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CONFLICTS IN THE BULGARIAN SCIENTIFIC SYSTEM IN TRANSITION TO MARKET ECONOMY

The changing social context of scientific activity in Bulgaria

Bulgaria has taken the first steps on the road to a market economy. The political changes were made in Autumn 1991, when the Union of Democratic Forces, a coalition of eighteen parties and political organizations, came into power. Now, the political system is a parliamentary republic. Only three of the political parties and coalitions which participated in the last election campaign are present in the Parliament. The narrow advantage of the leading political force has constrained the speeding up of the economic reforms. After long debates, the major laws on land property, restitution and privatization were adopted. However, privatization is proceeding very slowly – at the moment about 95 per cent of all property is owned by the state.

In a post-communist country, there is a tendency to adjust to the requirements of a

market economy by pursuing restrictive fiscal and monetary policies. In Bulgaria, the traditional market areas were lost, and there are huge internal debts. Therefore, production decreased by 23 per cent in the first half of 1992. Unemployment is increasing rapidly, especially among the educated and younger population.

Compared with the R & D indicators of other countries, Bulgaria has an exceedingly large manpower in science and the scientific services. According to international statistics, it takes tenth place in the number of scientists and engineers engaged in R & D per labor force (International Science..., 1991:45). During the 1980s, expenditures on R & D made up 2.7 – 2.9 per cent of the GNI (Nauka i technicheski progress...:8). The economic crisis has created unfavorable conditions for R & D activities. In the beginning of the transition period, the heritage of the centrally planned and directed system of research was subjected to sharp criticism.

Table 1. Scientists engaged in R & D in 1980–1991 by scientific field

Scientific field	1980		1985		1990		1991	
	number	%	number	%	number	%	number	%
Technical sciences	7 641	34	10 208	38	12 905	41	10541	36
Medical sciences	4 785	21	4 492	17	4 573	14	4 917	17
Natural sciences	3 769	17	4 490	17	5 459	17	5 272	18
Agricultural sciences	1965	9	2 126	8	2 089	7	1 930	7
Social sciences	4 441	20	5 575	21	6 678	21	6 400	22
Total	22 601	101	26 891	101	31 704	100	29 060	100

The policy of restrictions began in 1990. The special funds for industry R & D activities were abolished and many sectoral research institutes were closed down. In 1991, the reduction of academic staff at the universities and academies was about 10 per cent. As a result, the total number of scientists in the country was reduced by 8.4 per cent (Table 1). The reduction was greatest in the technical sciences, due to the dominance of industrial research, which has been affected by the "brain-drain" phenomenon towards business and overseas opportunities.

In 1992 the restrictive policy was extended to other fields of academic science. For instance, the Bulgarian Academy of Sciences was expected to reduce its personnel by about 15 per cent (about 2 000 people). Five institutes in the social sciences have been closed down, which makes up more than 30 per cent of the personnel in the discipline.

Besides the financial difficulties, there has been a dramatic change in the public attitude towards science and scientists. Up until the present, this attitude has been very positive, with an emphasis on the important role of scientific activities in the development of the nation. This tradition has several historical and ideological reasons.

First, at the end of World War II, Bulgaria was one of the least industrialized countries in Europe. Thus, there were very few institutions with a scientific heritage. The oldest one, the Bulgarian Academy of Sciences, was founded in 1869 as a learned society. In 1945, most of its 200 members represented the humanities and the social sciences. In the post-war period of nationalistic "ren-

aissance", science and education were regarded as important tools for industrialization, for strengthening the national identity and for placing the country in the context of European civilization (Boricev, 1989).

Secondly, science had a privileged position in the totalitarian period. The promotion of science was the responsibility of the state, and science was incorporated into the basic ideology of the communist party.

Thirdly, for the elaboration of a systematic science policy, the broader international context was regarded as favourable for extensive scientific development. This "golden age of science policy" was an expression of the mechanistic conception of the relations between big science, the powerful state and welfare society. Therefore, the imitation of the science policy of the superpowers was accepted as the main strategy (Simeonova, 1988). All these elements created a positive social environment for the scientific system, and the number of scientists grew from 5 000 in 1962 to 82 000 in 1989.

Today, there is a need to adapt to the new goals of a post-communist society on the individual as well as on the institutional level of scientific activity. A substantial difficulty in this re-orientation is the simultaneously ongoing transformation of industry and of the economy, especially as it lacks any long-run strategy. The lack of nodes between private industry and research and the inability to allocate corresponding funds prevents the achievement of a satisfactory balance between public and private support for science. The crisis of science policy is also related to a re-assessment of the priorities in economic development of the past decades, which are

now regarded as inappropriate in view of the country's natural resources.

