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SOCIAL SCIENCES

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To the Reader

The economic, social and cultural progress of modern society to a great extent depends on the development of science and technology, on the scientists' contribution to this development.

This issue opens with **R. Yanovsky***'s interesting study of the social responsibility of Soviet scientists and of their participation in communist construction.*

Soviet Scientists on Siberia

In response to our readers' great interest in the progress of the social sciences in Siberia we have asked the Siberian Division of the USSR Academy of Sciences for materials telling of that progress. In this issue we are glad to offer you articles by Academician **G. Marchuk,** *Deputy Chairman of the USSR Council of Ministers, about the efforts of Siberian scientists to find the best ways and forms of combining science and production and by Academician* **V. Koptyug** *on the system of training personnel for Siberia's scientific centres, higher educational institutions, industry and agriculture; an analysis of the main trends in economic research conducted at the Novosibirsk Scientific Centre in an article by Academician* **A. Aganbegyan;** *a survey of archaeological investigations in Siberia, by Academician* **A. Okladnikov;** *an article by Corresponding Member of the USSR Academy of Sciences* **T. Zaslavskaya** *devoted to the elimination of social distinctions between town and countryside on the example of Siberia, and by* **V. Boiko** *in which he discusses the social transformations in the destinies of the indigenous population of Northern Siberia and the Soviet Far East in connection with the construction of the Baikal-Amur Railway.*

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N. Babayev *and other authors describe the present level of the development of atomic power engineering and the system of reliable technical means for preventing the radioactive pollution of the environment.*

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In our next issue we plan to sum up our readers' replies to our Questionnaire published in **Social Sciences** *No. 4, 1979.*

We greatly appreciate your suggestions on the subject-matter and design of our journal and thematic collections, and will take them into account in planning our work.

We take this opportunity to wish all our readers and friends a Happy New Year, a lasting peace, happiness and success in their public activities for the good of the peoples of the world.

The Editors

The Work and Social Responsibility of the Soviet Scientist

RUDOLF YANOVSKY

In this age of the scientific and technological revolution, economic, social and cultural progress is increasingly dependent on the development of science. For it exerts a direct influence on the productive forces, stimulates all their components, not only technology, but also the human element, production and social relations. The main aims of Soviet science are the discovery of new sources of energy and raw materials, advances in technology and their application in industry, and solution of a number of cardinal economic and social problems.

This calls for a higher standard of research and its greater productivity. And of especial importance in this context is—besides improving the material and technical basis and organisation of research—the provision of adequate conditions for fuller manifestation of the researcher's creative abilities. In developed socialist society more favourable conditions are being created for the allround development of the individual in general and of the personality of the scientist in particular. And a fuller use of this powerful stimulating factor will carry us a long way towards fusing the achievements of the scientific and technological revolution with the advantages of socialism.

Socialist society's advance to complete social homogeneity cultivates in Soviet people features, traits and characteristics common to all classes and social groups. Taken in their totality, they determine the very essence of the socialist type of the worker, peasant and intellectual. But these common characteristics are inseparably linked with the distinguishing features of the various social and professional groups.

One of the principal traits of the Soviet character—and this fully applies to scientists—is a high sense of social responsibility. This is expressive of the collectivist principles that are intrinsic to all our social relations. The ideological foundation of the scientist's social responsibility in the period of developed socialism is the Marxist-Leninist world outlook. It is expressive of the fundamental requirements of social progress and of the vital interests of our people, and exercises a decisive influence on the work of the scientist. At the same time, the Soviet scientist's sense of social responsibility reflects the way of life of all sections of developed socialist society, and also certain specific features of science under socialism, the emergence of new links between science and other aspects of the society's functioning and its growing role as a factor of historical development of society.

The scientific progress, the principal orientations of scientific research and the character and social status of the scientist's activities, are determined by the requirements of social (and primarily economic) development. This is an objective regularity intrinsic to every stage of the evolution of mankind. But it acquires different forms in different social and economic conditions, and finds different manifestations at various levels of science as a social institution. It can act either as an exterior impetus or be ingrained in the consciousness of the scientist to become an inherent stimulator of his creative work.

In capitalist society, science is often exploited to solve social, political and economic problems in the interests of the ruling class, fix unequal distribution of benefits and values, justify military and political expansion and unequal international relations. The interaction of science with other areas of material and spiritual production and social and political institutions is here depersonalised. The dependence of science on social requirements, which stands out in institutionalised relations in capitalist society, is regarded by the scientist as a millstone on his freedom, as distortion of the humanistic nature of his work. And his reaction is often to escape from pressing social issues into "pure" science. And though in this day and age many Western scientists are coming to appreciate their personal responsibility for work in such fields as genetic engineering, nuclear physics, computer techniques, etc., capitalism creates many barriers to the scientist's meaningful participation in public and political life and manipulates public opinion to absolve the scientist of responsibility for the social consequences of his work.

The humanistic essence of science receives adequate expression only under socialism. For it is only under socialism that "the development of the capacities of the *human* species... coincides with the development of the individual".[1] The Marxist-Leninist

world outlook represents the progressive humanist ideals of social development and encourages the scientist to achieve these ideals in the course of communist construction. Marxism-Leninism helps the scientist to make optimal use of his creative abilities to promote social progress. He accepts the Marxist-Leninist world outlook precisely because he lives and works in the conditions of a socialist society.

The Great October Socialist Revolution demolished all social, economic, cultural, educational and psychological barriers and laid the foundation for a new type of intelligentsia drawn from the labouring population. This radically altered the social image and functions of the intelligentsia and cultivated in them new social traits. The growing role of the intelligentsia in mature socialist society is due to the fact that their interests coincide with those of the workers and farmers and that all classes and social groups are united by common economic, political and moral principles. The Preamble to the Constitution of the USSR notes that the working people "have consolidated the alliance of the working class, collective-farm peasantry, and people's intelligentsia, and friendship of the nations and nationalities of the USSR. Socio-political and ideological unity of Soviet society, in which the working class is the leading force, has been achieved."

These far-reaching changes in the social image of the intelligentsia, its place among the other sections of socialist society, apply also to those of its groups that are directly linked with science as a special branch of mental endeavour. More, it can be safely said that in our day the scientist epitomises the features and characteristics of the socialist intelligentsia as a whole. This should be seen in the context not only of the growing role of science in the life of society, but also in the light of the changed composition of the intelligentsia wrought by the scientific and technological revolution. Employment in science is increasing faster than in other branches of the economy, due to the growing technical complexity of modern industrial and agricultural production, their closer ties with science and the need for scientific substantiation of production.

The number of scientists, one of the more skilled contingents of our intelligentsia, has been increasing at a fast pace. Thus, on January 1, 1978, there were 1,279,600 persons engaged in research, teaching and other branches of science, a 50 per cent increase over 1970. Of this number 394,000, or 31 per cent, held doctoral or candidate degrees, and 224,000, or 18 per cent, held senior scientific positions. Women make up about 40 per cent of the scientific community.

Highly important, too, is the multinational character of this community, which includes representatives of all the Soviet nations

and nationalities. Again the figures: between 1960 and 1978, total employment in science increased 280 per cent, whereas the increase among Uzbeks was 330 per cent, Kazakhs, nearly 400 per cent, Moldavians, 500 per cent, and among such smaller ethnic groups as the Adyghe and Tuvinians 600 per cent, Karachai 660 per cent and Balkarians 1,000 per cent. A graphic indicator of the gradual convergence of our socialist nations is this growth of their intelligentsia, the bigger role it plays in the scientific and technological revolution, and the establishment of major scientific centres in all the Union Republics. To this should be added that the share of scientists in the working population is steadily increasing in all the Union Republics.

Another contributing factor in scientific progress is the consistently closer economic, scientific and technical cooperation of the socialist countries under the CMEA's Comprehensive Programme of economic integration. The transition from simple coordination of research to the dovetailing of research and development plans, and concentration on joint major projects, have enabled the socialist countries to build up an integrated scientific and technological potential, which is bound to play a steadily increasing part, along with national potentials, in formulating research policy.

Scientific contacts are also stimulated by global problems, that is, problems that concern the vital interests of the whole of mankind and can be resolved only by pooling the scientific and technical resources of all countries. These include environmental protection, rational use of natural resources, an adequate supply of food and fresh water, new energy sources, problems involved in exploiting the World Ocean and outer space, better public health facilities, etc. Soviet participation in international cooperation on all these pressing problems has vividly demonstrated the high world level of our research in the principal sciences. Our contribution to world science is a very weighty one. Our cooperation with scientists in capitalist and developing countries is producing tangible results and facilitating the continued scientific and cultural progress of the whole of humanity.

* * *

The growing social responsibility of the scientist is a key factor in enhancing the country's scientific potential and science's contribution to economic development. And social responsibility is understood as the sum total of professional, ethical and political views and actions directed at advancing science and using its findings in the interests of socialist society. Needless to say, social responsibility is not something constant, metaphysically ossified in

the person's definite indicators and parameters. On the contrary, both in substance and form it undergoes change with the development of society, with the complexification of links between science and practice, the growing scope and effectiveness of scientific discoveries, and the changing nature of scientific work.

The higher level of scientific and engineering facilities needed by industry, and the new research methods have radically altered the working conditions, the content and motivation of the work, professional orientation and skills of the scientist of today. His expertise covers a wide range, for his vision extends also to the principles and methods of kindred sciences. He is a man of broad interests and culture. Scientific work not only adds to his knowledge, but has a part in shaping his personality. For scientific work is a constant search requiring a keen intellect, imagination and ability to grasp the very essence of a problem and assess the practical value of its solution in the building of communism. In developed socialist society, scientific work is a form of public activity that enables the scientist to apply his multi-faceted creative abilities.

Among the principal factors in shaping the scientist's personality special mention should be made of the changes both in the content of work and in the way science is linked with production. The scientific and technological revolution has made it possible to automate experimental work, thus giving research an industrial dimension and new forms.

Science goes back thousands of years, but it became a wide-spread profession only with the advent of the scientific and technological revolution. The cognitive process, the development of basic and applied research, experimentation and designing now largely require collective effort. We have reached a stage at which fundamental results cannot be achieved and major economic problems solved without integration and cooperation of research collectives and effective organisation of their work. This does not, of course, preclude—in fact presupposes—continued perfection of research by individuals. More, combining personal scientific interests with work on wider projects is a necessary condition for the continued development of science. But this poses a number of methodological, organisational and ethical problems.

New forms of organising research to bring it closer to practice are a distinctive feature of modern science. So much so, scientific institutions and industrial enterprises are becoming elements in a single scientific and industrial cycle. They are brought together by the need to find scientific solutions for production problems. This has led to the emergence of a number of effective forms of cooperation. One form, widely used by the Siberian Division of the USSR Academy of Sciences, is expressed in the formulas

"academic institute—enterprise—industry", or "group of academic institutes—enterprise—industry", "research institute—designing bureau and experimental units of ministries and other departments working under academic supervision", etc.

In his address to Presidents of the Academies of Sciences of the socialist countries, Leonid Brezhnev, General Secretary of the CPSU Central Committee, gave a high appraisal of the methods employed by the Siberian Division. He said: "The Siberian Division of the USSR Academy of Sciences has accumulated very interesting experience. The institutes under it have direct links with many sectors of the national economy and with many large enterprises. They have developed long-term programmes of scientific and technological cooperation and are carrying them out in a consistent way."[2] "It is necessary to go on ensuring that scientists actively help to fuse science with practice and thereby contribute to the growth of our country's productive forces",[3] Leonid Brezhnev said at a meeting of Party functionaries and economic executives in Novosibirsk in 1978.

The growing scope of scientific investigation and development requires closer permanent links with industry. And there are now permanent liaison facilities, designing bureaus, research institutes and experimental production units, started on the initiative of the Novosibirsk Regional Committee of the CPSU and the Presidium of the Siberian Division. The next step was the organisation of the so-called "Assimilation Belt" complex near the Academic township to help industry assimilate new technology. That is being done by the 25 research institutes, 11 specialised designing bureaus and the experimental works involved in the project. In this way the scientific complex is being converted into a scientifico-industrial one. The importance of this innovation goes far beyond the Siberian Division and can well become the backbone of future scientifico-production amalgamations. At present the Siberian Division conducts up to 40 per cent of its research in cooperation with industrial units or whole industries.

This science-cum-industry method is being applied at two state farms—Iskitim and Medvedsky. The idea is to help them implement the recommendations of scientific research. Let us take the experiment at the Iskitimsky farm, about 60 kilometres from the Academic township. For a long time it was one of the backward farms in Novosibirsk Region, and the task was set to turn it into a model farm employing the latest techniques. The experiment is being carried out by eight academic (mainly biological) institutes, the experimental works and several more organisations.

It is part of a long-range plan to boost crop farming, cattle raising, achieve higher economic indicators and improve cultural

and general amenities. The immediate goals are a study of soils, scientific crop rotation, mechanisation and automation of labour-consuming processes, use of the latest agro-technical methods and of computers, and improvement of the farm's residential area. Productivity has already sharply increased and there has been a marked improvement in general and cultural amenities.

The various forms of cooperation between science and industry presuppose not only optimal apportioning of financial and material resources between basic and applied research, and smooth coordination and management, but also, to a certain degree, a change in the very nature of scientific work. Orientation on comprehensive projects, on bringing research into industry makes new demands on the work of the scientist. He must see and gauge the practical value of promising fundamental researches and tie them in with concrete production tasks and the social, political and economic policy of the Communist Party.

Work in an interbranch research and experimental laboratory, designing bureau or integrated research team made up of scientists and production men, makes for a closer feeling of collectivism, for ability to combine personal and social interests and thus helps to broaden the scientific and political vision of the scientist in the process of contact with specialists in other fields. Another result of work on these comprehensive projects is the cultivation of a "taste" for tackling practical problems, and the ability to assess the practical value of basic research, give it a definite direction and, last but not least, a growing sense of one's responsibility for progress both in science and production. More and more often scientists become partners in production and production workers in scientific research. This reciprocal arrangement helps to obliterate differences between mental and manual labour, between the working class and the intelligentsia.

The scientist's responsibility to society hinges on the specifics of scientific work, on the place and role of science in the present-day world. And we are here dealing with responsibility not only to one's country, but to the whole of mankind, and not only for the introduction of science in industry, but also for the evolvement of progressive social ideas, the growth of society's spiritual potential; responsibility, also, for a world at peace, for the consequences of scientific experimentation that might do irreparable damage to human life. The scientist of our day is not indifferent to conceptions of man's relation to nature and to recommendations designed to harmonise that relation. This is part of the social function of science, of its responsibility to society. It is indicative of the organic fusion, now in process, of the natural and technical sciences with the humanities, with social and moral thought based on a uniform, scientific approach to world problems.

We thus have further proof that the enhanced effectiveness of scientific work, on the one hand, and the personality of the scientist and his growing sense of social responsibility, his philosophical, ideological and moral maturity, on the other, are not two independent parallel processes, but intertwined and interacting elements of one and the same process, and one that is indicative of the role science is beginning to play as a qualitatively new social force, both in its cognitive and humanistic aspects.

* * *

The priority given to the development of the personality is an outstanding feature of socialist democracy and of the state and legal system of socialism. And of paramount importance in this respect are the broad democratic rights, freedoms and obligations of the Soviet citizen. These include free tuition at all levels, universal compulsory secondary education, the right to engage in scientific research and make use of its results, etc. The USSR guarantees freedom of scientific, technical and artistic creation. Under socialist democracy, the state affairs directly involve the scientific intelligentsia, and its interests and requirements find expression in government policy.

In socialist society, there is a direct link between what it gives the scientist and what the scientist gives it. This has evoked criticism from our ideological opponents, who argue that the scientist must be free of all responsibility to society and the state. For, they contend, civic responsibility and civic duties tend to suppress his personal freedom in research. That view no longer meets with support among Western scientists, since realities are leading them to realise that the scientist must bear personal responsibility for the social consequences of his work.

Socialism offers optimal conditions not only for the researcher but also for his colleagues in executive positions to creatively apply their professional, and intellectual abilities. But socialist society makes a number of specific demands on the directors of research collectives. These include, above all, an understanding of the nature of the creative process, its connection with the general problems of modern science and the concrete socio-historical conditions of developed socialism. The Soviet scientist is a creator, organiser, mentor and public personality.

Scientific workers belonging to the Communist Party play a significant role in resolving socio-economic problems and are active in organisational and political activities, thus bringing to bear the advantages of socialist democracy and facilitating its progress. The 25th Congress of the CPSU noted a substantial

increase in the number of scientists in Party ranks. In fact, the Congress delegates included 103 full and corresponding members of the USSR Academy of Sciences, branch academies and of the Republican academies, and 442 holders of doctoral and candidate degrees.

The Communist Party has always helped shape the spiritual image of the scientist, the process of his ethical growth as part of the general system of advancing the social and ethical ideals of Soviet society.

The development and perfection of socialist democracy, with all the people, including the scientific and technical intelligentsia, participating in the process, represents one of the most essential characteristics of mature socialism.

This stands out in sharp contrast to the capitalist countries, where unemployment and social apathy are spreading to the stratum of highly skilled specialists in various branches of science. Many American scientists say that their society is in the throes of a profound social and political crisis that is eroding all democratic ideals, dividing the nation, demolishing its international prestige. Many Western scientists have come to realise that the bourgeois state cannot halt the crisis of bourgeois democracy. The crisis is having a devastating effect on the personality of the scientist by preventing realisation of his creative potential.

Bringing the Soviet scientific intelligentsia into social and political activity has greatly helped the emergence of an harmoniously developed personality and has made for more active creative effort. Multiform public and political activity by members of the Siberian Division collective is ample proof of that. In 24 of the 25 institutes, the Communist Party branch is led by holders of doctoral or candidate degrees. In Novosibirsk, 700 scientists have been elected to institute, district, city and regional Party committees, and 164 are members of the regional, city and district Soviets of People's Deputies.

The Siberian Division is doing much to popularise science by cultivating a feeling of respect for scientific achievement and overcoming a technocratic approach by some members of the intellectual community to the dissemination of scientific knowledge. This involves teaching the scientist to see his work in perspective, take a new approach and orient his research on the requirements of the economy.

The Division has also developed other forms of popularising scientific achievement: Science Days, Technical Progress Days, exhibitions, conferences, radio and television programmes, articles and other items in the press. The Siberian scientists are thus rendering account to the people and to the state, which is investing huge material resources in promoting scientific investiga-

tion. Besides, all these measures help to enhance the social activities of the technical intelligentsia.

The Division can also look back on rich cultural traditions. It would be hard to conceive it without its famous geological museum and museum of Siberian and Far Eastern culture, which traces the history of the peoples of Northern Asia, from the Urals to the Pacific. Many of its valuable exhibits were found by three generations of disciples of Academician Okladnikov. And these exhibits, located in Leningrad, the Far East and Western Siberia, are effectively used to popularise science, the Leninist nationalities policy and cultural development in Siberia.

The new forms of integrating science and production are a key factor of social progress in socialist society and of moulding the new man. Active participation in this process creates favourable conditions for realising the ideal of the harmoniously developed personality of the scientist, inseparable from his people both in social origins and social interests. He belongs to the epoch of developed socialism and this determines his social and psychological traits and character. Working for the benefit of science, education and technology, the Soviet scientists are making a weighty contribution to the economic, social and spiritual progress of the land of the Great October Revolution. This is no more than natural, for the Soviet state is in every way expanding opportunities for every citizen to apply and develop his creative abilities and talents for the happiness and prosperity of the entire people in conditions of peace.

NOTES

[1] Karl Marx, *Theories of Surplus-Value*, Part 2, Moscow, 1968, p. 118.
[2] L. I. Brezhnev, *Our Course: Peace and Socialism*, Moscow, 1978, p. 24.
[3] Ibid., 1979, p. 30.

Soviet Scientists on Siberia

Siberia's Scientific Potential

GURI MARCHUK

Siberia's vast natural resources are a key factor in making it one of the most dynamic regions of the USSR. Concentrated in Siberia—which accounts for about 40 per cent of Soviet territory—are nearly three-fourths of the country's mineral, fuel and energy resources, more than half of its hydro-energy resources, a sizeable portions of its non-ferrous metal ores, about half of timber resources, more than half of the country's fresh water, and 20 per cent of the arable.

This, plus huge undeveloped lands, has made for large-scale extraction and processing of raw materials, the establishment of energy- and water-consuming industries of a considerably higher standard than in other parts of the country.

But Siberia is not making full use of its natural resources. Economic development is inhibited chiefly by a shortage of labour power and basic production facilities. Yet even now it represents a powerful and effective economic complex.

It has been the consistent policy of the Communist Party and the Soviet Government to encourage priority development of our eastern regions. Thus, under the current five-year plan industrial output in Siberia is scheduled to rise by 50 per cent. Also these figures: Siberia will supply the entire increase in oil output, most of the increase in natural gas and aluminium, a sizeable portion of energy-consuming chemicals, timber, cellulose and paper. Huge industrial complexes are to be built there. Obviously, a high rate of growth of productive forces of Siberia and the Far East, and solution of new major economic development problems require much analysis and long-term programming.

The Siberian Division of the USSR Academy of Sciences has been systematically working on the development of the region's

natural resources. In fact, its establishment in 1957 was part of the policy of boosting Siberia's productive forces.

The Division has had to cope with a 3-in-1 task: comprehensive development of fundamental research, effective use of scientific findings in the economy, and training of personnel, both research and production. The Division was the first territorial branch of the Academy of Sciences, with its own institutes in the natural, technical and social sciences, and from the very start they have worked in close contact with kindred sciences.

At present there are in Siberia (from the Urals to the borders of the Far Eastern Region) 50 research units under the Division, employing 70 full members and corresponding members of the Academy, about 400 holders of a doctoral degree and over 3,000 candidates of science. Total employment is now well above 40,000. It should be noted that prior to the opening of the Division there was only one corresponding member of the Academy in the whole of Siberia, 40 doctors and 300 candidates of science. The progress made over the past twenty years is in large measure due to the attention the Soviet Government devotes to the eastern regions.

The biggest research centre, in Novosibirsk, accounts for about half of all the Division's research facilities. It has branches in Irkutsk (Eastern Siberian) and Yakutsk and Ulan Ude, the capitals of the Yakut and Buryat Autonomous Republics. Branches have recently been started also in Krasnoyarsk and Tomsk, and there are plans to organise research units in the industrial centres of Omsk, Tyumen, Kemerovo, Chita and Barnaul. Siberia will thus have a network of scientific centres under the USSR Academy.

Three years ago the CPSU Central Committee adopted a decision on the Division's work in promoting more effective conduct and use of fundamental and applied research in the economy and in personnel training. It noted that its fundamental and applied research had helped raise the region's scientific and technical potential and the prestige of Soviet science. It directly influenced the development of the productive forces, education and culture in the eastern regions and contributed to the organisation of Academy Divisions in the Far East and the Ural areas, the Siberian branches of the USSR Lenin Academy of Agriculture and of the USSR Academy of Medical Sciences, and also contributed to expansion of higher education.

Today, with the Division a powerful and mature scientific collective working in the forefront of Soviet and world science, the time has come to lay more stress on its overall task, namely, development of Siberia's productive forces.

In keeping with the decisions of the 25th CPSU Congress and of the CPSU Central Committee and Soviet Government, the Presidium of the Siberian Division has been concentrating

fundamental and applied research on the goals of the 11th (1981-1985) and 12th (1986-1990) Five-Year Plans and on the key problems of comprehensive use of Siberia's natural wealth.

Central to all the work of the Siberian Division is formulation of a long-term comprehensive development programme (known as Programme Siberia) composed of 30 detailed sub-programmes drawn up collectively by scientists, Party and government organisations and the heads of major enterprises in various parts of Siberia. They cover the crucial problems involved in optimal use of the region's mineral, land, forest and water resources, the organisation and upbuilding of major economic complexes, environmental protection and other equally complex problems. All in all, about 200 research, Party and government organisations are involved in Programme Siberia.

