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978-0-521-34680-1 - An Introduction to Science Studies: The Philosophical and Social  
Aspects of Science and Technology

John Ziman

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**An introduction to  
science studies**

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JOHN ZIMAN FRS



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## Preface

In *Teaching and Learning about Science and Society* (Cambridge University Press, 1980), I argued at length that everybody ought to learn something *about* science, but that science is a large and open-ended topic, which needs to be treated in various ways at various stages of educational maturity. At school level, the most natural approach is through case studies of the place of science and technology in modern life, as we presented them, for example, in the *SISCON in Schools* units (published in 1983 by the Association for Science Education and Basil Blackwell). For slightly older students, a conception of science as a social institution can be built up from historical case studies, along the lines of the lectures I wrote up as *The Force of Knowledge* (Cambridge University Press, 1976).

The present work goes one level deeper. It is addressed to students – and other diligent readers – who want to discover, beneath the historical and contemporary particulars, a more general framework of principle. They want to understand what is being said about science by the historians, philosophers, sociologists, psychologists, economists and political scientists who have been making such notable contributions to ‘science studies’ these last few years. They need access to the scholarly literature in these various fields, both for its intrinsic interest and as a possible guide to action in scientific research, in industrial management, in political administration, and in public affairs.

Each of these fields has its own basic textbooks, ‘readers’ and advanced treatises. But there is a natural tendency, in each case, to look upon the subject from the viewpoint of a particular discipline, and to overelaborate the features that are mainly visible in that aspect. The student is seldom shown how these features might appear from other points of view, and thus never gets a coherent impression of the subject as a whole. In many cases, also, the most instructive writings start at quite a high scholarly level, making it difficult for the beginner to appreciate what is really at stake.

This book actually arose out of a course of lectures which students of physics, philosophy or sociology at Bristol University could take as one of the examined



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options in their bachelors' degrees. What seemed to be needed at that stage was a unified account, in the plainest possible language, of the general concepts and significant issues in this interdisciplinary area. In effect, it is an elementary treatise on *metascience* – the 'science of science' in the broadest sense – intended for use as a basic text in specialized undergraduate and postgraduate courses in all fields of science studies. It cannot pretend to be definitive in any one field, but shows by its approach and by many cross references from chapter to chapter, the relationships that exist between these fields.

A work of this kind craves infinite charity from scholars with specialized knowledge of particular topics. This charity is begged, not only for errors of fact or principle but also for apparently neglecting many valuable insights from many distinguished contributors. I know how much I myself owe to the evocative writings and distinctive ideas of a number of brilliant scholars in this field and, as the reading lists indicate, I should like every student to enjoy them and benefit from them as I have. But it seemed more useful to present the essential themes in my own language, and on my own terms, as a sympathetic rapporteur, rather than putting together a pastiche of other people's opinions in a medley of discordant voices. This means, for example, that I have tended to approach each topic in the first instance from the naturalistic standpoint of a working scientist or science student, and then to move round to a more philosophical or sociological stance as the analysis develops. I have also taken a personal line in drawing attention to the 'model' of academic science that I set out in detail in *Public Knowledge* (Cambridge University Press, 1967) and *Reliable Knowledge* (Cambridge University Press, 1978) and have devoted a good deal of space to the 'collectivization' of science in recent years, which seems to me to be a much more significant phenomenon than most other observers would allow. But this book is idiosyncratic only as an attempt to make sense of a very complicated and loosely articulated body of knowledge, and the reader should not take at face value the confidence with which some of my opinions are apparently expressed. Remember, please, that this is only an *introduction* to science studies, not an authoritative account of what is known. To make proper use of it, the student should read as deeply as possible into the recommended works, which will draw him or her further into 'fresh woods and pastures new'.

The writing of the final text during the past 18 months has been greatly facilitated by the generous award of a Visiting Professorship at this College. I am especially indebted to Elspeth Robinson and Joan Wright, who typed the manuscript for me. But work on this book really began many years ago, when I first prepared notes for these lectures, and it continued as I revised them in later years. All that time I had the good fortune to be a member of the H. H. Wills Physics Laboratory at Bristol, a particularly happy and distinguished university department. This is the moment to express my gratitude to all my colleagues there, not only for their

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unalloyed personal friendship but also for the support and encouragement they gave me in this novel educational enterprise. And now, having had to read up and write up the philosophy chapters for myself, I realize how much our students owed to Stephan Körner and David Hirschman, who taught this part of the course with such skill and understanding.

John Ziman

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*December, 1983*