On the other hand, the legitimization principles of science that were part of the rhetoric of socialism have lost their relevance for the scientific community. Internationalization of scientific and technological development is often used as an argument in anti-scientific claims.

In this situation, survival has become the main goal for the scientific community. Nevertheless, the strategies used are far from an active adaptation and from a restructuring of the research fronts. Mostly, they are defensive and conservative. As a consequence, the scientific community is in danger of disintegration.

The "White Paper" and the institutional conflicts in science

In the middle of 1992, the reorganized Ministry of Education and Science published its program for "... the trends and main stages of reform, concrete programs and legislative initiatives" under the title "White paper about education and science in Bulgaria" (1992:4; see also Simeonova et al., 1988). The main focus of the program is the further development of the institutional system of research that has long been the subject of lively public debate. Similar debates have been going on in all post-totalitarian countries (Balazs, 1992: 93). In these countries, the scientific system has a specific institutional structure. The academies of sciences are the organizations for basic research. The universities are mainly teaching institutions with relatively weak research activities. The rivalry between these institutions was not so manifest in the past. Now, as they are managed by different organizations, this rivalry tends to create deep confrontations.

Bulgaria has 33 institutes of higher education. The University of Sofia, founded in 1888, is relatively young. Because its professor staff was educated at western universities, it followed the pattern of Western European education, with close linkages to re-

search. This development was interrupted after 1944 when most of the professors were pushed out or transferred to the Academy of Sciences. At the Academy they founded scientific schools, attracting promising students, and were fairly successful in establishing international contacts. Having strong governmental support and a well-developed infrastructure, the Academy of Sciences was considered an elite research organization. In contrast, the universities and high schools were involved in teaching and applied research, based on contacts with industry. For instance, in 1988, more than 67 per cent of the universities' research funds were channelled through such contacts.

At the present, a new institutional structure for fundamental research is being launched in order to adjust to the model of the advanced western countries. The re-valorization of the universities is imposed by the growing role of education in the transition to a market economy. Of equal importance are the speeding up of the transfer of scientific achievements to education and the mobility of the research staff across the university departments.

The criticism towards the Bulgarian Academy of Sciences and towards the other Academies (of medical and agricultural sciences) stands on double grounds. Firstly, large scientific bodies are considered as unpromising structures because of their tendency towards bureaucratization and over-centralization. Secondly, the existing academic institutions leave little room for competition, and by monopolizing research resources, they form a barrier to new science policy aspirations.

The White Paper (1992: 123–124) expresses the leading ideas clearly: "In accordance with international tendencies, fundamental research will be transferred, step by step, to the universities and high schools. Therefore, it comes naturally to close down the Medical and Agricultural Academies and to reduce the Bulgarian Academy of Sciences to minimum size, in order to achieve similarity with the academies in the countries with a developed market economy".

The counter-arguments of the academic

community reflect the conflict caused by the policy pursued. According to them, the academy of sciences is not a "socialist invention" unknown in advanced market economies. Examples of such academies are the Centre National de la Recherche Scientifique and, in Germany, the Max Plank Society. Furthermore, the symmetry between the type of research and between the type of performing institution tends to be overlooked: the diversification of research activities plays a major role in the institutional strategy, and it is not only universities that are involved in fundamental research in the advanced market economies. Knowledge production has become a substantial part of industrial research and different state organizations and research centers contribute to its national concentration and specialization (Guenov, 1992).

Moreover, the international visibility of Bulgarian science is mostly due to the publications by researchers of the Bulgarian Academy of Sciences. They make up 55 per cent of all Bulgarian publications in international journals, in spite of the fact that only 15 per cent of the national manpower in science is employed by the Academy. Finally, it has been put forth that the post-graduate education at the institutions of the academy is no less effective than at the universities.

It seems that at least two aspects of the future development should be emphasized. Firstly, the transformation process should strive toward less bureaucratization. Lessons from the past show that rough administrative intervention in the scientific system has negative consequences. For instance, in 1962 the Academy of Agricultural Sciences was abolished and its institutes were dispersed in different cities, with the aim of intensifying their service function. Actually, very few of the researchers moved with the respective institute. In 1982, the Academy was re-established, but the development of the field had been badly damaged. Still, the centralist inertia is very strong and the self-regulative capacities of the scientific community are treated with mistrust.

Secondly, there is a need to assess the

models adopted from the western market economies and from some of the former socialist countries. For instance, the radical approach used in the re-structuring of the scientific system of the former GDR is often quoted in the argumentation of some science policy authorities. Other prefer to refer to the situation in Hungary, which points in the opposite direction. In both cases, comparisons lack the basis of a necessary contextual analysis. Institutional practices in science in the western developed countries are also subject to evolution. The shift towards an innovation policy, (Salomon, 1990), raises new problems of adjustment for research institutions in the small countries, oriented more to the future than to the past. In the light of this trend, the position of the Bulgarian industrial research units has received insufficient public attention. The same is true for the institutionalization of academy-industry relations.