The main aim here is priority development of fuel and energy, and within this task attention is concentrated on allround study and optimal use of Western Siberia's oil, condensate and natural gas. Siberian scientists suggested that deeper strata contain Paleozoic oil. They have proved right and it is already being extracted in the Tomsk and Novosibirsk Regions. Paleozoic oil will give Siberia its "second wind".

Siberian and Far Eastern geologists and geophysicists are intensively prospecting for new oil deposits in Eastern Siberia, Sakhalin and the Far Eastern ocean shelf. Major oil and gas reserves have already been discovered in the Krasnoyarsk Territory, Irkutsk Region and Yakutia.

However geologists are meeting with formidable difficulties. Many are working in permafrost areas with practically unexplored geological structures, or on the Arctic ocean shelf. We are introducing new prospecting methods, including vibration techniques and seismic prospecting, for the classical methods, which played such an important part in the rise of modern geology and geophysics, are proving less and less effective. At the suggestion of Siberian scientists, our planning authorities have adopted a new strategy of prospecting in Eastern Siberia. Hitherto experimental drilling was confined to a few sources, now prospecting covers large areas.

A qualitatively new stage has begun in the development of the West Siberian oil complex. The main emphasis is on tapping the region's rich gas deposits, and gas is now being produced in large quantities in Tyumen Region and Yamal Peninsula (Urengoi, Medvezhye and Vingapur deposits). Gas reserves here are estimated at tens of trillions of cubic metres.

Siberian scientists are also investigating the conditions for piping gas from the Far North. And piping largely depends on

increasing the pressure and lowering the temperature of the gas and, of course, on rational location of compressor stations.

Petro-chemicals are listed for rapid and substantial expansion: the world's biggest petro-chemical combine is being put up in Tomsk and another giant in Tobolsk. There are also plans for expanding the Omsk and Angarsk refineries. Petro-chemicals are a high priority.

One of the biggest economic development programmes is in coal. In the current five-year period we shall bring into full operation the Kansk-Achinsk brown-coal field, one of the world's biggest, and it is destined to become the chief producer of fuel and energy for the whole of Siberia. One advantage is that the coal lies on the surface, to a depth of 20-30 metres, in some places even deeper. Its production costs will be near to those of natural gas, which is the cheapest of all fuels. The method used will be strip mining, with much of the coal going into power plants of unprecedented capacity to be built there. Annual coal output will run into hundreds of millions of tons. Cheap energy will be a magnet attracting energy-consuming industries, notably aluminium, electro-metallurgy, chemicals and so on. There will be enough electricity for substantial exports to other parts of the country.

A problem still to be solved is how best to utilise the ash and slag, those by-products of coal. Another cardinal problem is how to prevent air pollution. Both require intensive research. In cooperation with Krasnoyarsk University, the Division is working out the scientific principles of low-waste chemical processing of Kansk-Achinsk coal.

The Kuznetsk coal basin is playing a new and bigger role too. Originally it was planned to use Kuznetsk coal only for metallurgy. But now geologists and economists have revised their estimation of the area's coal reserves upwards, and plans are under way to use part of them for power production.

The research staff of the Division's Mining Institute has made significant progress in automating the prospecting and designing of mines. Computers play no small part in this by providing calculations of the depth and width of mines, optimal parameters of reserves, patterns and systems of mining operations, etc. This has raised productivity in mine designing by as much as 500 per cent. Furthermore, use of the methods devised by the institute cut capital construction by 70 million rubles and annual operating costs by 11 million, besides reducing the necessary labour force by more than 1,000 people and this at the Kansk-Achinsk combine alone.

Siberia and the Far East play a big role in the country's supply of non-ferrous and rare metals. Our scientists are working on plans for expanding output of ores and are devising more modern

methods of extracting valuable components. In particular, an entirely new technology for full processing of ores is now being tested. Another project is a new mining technique that can be used to bring out very deep deposits.

Division's geologists now have proof that ore deposits of the Norilsk type can be found far beyond the Norilsk area. This is of special importance in extending the supply of ores for the Norilsk combine. Scientists elaborate new technology for deep mining in the area, mathematical models for various lines of production at Norilsk.

Construction of the Baikal-Amur Mainline (BAM) is the prelude to intensive development of many rich deposits. For instance, the new coal basin in South Yakutia produces the best quality coal in the USSR, its energy coefficient being much higher than that of the Donbas and Kuzbas coals and four times higher than that of the Kansk-Achinsk product. Exploitation of these deposits requires solution of a number of scientific and technical problems. The South Yakutia coking coal is an excellent base material for the metallurgical industry, and Nature has itself provided the other components—rich iron-ore deposits and reserves of natural gas. It is thus reasonable to predict that this area will become one of the USSR's biggest metallurgical bases, and Division scientists will have the job of working out its structural principles.

BAM will also give us access to rich mineral resources, notably for non-ferrous metals. In Chita Region, alongside BAM, are the Udokan copper-ore deposits. Outwardly they remind one of a huge plate turned upside down, the ore hidden in the mountain and only the edges of the "plate" protruding to the surface. To get at the ore, miners will have to move tens of millions of cubic metres of soil and rock. This can only be accomplished with a new and most powerful type of machinery in combination with wide use of explosives. Besides, mining operations must satisfy stringent ecological controls. We shall therefore have to decide whether to process the ore at the mine or carry it to another location. Many foreign firms have shown an interest in the Udokan project.

In the north of Buryatia, near the BAM line, prospectors have discovered rich deposits containing as much as 18-20 per cent of potassium oxide and 21-23 per cent of aluminium oxide. This is the Synnyr ore field, and it can give us more than potassium or aluminium, for it also contains deposits of bauxite, the world reserves of which is rapidly nearing exhaustion, and nepheline ores cannot fully cover the demand of the aluminium industry. But here at Synnyr we have a potential source of raw materials for that industry, for Synnyr ore reserves run into billions of tons.

Scientists are now at work to devise methods of extracting alumina and potash fertilisers.

Soil specialists, botanists and biologists are studying the soil and flora resources on the western section of BAM and the Barguzin basin, with special attention to its agricultural use.

Another major asset, of course, is timber, its output constantly increasing. But here, too, there are many problems awaiting solution. For instance, more and more timber is used to produce cellulose, and this consumes huge quantities of water. But so far we have no reliable methods of purifying the used water and here the field is open to both scientists and managers.

There is also this important consideration: solution of such problems as raising the general productivity of the Earth's biosphere, protection of land and water resources, regulating the climate and creating conditions for stable and high harvest yields largely depends on rational use and reproduction of the forests that cover much of Siberia and the Far East.

The Siberia Forest Programme is designed to serve as the basis for a rational, economical and balanced exploitation and reproduction of these forests.

The Siberian Division and the Far Eastern Research Centre are doing much for the integrated development of agriculture, one of their aims being an abundant supply of meat, dairy products and vegetables for the population of the two regions. Working in conjunction with the Siberian Division of the USSR Lenin Academy of Agriculture, scientists are studying ways and means of raising agricultural productivity in Siberian conditions, devising new types of farm machinery and studying the problems involved in developing agro-industrial complexes.

Higher productivity in animal husbandry is linked with the evolvement of new breeds of meat and dairy cattle and a stable balanced supply of fodder. Cross-breed sheep and hybrid cattle adapted to the local climate have already been developed. The Division now plans to organise a genetic centre in the Altai region as a base for genetic improvement of Siberian fauna.

An important place in the Division's work belongs to environmental protection and rational use of natural resources. Of particular importance here is work in the northern part of Siberia, in the permafrost area, where ecological recovery is always difficult and slow. Scientifically grounded recommendations are being formulated for protecting Lake Baikal and the sources that feed it.

Much has been accomplished by the Division in compiling a fundamental prognostic memorandum on economic development up to the year 1990. This entailed analysis and prognostication of the main industries and industrial complexes, with particular

references to fuel and energy, metallurgy, chemicals, engineering, transport, timber, construction, etc. The memorandum also contains recommendations on social problems, above all labour resources. Special attention is devoted to central regional and inter-regional programmes that will strongly influence economic development, both regional and national, up to the year 2000.

A high growth rate in Siberia can be sustained only with the use of modern technology and maximum automation. This has the added advantage of reducing labour demands, which is especially important in sparsely populated Siberia.

In short, all these tangled problems require a significant contribution by science. This is particularly so considering that our aim is a sustained above-average growth rate, which can be achieved only by optimal use of the scientific and personnel potential of research institutions and a closer relationship between science and the developmental needs of Siberia and the Far East.

The research staff of the Siberian Division never relax their efforts to find more effective ways of combining science with production and putting scientific findings at the service of the national economy. One effective method is to concentrate the efforts of scientists on crucial problems whose solution can produce early results in one or another branch of the economy and thus yield a tangible economic effect. This principle is basic to the progress of science and technology.

The ties between science and the economy are manifold: research institutes work in cooperation with production units or a whole industry; the Siberian Division cooperates with the appropriate ministry, etc. The main form, however, is agreements between Academic institutes and industrial research organisations, and direct contact with the chief production units of a particular industry.

The USSR Academy of Sciences, its Siberian Division and its Far Eastern Research Centre have still much to do in promoting economic development, training personnel and providing scientifically substantiated analysis and recommendations on the social and economic development of Siberia and the Far East. And we are confident that this work will open new perspectives to our eastern regions.

Integration of Science and Education

VALENTIN KOPTYUG

A broad network of training personnel for research centres, higher educational establishments, industry and agriculture of Siberia has been created in Novosibirsk State University and research institutions of the Siberian Division of the USSR Academy of Sciences. At present more than 2,000 graduates of Novosibirsk State University (or about one-quarter of all the graduates of that university founded 21 years ago) work at the institutes and design offices of the Siberian Division of the USSR Academy of Sciences. Without such a system the scientific centres of Siberia and the Soviet Far East could not develop at the rate called for by the requirements of the rapid development of the productive forces in the eastern regions of the country.

The foundation of this system was laid by Academician Lavrentyev and his associates during the very first stage of the organisation of the Siberian Division of the USSR Academy of Sciences. The underlying principle of the system is *integration of science and education.* The Novosibirsk Scientific Centre—the Division's firstling—successfully combines the trends and forms of work in the sphere of school (and sometimes even pre-school), higher school and postgraduate education. Such a combination is a natural consequence of integration and it inevitably leads to the removal of interbranch barriers. The system of personnel training coordinated at various levels by the Presidium of the Siberian Division of the USSR Academy of Sciences, the Rector's Office of Novosibirsk University, the Scientific Council on Educational Problems, the Committee on Organisation of Scientific "Olympiads", the Council of Young Scientists, etc., is a uniform developing body, despite its subordination to various departments.

I would like to dwell on the contacts of Novosibirsk State University with the Siberian Division of the USSR Academy of Sciences, particularly with its research institutions, in the field of personnel training.

Interaction begins at the *level of work with school pupils.* One aspect of this work is the formation of the future student body of Novosibirsk University. The activity of this educational establishment, from its very inception, has been aimed at making a maximum contribution, through the sphere of higher education, to the intensive development of the productive forces and culture of the eastern regions of the USSR. One of the necessary requisites for solving this problem is the fullest possible involvement of the region's gifted young people in the sphere of higher education. This is by no means a simple task, because the general educational levels of the school graduates in big cities, district centres and villages differ considerably, due to a number of objective reasons. Meanwhile, the school pupil's stock of knowledge cannot serve as the only yardstick of his creative potential. It is more important to properly evaluate his or her analytical abilities, power of logic, competency to find original solutions to problems, and on the basis of that, help school leavers to choose their future careers. For this it was necessary to establish individual contacts of representatives of the system of higher education with senior formers in all corners of the vast Siberian region.

This task has been solved successfully by the joint efforts of the Siberian Division of the USSR Academy of Sciences, the Ministry of Higher and Specialised Secondary Education of the Russian Federation and the Ministry of Education of the RSFSR. During "Olympiads" (school-subject contests) sponsored by the Ministry of Education, the Committee of the Siberian Division of the USSR Academy of Sciences on "Olympiads", jointly with Novosibirsk State University, sends dozens of senior-course students, postgraduate students, University instructors and research associates of the Division's scientific research institutions to various cities of Siberia and the Soviet Far East to take part in organising city and regional rounds of the "Olympiads" and to hold talks with school pupils.

In 1968, a correspondence school in physics and mathematics for 8th- and 10th-form pupils of general secondary schools was opened at Novosibirsk State University, and in 1976 a chemical department of the school began operating. In the course of a year pupils have to fulfil six or seven assignments sent to them by post. The "Olympiads" and the correspondence school help discover talented boys and girls not only in large cities, but also in the remotest corners of Siberia.

The next step in this direction was the opening of a three-week summer physics-and-mathematics and chemistry-and-biology school in Akademgorodok (Academic township) organised by the Siberian Division of the USSR Academy of Sciences and Novosibirsk State University. It annually invites about 600 pupils of the 9th and 10th forms. The aim of the school is to consolidate the interest of boys and girls in the natural sciences and contribute to broadening their horizons. Eminent scientists and scholars deliver lectures at the school on the general problems of science, as well as on the social aspects of society's life. The experience of holding specialised courses during school holidays has also proved fruitful. Two such schools—of young geologists and young programmers—have been functioning regularly.

The physics-and-mathematics boarding school operating at Novosibirsk University since 1964 has played an important role in ensuring equal opportunities for schoolchildren to receive a higher education, despite an unequal standard of teaching in urban and rural schools. The "Olympiads" and the correspondence and summer schools help form the body of the boarding school students. More than 500 senior pupils (9th and 10th forms) are studying at this school annually. One-third of them come from small townships and villages. On the average, workers' and farmers' children account for 37 per cent of the school student body.

Highly qualified specialists from Novosibirsk State University and the Siberian Division of the USSR Academy of Sciences are invited to teach at the school. Among them are two doctors of sciences and 26 candidates of sciences. The school's learned council includes two Academy members, 5 doctors, 6 candidates of sciences. All this helps school students to broaden and systematise their knowledge in the general subjects and successfully pass entrance exams to higher educational establishments and attracts an ever growing number of young men and women. For instance, almost 2,500 school-leavers applied to Novosibirsk State University in the summer of 1979 for 800 vacant places.

Now let us see how contacts and cooperation are maintained between Novosibirsk State University and the Siberian Division of the USSR Academy of Sciences in the *sphere of higher education.*

The principles of organisation at Novosibirsk State University very much resemble the principles of integration of science and higher education applied at the A. F. Ioffe Physico-Technical Institute, USSR Academy of Sciences, jointly with the Leningrad Polytechnical Institute, and developed at the Moscow Physico-Technical Institute. The application of these principles for organising a system of higher education at the Novosibirsk Scientific Centre proved especially efficient thanks to the University's territorial proximity to various research institutes dealing with practically all fields of the natural, technical and social sciences.

This interaction is expressed, above all, in drawing highly skilled specialists from the Centre's institutes into the teaching of students. More than 400 research associates of these institutes, among them 12 academicians and 20 corresponding members of the USSR Academy of Sciences, give lectures, conduct seminars and practical work and consult students at the University. This form of cooperation, recommended by a decision of the Central Committee of the CPSU and the USSR Council of Ministers "On the Development of Higher Education and Improvement of the Quality of Personnel Training" (1979), indubitably contributes to a high scientific level of the teaching of students and brings the system of higher education in line with present requirements. Novosibirsk State University constantly conducts work on ascertaining optimum continuity and coordination of the basic disciplines; special courses are regularly revised.

The highly skilled personnel and the use of the material base of the research institutions of the Siberian Division of the USSR Academy of Sciences provide for an individual approach to every student at the closing stage of his or her studies. Each year about 600 students of the 4th and 5th courses are sent to academic institutes to do their practical and diploma work. The University demands that doctors or candidates of sciences be appointed as their supervisors and consultants and that they should be specialists in the student's chosen field. This creates favourable conditions for the mastering of methods and techniques of research work by the student.

As a rule, the subjects of annual practical works are further developed in students' diploma theses, which yields better results.

Of great importance is the fact that both annual practical work and diploma theses tackle not some far-fetched tasks but serious scientific problems. Due to that, future specialists begin to make a contribution to solving scientific, technical and economic problems, while still students. The institutes of the Novosibirsk Scientific Centre annually send to the printers some 200 or 300 articles and officially announce discoveries based on the results of students' diploma theses.

Students' work at research institutes solves another major task, namely, it destroys a so-called psychological barrier which sometimes prevents a university or institute graduate from adapting to the requirements of a scientific research institution. The two years spent by a student in such an institution doing practical work and preparing a graduation thesis not only give him an opportunity to familiarise himself with the life of this collective and take a direct

part in its activity, but also enables him to overcome timidity and diffidence.

The utilisation of the scientific potential and material base of the Novosibirsk Scientific Centre makes it possible for the University to promptly change the specialisation of students and quickly train specialists for new, important fields of science and technology.

A host of examples can be cited illustrating the fruitful character of the joint efforts of Novosibirsk State University and research institutions of the Novosibirsk Scientific Centre in attaining a high level of professional training of specialists with a higher education. In 1977, out of 319 certificates awarded at the All-Union Student Conference "Student and Scientific and Technological Progress", Novosibirsk University students received 150, including 66 with recommendations for their works to be published. In 1974, Novosibirsk and Moscow universities shared first place in the country for the best organisation of students' scientific research work. In 1977, Novosibirsk University students won seven medals awarded by the USSR Ministry for Higher and Specialised Secondary Education and two (of the five) medals awarded by the USSR Academy of Sciences.

In 1978, V. Litvinenko, a student of the physics department, was awarded a medal of the USSR Ministry of Higher and Specialised Secondary Education and the Central Committee of Komsomol for his work "Synchrobetatron Chromatic Ray Resonances". He was also awarded a medal of the USSR Academy of Sciences "For the Best Student Research Work in 1978". The first person to receive such a medal was I. Shestakov, a graduate of our University, now D. Sc. (Phys. & Math.). That very year V. Servakh, a student of the mathematics department, earned a medal of the Ministry and the Central Committee of Komsomol for his work "The Task of Calendar Planning in the Conditions of Limited Resources", which had a direct bearing on solving a number of problems of the economic development of the Baikal-Amur Main Line construction zone. All in all, Novosibirsk University students were awarded in 1978 eight medals and received 11 certificates of honour for their contribution in the all-Union competition of students' works.

Contacts and cooperation between Novosibirsk State University and the Siberian Division of the USSR Academy of Sciences are not confined to the training of specialists with a higher education. The Rector's Office has concluded an agreement with the Presidium of the Siberian Division of the USSR Academy of Sciences on a traineeship period for University graduate students at the Division's institutes and their subsequent employment there. Novosibirsk State University and the Siberian Division closely

cooperate in the full-time training of postgraduate students and the preparation of their candidate theses. At present there are 240 former students studying at the postgraduate courses of Novosibirsk State University. Among their teachers and consultants are scientists and scholars working simultaneously at the University and research institutions of the Centre, which helps towards a rational use of all the above-mentioned advantages of cooperation between these two bodies.

Cooperation between Novosibirsk State University and the Siberian Division of the USSR Academy of Sciences also holds promise in such an important sphere as *retraining of highly skilled personnel*. In the conditions of the scientific and technological revolution this task acquires state importance.

Since 1973, an Institute for improving the qualification of teachers and instructors in the social sciences has been functioning at the University, and about 700 persons have attended it. The main emphasis is laid on the development of research and methodological work and the generalisation of the collective experience of chairs of various higher educational establishments of Siberia and the Soviet Far East.

In 1977, at the initiative of the Institute of Economics and the Organisation of Industrial Production of the Siberian Division of the USSR Academy of Sciences a special department of economic forecasting and long-term planning was opened at Novosibirsk State University. The main purpose of this department is to help leading officials of ministries, managers of enterprises and teachers and instructors at higher educational establishments master the modern methods of optimum planning and industrial management. Various active forms of teaching are employed, including the organisation of business games with the use of computers. This new department has been opened thanks to efficient cooperation between the economic department of the University, the Institute of Economics and the Organisation of Industrial Production and the Computing Centre of the Siberian Division of the USSR Academy of Sciences. The first results of the work of this special department are quite promising.

Now we shall dwell briefly on the *participation of Novosibirsk State University in the research work conducted by the Siberian Division of the USSR Academy of Sciences*. We have already spoken about the drawing on a mass scale of students and postgraduate students of the University into fundamental research carried on by the academic institutes of the Novosibirsk Scientific Centre. Many employees on the University staff take part in these researches.

New opportunities have emerged after the organisation of a research sector at Novosibirsk State University in 1962. This sector is oriented in its activity to the elaboration of new (mainly

comprehensive) problems which can later be included in long-term programmes of fundamental research of academic institutes, and also to the development of the results of fundamental researches of these institutes which are promising in so far as their implementation is concerned. It is not surprising therefore that many research subjects are being elaborated under tripartite economic agreements: Novosibirsk State University—an institute of the Siberian Division of the USSR Academy of Sciences—an industrial enterprise or a design bureau. For a majority of researches the material base of the Centre's institutes is being used.

Cooperation between Novosibirsk State University and the Siberian Division of the USSR Academy of Sciences can rightly be termed integration, when the interests of the institutions of two different departments in training personnel and utilising the intellectual potential and material base are so closely intertwined that it is difficult to find the interdepartmental border. The Novosibirsk experiment which has passed a two-decade test is justly regarded as positive. No doubt, the system of personnel training in the Novosibirsk Scientific Centre has not exhausted all its possibilities, and needs to be developed and improved.

Much attention is devoted at Novosibirsk State University to developing public activity of the students. They were the first Novosibirsk students to form in 1963 a builders' squad for work in virgin land areas, to exchange squads with Czechoslovakia in 1966, and in 1975 to initiate the organisation of a regional international student camp. Weeks of international solidarity are arranged annually at the end of April by the University, jointly with the regional and district committees of the Young Communist League (Komsomol). Hundreds of boys and girls do voluntary work on their holidays and the money thus earned is used to buy surgical instruments, cameras, books, etc., which are transferred during international solidarity weeks to representatives of progressive youth in countries fighting for their freedom and independence.

The University arranges discussions on many urgent problems of the country's life and international problems; these are often supplemented by discussions on ethical problems.

This also contributes to the fostering in young people of the feeling of participation in, and responsibility for, everything going on in the country, and for the fate of world civilisation.

Economic Studies at the Novosibirsk Scientific Centre

ABEL AGANBEGYAN

The Soviet Union attaches vast importance to building up the scientific and technical potential of Siberia and the Soviet Far East and to the accelerated development of their productive forces. The Institute of the Economy and Organisation of Industrial Production of the Siberian Division of the USSR Academy of Sciences, founded in 1957 and now with a staff of about 200 researchers, is making a significant contribution towards that goal.

The main directions of its research are as follows: development and territorial distribution of industry, organisation and management of production, the economics of industry, labour organisation, intra-industry reserves, regional problems of Siberia and the Soviet Far East, methodology of economic planning, etc. A characteristic feature of all its work is close contact with scientists in other fields. Thus, the Institute's laboratory of economico-mathematical research, founded in 1961, has helped to form closer ties with the Siberian Division's Institute of Mathematics and Computer Centre and with other institutions working in this field.

The Institute also has territorial sub-divisions to promote closer interaction with planning and economic bodies in the main Siberian centres. The list includes the Krasnoyarsk Economics Laboratory (established in 1959); the East Siberian Centre for the Regional Economy and Industrial Geography in Irkutsk (1968); the Economic Prognostication Laboratory in Kemerovo (1968); the Economic Research Centre in Tyumen (1968); the Industrial Economics Laboratory in Barnaul (1972); the Tuva Economics Laboratory in Kyzyl (1974). These sub-divisions provide practical

and methodological assistance to planning, research and economic organisations, educational establishments, and Party and administrative bodies in tackling economic problems, coordinate economic research in their particular region and furnish the necessary information and materials for the research carried out in Novosibirsk.

