

LIFE AMONG THE SCIENTISTS: FOUR TALKS

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INTRODUCTION

1. A report on recent work in what might loosely be called the anthropology of science i.e. investigating science, and the scientific communities who 'make' science, in terms of the total social context. This kind of investigation has a rather different focus from the earlier historical enquiries, by Merton and others, into science and scientists. Those enquiries were for the most part concerned with showing the connexions between the development of science at particular epochs and other social and economic developments: thus Merton, for example, argued that there were affinities between religious non-conformism, the use of early capitalism and the emergence of science and technology in seventeenth century England. However, in this view, science remained a quite independent and autonomous sphere of activity. Though it might be influenced by external social and economic factors, the content of science and the practice of scientists remained unaffected by those factors. Thus, for example, the truth of Boyle's law is determined by the objective facts of nature and the scientist is one who observes nature and discovers the laws that are inscribed in nature. In this view it would be ludicrous to suggest that Boyle's Law and the whole scientific program of which it is a part reflects the socio-economic pre-occupations of the seventeenth century English bourgeoisie.

The new approach to science and scientists, however, argues on the contrary that the content of science and the actual practice of scientists is in fact powerfully shaped and formed by social factors. Indeed, it has been claimed that the science of any particular epoch is in a certain sense 'constructed' by the society of that epoch for its own social purposes. Just as some sociologists and anthropologists claim that religion is a social invention or construct which serves the purposes of society (providing myths which enhance the cohesion of society and keep people happy with the status quo) so the new sociologists and anthropologists of science see science

in much the same way. In this view, the sub-communities of scientists invent and construct science in response to social pressures of various kinds and at various levels. They, of course imagine that they are observing the objective facts about nature and discovering laws which are 'there' in nature, but in reality they are doing no such thing. 'Objectivity' and the idea that the truths of science faithfully reflect the structure of nature are simply 'myths' rather like the myths which so-called 'primitive' peoples use.

The anthropology of science has taken two main directions: the first is concerned with elaborating a philosophical theory about the social construction of science and with a philosophical critique of the idea of scientific 'objectivity' and scientific 'truth'. The second is concerned with a sociological/anthropological study of actual communities with a view to showing how in particular laboratory contexts science is 'constructed'. Talk 2 will be concerned with the philosophical theory about the social construction of science: Talk 3 will be concerned with some of the more recent accounts of 'field work' among the scientists.

## 2. The Social Construction of Science:

Precursors: Karl Mannheim: since everything in human culture can be explained in social terms, science also must be susceptible to being explained sociologically.

Thomas Kuhn: science at any one time depends upon the tacit acceptance by groups of scientists of certain models or 'paradigms' of science.

Neo-Marxists: though Marx himself seemed to think (rather inconsistently with his own theory of historical materialism) that science was not a function of socio-economic factors, some of his followers have argued that science is, along with philosophy, religion, art etc., part of the ideological 'superstructure' which is 'determined' by the socio-economic 'base'. In this view, science and technology are a creation of capitalism and they serve capitalism's purposes by maintaining the bourgeoisie in power.

Some neo-Marxists have argued that science as a whole is simply a reflection of the forces within bourgeois-capitalist society; others have held that while particular kinds of science are reflections of dominant socio-economic forces and surreptitiously serve the interests of the dominant class, there can be a genuine science 'at the service of the people.'

#### Recent Thinkers:

The critique, by a number of philosophers of science, of the naive empiricist theory of scientific observation (we can observe natural phenomena directly and immediately without our observations being mediated by presuppositions, theories etc.) has cast doubts on the notion of scientific 'objectivity'. If we observe only what our theories allow us or direct us to observe then it is difficult to see how our observations can be true and 'objective' i.e. faithful reflections of reality.

The general doctrine of Wittgenstein and others that all our knowledge is social in character, in that it presupposes mutually accepted conventions and necessarily takes place in a social context, requires a common language etc. - is applied to scientific knowledge in particular.

Again, there is the philosophical assumption espoused by sociology that since everything in human culture is social in character and so explicable in sociological terms, science must also be susceptible to sociological explanation.

All of these ideas have contributed to the emergence in the mid-1970s of a school of thought which sees science as being as socially shaped and constructed as language. Richard Whitley and Michael Mulkey in England, David Bloor and Barry Barnes and Donald McKenzie of the Science Studies Unit in the University of Edinburgh, Bruno Latour in Paris, Steve Woolgar and Karen Knorr in the U.S., are some of the main scholars belonging to the social construction of science school.

#### Plusses and minusses

The idea that science is socially constructed and serves (often concealed) social purposes has helped to demystify science (and scientists) and to put them back into the context

of human culture and to remind us that science is a human activity. But the big question is how far one can press the idea that science is a social invention? If 'objectivity' and 'truth' are myths or fictions does this not lead to a position of radical relativism (thus we could not say that Boyle's Law is true in that it states certain objective facts about nature: we could only say that it reflects a certain constellation of forces in our society. The 'truth' of Boyle's Law is therefore 'relative' to our society). Again, if the social construction of science thesis is accepted then it is difficult to account for progress in science since this presupposes that we can judge a scientific theory to be more adequate or true-er than its predecessor i.e. gives a better account of the facts.

How can we retain the valuable insights of the social construction of science thesis and at the same time escape the spectre of relativism? Voilà la question!

### 3. Laboratory Life:

Attempts to investigate communities of scientists in a sociological/ anthropological way. Anthropology has been concerned in the past mostly with technologically simple, pre-literate societies and cultures: it has focussed upon the myths of such societies, their rituals and ceremonies, their symbolic behaviour, the elaborate frameworks of meaning' they set up, their complex forms of social classification and organisation. Making due allowances, scientific communities can also be investigated in an anthropological way - looking at their prevalent myths, the 'rites of passage' in the scientific 'tribe', interpreting the symbolic behaviour of scientists, analysing their social networks etc.

The best known of recent essays in the anthropology of science is the study of the community of scientists at the Salk Laboratory at La Jolla by Latour and Woolgar in their book Laboratory Life Studer and Chubin have also investigated the 'culture' of cancer research in their book The Cancer Mission: Social Contexts of Biomedical Research. Again, there have been quasi-anthropological studies done on particular historical developments in science, such as Donald McKenzie's study of the emergence of statistical theory in Britain at the beginning of this century and Pnina Abir-am's essay on Jacques Monod's directorship of the Pasteur Institute in Paris. June Goodfield's

recent book on the career of a woman scientist, and McCormach's fictional evocation of the life of a German classical physicist in the early years of this century, are also in the same vein.

What all of their works emphasise is the social context of scientific research - the macro social context of the society and culture outside the laboratory and the micro social context of the laboratory or research institute itself. What is produced by the laboratory or research institute is the result of complex social negotiations which determine what is to be non-acceptable as scientific 'fact'; what is seen to 'good' science, what is to be judged as 'fundable' science.

#### 4. The Deakin/Hall Institute Project:

The Social Studies of Science unit at Deakin University has begun an anthropological/sociological study of the community of scientists at the Walter and Eliza Hall Institute of Medical Research in Melbourne - a project which has the enthusiastic support of Sir Gustav Nossal, Director of the Hall Institute. It is hoped that a study of such a group of research scientists engaged in work in the volatile field of immunology will enable us to test some of the hypotheses put forward by the social construction of science proponents.