

Published Review of

L. Stevenson - H. Byerly, The many faces of Science, in: *International Studies in the Philosophy of Science* 10, 2 (1996), pp. 173-174.

By Louis Caruana

**Leslie Stevenson, Henry Byerly, *The Many Faces of Science: an introduction to scientists, values, and society*, Oxford: Westview Press, 1995.**

There is more to science than Aristotle's natural desire to know. The major achievement of Stevenson and Byerly does not lie in restating this idea, which has been common knowledge for a considerable time, but in presenting it in a very accessible manner, through a study of the lives of various scientists.

Starting at the period when science emerges as a standardly recognised profession primarily in the universities, the authors introduce their approach by highlighting two aspects: the image of science and the motivation of scientists. Both these aspects are multi-dimensional. The former ranges from the image of science as bountiful, to science as demonic, science as that which undercuts all human values, science as utopic, science as value-neutral, and so on. The aspect concerning motivation of scientists ranges from internal motives, like intellectual curiosity, to community motives, like desire for reputation, and external motives, like the attraction of public fame, desire for profit, ambition to influence public policy, and so on. Interesting historical examples illustrate what is involved in each of these aspects. Technology and medical science are considered also. Examples from these disciplines are given to show how the utility of science is related to the question of funding and to the desire for profits on the part of its practitioners. A very valuable chapter concerning scientists and the totalitarian state is also included. Examples here refer to Nazi Germany, Communism in the USSR, and also to contemporary totalitarian states

like China and Iraq during the Gulf War. The authors continue to highlight the interaction between scientific practice and economic and political power by offering a discussion on how some crusading scientists get involved in public policy, especially as regards nuclear weapons, genetic engineering, and ecology.

The overall effect of the use of the case-study method is that the reading becomes both interesting and accessible. The many captivating anecdotes include not only the stories of well known scientists but also of lesser known champions and villains. We find, for example, J.W. Gibbs, considered by Plank as one of the fathers of quantum physics, William T. Summerlin who was caught engaging in scientific cheating in 1974, and many others. Since the same scientists are sometimes discussed in different chapters to illustrate the various aspects of their approach, the book reads somewhat like a novel — the reader meets the same prominent characters a number of times along the way. There is value also in the way the authors do not limit their choice of cases to distant history but includes recent episodes, like the Fleischman and Pons press conference of 1989 at Utah concerning cold fusion, and cases relevant to recent important global political decisions. Such a choice of cases is a reminder that science cannot anymore be considered an intellectual activity pleasantly isolated from the destiny of the global village we live in, containing some who enjoy freedom and some who do not, some whose luxuries are becoming necessities and some who are dying of hunger or malnutrition. Even though, according to K. Popper, big science may destroy great science, our era is certainly one of big science. And this situation is probably here to stay. Significant projects cost huge amounts of money, and hard choices have now to be faced about the direction and funding of research.

Some readers may feel that the way the authors handle historical material is questionable because it does not do justice to the complexity of the writing of history. Some stereotype accounts have not been reviewed critically enough. For example the brief allusion to the clash between Galileo and the Catholic Church promotes the

usual simplistic interpretation that Galileo was a clear victim of obscurantism. It does not include the fact — of considerable relevance for the approach taken by the authors — that at the time of the trial he lacked the essential observational confirmation to his views, namely the stellar parallax which was observed only two hundred years later. Overall, the authors seem to favour a kind of historiography which attributes the origins of entire disciplines to the efforts of a few inspired heroes. But it is extremely important to be aware that there are other ways of writing the history of science. One may favour, for example, an approach according to which science of the past ought to be studied in the light of the knowledge we have today. On the contrary, one may hold that science of the past should be studied in the light of the situation and the views that actually existed in the past: here the historian is an observer not only *of* the past but also *in* the past. Because of the importance such historiographic options have, some readers will probably feel that the book would have been more valuable if explicit mention had been made of how the history of science may emphasise one aspect rather than another.

But in spite of this point, the way the book acts as a survey-map of the subject, supplying also useful suggestions for further reading, makes it a good interdisciplinary introduction for students in science studies, in philosophy and sociology of science, and certainly interesting reading for the general education of scientists themselves.

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