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In the early 1960s, the development of economic science, which is determined by quantitative and qualitative changes in the productive forces, led to the spread of the theory and methods of optimal planning, based on wide use of economico-mathematical instruments and computing machinery.

Three key factors contributed to mathematical modelling and economic planning in the Siberian Division: the theoretical basis and new methods worked out by such prominent Soviet researchers as L. Kantorovich, V. Nemchinov and V. Novozhilov; the availability of computing machinery and wide scientific and public support. The magnitude and complexity of the economic problems facing Siberia and the Soviet Far East imperatively required the use of modern scientific methods of long-range planning—systems analysis and economico-mathematical modelling.

Early, optimal planning methods applied to local economic problems proved no good for so complex a system as the national economy. What was required was a multi-level systems approach to macro-economic modelling that would more closely reflect objective reality. In keeping with the methodology of systems analysis, optimisation of complex systems is preceded by definition of their ultimate aim, the singling out of all elements contributing to its attainment, of a complex of interconnected sub-systems. The Institute's economico-mathematical laboratory was one of the first Soviet research collectives to concentrate on these problems.

Elaboration of a *system of economico-mathematical models of optimal long-range territorial-industrial planning* is one of the main directions of the Institute's work.[1] It includes a wide range of research to formulate the underlying principles of the proposed system; elaboration of individual types of its models; definition of the requirements with regard to information needed to produce these models, and the methods of collecting and processing such information; elaboration of mathematical methods for constructing individual models and the iterative processes of their coordination; construction of algorithms and programmes for modern computers, the aim being to solve lineal and integer problems of

optimisation; experimental testing of models and methods of their application, also of blocks of models and the system as a whole; elaboration of methods of economico-mathematical analysis of decisions and stage by stage application of models and systems in planning.

Evolving a system of models for optimal long-range territorial-industrial planning necessitated the study of general theoretical questions relating to optimal economic development, for instance, the choice of optimum criteria, formulation and formalisation of the aims of economic development.[2]

The master scheme for a system of models for optimal territorial-industrial planning, the first variants of which were drawn up as early as 1961-62, includes a sub-system of models for integrated economic planning (formulation of summarising indicators for the development of the national economy); territorial economic planning (defining the basic indicators for the development and location of the productive forces in the various republics and economic regions); optimal planning of programmed complexes, for instance, fuel and energy, agrarian and industrial, and different branches of the economy (defining optimal variants of the development and location of industry according to programmed inter-industrial complexes and individual branches of the economy); district-level planning (defining optimal variants for the development and location of productive forces in the given district).

Stage-by-stage modelling is a distinguishing feature of this system. In working out an optimal territorial-industrial plan, each stage is seen as a full cycle. Its results are carefully analysed and corrected and only after that all the necessary information is transmitted to the next level of the system. This method allows for stage-by-stage use of economico-mathematical models in practical planning, following completion of theoretical and experimental testing.

Each link of the system is treated as a self-developing sub-system. This presupposes inclusion in a given system of other elements, for instance, models of the formation of labour resources, technical progress, financial planning, etc. The self-development principle implies that each sub-system represents a group of interconnected models based on a master model. For instance, the master model for the sub-system of integrated economic planning is the dynamic inter-industry model. For the sub-system of territorial economic planning it is the optimised inter-industry and inter-district model; for the sub-system of programmed complexes and individual industries it is a wide range of standard optimal planning models for the development and location of industry in the various branches, etc.

3—Зак. 1816

The Institute's second major field of research is the construction of economico-mathematical models of long-range planning widely used in resolving *socio-economic development problems*. And here its activities include determining Siberia's place in the national economy, devising correlations of planned targets and supply and demand. This work is being conducted in conjunction with various departments of the USSR State Planning Committee and its Main Computing Centre, the USSR State Committee for Science and Technology, and a number of research institutes, notably the Central Economico-Mathematical Institute of the USSR Academy of Sciences.

Research along those lines has already yielded results. For instance, we now have recommendations on raising the quality of centralised economic management, particularly on a programme-oriented approach to planning, improvement of cost accounting and the system of economic levers.[3] The Institute participated in drawing up the Comprehensive Programme of Scientific and Technological Progress and Its Socio-Economic Implications for the period 1976-1990.

The third field of the Institute's studies concerns *the economic and social problems of the long-range expansion and territorial distribution of the productive forces of Siberia and the Soviet Far East*. Only partial problems were tackled prior to 1970. The methodology of economico-mathematical modelling, the enlargement of the network of scientific sub-divisions, and the greater accent on field studies and an increase in research personnel enabled the Institute to pass to comprehensive studies of the socio-economic problems of one of the country's biggest regions. And here the Institute's staff is concentrating on working out the theoretical foundations and conceptions of Siberia's economic development for a prognosticated period, new methods of investigating the regional economy (based on systems analysis, programme-oriented approach), and long-range regional planning and prognostication.[4]

Conceptualising the theoretical views on the most effective principles and methods of regional development entails solution of three groups of problems: comprehensive (overall development indicators), inter-industrial and industrial, intra-regional. Other elements in the group of comprehensive problems are: determination of optimal (measured by national standards) development rates for Siberia, optimal industry-wise and territorial economic structures; determination of key inter-industrial and general economic proportions, quantitative and qualitative indicators of effectiveness, rational methods of developing new areas, with due account of regional specificity; ways and means of promoting economic growth, raising scientifico-technical potentials, living standards, etc.

Studies of Siberia's economic and social problems have a distinct applied orientation. Their results serve as the theoretical basis for devising long-range development plans and are drawn upon by planning, designing and scientific institutions. Besides, some results can be applied directly in the long-range development of branches of the economy, and the organisation of sub-regional territorial-production complexes.

Analysis of large-scale territorial economic programmes is of first-rate importance in assessing Siberia's economic potential. This applies in particular to the Kansk-Achinsk fuel and energy complex, the West-Siberian oil and gas fields, agro-industrial, engineering and metallurgical and other complexes. Other fields of investigation are ecological protection (especially rational use of Lake Baikal resources), the formation of territorial-production complexes, and development of areas adjoining the Baikal-Amur Railway.

And still another important aspect of research is *the socio-economic problems of labour resources*: adequate supply of labour power, migration, including its demographic and economic consequences, trend and direction of population outflow, migration factors. The Institute has devised a long-range projection of labour power in inflows and outflows.

The key indicators in drawing up integrated economic plans (aimed at optimal utilisation of available resources to maximise consumption) are living standards, in particular consumption trends, and the processes involved in the formation, movement and employment of labour power. In fact, labour resources hold a central place in the system of territorial-production planning. And from this follows another field of study, namely, economico-sociological investigation and devising of methods of managing the formation, mobility and employment of labour resources. The principal purpose of such studies is to provide an economico-sociological theory and methodological recommendations for long-range planning of the formation and employment of labour resources. Among the more concrete subjects are analysis of fluctuation of personnel in industry, migration of rural population to the towns, living standards and general conditions of the Siberian population, the use of working and free time, application of mathematical methods in sociology.

Building up a stable labour force in agriculture should be seen as a high-priority task. Its achievement requires elaboration of a comprehensive programme of rural socio-economic development in conditions of continuing urbanisation. Without such a programme it is practically impossible effectively to influence migratory processes. And the construction of such a programme requires a systems approach to the rural community, i.e., regarding it as the

totality of interconnected spheres, dissecting the mechanism of each of these spheres and assessing their influence on our overall goals. Further, the investigator has to determine the degree of manageability of socio-economic processes and work out concrete methods of directing them. Research in this field has since 1971 held a leading place in the Institute's economico-sociological studies. The results were summarised in 1975 in a long-range comprehensive programme of the socio-economic development of the countryside up to the year 2000.

The Institute has also undertaken a study of *the economics of industrial enterprises.* The aim is to create a theory of the socialist enterprise and provide concrete recommendations for the use of economico-mathematical models to improve planning, economic stimulation and management of individual enterprises and their amalgamations.

These studies at micro-economic level include a theoretical analysis of the economics of the socialist enterprise (or amalgamations of enterprises) within the framework of the national economy and under the new planning and economic stimulation arrangements, and also mathematical modelling to produce models of cost-accounting operation, intra-enterprise planning and direction of technico-economic processes, in particular in the context of automated management techniques.[5]

On a more concrete level, the programme includes the formulation of the conditions for and defining the boundaries of employing profit indicators to assess the activity of an enterprise, formulating the underlying principles of material stimulation in a planned economy, simulated modelling of cost accounting (e.g., financial) activity, a characteristic of the forms and types of amalgamation and the ways and means of integrating their enterprises. The main purpose in working out simulated models is to give the designers of an automated management system the methods required to test the reliability of various systems or their elements and their effectiveness in concrete conditions. Beginning with 1973 there have been systematic studies to produce a rational management structure. The methods now available enable us to analyse the interaction of the structure of material input and output and their management.

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As mentioned above, construction of a system of economico-mathematical models of long-range territorial-production planning is one of the main directions of the Institute's work. Let us examine these models in each unit.

The first unit is a series of models for planning the national economy as a whole, for pre-planning principles and calculation of development rates and proportions. These are dynamic inter-industrial models and their optimised modifications, models of productive capacity balances, optimised norms of productive accumulation in the national income, etc.

We can single out three basic theoretical results. First, a cycle of research on the problem of economic optimisation criteria, including the methodology of constructing a goal-oriented consumption pattern and its use in analysing the regularities of consumption processes. Also formulated and proven are theorems of the similarity of problems with differing optimum criteria (reciprocity theorems). Second, investigation of the quantitative correlation of the interaction of the conditions and factors of extended reproduction (influence of the dynamics of material, asset and labour intensities on the rate and proportion of growth of GNP and national income, correlation between Department I and Department II, etc.). Third, identification of the quantitative regularities of the economy's transition to an intensive type of development.

In practical planning there is heavy reliance on the results of research in such a sub-system as optimisation of programmed and industry-wise complexes. Among the fundamental results obtained in this field mention should be made of a wide range of standard optimised planning models for the development and geographical distribution of productive forces within a given industry (production, transport, multi-product and multi-stage) and the methods of their economico-mathematical analysis; models of multi-industry programmed and goal-oriented complexes (agro-industrial, timber, etc).; basic elements of the theory of multi-level optimisation of industrial systems (including choice of technological variants for development of primary units); special mathematical methods and aglorithms in solving the optimisation problems in a given branch.

The second unit is a series of models for territorial planning. It consists, first, of optimised inter-industrial inter-regional models to set the correct proportions for Union Republics and regions; second, of optimised models for the economic structure of large areas; third, of a group of optimised models for forming regional territorial-production complexes and systems thereof; fourth, of models for regional goal programmes, for example, economic development of the Baikal-Amur Railway zone. All of these models have undergone experimental testing.

Among the theoretical results, the following should be singled out: formulation of the principles of territorial economico-mathematical models, with correlation of expenditure and results for the given region; analysis of the qualitative characteristics of

optimal geographical distribution of economic units; formulation of several schemes for territorial economic planning, including the economic mechanism of interaction between central and regional planning bodies.

Organically linked with such models is the study of regional economics. Conducted from the standpoint of the regional reproduction process, it allows for examination of a region's economy as an integrated organism with its own specifics in functioning and developing at various phases of the reproduction process.[6] Inter-industrial balance sheets have been compiled of production and distribution in administrative and economic regions, and this has significantly enriched regional analysis with the overall system of interconnected synthetic indicators.[7]

Formulation of the underlying principles of analysis of major territorial economic problems plays a highly important part in elaborating an economic strategy for the development and distribution of the productive forces. Solution of these problems requires a goal-oriented programme approach. Territorial planning of production organisation rests on an economic mechanism designed to resolve the objective contradictions between the interests of each territorial unit and those of a rationally conceived economic complex.

Research linked with the synthesis of economico-mathematical models in a common system has enabled us to study fundamental problems involved in improving the planning and management of the national economy. Thus, there have been formulated and proven theorems relating to coordination of overall optimisation with that of individual sub-systems. The main conclusion drawn from mathematical studies of a system of models is that optimal planning must combine directives based on a limited number of indicators with regulatory levers.

In synthesising a system of models we have worked out schemes for exchange of information between their sub-units to secure coordinated solutions. Methods have been proposed for harmonising industrial and regional planning, and we have reliable mathematical coordination formulas for the two-tier system, "national economy—industry". Research has also begun on the adaptive capability of plans.

Models that take into account social factors, the impact of scientific and technological progress, and stochastic and uncertainty factors, are now being used at all levels. Methodological recommendations on modelling long-range territorial-production planning have been included in the first section of the USSR State Planning Committee's project of an automated system of plan calculations.

* * *

The Institute's study of theoretical and methodological problems of labour-power mobility has yielded valuable results that have substantially altered our understanding of this process. Institute researchers have worked out the fundamentals of an inter-discipline economico-sociological theory based on a study of concrete cases and sociological investigations. The result has been an entirely new concept of labour-power mobility as an integral socio-economic process of movement between localities of social production and spheres of employment. This ensures satisfaction, on the one hand, of the requirements of parts of the national economy for a definite type of labour, and, on the other, the individual requirements of the workers directly or indirectly connected with a definite type of work. The investigations also gave us a broader theoretical understanding of the positive social and economic functions of the mobility process in the development of the national economy and socialist society, and also of the negative consequences resulting from this process. We have provided scientific grounding for a system of concepts in the movement of labour resources: mobility, reserves, jobs, movement of individual workers, system of employment, its socio-economic essence, mechanism of movement of labour, the job as a career, fluctuation, migration, horizontal and vertical shifts of labour-power mobility, etc. These elements reflect the results of a comprehensive economico-sociological survey. It has also given us a glossary of about one hundred terms on the theory of labour-power mobility.[8]

Institute researchers have also given us a clearer idea of the internal structure of this process, its various intertwining components, the connection between actual and potential movements, migration and fluctuation of personnel, job changing within a given enterprise and between enterprises, the mechanisms of the movement of labour resources, its causes and contributing factors, and possible regulatory methods. The effectiveness of these methods has been confirmed, in particular, by the sociological experiments in reducing fluctuation of personnel in Rubtsovsk, a medium-sized industrial centre in the Altai Territory.

The methodology of programming socio-economic research in this field, worked out by the Institute, is of fundamental significance. Its recommendations include the structure of a programme and concrete methods for examining each of its elements. It has also drawn up a special methodology to study the movement of workers and migrations from rural to urban areas. The first of these recommendations, meant for personnel managers and sociologists at industrial enterprises, summarises nearly

ten years of empirical study of fluctuation. The study regards fluctuation not as a socially negative phenomenon, but rather as a necessary and inevitable process performing important functions in the economy, though needing regulation and adjustment. As distinct from previous methodological principles, these recommendations provide for analysis not only of actual, but also of potential fluctuation, and not only between various enterprises, but also within one and the same enterprise.[9]

Selective sociological and statistical investigations of migration of rural population regards this phenomenon not only in its demographic and economic aspects, but also in its social aspect stimulated by the difference in the way of life and general conditions between town and country.

Another direction in the study of labour resources is the formulation, approbation and use in concrete analysis of modern mathematical methods of modelling and processing sociological information. The Institute has devised a new economico-mathematical model of migration. It represents a system of differential equations and has great prognosticating possibilities. A modernised variant of this model has been designed to imitate the migration of rural populations. It has been demonstrated that migration of urban and rural populations rests on different socio-economic mechanisms: in the towns the influx of population follows capital investment, whereas in rural areas the inflow of capital investment follows the outflow of population.

For the first time in world sociology, a mathematical apparatus for image identification is being used in studying labour-power mobility.[10] It can be used to prognosticate regional differences in rural-population migration and to devise multidimensional typologies of rural migrants to towns and of mobile workers in industry. Methodological approaches to the construction of systems models of manpower mobility have also been worked out.

* * *

The impact of economic studies in Siberia on the national economy as a whole has markedly increased over the past ten years, in particular thanks to the Siberian Division's close contacts with industry.

These contacts are sustained and systematic. The most important findings that can be put into practice are submitted to the USSR State Committee for Science and Technology, the State Planning Committees of the USSR and the Russian Federation for use in the economy. This necessitates verification of all economico-

mathematical models pertaining to the economic development of Siberia, the Russian Federation and the USSR as a whole. In this way academic economics becomes also an applied science.

There are several forms of utilising the results of basic research in production: a) transfer to planning, economic, designing and scientific organisations of methodological materials and proposals and recommendations on individual problems; b) the Siberian Division's participation in drawing up comprehensive plans for applied research in pursuance of cooperation agreements with enterprises and ministries; c) contracts for research on behalf of economic organisations; d) methodological and consultative assistance to enterprises, organisations and institutions. About 80 concrete problems have been solved on the basis of the Institute's methodological recommendations requested by planning, industrial and other organisations. Its data have been used in preparing plan variants for 1966-1970, 1971-1975, 1976-1980 and for the period up to 1990.

A characteristic example of the Institute's links with industry, based on long-term cooperation programmes, is its contacts with a number of Novosibirsk enterprises, in particular the Siberian Farm Machinery Works and the Iskitim state farm. Joint research is conducted in two areas: social factors in production, which are taken into account by management, and improvement of industrial planning and management structures.

* * *

On the whole, the research described in this article represents a significant advance in solving a number of economic problems. It is indicative, also, of the progress made since the establishment in Novosibirsk of a specialised academic institute working in close contact with kindred organisations. However, what has been achieved to date is but a stage in the development of such research in Siberia. There are still many scientific problems awaiting detailed study and application in economic practice.

NOTES

[1] A. G. Aganbegyan, K. A. Bagrinovsky, A. G. Granberg, *Modelling System of Economic Planning*, Moscow, 1972 (in Russian).

[2] *Optimal Territorial-Production Planning*, Novosibirsk, 1969; *Problems of Economic Optimisation*, Moscow, 1969; *Problems of Economic Optimisation*, Novosibirsk, 1973; N. F. Shatilov, *Analysis of Relationships of Socialist Extended Reproduction and Its Experimental Modelling*, Novosibirsk, 1974 (all in Russian).

[3] M. Ya. Lemeshev, I. A. Panchenko, *Comprehensive Programmes in National Economic Planning*, Moscow, 1973 (in Russian).

[4] *Economic Development Problems of Siberia,* Novosibirsk, 1974 (in Russian).

[5] R. G. Karagedov, *Profitability and Efficiency of Socialist Enterprises,* Novosibirsk, 1971 (in Russian).

[6] R. I. Shniper, *Integrated Economic Planning of Regions and Districts,* Moscow, 1972 (in Russian).

[7] *Analysis of Inter-Industrial Contacts in Siberia and the Soviet Far East,* Parts 1-2, Novosibirsk, 1972 (in Russian).

[8] *Methodological Problems of Studying Social Processes,* Novosibirsk, 1974; *Methodological Problems of Sociological Investigation of Labour-Power Mobility,* Novosibirsk, 1974 (all in Russian).

[9] *Studies in Labour Mobility in Industry,* Novosibirsk, 1969; *Mobility of Workers in Industrial Enterprises (Theoretical and Methodological Questions Involved in Analysing Fluctuation),* Moscow, 1974 (all in Russian).

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At the Dawn of History

ALEXEI OKLADNIKOV

The history of Siberia—a country with colossal potential, whose wealth, as the famous 18th-century Russian scientist Mikhail Lomonosov aptly pointed out, should "add to Russia's might"—has long been attracting the attention of both Russian and foreign researchers.

In our time, when the unprecedented socialist transformation of these expanses is taking place, historians face the major problems of studying the past of Siberia and its peoples and of showing the heroic efforts of the Soviet people to industrialise, and otherwise give a new look to, Siberia.

In the conduct of this work archaeology is of major scientific and socio-political importance. Archaeologists are called upon to draw a picture of the early life of the peoples which inhabited, and inhabit now, this gigantic eastern part of the Soviet Union. Theirs is the all-important mission of tracing the continuity of time by presenting the common and specific features of the complex historical process which has been proceeding for millennia.

The archaeological explorations conducted by the Novosibirsk Scientific Centre were launched in 1960-1961. Territorially and thematically, they are a continuation of excavations conducted by the Leningrad Department of the Institute of Archaeology of the USSR Academy of Sciences under the guidance of the present author. Currently, the Institute of History, Philology and Philosophy of the Siberian Division of the USSR Academy of Sciences (IHPP) is carrying out archaeological research of the Paleolithic and Neolithic periods and the Metal Age in Siberia, the Soviet Far East, Central Asia (Mongolia) and partially in other countries neighbouring on Siberia.

* * *

The following brief survey of the findings will be presented chronologically, beginning from the Paleolithic period.

The classical monuments of Siberian Paleolithic, located in the Yenisei Valley (the famous Afontova Gora site and the group of Kokorevo sites) are widely known from publications, they go back to the Sartang period—the closing stage of the Glacial period and are 20-14 millennia old according to the C_{14} dating. This would appear to indicate that man settled the colossal expanses between the Urals and the Pacific comparatively late. Remains of the Sinanthropus and material traces of his activity, approximately 300,000 years old, have been found in Eastern Asia. In the Urals, including the northern Urals, Mousterian monuments have been unearthed. Siberia, however, according to the former views, had been an uninhabited land in that period.

That was what lent such crucial importance to the discovery in 1961 in the Altai town of Gorno-Altaisk, on the Ulalinka River, of what is Siberia's oldest Paleolithic settlement known to date. The excavations were carried out by the present author and A. Umansky, with the participation of geologists V. Saks, Corresponding Member of the USSR Academy of Sciences, and S. Troitsky and I. Volkov, experts in the Quaternary geology of Siberia.

According to Troitsky, the layer which underlies the level that contains stone artifacts, in terms of European geochronology, can perhaps be attributed to the Riss-Würm interval or a still earlier stage. In other words, this moment of Siberia's geological history is 150,000 or, possibly, 200,000 years old. It follows that man may have appeared on the Ulalinka in the late Acheulean period of Europe or at a still earlier date. In terms of Siberian geochronology, this time falls on the late Taz Glacial stage—the early Kazantsevo Interglacial. Hence the new, basically important conclusion that the peopling of Northern Asia proceeded much earlier than was previously assumed. The early centre of primary human culture had existed in the Altai for hundreds, not dozens, of millennia. Dominating the vast expanses of the West Siberian Plain, which was exposed to incursions of the World Ocean, the Altai must have been one of the early centres of man's spread to the north and the east of the Asian continent.

This assumption has been confirmed by subsequent research. Still more important results were obtained during the exploration of the amazing Ulalinka site in the Altai and following it new ideas of man's emergence in Northern Asia were formed in the 1970s. The research performed jointly with L. Ragozin, a Siberian geologist who specialises in pre-Quaternary deposits in the Altai,

confirmed that the site is not 100,000 or even 200,000 years old but incomparably older.

According to these newly obtained data, the loose deposits of the Ulalinka Hill, which contain stone artifacts, are divided into three sections. The upper, 1.7 metres thick, bears a loess-like character. A Mousterian point and flakes typical of Siberian Neolithic have been discovered at its basis. The second, middle section, about 0.6 metre thick, resembles the deposits of the lower part of what is known as the Krasnodubrovo series. According to paleomagnetic data, the middle part of the Krasnodubrovo series deposits in Western Siberia is up to 690,000 years old. No vestiges of human activity have been discovered in this section. Processed stones comprising an original industrial complex previously unknown in Siberia, characterised by artifacts archaic in technique and form, lie directly under the Krasnodubrovo series in the upper part of the layer of golden-yellow plastic clay, which belongs to what is known as the Kochkovo series, which, according to Paleolithic data, is about two million years old and older.

