding reason for their absence in people like Davies.

The book is also evidence that the debate between science and religion thrives, at least enough for a

prominent mathematician to feel that it merits a book-length treatment and for a reputable publishing house to take such a project seriously. Neither side has let up, nor does there seem to be any sign that one will. However, despite advances in science, we also see from the book that the debate has not advanced much lately. Some scientific terminology gets fancier but the grammar of the debate is the same and old arguments against the virgin birth (228) and the possibility of demonic possession (231), etc, are still put forth.

It is conceivable that if a young mathematician has never given the issues in this book much thought, Davies may succeed in dissuading her from answering "yes" to the question "are you a Platonist about mathematics?" But it is hard to see how the book can similarly disabuse people of their Christianity. We hardly have a thorough debunking of metaphysics, Christian myths, or even scientific nonsense, but rather a statement of what Davies does and does not believe.

In the end, I am sympathetic with almost everything the book advocates for (as I am with the theses in his earlier *Science in the Looking Glass*). Like Davies I do not understand the intuitions of those who insist that there is a Platonic world of numbers, universes that we cannot detect, or the occurrences of miracles. But I find it difficult to see how the book offers coherent *reasons* for any of those conclusions.

The professional philosopher, scientist, mathematician, or theologian who is interested in arguments about the philosophical and theological themes discussed is better steered toward other literature. However, this book would well suit those who want to see how a smart, accomplished, and respected practicing mathematician treats metaphysics in the debates between Platonism versus anti-Platonism, science versus nonsense, and science versus religion.

## Endnote

Thanks to Dahlia Kozlowsky for helpful comments on an earlier draft.