

# Dobrov, G. M.

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## [Yesterday and to-day our Symposium...]

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Tekst jest udostępniony do wykorzystania w ramach dozwolonego użytku.



*M. Władyka*

On a demandé dans la discussion à partir du quel moment nous pouvons parler de l'histoire de la science — donc on a posé le problème du commencement et de l'origine de la science. Il me semble qu'il faut mentionner ici la théorie de l'école sociologique d'Emile Durkheim.

Or, Durkheim est d'avis que la science est une chose sociale. Il en est ainsi pour la religion qui — d'après Durkheim — est un fait "éminemment social". C'est dans la religion, c'est-à-dire dans les premières représentations collectives d'une société donnée: dans sa cosmologie, dans ses représentations sur l'origine du monde, sur l'origine de l'âme humaine et son sort posthume — qu'il faut chercher les premiers éléments de la science et de la philosophie. Au cours de l'évolution sociale, la science et la philosophie remplacent peu à peu la religion. En ce qui concerne la technique, c'est dans la magie qu'il en faut chercher l'origine.

La théorie de Durkheim fut dépassée et sa valeur fut mise en doute. Mais il faut le dire, elle possède un aspect juste et intéressant qui peut inspirer la réflexion sur la science et sur ses origines.

*G. M. Dobrov*

Yesterday and to-day our Symposium carries on the discussion about whether it is or it is not worth while to extend the history of science over the contiguous branches of knowledge. In connection with the theses advanced in the interesting lectures of Professor Suchodolski and Professor Daumas I should like to emphasize the idea that irrespective of which point of view will triumph the main thing for us was, is and will remain a greatest possible extension and development of just those very aspects of the history of science and technology which constitute its specific distinction as a peculiar form of scientific knowledge.

One of such major aspects is — in my opinion — the active participation of the historian of science and technology in the prognostication of prospects of scientific-technological progress. It seems that the notion "scientific-technological prognosis" can be determined in the following way:

The scientific-technological prognosis is a logically substantiated information on the future of science and technology, the form, the contents

and the probability of which are defined by: precedent generations experience which found its expression in the established regularities of the development of science and technology; knowledge and ideas inherent in the historical epoch in which the prognosis is being worked out; possibilities, the realization of which depends on future generations.

At present, the archives of prognoses are exceptionally rich. In order to make a segregation of this material, valuable for the historians of science and technology, into kindred methodological groups, it was necessary to introduce the notion of three "levels of scientific-technological prognosis".

Prognoses of the first level. They are meant for about twenty years ahead and start from the requirements of practice and the possibilities of science and technology which have become entirely formed to-day. It is very important to emphasize that in the prognoses of this group there are present, as a rule, not only qualitative, but also quantitative estimates. In case of a society developing on planned lines, those prognoses are of an objective character. They can be called perspective plans. In order to illustrate the possibilities of our science I shall adduce some results of historico-technological research made use of in the prognoses of the first level.

My colleagues working at the Ukrainian Academy of Sciences attained some practical results illustrating what possibilities are at the disposal of the historians of technology to contribute to the prognoses of the development of technology for the next future. They arose in connection with the fact that when making a historico-technological analysis (when generalizing the construction experience) of determined technological means we always strive for elucidating concretely the following 4 moments: a) regularities and progressive tendencies established in the given domain; b) genuine causes of the fact that one or another technological solution was at one time recognized as unsuccessful and remained forgotten and little known; c) possibilities of combining and utilizing any particular progressive ideas inherent in the technological solutions which deservedly went away into the past; d) ideas being of interest for the given kind of technology which can be expressed according to the association and analogy with the concrete experience of the present-day technology (in the broad sense of this notion).

On the base of such an approach, for instance, one of our young colleagues (B. Sukhov), who studied the history of the development of electro-measuring instruments, has formulated six suggestions and technological ideas recognized as perspective and practically valuable.

They are registered, now, in the appropriate patent documents and are widely adopted in practice.

I have had occasion myself for the last 13 years to deal with different aspects of the history of machines for coal mining. The following can be regarded as one of the results of that work. On the one hand, there have been specified and concretized the demands made in different specific conditions of coal output. On the other hand, there has been worked out a generalizing table of technological ideas, formulated for the last 70 years in connection with the requirements of the concrete conditions of coal output. On that basis, it has been found possible to draw conclusions as regards the perspective problems of constructing new machines, and to formulate their future technological characteristics.

**Prognoses of the second level.** They are meant for a more distant future (about 50 years). The quantitative estimates give way here to the qualitative ones. The fundamental problems of science are being referred to more frequently than the concrete technological ideas. As the obvious restrictive limits of such prognoses there are not regarded the economic possibilities, but — usually — the laws and propositions of natural and applied sciences, more or less clearly formulated to-day. It is conditionally believed, besides, that those very propositions will not be — in substance — reconsidered in the prognosticated period.

As a concrete example of such prognoses, a single work of D. Thomson *Foreseeable Future* may be cited.

**Prognoses of the third level.** They are meant for a period of the next hundred years or so, and are, as a rule, of purely hypothetical character. The quantitative estimates are for the most part absent here and the qualitative ones are only confined to the limits of the most general laws of nature. One of the examples of such prognoses are, for instance, the works of the Nobel prize laureate, the academician N. N. Semenov.

Most of the scientists find it possible to apply to the prognoses of the second echelon the principle of extrapolation of curves of scientific development typical of our time (such, for instance, as have been constructed by our American colleague, Professor Price).

On the other hand, the prognoses of the third level must probably be approached in a fundamentally different way. In order to resolve the question of the future fates of scientific-technological progress, the scientists ought to examine thoroughly the influence exerted upon it by the following three fundamental groups of factors: a) social conditions of development and utilization of science and technology; b) limits of the development of science and technology imposed upon by Nature;

c) internal contradictions of the development of science and technology.

Alone this superficial survey of problems facing the historians of science and technology in connection with the task of progress prognostication shows — in our opinion — how absorbing and how grateful is the field of action of those who had chosen, like ourselves, the profession of historians of science and technology.

En outre a pris la parole mais n'a pas envoyé sa contribution  
*M. Daumas.*