Paleomagnetic research conducted in the Ulalinka section has shown that the upper limit of the lower cultural deposit goes at least 300,000 years back and the lower more than 700,000 years.[1]

Of importance in the study of the history of man's development of the vast areas of Northern Asia are recent finds of primitive pebble artifacts of the chopper type—original implements with a beak-shaped point. Such items have been excavated in the Amur basin, among other places, at Filimoshki in Ust-Tu region. They have also been unearthed in western Mongolia. These finds are not accompanied by remains of the fauna, their greater part lying on the surface. However, the primitive forms and pebbly character of these items resemble the man-processed Ulalinka pebbles. Equally interesting is the fact that in shape they coincide with the pebble artifacts collected by K. Alpysbayev in the Karatau Mountains in Kazakhstan, and with the chopper discovered by the present author with the participation of G. Maximenkov in the thick pebble deposits of an ancient terrace around On-Archa in Kirghizia. It follows that the battered pebbles in question may go back to the fairly distant period of existence of the Archanthropus—the ancestors of the Neanderthal man.

The bifacially flaked big blades that resemble the widely known hand axes of Europe, the Near East and Africa, which has been excavated in Mongolia (Yarkh Mountains, the "Gobi Bottom") are very important for the understanding of the history of man's development of Northern and Central Asia. An equally surprising find was an almond-shaped hand axe, distinctly Acheulean in shape and technique of manufacture, discovered at the village of Bogorodskoye, on the Lower Amur, in 1977. To this day no

artifact so typical in shape has been uncovered in neighbouring Eastern Asia.

The discoveries of bifacial tools alongside widespread pebble tools in Northern Asia offer a new picture of the original peopling of these expanses. These discoveries suggest that, unlike the subsequent epochs, the distinction of this process in the Early and even Middle Paleolithic periods apparently consisted in the fact that no continuous areas of cohesive cultures and, correspondingly, no large local human groups were in existence. The small groups and individual early communities of the Archanthropus and Paleoanthropus settled haphazardly, pursuing their prey and briefly inhabiting some convenient ecological niches. Most probably, the source of spread of the protopeople, who were equipped with hand axes, from west to east and from south to north, was Hindustan or perhaps the part of Central Asia neighbouring on the Caucasus. This is evidenced by discoveries of A. Medoyev in Mangyshlak which include Acheulean-type hand axes.

The newcomers may well have met on their new territories the bearers of the pebble industry. It resulted in a complicated mosaic of population distribution which was totally at variance with the common view that monuments of the Lower and Middle Paleolithic formed a uniform continuous pattern, and that large culture areas existed at that time.

The next stage of the cultural development of the early Siberian population which is of basic importance for studying the history of Northern Asia, is presented alongside the previously studied Paleolithic monuments (Ust-Kansk Cave in the Altai) by cave sites—the Denisovskaya and Strashnaya caves—discovered by N. Ovodov and the present author in the Tigireksky Range in the Altai.

The C_{14} dating of a bone from the Strashnaya Cave confirmed that in European terms these finds go back to the late Mousterian epoch or to the very outset of the Upper Paleolithic period. For instance, two C_{14} dates have been determined for the Strashnaya Cave. The third layer has been found to be more than 25,000 years old (a more exact date defied disclosure). The second date, for the fourth layer, was found to be much earlier, it was discovered that the layer was 40,000-45,000 years old. Hence, the major conclusion that the Altai remained the centre of early man's spread even in the Middle Paleolithic period. Excavations made in these two caves support the concept of the more intensive development of man and his culture in those days compared to the earlier epoch. Evidence of this is furnished by the emergence of Levalloisian techniques, with their more perfect and basically new chipping techniques. The pebble was replaced by a specially

fashioned core, from which wide regular-shaped elongated triangular blades were shorn.

Alongside the Altai, the Levalloisian techniques of the Middle Paleolithic period is traceable as far east as Transbaikalia and Mongolia. This is confirmed by the results of excavations performed at Cape Sanny in the Uda Valley, in Tolbag on the Chikoy River, on Titovskaya hill at Chita as well as in Mongolia, where interesting finds have been discovered around the Arz-Bogdo Mountains, in Otzon-Mant in the south and on the Orkhon River (Moltyn-Am). The C_{14} dates obtained for the Transbaikalian settlements are 34,900±780 years for the Varvarina Gora site and 34,860±2,400 years for Tolbag.

Excavations conducted at Varvarina Gora site in the Uda basin disclose the picture of a permanent or seasonal Paleolithic settlement. Animal bones, processed stone—cores, blades, flakes, scraper-shaped tools—have been found within a sharply defined space enclosed by stones and pits dug by the ancient dwellers. Some of the pits apparently served as depositories. One such depository with stone-faced walls and floor contained the cranium of a beast of prey amid tubular horse bones—unbroken unlike the majority of other similar finds. Presumably, it was a ritual burial of the predatory animal's head accompanied by a sacrificial offering of parts of the horse.

The stone furniture of the dwelling on Varvarina Gora exhibits Levalloisian features. The double-ended pebble cores here are marked by Levalloisian techniques. The massive wide blades sheared of them have regular elongated forms. In the majority of cases one edge of the blade or both are retouched. There is a triangular point typically Mousterian in shape and retouch. The bone artifacts are represented by two small awl-shaped points. Primitive beads made from ostrich egg shell have been unearthed. Judging from the stone working technique and fauna (rhinoceros) the Varvarina Gora site chronologically must have stood close to such settlements as Cape Sanny, whose lower layers were formed at the Zyryanka stage of the Glacial period, which preceded the Sartang stage. The finds excavated in the Strashnaya and Ust-Kansk caves in the Altai go back to the same period.

The discovery in the Altai, Transbaikalia and Central Siberia (the settlement of Kemchuk, 90 kilometres west of Krasnoyarsk) of Paleolithic monuments displaying the Levalloisian stone-working techniques, constitutes a turning point in the understanding of the history of man's development of Siberia and of the history of the Paleolithic culture of Northern Asia. These monuments characterised by archaic features support the view that man settled in Siberia in deep antiquity and add to our knowledge about the nature of this process.[2]

The excavations of a Paleolithic settlement in Achinsk, discovered by geologist G. Avramenko, have yielded new data on the origin of the Malta-Buret culture of the Angara basin. Here G. Avramenko and V. Larichev have discovered remnants of a mammoth-bone dwelling like those of Malta and Buret. In the flint industry they have struck a similar combination of big pebble tools (choppers and scrapers) with small European-type artifacts, including characteristic denticulated Aurignacian-type blades. The Achinsk site has also yielded evidence of the existence of artistic bone processing—a mammoth tusk fashioned into a stylised phallus. The above finds add evidence that the bearers of this culture formed part of a large group of the Paleolithic tribes of Eastern and Western Europe (one such tribe stopped over on its way from the Urals to the Baikal area at the Achinsk settlement).

A specific phenomenon was constituted by a Paleolithic culture which did not include stone tools—a Paleolithic bone culture which is represented by the location of mammoth bones in the Kargat area at Volchya Griva (excavations of the present author, E. Alexeyeva and others).

The pre-pottery Late Paleolithic and Mesolithic cultures of the Far East developed along an equally complex and original path. One of the oldest Stone Age monuments of what is now the Maritime Territory is a flint-working settlement at the village of Osinovka near Ussuriysk (excavations of the present author).[3] In the redeposited crust of weathering, more specifically the layer of brownish-red clay, whose formation falls on the interglacial interval which may have preceded the glacial maximum in the Sikhote-Alin Mountains, i.e., goes 40,000 years back, archaeologists have come upon something like working areas of Stone Age masters. From pebbles of whitish-green volcanic tuff they fashioned unorthodox and odd-looking tools which combined signs of a core of the Levallois type and a chopping implement. Items which fused pebble and Levalloisian techniques came into existence. Similar finds have also been discovered in several sites in the Maritime Territory, including the Mo River at Lake Khanka, the Ilyushino hill at Ussuriysk, as well as the Middle Amur (the village of Bibikovo above Blagoveshchensk).

This path of development of Stone Age culture based on pebble techniques is also confirmed by new finds in the Maritime Territory—in the cave named after the Geographical Society at the city of Nakhodka in the mouth of the Suchan River (excavations of N. Ovodov, the present author, N. Vereshchagin, Ye. Leshok and others). Together with the bones of the mammoth, cave hyena and wild horse, archaeologists have discovered there big flakes manufactured by the characteristic method of pebble chopping—by transverse blows directly on the smooth

pebble crust without any preliminary preparation of the striking platform. Pebble-cores from which such blades were shorn have also been unearthed here. The finds in the Geographical Society Cave, which must be slightly younger than the Osinovka ones (35,000-25,000 years old) are also remarkable because they point the way along which the mammoth and, following the mammoth, apparently the primitive hunter made his way to Sakhalin and Hokkaido—along the land bridge which in the Glacial period linked what is now the Maritime Territory with the islands which today form Japan, and further with the American Continent.

In Northern Asia the end of the Paleolithic period was marked by the emergence of two widespread elements of the lithic industry. One of leaf-shaped knives processed by bifacial Solutrean-type plane retouch. They were first discovered in the settlement of Verkholenskaya Gora on the Angara and in the valley of the Ushanka Stream, and then in the latest Paleolithic-like settlements on the Orkhon River in Mongolia—in the same area as Moltyn-Am (Cheremukhovskaya valley). Similar knives have been dug up in the Dyuktai Cave, in the Aldan valley. They also represent a typical element of the culture of the Late Paleolithic population of Japan, which existed concurrently with Western Magdalenian culture approximately 17,000-12,000 years ago. In the upper layer of this rich flint-working settlement at Ustinovka, in the Maritime Territory similar knives have been discovered, they also must have belonged to the same period.

Another characteristic element of the Ustinovka settlement tools is burins made from blades whose long edges were processed by tiny retouch and burin blow was made athwart—diagonally to the blade's long axis. Similar burins, which were named Arao—the place where they were first described (Japan), have also been discovered in Ustinovka as well as in the Dyuktai Cave in Yakutia, and at the Verkholenskaya Gora site.

These burins and bifacially retouched leaf-shaped blades are accompanied by core-shaped artifacts which have come to be known as Gobi cores. In the layers of the Cheremukhovskaya valley, on the Orkhon River in Mongolia such items are typical of the final stages of this unique period of Paleolithic culture. Yet another remarkable settlement in Mongolia is known—a settlement on Mt. Khere-uul in the Khalkhin-Gol valley, where Gobi-type cores form the basis of the lithic industry.

The above examples testify to the extensive cultural integration over a substantial stage of the Paleolithic or Mesolithic periods in Inner Asia, geographically ranging from Japan to the Maritime Territory and further to Eastern Mongolia. This applies to more than Asia. N. Nelson observed in his day that the Gobi cores formed a link between the pre-pottery cultures of Alaska and

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Central Asia.[4] Perhaps it was not accidental that the culture of wandering Folsom hunters marked by precisely such bifacially retouched heads gained ground in America exactly at the time it did in Asia (c. 10,000-11,000 years ago).

The simultaneous emergence of the Gobi cores and ancient pottery (fragments of primitive clay vessels) in Japan (Fukui Cave) and in the settlement of Ust-Kyakhta on the Selenga, near the Mongolian border, was apparently not accidental either.

The subsequent period of the early history of the North-Asian tribes was the Neolithic period, with its emergence of pottery (clay vessels) as well as polished chopping implements, the bow and arrows. In different parts of Northern Asia the formation of new, Neolithic culture proceeded in different ways.

The Neolithic period formed the first major local cultures of Northern Asia—something like provinces, some of which can in turn be divided with different degrees of authenticity into smaller local regions. Furthermore, these large provinces of the Neolithic and Early Bronze periods (Glazkovo culture) of Northern Asia can be associated with latter-day historico-ethnographic complexes, primarily those east of the Yenisei—with the Tungus and Paleoasians,[5] as well as with the Ugro-Finns of Western Siberia—a factor of particular historical importance.

A newly obtained series of C_{14} dates casts a new light on the development of the Neolithic culture of Cisbaikalia. These dates make the Kitoy monuments older than the Serovo ones (burial ground No. 3, 1973 has two dates: 6,550±35 years and 5,720±50 years).

As they studied the Neolithic period in the past dozen years archaeologists concentrated on the Baikal area and the Soviet Far East. Recent explorations conducted around the Bratsk and Ust-Ilimsk hydropower stations on the Angara (R. Vasilevsky) and on the Lena and Olkhon Island in Lake Baikal (the present author, I. Aseyev and A. Konopatsky) have yielded a great amount of material which makes it possible to broaden our knowledge of the development of the Neolithic culture of the early Bronze Age period in Cisbaikalia. Among other things, it is significant that archaeologists employing the C_{14} analysis for the first time obtained absolute data for the Kitoy and Glazkovo burials. The Kitoy burial in Khuzhir (Olkhon Island) goes back to the very beginning of the fourth millennium B.C., the Glazkovo burial in the Obkhoy cemetery on the Kulenga River, a left tributary of the Lena, to the second millennium B.C.

In the late first millennium B.C. and the early first millennium A.D. the enormous expanses of Central Asia witnessed stormy events—the formation of large state-like tribal alliances which, within a short time, conquered immense territories inhabited by

hundreds of peoples and tribes, but due to external and internal political and economic contradictions soon disintegrated. On the other hand, these alliances, however shortlived, influenced the material and spiritual cultures of both the conquered peoples and the conquerors themselves. Evidence is furnished by numerous archaeological monuments which frequently occur in the steppe and mountain taiga areas of the south of the Eastern Siberia, including the area around Lake Baikal. Above all, mention should be made of the presence of many stone-slab graves found in Northern Mongolia and in the Achinsk steppes in the south of the Chita Region. Graves structurally similar to the above have also been found in Olkhon Island, on the western shore of Baikal, in the Yelantsy District at the village of Tyrgan[6] and at the Sarma Ulus.

Excavations of Mankhai stone-slab graves suggested that in the 3rd century-early 2nd century B.C. at Mt. Mankhai in the valley of the Khuda River there had lived people who had had a material culture similar to that of their contemporaries who had inhabited the Baikal shore and Olkhon. It is also of importance that the material complex of these graves was associated with the tribes which had migrated here from Mongolia leaving stone-slab graves of the Bronze and early Iron ages in the steppes. These movements are attributable to the political events of the time when Mongolia and Transbaikalia were invaded by the Huns and part of the local Selenga tribes, under the pressure of the conquerors, moved as far north as the Baikal area.

Almost simultaneously the stone-slab graves of Mongolia and Transbaikalia gave way to new monuments—Hunnic, which are dominated by burial complexes. More often than not, Hunnic graves occur in Western Transbaikalia and Mongolia. While the excavations of Noin-Ula barrows offer an idea of the wealth and might of the Hunnic aristocracy, the study of ordinary barrows and Hunnic sites in Transbaikalia helps reconstruct the picture of life of the mass of the Hunnic population. The Huns practised primitive agriculture. This is evidenced by finds from the Nizhne-Ivolginskoye fortified settlement, such as cast iron ploughshares, an iron sickle and grain grinders. The iron smelting furnaces, fragments of blooms, slags, small bronze artifacts and bones discovered in this settlement indicate that the Huns had comparatively developed crafts. On Hunnic sites and in Hunnic burials occur more-than-one-metre-high clay vessels to keep food and cooking pots. All Hunnic clay pottery was of good quality and made on the potter's wheel. Some of it is ornamented. Excavations and graves of Noin-Ula have disclosed many remnants of rugs of local manufacture, including felt.

The Hunnic economy was dominated by stock-breeding and bones of domestic animals have been discovered in many graves. An analysis of the osteological material obtained in the Ivolginskoye fortified settlement shows a high proportion of cattle and pigs in the Hunnic stock. Horse bones occur in the graves much less frequently. But then, the grave furniture quite often contained remnants of horse harness: cavalry was the main Hunnic force of arms.

The Huns built fortified settlements. The most northerly is Nizhne-Ivolginskoye on the Selenga River, which occupies an area of more than 75,000 square metres. Excavations show that it was surrounded by a powerful system of defence installations, which consisted of four ramparts 1.5-2 metres high and four fosses 1.25 metres deep. The settlement passed from the scene in the 1st century A.D. due to the overall decline of the Hunnic state alliance, which collapsed, torn asunder by the internal contradictions of its aristocracy and the mounting struggle of the subdued peoples.

Following the disintegration of the Hunnic tribal alliance a new tribal alliance—Xianbi—made its appearance in Central Asia. It included Mongolian- and Turkic-speaking tribes, the Xianbi, the nucleus of this alliance, in the view of the majority of researchers, being the ancestors of the latest Mongols. The economic basis of these tribes was nomadic stock-breeding. The stock was the property of individual families but they moved around the steppe together, driven by the need for grass and water. In the second half of the 2nd century A.D. the Xianbi represented a formidable force. Led by their elder Tan Shihai, they seized a colossal territory which stretched as far west as the Urals and as far east as the Ussuri River. Their possessions reached the Sayan Mountains in the north, bordering on China in the south. At the end of the 3rd century this gigantic alliance fell apart. A factor behind its disintegration, as in the case of the Huns, was internal and external political and economic contradictions.

The existence and collapse of the Xianbi alliance and the later period are illustrated by burials discovered and excavated by the present author in a place called Burkhotui in 1950 and on the Onon and Shilka rivers in 1958. These burials differ from the others known to date by their specific burial rites and furniture. They are faced with slabs of gneiss and granite and are oval being up to four metres in diametre. In the narrow grave-pits under the masonry one metre under the surface were discovered the dead bodies, which lay oriented northwards with a slight deviation to the west. At the heads stood flat-bottomed narrow-necked clay vessels with turned out rims. Nearly all vessels ornamented with one or several parallel applicated ribs, some of them split and

turned edges downwards. Furthermore, the graves were found to contain three-edged bone arrowheads, narrow knives, one arc-shaped copper torque and several T-shaped copper plaques. The graves of this type have come to be identified at Burkhotui culture. This group of burials and those like it stand between the monuments of Hunnic and Turkic times, i.e., go back to the 2nd-7th centuries A.D. This material suggests that the Burkhotui people maintained certain ethnocultural relations with the Amur basin tribes. To date, the cemeteries of Burkhotui culture, with its typical pottery and burial rites, have been discovered and partly excavated at the village of Tokchin, in the Onon basin, at the villages of Chindant and Ononsk, in the Burgotai and Amogolo valleys, on the middle and lower Ingoda and on the Argun.

Remarkably, certain ornamental similarity to Burkhotui pottery is exhibited by the pottery of the Kurynkan graves in Cisbaikalia. However, in the Kurynkan graves, which date from the first millennium A.D., as a rule, the dominant rite was that of incineration while in the Burkhotui cemeteries that of inhumation.

Interesting data on Siberian culture are derived from the examination of rock drawings, including those of the upper Lena valley, where petroglyphs of Shishkinskiye rocks were studied before. A careful examination of the red sandstone rocks on the Lena and the Kulgan, including at a place called Shaman-kamen, has yielded much information for gaining an understanding of the ancient art and culture of the Lena area and Eastern Siberia as a whole. This applies to pictures of elk which follow each other in pairs. Most of these pictures are polished, hence their good state of preservation. A key to the dating of the elk figures and later pictures has been discovered on a rock which overlooks a right tributary of the Talma, a river which empties into the Kulenga above the village of Ust-Talma, where something like a palimpsest of overlaid drawings of different periods has been uncovered.

* * *

Archaeologists have shown intense interest in the excavations of Neolithic monuments of the Amur and the Maritime Territory. By their character the Neolithic monuments of the Far East can be divided into at least three large groups: the Upper Amur, the Lower Amur and the Amur proper.

The Far East has an abundance of Neolithic settlements, many of them with enormous semi-subterranean dwellings. Large settlements in which dozens or even hundreds of people lived in subterranean Neolithic dwellings stretch from the mouth of the Amazar River and Blagoveshchensk region. One is the Novopet-

rovskoye settlement (excavations of A. Derevyanko) which totals at least 15 houses each with a dig-out pit, strong walls built from upright logs and a roof covered by earth or sand for retaining warmth.[7] The lower down the Amur, in the direction of the ocean (especially below Khabarovsk), the more frequent the occurrence of such settlements. In places, for instance, at Marinsk on Suchu (Shchuchiy) Island, or in Kondon, near Lake Evoron, they become regular little Stone Age towns like the small fortresses of the Kamchadals described in the 18th century by Stepan Krasheninnikov.[8]

The fishermen's settled life also explains the distinctions of pottery—the most common material of the settlements and the most important characteristic of Neolithic cultures. The early Amur pottery, with the exception of the late Neolithic vessels uncovered in Sargol (Kondon), which obviously made their way to the Amur from the North, are predominantly flat-bottomed rather than conoidal-bottomed, as in the taiga zone of Eastern Siberia. Fishing requirements also explain some specific elements of the stone furniture of the Amur Neolithic settlements, for instance, stone club (knuckle-duster) like those used by the Neolithic Ob population, or knives with a differentiated knob-like base, good for cutting and scaling fish. In some places occur the simplest net sinkers shaped as grooved pebbles and even heavy sinkers—"weights". These items furnish ample evidence of the determining influence of specific Amur-type fishing on the overall cultural make-up of the Lower Amur tribes.

The Maritime Territory and partly the Upper Amur (in distinction from the Lower) show traces of Neolithic agriculture. A big ornamented stone grinder with a bowl-shaped cavity has, for instance, been discovered in one of the dwellings of a Neolithic settlement on the Mramornaya River as well as characteristic segment-shaped grinding currants. Many similar currants have been excavated from Neolithic dwellings in a settlement at Olenesovkhoz near Vladivostok. Subsequently, with the early signs of the use of metal (bronze) boat-shaped currants made their appearance in the Kharinskaya valley.

The Neolithic art of the Lower Amur is without parallel in Northern and Eastern Asia. Above all, its hallmark is its ornamental pattern, based on a curved rather than a straight line, spiral-shaped curlicues, the complex ligament of the Amur basketry pattern. Archaeologists gave special attention to the unique monuments of the Lower Amur ancient art—petroglyphs discovered in Sakachi-Alyan and around the village of Sheremetyevaya on the Ussuri, the earliest of which go back perhaps to the Mesolithic as well as Neolithic periods. These monuments represent the most vivid manifestation of the original features of

the inner world and aesthetic concepts of the Amur primitive man.[9] To this should be added the petroglyphs of Transbaikalia, the Middle Lena and Baikal,[10] which are distinguished by their specific style.

Transition from Stone Age to Metal Age is marked in the excavations by such monuments as a large settlement on the Kharinskaya Hill and a series of settlements with early finds of bronze artifacts around Lake Evoron and in Kondon. These monuments provide an idea of two variants of Bronze Age culture: a northern, or Evoron, variant and a southern, represented by the settlements of the Kharinskaya valley.

Furthermore, excavations of early Iron Age monuments (the present author and A. Derevyanko) have been carried out. In the Maritime Territory the oldest early Iron Age monuments are comprised of Yankovsky culture ("shell-mounds culture") which bears a maritime character (with the presence of developed fishing, marine hunting and agriculture). This culture also contained rudiments of stock-breeding, including the raising of the domesticated pig. Another locally discovered early Iron Age culture has come to be known as Krounovka culture. Later, it gave way to Poltse culture. On the Amur the early Iron Age was marked by monuments of Uralic culture[11]—the culture of the settled agriculturists and stock-breeders, contemporaries of Yankovsky culture, which, apparently, was of the same origin, having however a number of distinctions in pottery. Poltse culture was widespread from Blagoveshchensk to Komsomolsk-on-Amur and further north.

From the late first millennium B.C. to the 7th century A.D. the Amur valley, the Maritime Territory and neighbouring Manchuria registered an extensive spread of the culture of the Mohe and Shivei (in the north) tribes. Original Mohe culture is illustrated by large cemeteries (for instance, the Troitsky cemetery at Blagoveshchensk, on the Zeya River) as well as many settlements, including fortified ones with subterranean dwellings (the Mikhailovskoye fortified settlement).[12] In the Maritime Territory and Northern Manchuria in the 7th century A.D. the Mohe tribes created the first state of Tungus-speaking tribes—the Bohai Kingdom.

