

The Social Role of the Scientist

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Book Review

A. Rahman: *TRIVENI: Science, Democracy and Socialism* (Indian Institute of Advanced Study, Simla).

Science policy, which relates essentially to the role and integration of science and technology in the social life and developmental processes within a nation, has grown in recent times into a many-faceted study which includes the history of science, its inter-relations with the social-economic fabric and the role of scientists themselves in the processes of social change. The rapid development of science and technology in the developed countries has posed a serious dilemma for those countries that remain wedded to the traditional social structures of yesteryear. What is popularly referred to as the Third Industrial Revolution has generated new sources of energy and technologies based upon electronics and automation that give promise of a life of creativity and plenty for all, of leisure and freedom from drudgery, of a flowering of the real potential of the human race. On the other hand, these sophisticated developments themselves, constricted by and interacting with the prevailing social framework, threaten to reduce mankind to a life of poverty amidst plenty, authoritarianism and alienation, along with the ever-possible danger of total nuclear annihilation.

The thesis advanced by Rahman is that while science and technology are conditioned by society and its value system, their development generates major social changes, value systems and ideas.

What should the role of the scientist be in this situation? Should the scientist limit himself to his laboratory and to the exclusiveness of his intercourse with fellow scientists or should he concern himself also with the socio-political processes that, in the final analysis, determine his own activity? Scientists in Sri Lanka have invariably veered towards the first alternative looking on in helpless bewilderment at the policies of governments that fail to understand the role of science and often ignore it in the formulation of national policies. This is a special problem for the under-developed "Third World" countries. However, this dilemma has often manifested itself in the developed countries as well. It was exemplified in the immediate post-war years by the tragedy of Robert Oppenheimer, one of the pioneers of the atomic bomb at Los Alamos, whose crisis of conscience led him eventually to victimisation by the policy-makers of the Pentagon. The rôle of Edward Teller, the so-called "father of the H-bomb",

who encouraged the murderous attacks on Hiroshima and Nagasaki, proves that scientific exclusiveness can only lead to scientists becoming the pawns of designing politicians and to the perversion of the fruits of their own brain-work. Scientific neutrality is a myth, an illusion in the twentieth century with its rough and tumble of clashing class interests, of the exploitation of the majority of humanity by a handful of rich nations. Despite the abstraction and attempted isolation of science and technology from socio-political processes, the problems of choice in scientific research—between objectives and goals of research, of different technologies and scales of investment are, in the last analysis, social and political.

If the objectives and goals towards which science is to strive are to become a vehicle for a different type of society, if culture, values and social organisation have to undergo a radical change, if rationality of decisions is to be part of culture and society, then it is not possible to achieve it within the framework of existing society and the goals for science and technology. Both have to be changed radically. "Scientific knowledge must be made the basis of a new culture, social organisation and political decision-making.... Scientists must transform science into a social movement of radical transformation."

Rahman analyses the dichotomy in attitudes among scientists from a historical perspective—from the time of the Carvaks in ancient India and the Ionians of Greece to the social activists of the contemporary period. Most historical studies of science have been unfortunately in the abstract, precluding an understanding of the interactions of society, culture and the political life of a period with science and technology. It is this lacuna that Rahman seeks to fill through the discerning analysis presented in this book.

Both in ancient India and Greece a sharp struggle existed between "those who aimed to apply scientific method to the study of social processes and the then available scientific knowledge to help in the organisation of society and those who tended to preclude society from the purview of science." This struggle developed in India between the Carvaks and the Brahmanical philosophies and in Greece between the Ionian and later Epicurean philosophies and the Platonic school.

"The basic difference between the opposing trends centred round the question; how to control people?" The Brahmanical and Platonic schools believed that if social organisation was to be effective, men must be made to obey—i.e. controlled. To do so fear must be created

amongst them—through myths and superstitions and punishment. Science therefore must be isolated from society and remain the exclusive preserve of an elite. In fact, both these schools represented the interests of narrow ruling class that held a monopoly of wealth and knowledge. They looked down upon physical labour which belonged to the province of the illiterate masses. They preferred to dabble in abstractions, in postulates and hypotheses derived from pure thought. This attitude, arising from the nature of the social milieu, coloured a good deal of Greek science in antiquity.

The Carvaks and the Ionians, on the other hand, advocated that men, instead of being controlled, could be motivated to do things on their own through understanding of phenomena and the laws of nature. For this purpose they tried to establish societies of brotherhood, preaching equality and promoting knowledge. In doing so, their main attempt was directed towards exposing the fraudulent practices of the priests, the myths invented and the role of gods in the affairs of human beings. They were, therefore, persecuted for their opinions."

With these philosophers, once again, we see social attitudes influencing the scientific approach. Unlike those of the Platonic school, observation and experimentation had a pre-eminent place in their work. Thus, Pythagoras experimented with musical notes. Empedocles proved the presence of air by thrusting a funnel into water.

Under the Ionian and late Epicurean influences, science was not conceived as a discipline limited to the laboratory. It meant an outlook which covered the entire field of natural as well as social phenomena. There were even attempts to use the rationality of science to shape society, in contrast to the Platonic philosophers who sought to isolate it from the masses in order to safeguard the privileged position of the social elite.

Today's scientific tradition once again seeks to limit observational and experimental techniques mainly to the laboratory. Rahman advances an interesting hypothesis to explain this: "The storm created by Copernican theory and the punishment meted out to Galileo for advocating it, had created a major social problem for the scientists as to how to avoid the social consequences of theories which came in conflict with religious and social philosophies and outlook. The

problem was solved, or rather an escape route was found, by Descartes, as the news of Galileo's punishment came in, by dividing the world into the material, where the laws of science operate and the moral where the edicts of the church prevail. Contemporary science having inherited this legacy continues to operate within the framework of this decision, despite the effort of many from Bacon to our own period."

The scientific community in "Third World" countries such as Sri Lanka, having artificially absorbed the scientific and cultural traditions of the West, follows the same road, perpetuating and reproducing the dichotomy of science in the capitalist world.

However, much as they would like to sojourn in their ivory towers, scientists today are repeatedly brought up against the social consequences of their work—for example, the impact of automation on the employment problem, the rape of our environment or, worse still, the perversion of science by modern imperialism to prepare the destruction of the human race itself. Rahman's book deals with the critical role that scientists must play if science is to be an agency of social progress and not of destruction. Should scientists also be social revolutionaries in the ancient tradition of the Carvaks and Ionians? Or, at least, should they not acquaint themselves with the socio-political problems of their countries and apply their scientific methodology to effect the necessary changes in the fundamentals of the social order?

Rahman's book is a valuable contribution to the ever-growing volume of literature on science policy studies. As Chief of Planning and Head of the Centre for the Study of Science, Technology and Development at the CSIR in India, Vice-President of the International Council for Science Policy Studies and a person recognised internationally for his work in the field of Science Policy, Rahman's views on science and its inter-relations with society will be of particular value and interest to scientists of the "Third World". One word of criticism: it is regrettable that a large number of printing errors—dropping participles, etc.—should have crept into this edition. One only hopes that more care will be taken with future editions to eliminate technical shortcomings of this nature. However, this cannot detract from the value of the book and the provocative ideas it advances.
