Book reviews

Ian Hacking, *The Social Construction of What?* By Gregory Radick

Peter Machamer, Marcello Pera and Aristides Baltas, *Scientific Controversies: Philosophical and Historical Perspectives.* By Steve Fuller

Henry H. Bauer, *Science or Pseudoscience: Magnetic Healing, Psychic Phenomena, and Other Heterodoxies* and Michael Shermer, *The Borderlands of Science: Where Science Meets Nonsense.* By Alex Dolby

Eric Higgs, Andrew Light and David Strong (eds.), *Technology and the Good Life?* By Graeme Gooday


Stephen Gaukroger, *Francis Bacon and the Transformation of Early-Modern Philosophy.* By Steven Shapin

Francis Bacon, *The Instauratio Magna: Last Writings.* By John Henry


W. Clark, J. Golinski and S. Schaffer (eds.), *The Sciences in Enlightened Europe.* By Dave Riley

David N. Livingstone, D. G. Hart and Mark A. Noll (eds.), *Evangelicals and Science in Historical Perspective.* By Aileen Fyfe

Myles W. Jackson, *Spectrum of Belief: Joseph von Fraunhofer and the Craft of Precision Optics.* By Iwan Rhys Morus

Xiang Chen, *Instrumental Traditions and Theories of Light: The Uses of Instruments in the Optical Revolution.* By Sean Johnston


By Massimo Mazzotti

Susanne Zimmermann, *Die Medizinische Fakultät der Universität Jena während der Zeit des Nationalsozialismus.* By Paul Weindling

Vaclav Smil, *Enriching the Earth: Fritz Haber, Carl Bosch, and the Transformation of World Food Production.* By Mark R. Finlay


Ian Hacking does not skimp in answering his title question. He looks at the social construction of women refugees, the psychological subject, quarks, schizophrenia, child abuse, the velocity of light, a limestone-like rock called dolomite and the motives of murderous Hawaiians, among other ‘whats’. His aim is less to evaluate than to clarify. He asks about the nature of claims for social construction, and the sources of the ‘constructing attitude’ (p. 47) now so widespread, not least among historians of science. His book is a tract for our times, full of insights about the recent science wars. But it is also part of a project that, in one way or another, has engaged Hacking for some thirty years. That project is, roughly, to integrate Michel Foucault’s insights about knowledge and power into analytic philosophy. There is much of Foucault in Hacking’s abiding concern, here as elsewhere, with how the past shapes present possibilities, of thought, language and action.

The first two chapters provide some general orientation. As Hacking shows, people reach for the phrase ‘social construction’ when they want to deny that an item now taken for granted is an
inevitable product of a universal human condition, or an inevitable discovery about a preexisting order of nature. He bids us not to exaggerate the novelty of these denials. The constructing attitude of the present day belongs to a tradition of sceptical humanism, inaugurated by Immanuel Kant, and including the logical positivists. There is nothing new in insisting that we humans construct what we claim to discover. What is new is the interest in how we do it, in actual historical process, and especially in how particular social and material arrangements help bring an item into being and then sustain it.

Items in the natural sciences are the ‘whats’ of the third chapter. Quarks are social constructs, says the sociologist of science. Just look at the history. No, replies the high-energy physicist. Quarks are discovered constituents of nature—real, not constructed. Hacking intends the title of his book in part to promote better intellectual hygiene in encounters like this. He wants us to ask what, precisely, is claimed as constructed, and then to make some distinctions. The key distinction he urges is between ideas—the classification ‘quark’, say, or the theory of quarks—and objects—quarks as entities in the world. The issue dividing the quark constructionist Andrew Pickering from his critics is not whether the entities, quarks, are real. The issue is whether there might have developed a different but equally successful physics that did not include quark ideas. That odd counterfactual claim needs unpacking, and Hacking delivers, brilliantly. He judges that contingent history shapes scientific knowledge in two ways. First, scientists might have asked different questions. Second, they might have resolved conflicts between theory and world in different ways. According to the questions asked, and the resolutions chosen, a science will develop along one of several different possible pathways.

There is more than a little irreverence in the view that much of what scientists hold for true they might not have, or that the classifications used in the sciences do not match the inherent structure of nature (if there is such a structure), or that scientific knowledge remains stable so far as the surrounding social and material arrangements remain stable. These three related theses—on contingency, nominalism and stability, in Hacking’s terms—constitute a metaphysics, with a political edge. ‘The science wars, as I see them’, he writes, ‘combine irreverent metaphysics and the rage against reason, on one side, and scientific metaphysics, and an Enlightenment faith in reason, on the other’ (p. 62). The rage against reason is a rage against environmental poisons, weapons of mass destruction and other ruinous products of science. One way to aid those who struggle against ruinous science is to undermine the authority of scientists, and one way to do that is to deny that scientists are lighting up dark corners of a God-given reality. Hacking evokes the rage behind the metaphysics—but also the bewilderment of scientists who value the idea of one truth as a safeguard against totalitarian lies.