Among the few but vivid Bohai period monuments discovered in the Maritime Territory stand out a complex formed by a temple and fortifications made of boulder ramparts at the village of Borisovka near Ussuriysk. Amid the ruins of a temple which must have belonged to the local rural community or the ruler of a small provincial area, in addition to ordinary tiles, tiles with Bohai-type rosettes on their tip-disc trimming, two unique bronze statuettes

and a mask-like object with the head of a dokshiit-like deity and the torso of a seated naked human figure have been discovered.

The present author and V. Medvedev, during their systematic excavations of large Nuzhen period cemeteries around Lake Bolon, at the village of Nadezhdinskoye and near the township of Smidovichi found a rich material complex. A complicated burial rite has been disclosed and sizeable collections of vessels, metal decorations and objects of armament and everyday life have been established. Decorations with plates and pendants, fancy little bells and Nuzhen warrior belts have been reconstructed. These items reflect both the economy and the high level of material culture of the Amur Nuzhens as well as their spiritual culture. The Nuzhen monuments also offer remarkable material which makes it possible to trace a certain relationship with the late mediaeval culture of the Eastern aborigines—the Tungus-Manchu tribes, primarily the Nanais.[13]

The past few years have seen explorations of a major mediaeval cemetery (excavations of V. Medvedev) in Ussuriysky Island on the Amur.[14] In the 8th-11th centuries the Tungus-speaking Nuzhen tribes which inhabited the Amur valley and in all probability also this dozens-of-kilometres-long island have left something like 1,500 burials on a sand mound. A substantial proportion of the monument has been destroyed by modern quarries. However, more than 250 burials have been opened.

The burial was performed in an oval or rectangular gravepit with rounded corners, up to 140 centimetres deep from the present surface. While observations related to the burial rite provide some idea of the intellectual level and religious views of the people who lived in the late first-early second millennia along the Amur the many items extracted from the graves are a source of information about different aspects of their material culture, the development of their trade, the level of their military craft, economy, etc. Alongside everyday items (clay vessels, knives, fire-kindling tools), decorations and objects of armament traditional to the mediaeval cemeteries of the Far East and other areas, archaeologists have extracted from the burials work (iron shaving-knives, fret-saws, celts) and fishing tools (many iron hooks, clay sinkers for nets). These finds deepen our insight into the productive activity of the early Nuzhen population of the Amur area. As regards other material complexes, for example, everyday objects, among them, due to their particularly great numbers and good state of preservation, stand out remnants of armour—rectangular iron armour plates discovered in several burials—up to 700 in all.[15] It is interesting that in view of its particularly great value the armour was not always buried with the dead but was hidden in what resembled caches aside from the burial. This

explains why they survived even when the graves were destroyed or looted. Special mention should be made of the belt plates used by the Amur Nuzhens which were buried on Ussuriysky Island. The burial complexes contained dozens of plated belts, which consisted predominantly of bronze and iron plates, many of them gilded. The belts' dominant feature is their rectangular blade-shaped plaques with openings and dents along their upper edges. Similar decorations, of which as many as 20 can be found in individual burials together with other items, graphically illustrate the distinctive Nuzhen culture of the Amur area.

In addition to the Amur area and the Maritime Territory archaeological explorations have been conducted in the Far North-East, the Okhotsk Sea coast, Sakhalin and the Kuriles (the present author, R. Vasilevsky, V. Golubev). This research broadens the picture of the past of these areas of the Pacific region[16] and makes it possible to trace the complex ethnocultural relations (Ainus, Eskimos, Koryaks and other Paleoasians) which prevailed in the north of the Pacific. Among other things, this applies to what is known as Okhotsk culture, which has been increasingly attracting the attention of Soviet[17] and foreign, primarily Japanese, researchers.

* * *

In recent years Soviet archaeologists have been engaged in regular excavations in Western Siberia, particularly, the Novosibirsk Region.

They have been carrying out annual explorations in the Baraba forest-steppe, where the primary objects of study are Bronze Age settlements and cemeteries. Several monuments of this period have been completely excavated. Among these the Preobrazhenka-3 cemetery is of especial interest, in it almost 300 burials of Andronovo and Irmen cultures have been explored.[18] Currently, a picture of the historico-cultural process which took place on this territory from the early stages of the Bronze Age (early second millennium B.C.) to the transition from the Bronze Age to the Iron Age—the 8th century B.C.—is coming to light. It is based on reliable stratigraphic observations made in the process of excavation of both stratified settlements and cemeteries. In several instances archaeologists succeeded in tracing the inner chronology of individual cultures, as well as in identifying their local variants which had arisen due to the uneven cultural development in various parts of the Baraba steppe.

Furthermore, settlements and cemeteries of the early Iron Age and the Middle Ages have been discovered and are now being

explored. In this connection mention should be made of cemetery Kyshtovka-2.[19] A meticulous analysis of the burial rite and material complexes has disclosed, accurately enough, the ethnic affiliation of the population which has left this monument (the South-Khanty ethnos)—a factor which will subsequently promote the retrospective study of the territory's cultural development.

Of particular importance is the discovery of Paleolithic sites. Until recently only the Volchya Griva site dating from the Upper Pleistocene was known on this immense territory. The past few years have seen the discovery and partial exploration of another two monuments of this period—Vengerovo-5 and the Novo-Tarbisskaya site (the present author and V. Molodin).[20]

The geomorphology and the pattern of material culture of these monuments are distinctive. The sites are located on hill range, their cultural stratum usually contains many bones of mammoths and other specimens of the late Pleistocene fauna. The absence in Baraba of its own sources of stone materials suitable for tool-making made stone a highly valuable material for ancient man. This explains why finished flint implements and flakes are of extremely rare occurrence on the sites. However, available data indicate that the tools were predominantly blades and blade-shaped flakes.

Continuing the study of late Iron Age monuments in Transbaikalia (excavations of I. Aseyev), archaeologists have excavated nomad burials on the Onon, on Baikal shores and in Olkhon.[21] The study of petroglyphs (the present author) initiated in the previous period on Mount Khashkhai, in the Angara basin, and on the Upper Lena, has yielded fresh material which enables archaeologists to form a broader picture of the life, art and religious rituals of the Kurykan tribes—the ancestors of the Buryats and the Yakuts.

For several years archaeologists performed similar research in the Altai, exploring burials of early nomads and ancient Turkic-speaking inhabitants of the Altai and studying the petroglyphs. Researchers also unearthed monuments of Russian culture of the 17th-18th centuries including in the former Ilim fortress, in Zashiversk (Ye. Sedyakina, V. Molodin). This research substantially added to the data obtained from written sources offering a clearer picture of the life and culture of the early Russian settlers in Siberia.[22]

The local archaeological research is extended by broader studies, including of the Stone Age and the early and mediaeval history of China, Mongolia,[23] Korea and Japan. These themes are discussed in several publications, some of them devoted to art in the context of the problem of the rational essence of the world-outlook of Paleolithic man,[24] as well as in popular articles

and books on problems of the origin of man and the historiography of the Paleolithic period which have won an impressive readership.[25]

In 1974, Soviet and American archaeologists carried out their first joint expedition to the Aleutian Islands and Alaska (it was co-directed by the present author from the Soviet side and W. Laughlin from the American side), which has made for a better understanding of the early relationship between the tribes of Asia and America, of the role of the Aleutian Islands in the peopling of the New World and of the history of ancient Aleutian culture.[26]

A notable place in the archaeological study of Siberia is held by the Museum of History of Culture of the Peoples of Siberia and the Far East, housed in the IHPP, in which unique archaeological and ethnographic materials ranging from the Paleolithic period to the 19th century inclusive are on display. Basically, the museum is to show and prove the continuity between ancient and modern cultures and the progressive development of the peoples of Siberia, including the emergence of early forms of statehood in that part of the country.

Of major significance in the historical study of Siberia is a careful attitude to its monuments, more than 1,280 of which have been discovered to date. Siberian scientists and scholars are preparing to establish an open-air All-Siberian Historico-Architectural Museum of the IHPP. To date this future museum has received 15 architectural objects from different parts of Siberia, including such gems of its architectural and building art as the Russian Church of the Saviour built in 1700 in Zashiversk, the Buryat dugan temple from Gusinoozersk, watchtowers of the late 17th-early 18th centuries from Kazym, a log cabin of the descendants of I Polomoshny, a fellow-trail-blazer of Semyon Dezhnev, etc. The museum's four sections will offer a display of early man's settlements in Siberia, its diverse aboriginal dwellings and a Russian Siberian village, complete with houses and outbuildings. The museum will present an impressive picture of the continuity of labour traditions, friendship and cultural interaction between peoples.

The development of Siberian archaeology and research into the history of Siberia since the first man set foot there form a major contribution to the study of the early history of the Soviet peoples and all mankind.

NOTES

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The Methodology of Study and Prognostication of the Development of Rural Areas

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One of the most significant problems now being solved by Soviet society is the overcoming of social differences between town and country, including the difference between industrial and agricultural labour. The growing significance attached to this problem has been reflected, among other things, in the development of branches of science involved in the study of rural areas. A number of major works have been published recently in the USSR concerned with the social problems of these areas.[1] Siberian scholars have also made considerable contribution to the development of Soviet rural sociology.[2] The study of rural population migrations conducted here over the last few years covered a wide scope of problems in the life activity and mode of life of rural population and in the planning of the social development of rural areas.[3]

At the same time the studies that have been conducted have shown that, to solve even relatively special questions, isolated studies of various aspects of the life of rural areas are insufficient. It is becoming increasingly clear that rural communities are complex social organisms that are simultaneously integral parts and functional subsystems of society serving it in certain respects. Control of this object requires elaboration of a sufficiently well-coordinated interdisciplinary programme based on the knowledge of inner mechanisms of functioning and development. This, in turn, assumes the study of rural communities as relatively independent systems functioning within the framework of advanced socialist society.

Since 1972, the Institute of the Economy and Organisation of Industrial Production of the Siberian Division of the USSR Academy of Sciences (IEOIP) has been engaged in the research project "Perspectives of Socio-Economic Development of Rural Areas (a Case Study of Siberia)". The goals of this project are: (1) the development of the methodological means (theory, methodology, and special procedures) for socio-economic systems study, prognostication, and control of the development of rural areas; (2) analysis of the present state, structure, laws of functioning and social reproduction of the Siberian village; (3) preparing several versions of the prognosis of social development of this village within the next 15 to 25 years; (4) substantiation of the principal elements of long-term programmes for all-sided socio-economic control of the development of rural areas.

In its goals, this study is close to the international project "The Future of Rural Communities in Industrialised Societies", carried out in 1971-1976 by the European Coordination Centre for Research and Documentation in Social Sciences (Vienna Centre). The IEOIP was one of the sponsors of this project. It should be emphasised, however, that the international project did not set the goal of systems study of rural communities, while in the Siberian project it figures as the primary task.

The present paper is an attempt to elucidate, first, the theoretical conception of rural community as a subsystem of society and, second, the principles of methodology and procedures for interdisciplinary (systems) study of rural areas.

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The question of whether the entire rural area of a certain country is a systems object is not at all clear. It is appropriate to recall here that systems studies are of two types. Studies of the first type investigate systems clearly delimited from the environment (e.g., organisms). In studies of the second type, on the contrary, the scientist is from the outset faced with the object in its diverse manifestations, while the system itself has to be singled out or constructed on the basis of the empirical material available, construction of the system being one of the basic and most complicated goals of study. That is precisely the situation we are faced with in attempting a systems study of rural communities. The first step in the direction we are interested in is theoretical definition of the object of study and of the features distinguishing it from the environment.

As is well known, there are no general or universal definitions of town and countryside applicable to all countries and accepted by all scholars. The boundaries between these types of settlement are sufficiently vague and conventional, and the features by which various sciences distinguish them are numerous and extremely diverse. To define rural community as an object of socio-economic study, let us introduce the concept of the social settlement structure of society which will be a generic one with regard to town and country. This structure is the result of interaction between two "cross-sections" of society—the social and settlement aspects of it.

Elements of the social structure of society are classes, social strata, and groups differing in their status and standing in certain relations to each other. A specific form of links between them are production relations and, taking a broader view, social relations characteristic of the given society. The main distinctive features of social status or membership in a certain class, stratum, or group are the relation of members of society to means of production, their role in social organisation of labour, size and mode of obtaining income, and degree and mode of participation in production management. These criteria define the working class, peasantry, and the intelligentsia, and within these, certain strata and groups—for instance, skilled and unskilled workers, agricultural and industrial workers, etc.

Elements of the settlement structure of society are types of settlement, differing from one another but at the same time interconnected. Settlement typology is based on such distinctive features as size of permanent population, nature of its pursuits, remoteness from social and cultural centres, townforming factors, previous history, natural environment, modes of building, availability of everyday services, etc. Links between various types of settlement are effected through the exchange of population and results of labour, in particular, the exchange of commodities and services.

The settlement and social structures of society are to a certain extent independent from each other, since members of the same social stratum (say, skilled agricultural workers) live in settlements of different types, beginning with one-house farms and ending with small towns, and vice versa, inhabitants of settlements of the same type (say, a large city) belong to different social strata.

At the same time, there is a certain dependence between settlement types and population social structure. Thus, almost all farmers live in rural settlements, while artistic and scientific intellectuals live in major cities. That is the basis for singling out types of settlements essentially differing in the social composition of the population and thus forming elements of the social and

settlement structure of society. This structure is of a larger scale than settlement structure, for all settlements with kindred social structure belong to one type, although they may differ in other respects.

Town and rural community are the principal and largest (though not the only) elements of society's social and settlement structure. The basic feature of rural communities, distinguishing them from other types of settlement, is their links with land and agricultural production. In most modern societies rural communities lag behind urban ones in the economic, social and technical respects. In antagonistic societies this backwardness, resulting from economic exploitation, is transformed into social antithesis between town and country. Socialist societies set the goal of gradually overcoming social differences between town and country, but its complete resolution requires much time.

Proceeding from the above, let us attempt to define the rural community concept. The rural community is an element in the social-settlement structure of society that was formed in the process of social division of labour and is characterised by farming and kindred branches as the population's main occupation, lower labour productivity as compared to the level attained by society as a whole, the degree of actual socialisation and technological equipment, and the ensuing lower level of the population's income and consumption. The small size of the communities, the considerably lower level of social services, and the predominance of direct contacts between men determine a specific system of value orientations and norms of behaviour as well as a specific mode of life depending on the above factors.

The social object thus defined may be regarded as a systemic one. Indeed, the rural community functions and develops within the framework of a larger system—the national society. It differs from the rest of the national society, first, functionally, for most of its population is engaged in agriculture and the branches serving it; second, socially, for rural population is a specific element of the social structure of society characterised by a correlation of classes and social strata sharply differing from that of urban population; third, spatially, for rural communities have a territory of their own; fourth, from the administrative and legal points of view, inasmuch as state control of rural communities is of a relatively autonomous nature (up to the level of the rural administrative district), while the legal regulation of the activities of the rural population differs essentially from that of urban population.

The integral nature of a system with regard to its environment is tested by the presence in this system of functions relating to the whole that are not reducible to the functions of its elements. The main *social* function of rural communities with respect to national

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society is ensuring normal conditions for life activity and reproduction of the agricultural population, this function being realised through the interaction of all the elements of the rural community's inner structure. The main *economic* function of rural communities with regard to society is production of agricultural output. At first glance, this function is realised by only one of the elements of rural communities—the production sphere, but in reality the latter cannot function without very close links with the spheres of population reproduction, education, and material and spiritual consumption.

The performance of the socio-economic functions in the life activity of rural population is, in our view, the system-forming factor of rural communities.

It should be noted that the system under study is stratified into several hierarchical levels; the following levels may be considered in the case of the USSR: (a) the rural areas in their entirety, the rural community of the whole country; (b) the rural community of a national republic or major region; (c) the rural community of a region or territory; (d) the rural administrative district; (e) a number of settlements belonging to one collective- or state-farm; (f) a separate rural settlement.

The rural community has a control system ensuring a kind of "grinding-in" of its elements and their normal functioning as a whole. In cases where spontaneous or relatively independent development of rural community elements leads to a breaking-point situation, various control mechanisms come into play which return the system to the state of equilibrium.

All of this shows that the rural community conforms with most criteria imposed on systemic objects and may thus be regarded as a complex homeostatic organic system.

A systems study of the rural community assumes step-by-step solution of a number of interconnected scientific problems: (1) the rural community as an element of present-day socialist society (with an identification of the mechanisms of the influence of society on the rural community and of the functions performed by the rural community with regard to society; (2) the structure of the rural community itself: its division into subsystems, elucidation of their mutual functions, conditions, and nature of interaction, as well as their role with respect to the environment; (3) inner structure and mechanisms of functioning of subsystems of the rural community, defining units forming these subsystems, making analysis of ties between them and constructing a general model of the rural community at unit level; (4) mechanisms of economic, political, social, and legal control of the rural community, construction of a model of the rural community as a controlled system.

Let us deal in greater detail with some of the above tasks.

The rural community as a subsystem of developed socialist society. To understand the tendencies of contemporary and future development of the rural community, it is important to establish, first, the laws of development of the larger system—society, and second, mechanisms of transmitting the appropriate developmental impulses from society to the rural community.

Recently there has been a significant growth of interest for studies in the development of whole national communities as well as of smaller socio-territorial communities (districts, towns, rural settlements, etc.). In this type of studies social development is taken to mean shifts in a wide range of living conditions taking place under the impact of scientific, technological and social progress.

Social development is a complex and many-sided process. At least five components characterising its various aspects may be distinguished for analytical purposes: social production, socio-economic, socio-demographic, socio-geographic, and socio-cultural development of communities at various levels. These processes, on the one hand, embrace the rural community as part of society, and on the other, they regulate in a certain way the relations between the rural community and society. The latter point has special reference to social production and socio-cultural development or, to put it differently, to society's industrialisation and urbanisation. The content of these processes being well known, we shall not dwell on it here.

The effect of industrialisation and urbanisation of society on the development of rural communities is of dual nature. On the one hand, they condition the gradual "compression" of rural communities, their decreased role in the social division of labour, distribution of national income, and consumption of material and spiritual wealth. That is manifested in relative, at first, and subsequently absolute decrease in the number of rural settlements, their population, and arable land area. On the other hand, the same processes affect rural communities as an integral part of the entire society, causing qualitative shifts in its production, economic, social, demographic and material-spatial structures. Changes of this type constitute the content of the rural community social development—the process with which we are most concerned.

The actual development of social objects is, of course, never unidirectional—progressive changes in some areas are frequently accompanied by losses in others, and periods of rapid advancement are followed by periods of stagnation and even loss of some positions previously gained. If we are to regard development as the totality of progressive changes in the state of the object under

study, then the content of the social development of the present-day Soviet rural community may be characterised in the following way.

Agricultural production in most areas of the country is being put on an industrial basis. Production of separate types of output is concentrated at a limited number of large specialised enterprises having a much greater potential for mechanisation and automation than smaller ones. Automated systems of information accumulation and processing are introduced in the management of agriculture. The hierarchy of working places is becoming more complex and differentiated, the demand for highly skilled workers is growing fast, while unskilled labour is released from agriculture. The opportunities are increased for choosing professions and for workers' social and professional promotion, seasonal fluctuations in the nature of labour decrease, the conditions of work in agriculture approaching those in industry. Owing to changes in the branch structure of the agro-industrial economic complex, a large number of industrial and construction enterprises are being built in rural areas, while the proportion of rural population engaged in farming is decreasing.

The growing share of highly skilled agricultural labour (and the resultant increase in wages) contributes to a rise in the rural population's actual incomes. Gradual reduction in the labour intensity of personal subsidiary holdings, introduction of modern durables in rural everyday life, development of various forms of social services signify a transformation of the traditional rural mode of life and its growing similarity to that of city dwellers.

The characteristics of demographic development of town and country are becoming noticeably similar. Urbanisation and changes in the way of life, the spreading of urban norms of behaviour tend to eliminate the difference between the birth-rate and natural growth of rural and urban population. The mean size of the rural family is reduced, and its structure simplified, so that it includes not more than two generations, as a rule.

The educational level of rural population is raised through the introduction of universal secondary education, extension of the network of specialised educational establishments, and sending most of the graduates to rural areas. Shorter working days in farming contribute to the population's increased leisure. Construction of clubs, libraries, sports facilities, and extension of the forms of their work increase opportunities for using this leisure for cultural purposes.

The system of social relations in rural communities is gradually formalised. The role of kinship relations decreases. The social control of individuals' behaviour is weakened. The needs, interests, value orientations, and opinions of rural dwellers assume many features formerly characteristic of city dwellers only.

The general number of rural settlements decreases, the population is gradually concentrated in relatively large villages with all amenities. Their appearance is changing: the network of streets is becoming more regular, excessive dispersedness of buildings is eliminated, the proportion of modern type multi-storey buildings is increased, and social centres of settlements are formed. More conveniences become available in rural dwellings (sewerage, running water, gas, central heating, etc.).

Lastly, the development of transport communications shortens the economic and social distances between separate settlements, including those between villages and town. Transport mobility of rural population increases—trips to neighbouring villages and towns both for production purposes and those of everyday life are becoming more frequent. In suburban districts a large proportion of the population is occupied at urban enterprises, commuter-type migration becoming widespread.

Such is, in general outline, the content of progressive changes taking place in the Soviet rural community as a subsystem of developed socialist society which is under permanent control of the latter.

Both the direction of development of rural communities in principle and its rate are determined by the interests of socialist society as a whole. This is reflected in the links between planning and control. These links may be divided into *economic* (planning of production and material and technical supplies, regulating the economic mechanism, applying certain financial levers); *social* (provision of various social privileges and sanctions for some or other groups of the rural and urban population); *administrative and legal* (regulating the rights and duties of various groups of population and types of organisations); *political* (the Soviet power), and *ideological* (forming communist world outlook, spreading certain spiritual and political values, moral norms, etc.). The rural community's response to the controlling effect of society is expressed in various types of "feedback", e.g., in the extent of actual fulfilment of production plans, regularities of population migration and manpower fluctuation, workers' attitude to labour, etc.

The other group of links is formed by connections between rural communities and society based on the exchange of material wealth, services, information, income, labour, population, as well as social norms and values. This exchange is realised on the basis of specific relations and therefore assumes various forms.

Material wealth which is exchanged between society and rural community is intended for both industrial and personal consump-

tion. This type of links is secured through the material and technical supply of enterprises, selling of consumer goods in rural communities, state purchases of agricultural produce, collective-farm (market) trade in the cities. These relations are intended to ensure the proportional development of the interconnected branches of economy—agriculture, industry, construction, transport, and to regulate the comparative rates of labour productivity increase in these branches, as well as correlation between levels of personal consumption of urban and rural population.

Both urban and rural population obtain most of the social and cultural everyday services where they live. Exchange of services between rural communities and the rest of society is therefore developed much less than exchange of material wealth, still it does exist. Rural dwellers use the services of medical institutions, shops, multiple service establishments, museums, theatres, parks of culture and recreation, etc., situated in cities. In their turn, city dwellers living in summer country houses or vacating in villages make use of rural recreational resources and rural community services. The resultant division and cooperation of labour promote a more effective organisation of services for the entire population, satisfying its needs more fully.

The varied commodity-money relations between the rural community and society "serve" the distribution and redistribution of the national income and have a formative effect on certain proportions of economic and social reproduction. These links regulate the comparative rates of growth of urban and rural production and non-production funds, the degree of profitability of urban and rural enterprises, and the level of personal incomes of urban and rural population.

Information coming from society to the rural communities creates conditions for training highly skilled personnel and medium echelon workers, facilitating also the elimination of cultural differences between town and country, widening the general spread of information and thereby of the population's social activity, and satisfying its spiritual needs. Goal-directed regulation of information exchange is a most important instrument of raising the technological, social, and cultural standards of rural communities.