The rivalry between various scientific fields

As a result of the restructuring process of the scientific system in Central and Eastern Europe, with its main focus on the reduction of the scientific potential, there is a growing need to evaluate both the quality of research and the societal demand for it. The evaluation is determined by political decisions and it is done as part of the general economic, political and social planning process. The broader, international context of research has to be stressed, because these countries have become more open to the free flow of information, researchers and products.

When evaluation is used as an instrument for the reallocation of resources, it easily becomes the focus of a public debate on science and scientists in general. This debate involves practically the whole scientific community. Partly it is due to the adopted bottom-up approach: research units are asked to elaborate specific indicators and criteria, relevant to the field and type of activity, before the next step – the setting up

of a unified system – will be approved by the Supreme Commission of Accreditation.

The amounting conflicts around this procedure confirm the observations that the attitudes of scientists towards evaluation methods, criteria and indicators depend on differences between scientific fields (Stolte-Heiskanen, 1991; Hemlin and Montgomery, 1990; Jimenez and Escalante, 1990).

In Bulgaria, the concept of scientific and technological revolution coincided with the industrialization process and was included in the program aiming at the speedy growth of the technical sciences. Between 1970 and 1990, the number of scientists in this field has grown from 4072 to 12905 (by 317 per cent). At the end of 1991, more than 20 per cent of the research staff of the Bulgarian Academy of Sciences was in the technical sciences.

After the collapse of the of the contract system in the technical sciences, a new strategy was adopted. In order to cope with financial difficulties, many technical institutes set up firms and small business enterprises. However, this approach, which elsewhere is regarded as a normal evolution of academic institutions (Etzkowiz and Peters, 1988), was rejected by the Bulgarian academic community as a “degradation” of academic norms.

The attempts to reduce scientific activity to fundamental research in the “hard” natural sciences can be seen as an uncritical implementation of the evaluation criteria adopted in the scientific centers, with big science orientations, cultures and resources.

The over-ideologization of science in the previous period raises many difficult questions. It cannot be denied that different scientific disciplines contributed in various ways to the ideological premises of the ruling communist party. Therefore one can ask, whether it will be possible for some scientists, institutes and fields to participate in the transformation of society towards more pluralistic social, political and economic structures. For instance, the manipulation of national history, performed on the basis of “scientific” argumentations, and followed by nationalistic

intolerance since 1984, has been seen as a symptom of a breakdown of research ethics.

The social sciences in Bulgaria have been dominated by the Marxist-Leninist ideology. Today, a lively discussion is going on about how to make the necessary ideological shift. Scepticism on whether a reconceptualization of social phenomena can be expected from the same “substrate”, i.e. the same institutes, scientists, etc., raises complex issues. Looking back to the development of the analytical tools in such fields as economics, sociology and political science, one can observe a substantial change in the last 10–15 years: a growing importance of the international flow of information, especially from the Western countries.

Actually, behind the rhetorics of the socialist society, a permanent eye was kept on the experiences of the advanced western countries. To some extent, these experiences were used to correct the strategies and tactics of decision-making. For example, the social sciences were involved in the study and implementation of several management technologies. The so-called “perestroika” period was a time of intense activities in the establishment of firm organizations, bank systems and joint-ventures with western companies.

Many international experts consider the social sciences as a very important field in the transition period. Along with the deepness of the changes, social relations and structures are coming to the fore. In other Eastern European countries, the reaction to the challenges has been to intensify the research potential in the field (News Letter of HAS, 1992). In Bulgaria, the opposite policy has been pursued by a 40 per cent reduction in 1992 at the academic institutes and by the closure of almost all sectoral research institutes for applied social sciences.

The social structures of science under the pressure of restrictive policy

The general claim of “social harmony” in the totalitarian states was reflected by the silence

of the scientific community over gender and generation conflicts. The latter was less evident twenty years ago, but the tendency is remarkable in the process of "ageing" of research institutes and the slowing-down of the extensive development of R & D. The unfavourable social context of science and the struggle around the "heritage" has added to the intensity of the present debate on the subject.

The present development in science is called a "revolution of docents", stressing the fact that the upper strata of the scientific community is practically isolated from the restructuring of science. As regards the new General Assembly of the Bulgarian Academy of Sciences, only seven of all 50 academicians and 13 of all 84 member correspondents were elected, which makes up 10.5 per cent of all members of the Assembly, while the docents' share is 48.2 per cent. Previously, the membership in this supreme body was the exclusive privilege of the "members of the Academy".