Constructionist irreverence carries over from the natural into the human sciences, and intensifies. The label ‘quark’ names what Hacking calls an ‘indifferent kind’. Quarks are indifferent to how we sort them. People are not indifferent. Directly and indirectly, people interact with the kinds we use to sort them. A label can alter a person’s self-understanding and behaviour, so much so that the person is no longer of that kind. Hacking looks at these ‘interactive kinds’ in his fourth chapter, about mental illness, and fifth chapter, about child abuse. It sounds reckless to claim that schizophrenia or child abuse is a social construct, until we ask what, exactly, is claimed as constructed. Child abuse, or the idea of child abuse? Some adults batter children, and that battering is real. But, Hacking shows, the concept of child abuse—what counts as an instance of it, what it means to be of that kind—emerged through the actions of doctors, social workers, journalists, feminists, politicians, support groups, survey-takers and others, starting in the United States around 1960. He makes a number of telling contrasts between the twentieth-century kind, ‘child abuse’, and the nineteenth-century kind, ‘cruelty to children’. Sex between an adult and a child is, we say, an act of child abuse. It sounds reckless to claim that sexual acts as instances of cruelty. What, then, is constructed? Interactive kinds; but also the matrices within which those kinds come into being, and the people whose lives, inner and
outer, go differently in virtue of a certain pattern of sorting.

The final three chapters, on weapons research, dolomite and the murder of Captain Cook, develop the themes of the earlier chapters, but in a piecemeal way. The chapter on dolomite in particular seems a missed opportunity. Here Hacking describes the history of debates about the formation of dolomite, and then uses the dolomite case to illustrate the insights of old and new philosophical perspectives on science. He alights on inductivism versus deductivism, then interests, networks and such. This is all fine, if unprepossessing. I wish he had turned instead to a contrast introduced in the chapter on the natural sciences, between an old-school, logical doctrine, due to W. V. O. Quine — that observation underdetermines theory — and a new-school, constructionist doctrine, due to Pickering — that the resistance of the world underdetermines scientists’ efforts at accommodation. Quine’s doctrine directs attention to how scientists modify their theories; Pickering’s doctrine to how they also modify their apparatus, their analyses, even the phenomena under study. The dolomite case would have served well to show what these abstractions amount to in practice, and how much the historian who ignored them would be missing.

No matter. The book as a whole is advertisement enough for history of science in a philosophical key, and philosophy of science in a historicist key. Even philosophers who have taken the historical turn have so far been little inclined to think hard about the extent to which the sciences are independent of their histories. I hope Hacking succeeds at putting contingency, nominalism and stability on the philosophical agenda. As for historians of science, the constructing attitude is more or less standard issue among them now. But out of shared metaphysics and shared rage? Often, I suspect, the attitude is little more than a writing strategy, a stance adopted towards the past to ensure that narratives do not come out sounding ‘Whiggish’. Hacking invites historians to take themselves seriously, and gives them the philosophical tools with which to do so.

Gregory Radick
University of Leeds


This book is the long-awaited sequel to Marcello Pera and William Shea (eds.), Persuading Science: The Art of Scientific Rhetoric (Canton, MA, 1991). The format is largely the same: take a dozen senior scholars from North America and the European Mediterranean clearly identified with the ‘history and philosophy of science’ (often the same ones as before), along with a few of their worthier students, and sequester them for a few days in an Italian villa. The results this time are better than before, at least in terms of the range and quality of contributions.

Beyond the usual discussions of the Scientific Revolution, we find here cases drawn from eighteenth- and nineteenth-century chemistry and twentieth-century biology, psychology and anthropology. Another improvement is the editorial insistence that contributors position themselves with respect to each other’s conceptions of scientific controversies. Too bad the contributors failed to interpret this charge as an opportunity for disagreement. The reader is thus treated to the spectacle of many apparent differences among these scholars of controversy left unvoiced or air-brushed out of existence. Perhaps the cosiness of the Italian villa was not such a good idea, after all! Or, perhaps, Maurizio Mamiani’s chapter on how Robert Hooke and Isaac Newton settled their controversy over the nature of colour explains matters here. I leave it to the reader to decide.

All told, however, a paperback edition of this book would make a rather good textbook on scientific controversies. Peter Machamer’s opening chapter is a model of didactic clarity. Since scientific enquiries are supposed to be settled by some definitive piece of evidence or reasoning, the presence of significant controversy proves awkward. The longer controversy persists, the more likely it will take in more issues and threaten the legitimacy of the scientific community. Philosophers have tended to diagnose this situation in terms of some negative cognitive trait, especially stubbornness and ignorance but...