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Book Review - Science in Society: an Introduction to Social Studies of Science.

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Massimiano Bucchi, London, New York: Routledge, November 2004, ISBN: 0415321999 0415322006, translated by Adrian Belton, and reviewed by Peter Morrell, Hon Research Associate, Staffordshire University, UK, April 2005

This small book [145 pages] gives the reader an overview of an important topic, a fairly good bibliography as well as a names index. Half the references date from the 1990s, one third from the 70s and 80s and two thirds from the 80s and 90s, and this is probably an accurate reflection of the publications chronology of this field.

Bucchi confesses in the introduction that his "book can only provide a partial survey of its subject matter, one restricted to the themes or approaches most distinctive of the discipline," [p.2] and that readers should "use the citations...as a stimulus to read works in their entirety." [p.2] He also warns the reader that this topic is often "treated in overly simplistic terms," [p.1] that many scientists show their loathing of it by "dismissing the discipline out of hand," [p.1] but he says the book is not "an apologia for the sociology of science or to rehabilitate it in the eyes of scientists." [p.1]

The book is divided into eight chapters, which elucidate – sometimes clearly and magnificently – how science operates, what sociologists find interesting about it, how scientific knowledge is generated, various aspects of mathematics and laboratory science, and a short chapter on 'science wars,' or conflicts concerning epistemology within the scientific community.

I found the book makes few presumptions of previous knowledge on the reader's part, with technical terms being kept to a minimum, and introduced and explained within the text; concepts tend to be 'taken apart' and explored in an enthusiastic and jargon-free manner.

The book's many strengths make it a little gem or classic both for the interested beginner to this subject and for those searching for a solid overview. For those wishing to teach this module in their courses, for example, the book gives a simple structure that could easily be adapted by lecturers into an optional course module on science studies for undergraduates.

The first chapter outlines the importance of science in modern life and how much money it absorbs globally. Much data is invoked to illustrate its massive growth and diversification in the modern world, and its considerable, pervasive and unique influence throughout the political, international and academic worlds.

To a degree, these pointers prepare the reader for a more critical appraisal of how easily and tacitly science has become accepted by the lay public as the most reliable truth generator in the modern world. A history of science in the twentieth century is included, and its intimate connections with technology, big business and politics. Much of the discussion is rightly anchored in Merton's pioneering work, which serves to contextualise these first twenty or so pages.

The second chapter mostly discusses Kuhn's work and its modern relevance. The theme implicit to these early chapters concerns the fact that three generations of sociologists have now come to question the extent to which science truly is an

objective enterprise, to what extent its knowledge is real and to what extent its ideas are partially socially conditioned if not biased and misleading.

These complex topics are raised and explored, albeit briefly and succinctly, but in a short introductory work of this type, truly detailed appraisals of such topics is then left to the reader, for whom the well-selected reference material supplies an adequate mass of further reading material. The book therefore succeeds by launching any interested reader into following up key reference texts, such as those by Barnes, Edge, Woolgar, Shapin, Bloor, Gieryn, Merton, et al.

Chapter three explores the abstract nature of mathematics, its importance in shaping scientific thinking and the extent to which it is more socially conditioned than it seems. Using a range of examples, old and new, these themes are unravelled for the reader in a quite compelling manner. The discussion is largely built around Bloor's and Shapin's work.

Chapter four explores laboratory science, where the work of Collins, Pinch and Latour informs a lively discussion of the numerous conceptual pitfalls of scientific methodology, while chapter five considers the technological aspects of science and how social forces can shape the development of a product or gadget, including devices like missiles, bicycles, compact discs, particle accelerators, computer keyboards, telescopes and ultrasound scanners, to name but a few.

Once again, the dominant implication is that social forces and human demands are often as important shapers of such technological devices in the modern world, as the creative energies and knowledge of scientists. Bucchi shows how most marketable products partly result from several forces working in society, do not simply flow directly from laboratories into high-street shops and department stores, but usually go through a complex and socially-conditioned phase in their development.

The shortest chapter in the book [chapter six], on 'science wars,' gives a painfully

thin sketch of this increasingly important topic. This is a disappointing chapter, when one considers the controversies that still rage about Cold Fusion, climate change, evolution, HIV/AIDS, CJD...etc. It conveys the impression of a hurried and superficial discussion that has ignored much important material, inclusion of which would have added greater stimulus and depth. The material is all out there, but Bucchi seems to have passed it over.

However, the next chapter on the role of communication in science is very interesting and probably compensates for the previous deficiencies. It explores how science presents itself to the world, how it becomes moulded and presented through the media, by journalists and commentators. Bucchi explores with a deft vitality the extent to which the public might simultaneously be informed, duped and misled by science journalism. He raises the genuine issue of what is true, what is objective and what is omitted from scientific matters in their presentation to the public.

Much debate centres upon the nature of scientific knowledge, for example, and how it might be easily manipulated by journalists for mass consumption by a lay audience. Through this process, information can implicitly also become disinformation or misinformation. Bucchi makes a splendid case for caution, reflection and scepticism in this interesting field and marshals some good examples to add depth to a successful chapter in the book. Judging from the references, this is an area of his own interest and research, which probably explains the higher quality of this exceptional chapter.

The last chapter is one of the longest and attempts to summarise the main points; it considers 'a new science,' encompassing the human genome project, the use of scientific advance for profit, the politics of science, HIV/AIDS, the construction of a map of science today, aspects of science publications, the biased funding of research and the social accountability of science. He succeeds in mentioning these big subjects, but adds little useful analysis to any of them.

While he succeeds in mentioning the social role of science, the social and ecological consequences of technological innovation and scientific discovery, the relationship between social conditions and cognitive activity, and the historical development of scientific epistemology, yet he signally omits other key issues.

Though he acknowledges the social challenge to the monolithic nature of the scientific hegemony, yet he ignores pluralist beliefs, postmodernism and some of science's inherent biases and inequalities. He mentions paradigms and positivism, but he fails to explore the paranoid way science polices the borders of its knowledge, its aggressive and insecure reaction to 'pseudoscience,' and real conceptual issues relating to fragmentalism, holism, phenomenology, or the rigid orthodoxy of its conformist belief system, to which its devotees often subscribe as passionately as inquisitorial zealots of old. These subjects simply do not appear in this book.

Bucchi thus seems to skate blithely and superficially over big subjects and deep issues, mentioning them en passant, if at all, instead of pausing to give the reader a decent thumbnail sketch of each, or posing questions for deeper reflection. In this he certainly fulfils his own prophecy, made on page 2, that he does not "do justice to their complexity."

Finally, the book fails to explore the tacitly prevalent fragmentalism and reductionism of science, or state what justifies it is as opposed to a potentially holistic 'scientific phenomenology.' It disappointingly fails to explore the rigid axis of deviance and conformity that could have emerged from his excellent discussion of Kuhn in chapter 2, and which runs through science like a name through a stick of candy. He fails to say why science is so dominated by a priori expectation from accepted theories, and its reluctance to embrace a less theory-driven strain of empirical investigation.

Therefore, Bucchi fails to justify whether science deserves the high status it enjoys in the modern world, for example, or if its status as a neutral and objective

system of enquiry is really warranted. Does it reveal as much about life and the world as is routinely believed by scientists and politicians? Bucchi fails, I would say, to explore any of these key matters sufficiently, and, in many cases, they are not even mentioned.

In spite of these misgivings, and given the caveats mentioned at the start and the severe restrictions of its brevity, it is a useful, informative and stimulating little book that is written with an engaging clarity and vitality.

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