The development of commuting and seasonal migration of population between town and country signifies exchange of labour. A considerable part of the population of suburban areas permanently work at urban enterprises. Among city dwellers there are also persons working in the surrounding villages, but their number is not great. Much more widespread is the assistance to rural communities provided by city workers' labour during the seasons of highest agricultural activity. Exchange of the labour of

permanent dwellers raises the general level of employment of labour resources in social production and reduces the shortage of manpower in it. At the same time commuting and seasonal migration perform important social functions, extending labour and social mobility of rural dwellers, and promoting a better knowledge of the city and urbanisation of their consciousness, etc.

Exchange of permanent population (as distinct from commuting and seasonal migration) presupposes changing the place of residence, that is, moving from rural areas to towns and vice versa. The functions of this kind of migration are close to those of the commuting migration just described. Its function is to establish correspondence between the sites of industrial enterprises and workers' place of residence, to extend the possibilities of rural dwellers' social and professional promotion, to raise their living standard, and introduce them to the urban way of life.

Rural and urban population have different systems of social norms and value orientations. Rural norms and values reflecting the conditions of insufficiently urbanised society are less developed than urban ones and gradually give way to the latter. Rural norms and values are introduced into cities almost exclusively together with their carriers, that is, the migrating population, while mechanisms of the spreading of urban norms and values in the villages are more varied. They include not only the moving of a certain part of city dwellers to the country but also living intercourse between town and country dwellers, their discussion of current affairs, working out a common attitude to these affairs and to certain aspects of social life. Besides, the social norms and values of the rural population gradually change under the impact of society's goal-directed activity in political, ideological, moral, and cultural education of the people through mass media, art, and literature.

Elements and system-forming relations in the rural community. The specific mode of functioning of the system under study is the life activity of rural population. It is therefore natural to single out as subsystems such spheres of this life activity that would perform significant and relatively independent functions in the attainment of the system's general goals.

However, can one speak of the rural community's goals? The rural community is not a single-purpose system constructed for carrying out certain tasks but an integral part of society.

Accelerated socio-economic development of rural communities, levelling out of the social condition of urban and rural dwellers is, as has been noted, one of the highest goals of socialist society. This does not rule out but, on the contrary, presupposes working out long-term goal-directed programmes for the social development of the rural community reflecting, on the one hand, the needs and

interests of society, and on the other, the resources and potential available to it. Let us try to define the goals of a long-term programme for the development of the Soviet rural community over the next 15-20 years:

— to attain a level of agricultural and kindred production sufficient for satisfying the society's needs in foodstuffs, for production and consumption needs of the rural community itself, and industry's need for raw materials;

— to ensure the reproduction of rural population on the basis of natural movement and migration that would ensure satisfying the rural community's need for manpower and the urban community's need for increased numbers of workers;

— to overcome, in broad outline, the socio-economic and cultural backwardness of the rural communities in comparison with the urban ones; to achieve a transformation of agricultural labour into a variety of industrial one; to eliminate most of the differences between the standards and modes of living of rural and urban population; to ensure that the material, social and cultural needs of rural population are satisfied to a fuller extent than at present;

— to intensify the recreational and ecological functions of rural areas and raise their role in the conservation and enrichment of society's natural resources.

The kinds of activity "responsible" for carrying out these tasks fall into three major spheres: material production, reproduction of men, and reproduction of natural environment. Each of these spheres produces its own "output" which is consumed, first, within the sphere itself; second, by other rural spheres; third, by the external, non-rural part of society. Accordingly, the flow of wealth from society to the rural community is distributed between these three spheres of activity.

However, the division of total life activity of rural population into the spheres of reproduction of material wealth, men, and natural environment is inadequate, for each of them includes kinds of life activity essentially differing in their goals, objects, means, modes, and results, that is, essentially independent of each other. In order to single out the more special but at the same time sufficiently large and relatively independent units in the population's activity, it is necessary to determine clearly the very concept of sphere of life activity regarded as a subsystem of the rural community. In this study, a subsystem of this kind is interpreted as a specific agglomeration of social objects which, first, is ordered according to the function it plays in the sphere of social reproduction; second, includes both the activity of formal organisations (enterprises, establishments, and departments) responsible for the different areas of reproduction and the corresponding

activity of unorganised rural population; third, is characterised by specific goals, objects, means, modes, and results of activity of formal organisations and population.

Application of these criteria yields a division of the three major spheres listed above into more special types of activity in such a way that only relatively weak links will be disjointed. As a result, seven subsystems corresponding to seven types of life activity of rural population are singled out: (1) social material production; (2) collective farmer's personal subsidiary holdings; (3) health care; (4) enlightenment and specialised education; (5) material consumption and everyday life; (6) spiritual consumption and leisure; (7) reproduction, conservation, and utilisation of the natural environment.

All of these subsystems are necessary for the existence and development of the rural community, as each of them reproduces a specialised "output" necessary for other subsystems.

One can single out six most important kinds of resources, or values, that are the products of certain subsystems of the rural community distributed between its elements: labour resources, the population's working time, the population's leisure, material wealth, income, and natural resources (including arable land and forests, territories suitable for settlement, etc.). The links involving production, distribution and consumption of these resources are system-forming for the rural community. Regulating the proportions of distribution of the most important resources between the subsystems is an effective instrument of controlling the rural community's development.

The specific functions performed by separate subsystems of the rural community in its social reproduction appear as their system-forming factors. Understandably, the internal structure of the subsystems cannot be based on further meaningful detailing of the kinds of life activity. This detailing may only result in a growing number of subsystems without transition to a new level of their study. The elements forming the internal structure of the subsystems of the rural community are taken to be the functional elements of the population's activity and the corresponding formal organisations ensuring, in the final analysis, the realisation of the subsystem's functions. These elements are: the goal of activity, its subject, object, means, ways, and results. On the whole, a separate subsystem thus includes 12 elements (units), but some of them may coincide. For example, the subject of the population's activity in obtaining education (the student contingent) is at the same time the object of the activities of educational establishments. The overall number of units ensuring the rural community's functioning and development is somewhat smaller than the theoretically computed one.

The methodological principles and methodological specific features of systems studies of rural communities. The methodology and special procedures of systems (interdisciplinary) study and prognostication of the rural community are determined by the content of the theoretical conception presented in basic outline above. Let us try to enumerate the most important features of planning and implementation of systems studies of the rural community, indicating at the same time the way in which the corresponding principles are realised in the practical work of the Sector of Social Problems of Rural and Urban Communities at the IEOIP.

The themes of the project. Two groups of themes are singled out for the analysis of the rural community's inner structure. The first one deals with the study of the rural community's subsystems. Of this nature are, for instance, the themes "Social Material Production in Rural Communities", "The Personal Subsidiary Holding", "Material Consumption and Everyday Life in Rural Communities", and others. The second group of themes is determined by the goals of special studies in the system-forming links of rural communities. Here belong such themes as "The Utilisation of Labour Resources and Level of Population Employment", "Working Time Balance of Rural Population", "Formation and Distribution of Collective and Individual Income", etc.

The links between the rural community and society are realised, as has been pointed out, at two levels. On the one hand, they are associated with the rural community as society's subsystem, and on the other, each of these links, when considered more closely, is associated with one or more concrete subsystems of the rural community. Both of these aspects are of great significance. The description of the structure, laws of functioning and development of subsystems therefore necessarily takes into account the subsystem's external connections, some of them being localised within the rural community, while others reflect the rural community's links with society.

The second aspect of studying the external connections, where the rural community is regarded as a whole correlated with society, is reflected in the theme "The General Laws of the Urbanisation of the Rural Community and Migration of Rural Population".

Combining the analytical and synthetic approaches. The identification of a great number of themes dealing with the various aspects of the rural community reflects the analytical approach to the subject-matter in hand. Systems studies of rural communities, however, also presuppose subsequent synthesis of the results of special studies with the aim of returning to the level of the whole. Attaining this aim is ensured in two ways.

First, the system of information links between the separate themes is established already at the stage of compiling programmes for the methods of study. Lists are made of the major characteristics of the rural community and of the corresponding operational indicators divided into three groups with regard to the theme being studied: input (obtained in the study of contiguous problems), internal (obtained and utilised within the framework of the theme), and output (constituting elements of the general prognosis of the rural community's development or obtained in the study of contiguous questions). Comparing these studies in different themes enables one to formulate a general system of information links, establish contacts between performers at the proper time, reveal the points of divergence between them, etc.

Second, the project includes, from the very outset, not only analytical but also synthetic themes, intended to form integral ideas of the rural community from certain special viewpoints. One of these themes ("General Laws of the Urbanisation of the Rural Community and Rural Population Migration") has been touched upon above, the second theme of this kind is "The Socio-Economic Typology of Rural Settlements", and the third, "The Way of Life of Rural Population and the Laws of Its Urbanisation".

The socio-economic typology of rural settlements presupposes an integral view of the spatial structure of the rural community, first of all with regard to formal organisations and social institutions, while the study of the way of life makes it possible to synthesise the conceptions of the basic forms of the rural population's life activity and links between them.

The nature of the information required. The ramified system of information connections between the themes requires that the information should be fully available for comparison and should take into account the nature of objects described and the time encompassed. Work on all the themes of the project is therefore based on the data of the same sociological surveys. Understandably, under these conditions the latter become interdisciplinary, and their programme is extended and made more complex.

Inasmuch as every sphere of life activity (rural community subsystem) is considered from the point of view of interaction between population and the appropriate formal organisations, the need arises for studying simultaneously the population (conditions of its labour and everyday life, specific features of behaviour and consciousness) and the formal organisations of rural communities. The study thus becomes sociological-statistical in nature.

Field studies on which the present paper is based are conducted in cooperation with the Central Statistical Board of the Russian Federation, and make use of both the sociological and

statistical apparatus. They are repeated every five years. Three such studies have been carried out to date: in 1967, 1972, and 1977. The sociological apparatus of the 1977 survey included two interconnected formalised interviews: "The Rural Family" and "The Rural Dweller". The first interview was conducted with the head of the family, the second, with each of its adult members occupied in social production. The interviews in the form of answers to questionnaires containing 174 questions each complement each other affording a sufficiently comprehensive view of the conditions of labour and everyday life of rural population.

The statistical part of the apparatus consists of 14 forms filled in by secretaries of the surveyed rural Soviets under the control of statistical organs. The most important of these forms are "Report by an Agricultural Enterprise (Collective Farm, State Farm)" offering a detailed description of the composition and fluctuation of manpower, the nature of work places available, conditions and content of the workers' labour, as well as the basic economic indicators of the enterprise; and "Characteristics of the Settlement" describing the conditions of life in each settlement, its natural features, amenities, services, nature of dwelling houses, branches of the economy in which the population is employed, etc. In addition, forms are filled which characterise the material basis, financial resources, manpower, and basic results of the activity of rural industrial enterprises, construction organisations, schools, clubs, houses of culture, libraries, children's and medical institutions, commercial enterprises, communications, everyday services, canteens, etc.

The nature of the studied object. Systems studies of the rural community's social development impose extremely stringent demands on the choice of the empirical object of study. First, this object must be representative of a sufficiently large region of the country. Besides, it should be borne in mind that the process of urbanisation is extremely uneven in different areas of the village community, so that the concept of rural community covers both highly urbanised settlements and those very little affected by urbanisation. The sampling of settlements studied should take into account as fully as possible the variety of natural, economic, and social conditions of rural population's life. At the same time the sociological-statistical nature of the study imposes more rigorous demands on the scale of sampling which has to embrace a sufficient number of families and also the necessary number of formal organisations of each type—clubs, schools, medical institutions, and that means a greater number of settlements.

Our studies are based on a multi-dimensional sample of the social objects of several districts representative of the rural areas of Novosibirsk Region. Its area (171,000 sq. km) is larger than that

of many European countries; further, it occupies a central position in the West Siberian region and provides a representative picture of the general laws of its development.

The sampling was conducted in three stages. At the first stage, 14 rural districts of Novosibirsk Region were chosen out of the total number of 29, those 14 being representative of the region in the mean size of settlements (the degree of population dispersedness), proportion of collective farm population, population migration relative balance size, as well as in remoteness of district centres from Novosibirsk and the nearest railway stations. At the second stage, of the 185 rural Soviets in the districts selected, 34 were chosen as representative of the region with regard to the indicators listed above. All settlements were studied within the jurisdiction of the rural Soviets selected. The third stage consisted in the selection of families to be questioned; the selection was conducted according to different criteria for settlements of different types on the basis of farm books kept by the rural Soviet. Later the family sampling was made representative of the region by weighing data on the basis of special coefficients.

The study of the dynamic tendencies of development. The research project "Perspectives of the Rural Community's Socio-Economic Development" is prognostic in nature. It implies not only a detailed description of the present state of the Siberian rural community but also reveals the mechanisms of its development, making it possible to forecast the future. The need is therefore clear for obtaining data about the dynamic tendencies of the rural community's development over more or less long periods. Regrettably, this need is in contradiction with the nature of information required, for the latter is almost completely absent in statistics. The only way out of the predicament under these conditions is conducting repeated sociological-statistical surveys based on one and the same sample and on comparable programmes.

The first interdisciplinary study of the Novosibirsk rural community was conducted in 1967. The programme of the study included "The Rural Family's Questionnaire" (of 108 questions, some of which addressed to each grown-up member of the family) and of eight statistical forms. This study was focused on research in population migration, but its programme was of an allround nature. The survey covered 212 settlements, 5,119 families, and 10,576 adult rural dwellers.

The second interdisciplinary survey using the same sample was conducted five years later, in 1972. By that time there were 178 settlements left on the territory of the rural Soviets in question because of amalgamation of small villages. This time, the norms of family selection were differentiated depending on the population

size (every seventh family was interviewed in smaller settlements, every fourteenth, in medium size settlements, and every twentieth, in large ones). In all, 1,640 families and 2,320 workers were questioned. The programme included filling in the "Rural Family's Questionnaire" and "The Worker's Questionnaire" comprising 100 and 140 questions respectively. The statistical apparatus included nine forms, the content of which changed as compared to 1967 towards a more all-sided reflection of the rural community's development.

The third interdisciplinary study of the West Siberian rural community was conducted in 1977. It was based on the 1972 research programme with some essential corrections in accordance with the requirements of the theoretical conception and results of processing data obtained earlier.

To conclude, we would like to emphasise that the systems approach to the study of the rural community opens up fundamentally new perspectives for the formulation and solution of some interesting and complicated scientific problems having a direct bearing on the life of our society.

NOTES

[1] Yu. V. Arutyunyan, *The Social Structure of Rural Population,* Moscow, 1971; *The Scientific and Technological Progress and Social Changes in Rural Areas (from Byelorussian Materials),* Minsk, 1972; *Problems in Overcoming the Differences Between Town and Country,* Moscow, 1976; P. I. Simush, *The Social Portrait of Soviet Peasantry,* Moscow, 1976; A. I. Timush, *Scientific and Technological Progress and the Social Development of Rural Areas,* Kishinev, 1977 (all in Russian).

[2] *The Social Problems of Rural Labour Resources,* Novosibirsk, 1968; *Rural Areas in Modern Siberia. Some Problems in Social Development,* Parts I, II, Novosibirsk, 1975; *Methodological Problems of Systems Studies of Rural Areas,* Novosibirsk, 1977; *The Development of Rural Settlements,* Moscow, 1977 (all in Russian).

[3] *Rural Population Migrations: Tasks, Goals, and Methods of Control,* Novosibirsk, 1969; *Rural Population Migrations,* Moscow, 1970; *The Socio-Economic Development of Rural Areas and Rural Population Migrations,* Novosibirsk, 1972 (all in Russian).

Baikal-Amur Railway and the Peoples of the North

VLADIMIR BOIKO

A resolution of the CPSU Central Committee and the USSR Council of Ministers "On Measures Ensuring the Further Economic and Social Development of the Areas Inhabited by the Nationalities of the North", published in *Pravda* on February 26, 1980, says that the consistent implementation of the Leninist nationalities policy has enabled nationalities of the Soviet North to record substantial economic and cultural successes. Today many areas populated by these nationalities, including Northern Siberia, are the scene of the intensive development of their rich natural resources and the construction of large industrial complexes, power projects and transport facilities. The decision maps out measures ensuring comprehensive economic development and the perfecting of the management of economic and cultural construction in these areas over the period 1980-1990.

The Baikal-Amur Railway (BAM) crosses a territory inhabited by the indigenous peoples of Northern Siberia and the Soviet Far East. Bringing this zone into economic circulation will undoubtedly influence the economic, social and cultural development of the Evenks, Nanais, Ulchi, Nivkhis, Udegheis, Negidals, and Orochi—in all 25,000 people.

This comparatively small group of peoples form individual, predominantly compact, national groups in the vast BAM zone. Its gainfully employed population comprising less than half of its total number, the group is hardly likely to seriously affect the calculation of the balance of labour resources. The general project

of the territory's economic development puts the accent on the social advancement of these peoples, the character and orientations of possible changes in various fields of their activity and on the choice of optimum rates of the internationalisation of their way of life.

Up until the beginning of socialist changes the smaller peoples of Northern Siberia and the Soviet Far East had, in effect, retained archaic forms in their economy, everyday life, culture and social relations. Like centuries ago, they lived by hunting, fishing, food gathering and primitive reindeer-breeding. Up until the 20th century weaving was unknown to the majority of these peoples and pottery to many, for theirs was a nomadic life.

The specific features of their occupation and settling did nothing to overcome isolation. And, although the incorporation of pre-revolutionary Russia's outlying areas drew their economy into the Russian market exerting a progressive influence on the whole on the development of their smaller peoples, sweeping changes in their life began only in Soviet times.

A comparatively brief period—the lifetime of one generation—saw a qualitative leap in the social development of these peoples from the most backward social forms to modern civilisation, from primitive forms of economy and everyday life to socialist ones. Underlying these changes was the Leninist nationalities policy of the Soviet state, which stimulated progress in all aspects of the activity of the smaller peoples. The solution of general problems in the course of building a socialist society went hand in hand with a search for concrete forms and methods of social development with due regard for the specific features and interests of each group of peoples—a factor that lent great effectiveness to the measures which were adopted. In the political field, for instance, elements of traditional community administration were integrated with new forms of state government—a factor that ensured a gradual transition to socialist statehood. In the economic field, the first organisational form—comprehensive cooperation—gave way to the simplest production associations, which in the 1940s changed into a higher, the artel form of cooperation with its inherent collective form of property. In the cultural field, a major role was played by the creation of local written languages, by the volunteer teachers of other nationalities who helped to eliminate illiteracy, by mobile cultural centres, etc. Within a short time 13 nationalities obtained alphabets, had textbooks written and books translated for them, proceeded to publish newspapers in their own languages and formed their own intelligentsia, which is now represented, in the main, by medical, cultural and educational workers.

Naturally, radical changes had to be introduced with due account of the level of development of each people's specific features and thus to avoid a crude breakup of its customary pattern of life. The development of individual branches of production into predominant ones was approached from precisely this standpoint. The economic expediency of these branches was a subordinated factor. A factor behind the smooth, painless changeover to new forms of community living was the retention of the customary area of settling, the traditional types of occupation and branches of production.

At present the industrial development of the traditional areas of settling of the smaller peoples of the North is entering a new phase. The construction of BAM and major territorial-production complexes are exerting a great influence on the character of social and other processes the regulation of which is becoming noticeably complicated.

To begin with, it is quite a problem to orient the indigenous population on types of occupation and branches of production. Of course, it is tempting to retain orientation on the traditional types of occupation. The use of indigenous skills and know-how to ensure the continued upsurge and development of long-established branches of production, notably reindeer-breeding, in view of the necessity of creating a local production base, seems to be quite natural and justified. However, orienting the indigenous people exclusively on traditional occupations could have posed the threat of a decline in the inner stimuli to the development of the individual: the narrow spectrum of traditional skills and the poorly progressing content of traditional labour give no impetus to the daily necessity of vocational upgrading and expanding the scope of occupations.

The curriculum of the present-day secondary school provides the knowledge adequate for learning any trade or profession. This explains why we observe among some sections of the population, especially among young people, a certain contradiction between their level of education and life and vocational orientations, on the one hand, and the content of the work they perform, which does not require the full use of the knowledge they have received, on the other. And, although energetic steps are currently being taken to change production processes and, particularly, to adequately equip long-established branches with new equipment the jobs of reindeer-breeder and hunter, because of their specific features, are renewing their content slowly. Whoever wants to become a good hunter or reindeer-breeder has to master the skills and techniques of the previous generation. Meanwhile, industrial work, which is connected with technology, in addition to fostering

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abilities, induces man to perfect and augment his vocational knowledge.

Of course, there are psychological difficulties. In school (boarding-school) the boys and girls of the indigenous nationalities, besides gaining new knowledge and broadening their intellectual horizons in general, seek broad daily social communication, want to share in the life of the community, in using the cultural potential of a populated area. This pattern of behaviour, which takes shape at the beginning of the individual's career, cannot achieve self-realisation, for instance, in the conditions of outlying reindeer-grazing. Small labour teams (five-six people—usually two or three families), isolation from the rest of the population for practically the whole year, and a very limited potential for consumption of intellectual culture, in other words, conditions which only recently satisfied the older generation are becoming unsuitable for the younger generation. It is precisely in this context that the problem of cardinal change in the technology of long-established types of work and of bringing them up to the level of industrial jobs is being tackled.

In Soviet times the smaller peoples of the North have traversed a long distance—from a socially and occupationally uniform society with a primitive economy and undeveloped productive forces to a society with extensive socio-vocational differentiation. This period has seen the formation of national contingents of collective farm peasantry, intelligentsia and working class. However, the socio-vocational structure of the smaller nationalities of the North is not yet similar to that of the whole population of the administrative region. Individual peoples, like, for instance, the Evenks of the BAM zone are only beginning to shape the industrial contingent of their working class. For this reason, certain objections to orienting the whole indigenous population on traditional occupations also arise from the necessity of resolving problems connected with eliminating socio-vocational disproportions.

Traditional branches can and must be brought up to the level of industrial labour. This problem has to be resolved already in the course of implementation of the BAM zone development plan. And, although it will apparently take some time to achieve this, the economic and social results will undoubtedly be gratifying. At the same time, a section of the population (as a rule, young men and women) is already being trained for performing complex professional functions. The construction of BAM creates and will continue to create a permanent demand for a skilled labour force and the trained sections of the population will inevitably orient themselves to new forms of labour and the performance of complex labour functions. It is an objective process.

However, overhasty transition of the indigenous peoples to new types of labour is likewise undesirable. It is on record that reorientation of the individual to values which are still alien to him involves a difficult adaptation to new types of labour and a new way of life. Consideration of the specific features of this adaptation in the management and administration is designed to facilitate the successful overcoming of these difficulties.

There is yet another problem-creating situation. The development of the BAM zone is sharply swelling the influx of population of other nationalities to the traditional areas of the smaller peoples. Multinational labour teams and settlements are coming into existence and the structure of communication between the nationalities is substantially changing. Closer contacts and broad communication are leading to a faster exchange of values, exerting a positive influence on all spheres of the smaller peoples' life. At the same time, scholars, with a view to making fruitful recommendations for social management, are giving thought to all the possible consequences of these processes. What if they result in the premature dissipation and dissolution of the national community? What if its consolidated state is upset? What if the level of its national awareness—a factor in the integration of labour teams comprised of members of other nationalities—drops?

Thus, the search for strategy, tactics, forms and methods of controlling the processes of development of the smaller nationalities of the North has produced a whole complex of problems which are being studied by specialists.

