

Ravetz, Jerome R.

[The problems raised by...]

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Tekst jest udostępniony do wykorzystania w ramach dozwolonego użytku.



B. M. Kedrov

I support the lecturer's statements that: a) the history of science and technology is also a science and must not be reduced to a simple description of facts, b) the applied sciences are not a secondary thing derived from the "pure" sciences, c) all sciences are united, and consequently the history of science ought to comprise the social sciences as well.

It is however necessary to establish a criterion for determining the moment when a given branch of knowledge turns into science. This is a complex, long and many-sided process implying the fulfilment, at least, of two conditions: 1) formation of a fundamental idea conveying the peculiarity of the subject being studied, and 2) working out of a particular research method, adequate to the subject of a given science. In its fuller form, that criterion includes: 3) the creation of a scientific theory generalizing the experimental data and helping to separate science from fiction and facts from inventions, and 4) the discovery of a single real law, on the base of which the explaining of phenomena observed and the predicting of new phenomena would be possible. In applying that criterion to chemistry, we ascertain that the process of its becoming transformed into science took more than a hundred years: it was Boyle (*Sceptical Chymist*, 1661) who initiated the said process, and Lavoisier (*Traité de chimie*, 1787) who completed it.

After applying that criterion to social sciences, we find out that they became a veritable science not earlier than in the middle of the XIXth century, this process being linked with the name of Karl Marx. Up to that very moment, there only were separate elements of the future science on society. It is therefore not to be considered that the social sciences had appeared earlier than the natural ones.

J. R. Ravetz

The problems raised by Professor Suchodolski cannot be solved this week, but they cannot be ignored. Until recently the history of science was little more than the chronology of innovations in pure natural science. Now we know that science is a social activity, and we must consider all its manifold relations with the practical, social and intellectual life of society. But where are we to draw the line? If social science should be considered along with natural science, why not also classics, jurisprudence, and even theology. Many members of this Symposium are atheists, some are militant atheists. Should such among us treat the

history of theology with respect? It might seem so; the interaction of science and religion at several critical points is well known. Also for several centuries theology was more of a *Wissenschaft* than was the exploration of the natural world. I cannot answer this question concerning theology; I use it as an illustration of the deepest problem raised by the wide perspective of Professor Suchodolski.

There are also practical problems in this new extended view of science and its history. With so many different disciplines demanding consideration must each of us become a universal specialist? Or must we all apply the tactic of the "massed typewriters" of much American scholarship! A possible solution to this problem was suggested some years ago by our colleague Dr Gella; if one investigates well chosen problems rather than trying to accumulate facts, then one finds it possible to achieve sufficient competence in neighbouring disciplines to use evidence to good effect.

L. Szyfman

Le professeur Suchodolski dans son excellent rapport a justement posé la question de l'unité des sciences naturelles et des sciences anthropologiques et sociales. C'est bien vrai que l'histoire des sciences sociales, anthropologiques et naturelles doit être incluse à l'histoire générale de la science et que les sciences naturelles ne sont pas moins exposées aux influences idéologiques, ainsi que politiques, que les sciences sociales. Il n'est pas difficile de citer des exemples pour cette thèse. Il suffit de se souvenir du sort historique des théories de Lamarck, de Haeckel et des autres éminents savants pour comprendre la nature de ces influences.

Comme nous a montré, par exemple, M. Franck Bourdier de Musée National d'Histoire Naturelle à Paris, Georges Cuvier, adversaire le plus fervent du transformisme croyait lui-même à l'évolution des êtres vivants, mais à cause des motifs politiques et idéologiques il combattait impitoyablement les idées d'évolution. Je ne veux pas dire, que c'était la seule cause du "fixisme" de Cuvier, mais qu'elle jouait chez lui un rôle assez important lorsqu'il fallait approuver ou désapprouver une théorie.

Nous voyons donc, que toutes les théories révolutionnaires — sociales, politiques, scientifiques dépendent de certaines lois analogues. Découvrir ces lois générales, communes aux toutes les sciences, est un devoir des historiens de la science. Mais en cherchant les lois générales auxquelles sont soumises toutes les sciences, il faut éviter le danger de remplacer la tâche essentielle de l'histoire de la science — c'est à dire