Tracing back the scientific career of many people in high scientific positions shows the negative effect that the breakdown of scientific traditions in the country had. Institutional growth was fast, opening up many scientific opportunities with low quality requirements. The strong polarization of research activities and university teaching closed the door on politically "unreliable" people despite their professional capacities. The context of the cold war generated fast professional career advancement, sometimes not corresponding to internationally approved standards.

The role of the scientific establishment in a small country is another means to analyse the conflicts. In a centrally planned economy, there is only one possible sponsor for science – the state. The lack of alternative sources for financing increases the power of the scientific establishment. It not only monopolizes the leading administrative positions, but it has become the final source of legitimacy and recognition of the achievements of younger scientists. In the last years, conservative attitudes have been manifest

in the tendency to preserve the structure of the research fronts, to use "personal" biases in resource allocation, etc.

An attempt to provide young scientists with more possibilities through the democratization of scientific activities is one of the main features of the reorganization of the Bulgarian Academy of Sciences. The recently adopted Charter of the Academy divides the functions of the academic community into two parts: the Academy as a learned society in which the academicians and the member-correspondents have their traditional advisory role, and the Academy as a research center, responsible for the research activities of all institutes incorporated in it. The newly adopted age limits for administrative positions are another measure in the same direction.

Gender issues has also become a new source of conflict in the scientific community. Female representation in science is relatively high in Bulgaria: 1991, about 40 per cent of all researchers were women. Their share exceeds 50 per cent in some fields, such as the humanities and the medical sciences. The gender distribution by scientific degree confirms the substantial role of women in science: they hold 38 per cent of all PhD and 14 per cent of Doc. Sc. degrees. (Nauchno-technicheska i razvoina...1991:14–17).

It is broadly recognized that the economic difficulties of the post-communist countries are having a detrimental effect on women's position. In Bulgaria, about 70 per cent of the unemployed are women, and business managers prefer in 75 per cent of the cases to dismiss women rather than men (Katsarkova, 1990).

The general attitude is very similar in science. Although professional criteria are considered as decisive for promotions and career opportunities, female scientists hold low positions in the administration and management of research units and are weakly represented in research councils, on editorial boards, etc.

The restrictive science policy has resulted in a 15 per cent reduction of the research

staff of institutes and in a substantial decrease in the number of research posts for young scientists. Women are easily in the first range of dismissed researchers and find it difficult to get a research post. Another way to push them out is retirement. Until recently, women had no access to the privilege of senior researchers to retire later. After a sharp reaction, a compromise was made: "careful examination of each case by the respective research council" was recommended.

As a result of this new situation, academic women show a growing interest in women's organizations aiming at the protection of their professional rights, such as the recently established Inter-University Women's Association.

Science and technology policy in the transition period

It is obvious that S & T policy is not the primary focus of the state bodies, regardless of all the negative implications of the deterioration of science. The "brain drain" among the younger and more talented researchers into management and industry is an indication of the loss of prestige and attractiveness of science. The lack of policy is labelled "autonomy" of research institutes in contrast to the previous state intervention in scientific affairs. One reason for the current state of affairs is the misleading conception of the state's role in knowledge production in a market economy as being necessarily "demand-supply" based.

In the last two years, the international scientific community has strongly emphasized the problems for scientific development in the post-communist countries. The joint efforts of the UNESCO Department for Science and Technology and the International Council for Science Policy Studies resulted in a short-term project on S & T policy in the transition period. The main recommendations to the governments of the countries in question concern the following issues: adaptation of the legal system and of the institutional set,

reorganization of the research policy process, integration of the national scientific community with the international one, etc. Many of the lessons learned in S & T policy in the advanced western countries are taken into account in these recommendations. One of the most important of these is that no ready-made decisions are available and that concepts and practises evolve continuously according to the specific conditions of the country.

In order to solve the amounting conflicts in the scientific community, the government should strive towards a better public acceptance of science. This has nothing to do with a simple propaganda effort, but rather the strengthening of the collective public awareness of the rules and practices of scientific activity: science as a long-run investment with a long pay-off time; science as having not only economic, but also cultural and educational impacts; science as a systematic activity which needs continuity and is antithetical to rough fluctuations in resources.

The tension caused by the resource shortage can be diminished by improving the innovation activities in research units. The relations between industry and the academic community lack a firm legislative and infrastructural basis. The role of the government as a third party has been approved in the Western countries. Many foreign experts visiting Bulgarian research institutes have noted the high endogenous capacities for innovation activity. However, effort to set up new organizational forms such as science parks or innovation centers have remained fragmented and do not enjoy the attention of the respective local and central authorities.

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