* * *

A study of the social processes and trends of development among the peoples of the Lower Amur area in the process of its industrial development has been made, in particular, by sociologists of the Institute of History, Philosophy and Philology of the Siberian Division of the USSR Academy of Sciences, since 1967. The choice of a study area was determined mainly by the degree of concentration of the indigenous peoples. A survey was carried out in the Khabarovsk Territory, among others, in the Komsomolsk, Nanai and Amur districts, which account for almost 80 per cent of all Nanais, and in the Ulchi District, which concentrates 80 per cent of all Ulchi.

The singling out of a group of several peoples as the object of an integrated study proved possible because of the uniformity of their economy, main types of occupation, way of life, natural environment and area of habitation. This group of peoples occupies a somewhat specific place among the other smaller

peoples of the North. The explanation is better natural and climatic conditions and types of work (mainly fishing), which make possible human concentration in large settlements, prolonged community living with other peoples and more intensive industrial development of the area. Already in the 1930s new industrial towns and workers' settlements whose influence is traceable to all spheres of life began to appear in the areas inhabited by the Lower Amur peoples.

The territorial mobility of the Lower Amur peoples sharply rose: by 1970 the proportion of the urban population had risen to 27 per cent while its growth rates over the period 1960-1970 greatly exceeded the country's average.

The Nanais and Ulchi lived mainly in the collective farms specialised in fishing. By the 1970s, a drop in the proportion of the fishcatch had increased the proportion of non-traditional branches of production such as logging, timber processing, fur farming, stockbreeding, etc. Changes in the economic life of the collective farms have been a substantial factor behind the redistribution of the collective farm population between various branches and spheres of production increasing the influx of migrants to the towns and workers' settlements.

A major incentive to migration to urban centres is the orientation on more skilled new jobs. About 10 per cent of the Nanais who work in rural areas believe that their level of education is higher than their job requires. Some categories of the younger generation particularly sharply feel the discrepancy between the character of the jobs and the level of their education.

City appeal has also been registered in several other indicators. More than 50 per cent of the potential migrants intend to move to towns; 10.8 per cent of the rural inhabitants would like to spend their holidays "simply in town", another 23.4 per cent would like to do it visiting towns and almost 50 per cent of the Nanais would like their children to become townspeople.

The practical realisation of the emphatic value orientation on urban centres depends on many factors, including the location (accessibility) of the city, the intensity of contacts between rural and urban people and the possibility of getting jobs and housing in town.

Today every sixth Nanai family has a son or a daughter living in town and almost every Nanai family—relatives there. The result is fairly stable rural-urban contacts: the traditional contacts between the relatives are very strong.

The rise in territorial mobility is accompanied by a rise in social mobility: social and vocational structures change and new vocational and social groups appear on the scene.

The broad choice of occupations offered by the national economy of the Khabarovsk Territory is used by the indigenous population of the Lower Amur sufficiently fully. For example, the proportion of the rural Nanais employed on collective and state farms equals 62 per cent, while that of the Ulchi only 42.6 per cent. The proportion of those engaged in industry, construction, transport, communications, in trade and the supply services are 18.7 per cent and 21 per cent respectively and of those engaged in the spheres of management, culture health services and public education 17.2 and 33.9 per cent respectively.

The vocational skill structure of the rural population shows a high proportion of workers engaged in intellectual pursuits: 21 per cent among the Nanais and 24.6 per cent among the Ulchi. This big contingent of the rural intelligentsia continues to grow—so much so that, to date, the proportion of highly skilled office workers in the non-Russian villages of the Lower Amur area has reached the country's average.

The younger generation claims a higher proportion in the groups which do intellectual and other highly skilled jobs. The traditional trades of a fisherman and hunter have smaller attraction for the young people. Among the hunters, for instance, there are none under 30 and 71.7 per cent are over 50. The fairly large proportion of young people in the unskilled worker group shows that there is still an insufficiently wide choice of occupations at the outset of a career. These young people realise their trade and professional interests in the rapidly growing towns and workers' settlements of their traditional settling areas.

The economically active urban population of the Lower Amur area is represented by two main groups: factory workers (86.1 per cent) and office workers (12.6 per cent). Among the women the proportion of office workers is higher (15.5 per cent as against 8.6 per cent among men). The urban inhabitants of the peoples in question are engaged in the most diverse branches of the national economy, and particularly in industry—32.8 per cent, construction—20.9 per cent, transport and communications—12.6 per cent.

It is difficult to overestimate the role of the town in the socio-vocational evolution of the Lower Amur peoples: they are learning new jobs, acquiring habits of skilled labour and are satisfying their requirements in individual types of work.

Special pre-labour training accelerates vertical socio-vocational mobility, especially among persons under 30, thus stimulating the formation of a socio-vocational structure of the Lower Amur peoples, that is identical to that of the whole Soviet population.

The above suggests that the formation of an industrial complex in the centre of traditional settling has played an

exceptional role in the development of the peoples in question. New value orientations on types of work and the increased requirements of the indigenous population, especially the young people, can be satisfied in places of traditional settling. At the same time, hunting and fishing as hobbies for certain groups, the river with its power of attraction, the opportunities for contacts with relatives—all this creates an atmosphere in which a change in vocational orientation and new conditions of life in town do not cause major psychological tensions.

An analysis of the processes of development of the Lower Amur peoples[1] permits us to draw several conclusions and offer suggestions which could be of use in controlling the social development of the BAM zone Evenks. But if the trends of development of the Evenks connected with the emergence in their traditional settling zone of industrial, transport and other formations and urban growth are identical to those of the Lower Amur peoples the course of the processes here will be marked by specific features.

To begin with, the structure of the branches of production and the choice of types of occupation in the Evenk villages are much narrower than in the Nanai villages. This limits trade and professional specialisation and the formation of new value orientations. There are also considerable structural differences in a multinational community. The Nanais, for example, live in villages with a predominantly non-Nanai population (more than 60 per cent) while the Amur Region Evenks live in villages with a lower proportion of non-Evenk population (only up to 35 per cent). Naturally, this situation weakens the exchange of values.

The pace of urbanisation among the Evenks between the 1959 and 1970 censuses was the lowest among the peoples of the North. The migration of Evenks to workers' settlements and towns and the mastering by them of new types of occupation, which meet increased requirements, are processes that are only beginning. However, rapid construction is likely to make these processes more intensive than among the Lower Amur peoples.

Naturally, the "explosive" formation of new settlements in direct proximity to, and in some situations directly in, their own villages (Zolotinka, Yakut ASSR) will shorten the integration period and complicate to some extent their adaptation to new forms of labour and a new way of life. The shrinkage of reindeer pastures and hunting and fishing areas will require the development of new areas and finding new technological and organisational solutions taking into account the considerable remoteness of the grazing and farming grounds from the settlements.

The aforesaid made necessary a special study of practically all spheres of life of the Evenks and the elaboration on this basis of

practical recommendations with due account of their specific features.

The special expedition organised at the end of 1976 to collect information on the influence of BAM on the social development of the Evenks studied the public opinion of different sections of the Evenk population on a wide range of questions posed by the construction of BAM in their traditional settling area. The survey was carried out in all the five Evenk villages of the Amur Region—Pervomaiskoye, Ust-Urkim, Ust-Nyukzha, Bomnak and Ivanovskoye—and in one township of the Yakut ASSR—Zolotinka.

In the said population centres all able-bodied men and women—both those engaged in social production and not engaged—were polled. The expedition gathered diverse sociological data which mirrors the state and trends of development of the socio-vocational, demographic and educational structures of the indigenous population, the level of development of the spheres of labour, culture, everyday life and social communication, the features of consumption of cultural and spiritual values, social consciousness, the structure of value orientations, the requirements of various socio-demographic population groups in certain types of labour, value orientations in the fields of culture, everyday life and social communication.

The findings were presented in a report "Social Development of the Indigenous Peoples of the North in the Conditions of the Construction of BAM" submitted to the Presidium of the Siberian Division of the USSR Academy of Sciences, and formed the basis of measures which ensure the most rational development of the smaller peoples of the North as provided for by the integral socio-economic development plan of the BAM zone. The present article cites some data, generalised estimates, opinions, attitudes, orientations and plans of Evenks polled by the expedition and the results of statistical data processing.

The Evenks of the central part of the BAM zone (about 2,200 people) from compact groups in the above-named six townships: the proportion of the indigenous population in each averages 65 per cent, the rest being Russians. Of the surveyed population 52 per cent were Evenk families, 21.5 per cent Russian families, 10.7 per cent mixed families and 12.7 per cent single persons.

Among Evenks of working age (including students) those engaged in social production account for 65 per cent, Russians for 83 per cent. Among the Evenks second members of the families (housewives) are, as a rule, less engaged in social production.

The predominant economies are collective and state farms, where 66 per cent of the entire gainfully employed Evenk population is working and 35.6 per cent of gainfully employed

Russian population. In 1971-1975 the structure of commodity production of the non-Russian collective and state farms (Amur Region) was dominated by reindeer-breeding (47.1 per cent). The proportion of hunting products was 14.8 per cent, that of fur farming products, 11.2 per cent, that of the products of other occupations (forest working, private construction) 23.5 per cent. Fishing, plant-growing and stock raising are represented scantily (only 3.4 per cent).

In 1975, 70.4 per cent of the total income came from reindeer-breeding. Its comparatively high profitability is due to the scarcity of breeders. The average annual profitability level of hunting is not high: in 1971-1975 it was 14.3 per cent. The caged fur animal population is not large; over the 15 years preceding the survey it rose by 20 per cent.

Manual workers comprise 75.9 per cent of the gainfully employed indigenous population and 47.1 per cent of the non-indigenous. Skilled workers (machine operators and those connected with technology) account for 1.7 per cent of the indigenous population and 14.5 per cent of the non-indigenous population. These differences are due to reindeer-breeders being included among workers of non-mechanised labour. Specialists in the sphere of material production account for 2.0 per cent and 4.6 per cent respectively and specialists in the sphere of non-material production for 7.4 per cent and 19.7 per cent respectively. The proportion of workers in medical institutions and those in state and public organisations are the same.

The attitude to work was gauged by the satisfaction with its specific type. The majority of the Evenks (78 per cent) and the Russians (80 per cent) are pleased with their jobs. Among the traditional branches, agricultural workers expressed the highest degree of job satisfaction. It is high among the other workers of these branches (81 per cent). The lowest job satisfaction was registered in the unskilled labour group (in this group 28.4 per cent have a specialised secondary education—a "surplus" education for this particular type of work). From among those who have received a specialised education (including at special courses) 27.8 per cent previously did not work in that speciality, 47.5 per cent of the Evenks think the job suitable if it does not take them out of their villages.

Twenty-five per cent of the gainfully employed Evenk population (two-thirds of them hold low-skilled physical jobs) said they intended to change their jobs. The highest potential mobility (mobility coefficient is the ratio of the number of those who desire to change jobs to the group total) is recorded by office workers (0.48) and manual workers (0.29), the lowest by highly skilled

employees. 50 per cent of the working Evenks link the possibility of changing their job with the construction of BAM.

The Evenks, especially their younger generation, show a tendency to reorientate to non-traditional types of occupation.

70.4 per cent of Evenks in the eighth form intend to finish the 10 forms of general secondary school; 66.7 per cent of the Evenk schoolchildren intend to continue their education on finishing secondary school. At the same time, 37 per cent of the Evenks in the senior forms say they want to join in the construction of BAM when they finish school, because they want to make their contribution to this nationwide project (71 per cent of the answers).

An analysis of the new-traditional ratio in the adolescents' choice of professional career indicates that this ratio is in favour of the new. Only 18 per cent of the pupils in the 8th and 10th forms said they favoured the traditional way of life while 45.3 per cent of those in the 8th form and 57.3 per cent of those in the 10th form were oriented on a way of life connected with industry, towns and construction projects.

The big influx of migrants from many parts of the USSR to the BAM project is rapidly internationalising the Evenk way of life. Among other things, noticeably greater importance is being attached to cultural values in their general structure of requirements. For instance, among the Evenks who are going to change their places of residence 23.8 per cent are no longer satisfied with their cultural and living conditions (among the Russians these reasons for migration were given by 35.7 per cent of the respondents).

The growth of the living and cultural standards of the Evenks is furthering various forms of public activity in all sections of this ethnic community. 42.0 per cent of the polled Evenks said they took an active part in public affairs.

The data on potential migration give an idea of the future plans of the BAM zone Evenks. An analysis of their intention to move elsewhere, of the directions, motives and structures of the potential migration flow serves as a basis for conclusions about the nature of the requirements, level of satisfaction with specific conditions and formation of new value orientations.

Eighteen per cent of the Evenks (mostly between the ages of 20 and 24) expressed their firm intention to change their place of residence; 41.2 per cent of the persons with a 10-11 years school education show a vividly expressed urban orientation. They are followed by a group of workers with higher and specialised education.

Sixty-six per cent of the Evenks of the surveyed villages expect a complete or partial improvement in their living conditions as a

result of the construction of BAM. More moderate hopes among the Evenks are associated with their anxiety over the future of the natural environment and the state of traditional types of occupation, notably reindeer-breeding. All polled reindeer-breeders foresee a deterioration of the potential for their branch of husbandry.

On the whole, however, the Evenks view BAM with optimism. An improvement in supply and everyday services is expected by 61 per cent of the Evenks, a worsening only by nine per cent, better possibilities for education by 33 per cent, worse by 1.6 per cent, a rise in incomes and living standards by 26 per cent, a drop by 0.4 per cent, etc.

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An analysis of the data collected made it possible to draw the following conclusions which served as the basis for the strategic plan of the social development of the BAM zone Evenks. The Evenks of the central part of the zone are at a stage of development at which orientation on new types of labour and increased requirements in the field of material and intellectual culture and everyday life in the present situation can be satisfied much more effectively. Today they enjoy a higher technical, economic, production, cultural and everyday life potential of their area. The choice of the optimum combination of traditional and non-traditional types of occupation as the dominant one for some specific population group as well as of the rate, volume and direction of migration (urbanisation) requires a differentiated approach. In singling out those sections of the population which retain their orientation on traditional types of occupation and those which orient themselves to new jobs, the administrative bodies can more effectively consider the specific situation in the sphere of production in the case of each national group.

The development of the traditional branches of the economy, which more than 50 per cent of the Evenks said was essential, should have a fundamentally new organisational and technological basis. With a view to including the traditional branches of the economy in the overall production complex which is taking shape in the BAM zone a study will be made of the economic expediency of the traditional branches and the degree and character of their participation in the formation of a local production base as well as of the necessity of developing new hunting grounds and reindeer pastures as compensation for the inevitable losses caused by the construction of BAM.

The development of new natural complexes with a view to expanding the traditional branches of the economy will not be

accompanied by displacement (complete or partial) from the BAM area of non-Russian settlements (organisation of branches of collective and state farms). This view has been expressed by the absolute majority of the polled population and by practically all experts. Such displacement would conflict with the concentration of the rural population into larger formations with a broad infrastructure and a greater cultural potential, which is observed everywhere. It would worsen everyday life and cultural conditions and slow down social and cultural development. Today a comparatively small proportion of the Evenk population, mostly elderly people, is engaged in reindeer-breeding. The younger generation is not oriented on reindeer-breeding, and link their work plans with BAM.

Hence, it appears expedient to broaden the transfer of herdsmen to a shift-team system, where possible, to build stationary field camps along the route of a reindeer herd with the necessary domestic and other facilities, to expand the training of expert reindeer-breeders, veterinarians and animal specialists and to organise special courses for training radio-operators, reindeer-breeders, motormen, etc., in agricultural technical schools and to enrol specially selected young Evenks in these courses.

The industrial development of the BAM zone resources requires careful elaboration and implementation of various measures to preserve the raw material basis of fur farming, fishing grounds and other biological resources of the taiga.

With a view to improving the economic situation and raising the rate of employment, especially among women, various national trades, notably those related to the processing of reindeer-breeding products, will be organised. Instruction in applied art in schools will promote the continuity and preservation of elements of national culture.

Considering the mounting interest of the Evenk population (especially the youth) in non-traditional occupations, their possible choice directly in the Evenk village is being broadened, provisions are being made for the development of new branches of production that would meet the requirements of the BAM project. The growth of the economic potential of the Evenk villages should be accompanied by the development of their infrastructure. All this will make it possible to satisfy the increased requirements of the population and to keep it in its customary area.

Certain other conditions are provided for in the training of skilled construction workers that will help young people of the indigenous nationalities to learn new trades, find their first jobs, get housing, etc., all of which will facilitate their adaptation to the new forms of labour and new way of life.

The large-scale industrial development of the traditional settling areas of the smaller peoples of the North in the context of construction of the BAM will undoubtedly accelerate the integrative processes under way in all spheres of life. The adaptation of these peoples to the new conditions will hardly be a quick and simple process but it will obviously have positive social results.

The solution of the problems involved in the continued development of the smaller peoples of the North rests on the powerful economic, material, technical, social, political and cultural foundation of developed socialism. The close attention paid to the destinies of these peoples and due account of the specific features of their development are in line with the spirit of the Leninist nationalities policy pursued by the Communist Party of the Soviet Union and the multinational Soviet state.

NOTE

[1] For details see V. I. Boiko, *Social Development of Lower Amur Peoples*, Novosibirsk, 1977 (in Russian).

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A Great Writer and Humanist

(On the 120th Birth Anniversary of Anton Chekhov)

GEORGI BERDNIKOV

World fame came to Chekhov's two older contemporaries, Tolstoy and Dostoevsky, still in their lifetime, but to Chekhov only posthumously. Since then, however, Chekhov's fame has risen so swiftly that now throughout the world he is considered on a par with the author of *Anna Karenina* and *The Brothers Karamazov*.

This rapid rise in world fame bears out Tolstoy's remark that Chekhov is "an artist of life". Chekhov's work, said Tolstoy, "is accessible and understandable not only to every Russian, but to every person wherever he is."[1] The well-known British actor Paul Scofield has noted that although Chekhov is one of the most national of writers and his heroes are Russian to the core, their problems, their joys and sorrows, family life and ordeals are the same as those of other peoples.

At the same time commentators abroad have often pointed out that Chekhov has given the world a truthful picture of Russia and the Russian people. Claude Roi said in 1958 that Chekhov, like Tolstoy, is a writer thanks to whom people everywhere come to know Russia and to love its people better and to realise why a revolution there was so needed.[2]

Chekhov was indeed a Russian writer in every sense of the word. Not only did he love the Russian people and Russia's natural sceneries and was preoccupied with problems of Russian life; he was able to express the most important element in the thinking of progressive Russian circles of his time, who were deeply interested in the basic questions of social existence, questions that concerned all people, not just Russians, regardless of their race or nationality.

In speaking of the world significance of Chekhov's work, critics often call attention to the new artistic form discovered by Chekhov. This discovery is undoubtedly important, and Tolstoy, for instance, noted it. But, nevertheless, for Tolstoy Chekhov was above all an artist of life. Gorky, too, pointed out that the main feature of Chekhov's work was such a deep truth about life which was unknown to world literature before Chekhov. According to Gorky, "Chekhov mastered his own conception of life and in this way was able to rise above it." [3]

Chekhov's artistic discoveries cannot be separated from his "conception of life", from his insights into Russian reality and the basic problems of human existence.

Chekhov's predecessors and elder contemporaries, each in his own way, subjected the system of bourgeois social relations to profound criticism. But the starting point in the thinking of Tolstoy, Gleb Uspensky and Dostoevsky about the present and future of Russia, was that Russia could somehow bypass the capitalist stage of development which inevitably brought misery and suffering to man.

Chekhov was the first Russian writer to see clearly and to show that bourgeois social relations had already taken root in Russia affecting not only official and public life but also private and family life. He wrote: "Hypocrisy, stupidity and arrogance hold sway not only in merchants' households and in prisons; I see them in science, literature, among the youth..." [4]

This is a dominant idea already in some of Chekhov's early works.

In most of Chekhov's humorous stories the events revolve around the "little man", a well-known figure in Russian literature, traditionally the victim of injustice, arbitrary rule and despotism. In Chekhov, however, contrary to traditions, the perpetrators of injustice and evil deeds are often the very same type of small-time officials.

Such stories, individually or taken as a whole, present a picture of life to which ties of friendship, family and love are alien, and which rests largely on attitudes and feelings conditioned by the social hierarchy and money.

Critics of the time thought that the stories marked a break with the democratic traditions of Russian literature, whereas in actual fact they represented a great stride forward in artistic depiction of the essence of the ruling system and its basic hostility to man. They showed the indissoluble link between servility and despotism; they presented scenes from life which were an intertwining of these ugly phenomena under the bourgeois-landlord system. All this was actually a new defense of man, and not only of his rights, but of human nature itself.

Some critics also felt that the very tone of Chekhov's stories was a betrayal of the democratic traditions of Russian literature. In Chekhov's descriptions of horrible scenes there is neither bitter irony, nor sarcasm, nor any of the usual forms of didactic comments from the author. Chekhov merely ridiculed and laughed, and this was taken by many as a sign of a lack of social and political consciousness, which was impermissible and should be condemned.

But it may well be that it is in Chekhov's laughter that the basic democratism of the young writer, his moral health and his spontaneous historical optimism were most clearly manifested. Chekhov showed that the morals and manners which he portrayed were for him repugnant, sick and abnormal and for that very reason also comical.

But another tone is already present in some of Chekhov's earliest works—sad, melancholy stories about the twists and turns in human lives. They complement the humorous stories and underline the humanistic essence of Chekhov's work as a whole. While in some stories Chekhov shows the ridiculous nature of imaginary suffering, in others he is full of sympathy and compassion for his heroes, those who have not lost their humaneness.

However, Chekhov did not completely succeed in this more serious genre until later, in the mid-1880s. At that time he published a number of lyrical stories which were original in form and content and represented something new in Russian, as well as world, literature.

These stories, like the earlier ones, are about fairly ordinary people, at least judging by their external features. But in reality they differ sharply from the heroes of the humorous stories. There we are in a whimsical, funny world peopled by soulless creatures; in the later stories, even in an ignorant, underdeveloped person we are made to feel deep emotional undercurrents.

Gradually the reader comes to recognise the basic lyrical theme of these stories. Most often it is a sudden welling up in the hero of long accumulated feelings of deep dissatisfaction with his life and a yearning for a different kind of life, for freedom and happiness.

The best story of this group is *The Steppe*. In it the dramatic conflicts arising from an existence without freedom and happiness turn into a general problem of Russian society, of the life of the Motherland and the Russian people whose colossal, untapped strength was still held in leash.

In Chekhov's subsequent works much was to undergo changes, but a yearning for something better and nobler remained with him to the end.

Instead of a general assessment of existing social relations, Chekhov now made a more profound analysis of different aspects of social reality, disclosing the historical mechanism at work and the practice of enslavement of people in town and country in tsarist Russia. New heroes appeared who were involved in intense debates over philosophical, social and political issues. But even in these later stories the drama of human existence in the prevailing conditions remains a major theme. And because each of the stories affirms man's right to happiness, dignity and freedom, because each is saturated with an awareness of a goal, the reader gets a feeling not only of life as it was but also of life as it should be. As years went on, the idea of a happy future was underlined with growing confidence and certainty in Chekhov's works, and the contours of a new life became increasingly clear, not as some distant dream, but as a historical reality that was fast approaching.

Progress in Chekhov's work is inseparably linked with his increasingly penetrating analysis of what is his main subject—the conflict between man and the bourgeois-landlord system.

Chekhov is in the tradition of Russian realism. He has created many images of "thinking" individuals, people who found themselves in sharp conflict with the moral attitudes of their time. But in most cases, writers linked hopes for a better future not with those individuals, but with the people as a whole *(narod)* by which the peasantry was traditionally meant. Here the relationships between the intellectual and the people *(narod)* were extremely complex, at times full of dramatic conflicts. The correlation of the people, as the bearers of a higher truth, and of the peasantry as a historical reality, became a problem that seemed all but insolvable.

At this point Chekhov took an important step forward, rejecting the traditional idea according to which the people *(narod)* meant the peasantry. The belief that "all of us are the people and that all the best that we do is done for and by the people",[5] enabled Chekhov not only to stop idealising peasant life, but also to speak the truth, however bitter, about that life. This rounded out Chekhov's portrayal of the realities of his time.

Chekhov's general democratic stand opens up yet another dimension before him; it helps him disclose the universal significance of the conflict between man and the bourgeois system.

Chekhov shows that this system is inimical not only to the majority who are exploited by it, but also to members of the ruling classes who become depersonalised and to intellectuals who either succumb to the bourgeois, philistine idea of happiness or are resigned to the accustomed way of life.

In Chekhov, collisions with the bourgeois system are of an all-embracing nature. The "thinking" individuals could no longer seek refuge in withdrawal and isolation, as did his predecessors in

Russian literature. All those who had preserved their humaneness came into conflict with the system.

In all of Chekhov's mature works the conflict is between the individual and the prevailing moral attitudes and customs, a conflict leading either to the birth of self-awareness in the individual and his rejection of the system, or to a deadening of his human feelings and emotions and his acceptance of the banalities surrounding him.

In portraying clashes between the individual and an unjust social system, Chekhov shows that resistance to that system is the only way to save one's humaneness.

Thus, Chekhov's concept of human happiness is filled with a new content.

One of the sharp contradictions of the bourgeois-landlord system in Russia, according to Chekhov, consisted in that it deprived good people, conscientious, thoughtful and honest, of the possibility to be happy. Probably no writer before Chekhov had exposed this contradiction in stories or plays. And Chekhov went still further by pointing to the shaping up of a new conception of happiness—the happiness of being aware of one's dignity, of seeking a new life and working for the triumph of that life and, finally, of taking the difficult, uncharted road towards a happy future.

What makes Chekhov's work irresistible is his humaneness, a humaneness not only of content but also of form.

Whatever complex problems Chekhov deals with, they are always made human and are presented, in the final analysis, as clear-cut questions of justice and injustice, and especially in relation to the hero himself. This, for example, is how the philosophical debate between Gromov and Ragin in *Ward No. 6* is settled. Ragin had known the taste of his own blood, and his dying thoughts are a summing-up of the philosophical discussions, which is relevant for the reader as well. By now the reader's feelings are thoroughly aroused by this glaring injustice, and he responds with both his heart and mind to the final conclusions drawn by the main character and to the ending of the story.

Here Chekhov raises a problem and humanises it; he translates philosophical debates into the language of moral principles by a special method of constructing and building up his story, which ends in the unexpected confinement of Dr. Ragin in ward No. 6. In other stories, similar results are achieved by corresponding forms of narrative. In the story *My Life,* for example, the descriptions of despotic behaviour, shameless plundering and constant flaunting of standards of justice are deeply convincing because they are the subject of the hero's confession; he tells what is for him and for his friends facts of everyday existence.

7—Зак. 1816

A classic example of the kind of results which Chekhov can achieve when he gives a subjectively tinted portrayal of the external realities surrounding the hero is the scenes of falling snow in the story *The Attack.* These scenes, reflecting the changes not only in the mood but also in the judgement of the student Vasiliyev, perhaps more than any other artistic element of the story, lead the reader to the final conclusions drawn by the hero.

Presentation of objective reality through subjective perceptions of it (by the characters in the stories), in fact, helps Chekhov to put into practice the main principle of his poetics, the principle of objectivity, which demands a truthful interpretation of social reality.

Chekhov did not try to impose his own opinions on the reader. But this does not mean that he had no opinions concerning the events he described or that he considered all his heroes to be equally in the right and laudable. In 1890 he wrote to a critic who attacked his story *Horse-Stealers:* "You rebuke me for my objectivity, calling it indifference to good and evil, an absence of ideals, ideas and so on. You want me to say when I am describing horse-stealers that it is bad to steal horses! But that has been known all along without my saying so... When I write, I count on my reader entirely and assume that he will supply the missing subjective elements himself." Chekhov at the same time tried to help the reader understand the matter better. He continued: "I am saying: you are having to deal with horse-stealers, so you had better know that these people are not poor but well-off, that they are people with a cult for whom stealing horses is not simply an act of thievery but a passion."[6] Chekhov's remark that the horse-stealers "are not poor but well-off" is not, of course, to be taken as a justification of the men. On the contrary, he is leading the reader away from the only possible extenuating circumstance in such cases—desperation, poverty, hunger.

Chekhov believed that a writer should be able to get to the heart of what he observes and describes, for only then can he be just and correct.

Objectivity does not at all rule out assessment of realities. Indeed, it implies a historical assessment of realities and an ability to distinguish between the permanent and the essential from the transient and petty. Chekhov understood this important demand of art early in his writing career. In 1883, in a letter to his brother Alexander whom he criticised for being subjective and for writing about what was petty and trivial in his stories, Chekhov said: "You, who are strong, well-bred and educated, should emphasise what is vital, eternal, and touches genuine feelings, not superficial ones... Subjectivity is a horrible thing."[7]

For Chekhov, objectivity meant trying to understand realities in depth and to interpret them correctly. This he regarded as the artist's just interpretation of realities and just attitude towards them. The principle of objectivity is the dominant element of Chekhov's poetics.

As we have seen, Chekhov fully counted on the moral health of his readers. At the same time he was concerned not only to enlarge their knowledge of one or another subject, but also to stimulate the growth of their moral awareness. He did this, however, not didactically, but by sharing with his readers his vision of the world conveyed by means of the imaginative and emotional structure of his work, which imperceptibly leads the unprejudiced readers to a certain feeling, thought and conclusion.

Chekhov's faith in his readers-coauthors was so strong that he even preferred to let them make their own emotional assessment of what was portrayed. Hence his conviction which may appear paradoxical at first glance: the colder, the more outwardly indifferent and the more impartial the description, the stronger will be the impression it produces on the readers. While working on *Ward No. 6,* to which this principle fully applies, Chekhov wrote to Avilova: "When you portray the unfortunate and the wretched and want to stir the reader's sympathy, then try to be cold; this provides other people's misery with a kind of background against which it stands out more clearly like a relief... Yes, you must be cold."[8] And soon afterwards he again wrote on the subject: "One can weep, moan over stories and suffer with the heroes, but I believe you must do this in such a way that the reader doesn't notice it." And a little further on comes this concise formula: "The more objective [the description], the stronger the impression it produces."[9]

Chekhov was true to this aesthetic credo to the very end. Thus, for example, he did not use a single derogatory word in describing Aksinya *(In the Ravine),* and he narrated her act of killing the infant boy, an act of unmitigated evil, in a matter-of-fact way. The effect this scene has on the reader is just what Chekhov would have expected. It is probably one of the most blood-chilling scenes in the whole of world literature.

However, when Chekhov thinks and feels as his heroes do, the structure of his narrative does not always allow him to lead the reader to his vision of realities and his own conclusions. In such cases this principle of story-telling is somewhat supplemented by the author's comments which are, however, never obtrusive, being skillfully woven into the narrative, especially into the monologues of his heroes in their moment of insight and awakening when they begin to reassess realities, their own life and the life of those around them.

The subtle interweaving of the objective and the subjective was a favourite method with Chekhov enabling him to overcome without much difficulty the limited intellectual possibilities of some of his characters, such as the coffin-maker Bronza *(Rothchild's Violin);* in this way Chekhov was able to avoid idealising such characters and at the same time to rise above the prosaic everyday existence and bring both hero and the reader to a higher level of thought and generalisation.

Chekhov applied this principle brilliantly already in his story *The Steppe,* where the observations and thoughts of the boy Yegorushka as he journeyed across the steppes, merging with the reminiscences and reflections of the narrator, suddenly turned into highly lyrical and philosophical comments on the fate of the Motherland.

Such lyrical digressions clearly point to yet another wellspring of Chekhov's artistry—the rhythmical, musical organisation of his stories and plays. In the plays, quite prosaic dialogues are not infrequently followed by emotional outbursts of a character, and the stage suddenly rings with poetry.

The musical organisation of Chekhov's narrative is also a means of inviting the reader to share the author's vision of the portrayed objective reality and tonal valuation in a work.

In the light of what has been said, it becomes clear that there are no grounds whatever for interpreting Chekhov's work in a relativistic spirit, as it is often done in the West in an attempt to show that Chekhov allegedly wanted to even out good and evil, that Chekhov was not interested in general ideas, that an ideological pluralism was inherent in him, etc.

Chekhov's consistent humanism led him to condemn the system of bourgeois relations in no uncertain terms. This uncompromising exposure of the callous, inhumane bourgeois morals and ways, however, is often demagogically used in the West in an attempt to present Chekhov as someone for whom human existence had no meaning, and from here it is only one step to proclaiming Chekhov a forerunner of the decadent literature of the 20th century, in particular, of the theatre of the absurd.

As evidence of decadence of both Chekhov's world outlook and his literary work Western critics refer not only to the category of time, but also to some features of Chekhov's style, in particular, Chekhov's skill in handling details in portraiture, in landscape description, in building up a subject, and in general Chekhov's principles of introducing complexity into a subject. They talk about "chance" being the dominant element in Chekhov's works and try to show that the picture of the world as painted by Chekhov is void of logic and is totally absurd. But in so doing these critics fail to consider the real content and structure of

Chekhov's works. Insensitivity to what Chekhov is really saying, to his emotional order and overtone and thus also to the very meaning of his stories and tales and plays, is characteristic of these critics who wrote and continue to write about Chekhov's relativism, pessimism, etc. What distinguishes Chekhov from decadent writers of various trends is above all his historical optimism, which of course is not considered by such critics, who likewise ignore Chekhov's faith in man, his conviction that "everything in a person must be beautiful: his face, his clothes, his soul, his thoughts",[10] that people will build a new society based on ideas of justice.

It should be noted, however, that Chekhov's humanism put great demands not only on the social system but also on man; it had no place for those who embodied within themselves the ruling order, who preserved and strengthened that order.

In other instances Chekhov's attitude towards his characters is a complicated mixture of compassion and reproach—compassion, for their being victims of the system, and reproach, for their lack of will and laziness and complacence.

No less complicated is Chekhov's characterisation of the positive heroes. Here Chekhov also strives for truthfulness and avoids idealisation. He does not gloss over the weaknesses and shortcomings of his contemporaries, of people who share his way of thinking. But what mainly interests him is their intellectual and spiritual makeup, their conflict with the bourgeois system, their yearning for a life worthy of man.

As noted earlier, Chekhov's heroes are people from different social strata and classes. Thus in Chekhov we have some unusual heroes—untypical merchants, bank clerks and so on, whose inner world reflects, however, the typical process of a fundamental reassessment of the cultural and moral values in pre-revolutionary Russia. In this Chekhov is an innovator creatively developing and enriching the principles of imaginative generalisation.

Chekhov's humanism implies respect for man, a belief in his limitless possibilities and a sober assessment of man as he is. In Chekhov's assessment not only of contemporary life and problems but also of his contemporaries, an important role is played by his historical approach.

What, for example, is Chekhov's attitude towards Ranevskaya (in *The Cherry Orchard*)? What kind of person is she? Those who say that Chekhov portrays her as a kind and sympathetic and in her own way a remarkable person are right, but not entirely right. For the kindness of Ranevskaya is inseparable from her egoism and recklessness.

The image of Ranevskaya, like that of many other characters in Chekhov, in the light of the objective historical process, turns

out to be the supreme judge both of the bourgeois-landlord system in Russia and of the people living under this system.

In this sense *The Cherry Orchard* may be seen as a huge living fresco, a peculiar kind of "Day of Judgement", done not in the style of Michelangelo but in the Chekhovian manner, where the supreme judge is not Christ, but History as Chekhov conceived it—understanding, humane, but also inexorable, rejecting not only the world of Gayev and Ranevskaya but also the world of Lopakhin, and already discerning the outline of the future, new life.

Chekhov succeeded in describing the process of inner liberation of the human personality from the fetters of this unjust system, the process of a fundamental reassessment of its seemingly unchangeable values, while at the same time showing man's striving for a new life that would open up boundless opportunities for his many-sided development.

On his way to Sakhalin, having seen something of Siberia, Chekhov wrote: "My God, how many good people there are in Russia!" And filled with admiration for the "mighty, furious hero"—the great Siberian river Yenisei, which, it seemed, "doesn't know what to do with its power", Chekhov added: "What a full, clever and daring life will one day light up these shores!" [11]

Chekhov shows the general human significance of the growing man's self-awareness. And this is what gives his work universal importance.

NOTES

1 P. Sergienko, *Tolstoy and His Contemporaries,* Moscow, 1911, p. 226 (in Russian).
2 *Literary Heritage,* Vol. 68, Moscow, 1960, p. 735 (in Russian).
3 M. Gorky and A. Chekhov, *Correspondence, Articles, Sayings,* Moscow, 1951, p. 124 (in Russian).
4 A. P. Chekhov, *Collected Works and Letters,* Vol. 14, Moscow, 1949, p. 177 (in Russian).
5 Ibid., Vol. 12, p. 199.
6 Ibid., Vol. 15, p. 51.
7 Ibid., Vol. 13, pp. 47-48.
8 Ibid., Vol. 15, p. 345.
9 Ibid., p. 375.
10 Ibid., Vol. 11, p. 213.
11 Ibid., Vol. 10, p. 369.

Public Education in the USSR in the Conditions of the Scientific and Technological Revolution

VICTOR KUMANEV

As one of the most important social institutions, the system of education is linked with other social institutions and with the sum total of social relations. Its essence, aims, organisation and accessibility depend to a great extent on the political and economic systems.

As a result of the radical changes that occurred after the Great October Socialist Revolution of 1917, a new system of education was set up in Russia. There were failures and mistakes, but at the same time there were undoubted successes in the very building of the new system of teaching based on Lenin's concept of the unified labour, polytechnical school. The Soviet state retained everything that was beneficial in the old type of school and rejected whatever hindered the development of the individual, such as national, race, class and mystic prejudices, drilling and cramming. It also made intensive use of the valuable elements of mass education in the rest of the world.

Today, the Constitution of the USSR guarantees the right to education to all Soviet citizens. Art. 45 says: "This right ensured by free provision of all forms of education, by the institution of universal, compulsory secondary education, and broad development of vocational, specialised secondary, and higher education, in which instruction is oriented toward practical activity and production; by the development of extramural, correspondence and evening courses; by the provision of state scholarships, and grants and privileges for students; by the free issue of school textbooks;

by the opportunity to attend a school where teaching is in the native language; and by the provision of facilities for self-education."

In accordance with Fundamentals of Legislation of the USSR, the public education system is based on the following principles outlining its development:

— the equality of all citizens of the USSR in receiving education, without distinction of race or nationality, sex, creed, social or property status;

— the institution of universal compulsory secondary education;

— the free choice of the language of teaching; instruction in the native language or in the language of any other people of the USSR;

— the free provision of all forms of education and medical care, free tuition and maintenance for some categories of students, provision of state scholarships, grants and privileges for students;

— the humanism and high morality of education, and continuity of education at institutions of all types;

— co-education of males and females;

— the secular character of education;

— the scientific character of education, its constant improvement on the basis of the latest achievements in science, technology and culture.

In this age of the scientific and technological revolution, the level of education of the Soviet people continues to rise. According to the USSR Central Statistical Board, in 1978, 840 urban and 680 rural inhabitants of the USSR out of 1,000 employed in industry and agriculture respectively had a complete or incomplete higher or secondary education, while in 1939 the corresponding figures were 242 and 63. At the same time, approximately equal levels have been achieved in the education of men and women, the respective 1977 figures being 750 and 752. Over 96 million people, or more than one-third of the entire population, are at present studying at the general, vocational and technical schools, institutes of higher learning and other educational establishments.

At the same time, if further social development and scientific and technological progress are to be assured, the educational system must face still higher demands. Besides economic criteria, socio-political criteria, also operate in the USSR, which leads the world in eliminating essential distinctions between the working class and the peasantry, between the urban and rural populations, between mental and physical labour, i.e., in achieving the social homogeneity of society and assuring the harmonious development of each individual.

A highly developed and efficiently run society founded on the latest scientific and technological achievements is incompatible with narrow specialisation, one-sidedness and industrial incompetence on the part of the worker.

These days, to be educated means to know the fundamentals of the science in question, its main achievements, and its application in practice and to be familiar with modern equipment, technology and methods of management. At the same time, in our view, today's educated man should know his own profession and be able to work in related fields of knowledge.

Thus, a combination of versatility and specialisation is an essential feature of education today, and in the Soviet state higher education will be raised to such a level that everyone will be able to satisfy his or her thirst for knowledge or need for higher qualification.

At this stage in the development of Soviet society, people with a higher education still enjoy certain advantages in the sense of social prestige. Hence the utilitarianism in some young people's approach to education. However, as the circle of people with a higher education widens, this attitude dies away and is replaced by the desire to improve one's knowledge and widen one's horizons. The Soviet intelligentsia is constantly being replenished by the considerable mass of young workers and peasants. In recent years many universities and institutes have opened preparatory departments (workers' faculties) where workers and peasants selected by their enterprises, collective or state farms can prepare themselves for the entrance examinations, and an absolute majority of these ultimately succeed in entering the establishment of their choice.

The scientific and technological revolution requires a much higher level of general education and professional training. The new requirements also coincide with the socio-political tasks the educational system is to accomplish (raising the working people's cultural and technical standards, eliminating essential distinctions between mental and manual work, etc.). However, the number of people who want to receive a higher education considerably exceeds the needs and possibilities of society. The prestige of some professions is not yet high enough. According to sociological surveys, the first five places in terms of prestige are occupied by physicists, pilots (including cosmonauts), radiotechnicians, mathematicians and geologists, while salesmen, for example, occupy the 70th place, weavers, 42nd, turners, 29th, and so on. This is a result of certain drawbacks in the system of bringing up children, including family influences, the image projected of certain professions and the careers advice service. The Research Institute of Professional Training and Guidance of the USSR Academy of Pedagogical Sciences, has been called upon to help in

the rational solution of this problem. Naturally, poorly automated or mechanised manual work can hardly be expected to attract young workers.

The time will come, of course, when there will be no need for hard physical labour. Nevertheless, it is always important to promote respect for any kind of work, be it mental or manual, because both the individual and society benefit from a correct choice of profession: each Soviet citizen should work wherever his abilities are used to the greatest advantage. Man will only feel the need to work when his labour is useful to others and corresponds to his inclinations, tastes and physiological and psychological potentialities. In the long run, it is not the profession itself but the attitude towards it that counts. It is not so much a matter of *what one does* as *what sort of a person one is.*

It is, indeed, difficult to choose a profession, and the careers advice service tries to take into account not only the requirements of the present day but also new trends in the development of production, science, technology and culture. The Soviet system of education is supposed, not only to give one a profession but to enable one to master it entirely and to be *creative* in the true sense of the word.[1]

The scientific and technological revolution essentially increases the amount of information in all spheres of knowledge. Some 8 or 10 thousand million printed pages are added annually to the torrent of information, and a researcher can only get acquainted with some ten per cent of the literature in his field. Moreover, as Academician Kedrov noted, if one were to read *all* the literature in one's field of knowledge, there would be no time for research.

The human memory is just as limited as the time available for study, and the information flow is increasing. Not all information is needed and there has to be a certain selection. Knowledge is becoming obsolete more and more rapidly. Some 20 or 30 years ago, knowledge was conditionally valid for more than a decade. Today the span of time is much shorter.

The way out of this dilemma can be found basically in organising teaching in such a way that students and specialists strive to *independently* master the latest scientific and technological achievements and keep pace with progress.

The modernisation of the content of education and the introduction of new plans and curricula in the 1960s were of great importance for Soviet general schools. New textbooks and aids were worked out and the standard of education rose considerably. The curricula in social, natural and mathematical sciences were changed radically, without adding new courses or themes to the traditional ones. This was achieved by changing the structure of the subjects under study and raising their scientific standards in

accordance with current scientific views. The compilers of the curricula and the authors of the textbooks tried to define the main ideas in the light of which the content of teaching in each subject was highlighted. The new maths curriculum for the 4th and 5th grades is a single course which includes elements of arithmetic, algebra and geometry. The fundamental algebraic material is now concentrated in the 6th, 7th and 8th grades, and a systematic study of geometry begins in the 6th grade. Some maths programmes are still undergoing improvement.

The polytechnical orientation of physics (the systematic course embraces the 8th, 9th and 10th grades) has been increased essentially as well as the role of laboratory work and experiments. Efforts were made to simplify the textbooks for the senior grades and perfect the methods.

The elementary natural history course begins in the 4th grade, and in the following grades, up to the 8th, the students are acquainted with botany, zoology, and the anatomy, physiology and hygiene of man. The course is completed with a general biology course for senior grades. There are still some shortcomings (some themes are too complicated and the textbooks are overloaded with description), but the important thing is that the new biology course is closely related to agricultural practice, cattle-breeding and agronomy and is easily assimilated by the students.

Both theoreticians and school teachers insist that the students' knowledge in chemistry has become more profound. The same is true with astronomy which puts greater emphasis on the astrophysical phenomena attracting modern science.

There has also been an improvement in programmes and textbooks in the humanities. Following recommendations by linguists, greater attention in studying Russian and other languages of the peoples of the USSR is devoted to conversation and vocabulary. The history course is structured in such a way that it imparts a system of knowledge about the historical process as a whole showing the road travelled by mankind from antiquity to the present day. A new course, Fundamentals of the Soviet State and Law, has been introduced for the 8th grade. New programmes offer greater possibilities for aesthetic and physical education as well.

The new educational curricula, naturally, require not only new textbooks but also new educational aids.

The task of public education in the USSR is to impart basic knowledge to students and open up their vistas for further intellectual development. Almost 80 optional courses have been worked out in the Russian language, social science, biology, physics, pedagogy, psychology, nature protection, ethics, aesthetics, working skills, etc. Soviet scholars are contributing greatly to these

efforts. The USSR Minister of Education M. Prokofyev, however, emphasised that "reproaches can also justifiably be levelled at researchers, for they have not yet solved various burning issues in the theory and practice of education. There has been criticism in the press of the fact that pedagogical science occasionally lags behind the requirements of life objectively conditioned as it is by radical changes in our society."[2]

The current modernisation of the content of education, in the long run, amounts to raising it to the contemporary levels of knowledge, on the one hand, and on the other, to comprehensively developing the perceptive capabilities of students and their abilities to create, analyse and draw their own conclusions. Problem-oriented instruction is a means of implementing these principles.

The reform in education has caused many problems, including that of preventing school students overworking while maintaining a high level of secondary education.

It is true that the scientific and technological revolution has greatly increased the role of the physical, mathematical, chemical, biological and technical sciences. At the same time one also needs a philosophical, economic and legal background and a knowledge of history and literature.

To become a real human being in the highest sense of the word one must master advanced knowledge and also possess lofty moral qualities. And this cannot be achieved simply by studying the natural and technical sciences. Anton Chekhov's idea that "everything should be beautiful in man—face, clothing, soul and thoughts" can be fully applied to the task of moulding the new man.

Inadequate education, poor technical knowledge and a low level of professional training have as negative an impact on production as obsolete equipment, outdated technology or mismanagement. In many cases an increase of labour productivity of up to 50 per cent can be achieved as a result of raising the educational level of the workers. It is no wonder, therefore, that mass education has a very high priority in economic, social and cultural development in the USSR. In our day and age it is an objective requirement of social progress, dictated primarily by the rapid growth of the forces of production, the unprecedented complexity of social production and the unfolding scientific and technological revolution. A great deal, especially the economic might of the Soviet state, the spiritual growth of its society and the prosperity of its people, depends on the quality of the education of the rising generation, on the accumulation and effective utilisation of scientific potential and on the number and composition of highly-skilled personnel.

The importance of these tasks in the Soviet Union was stressed at the 25th Congress of the CPSU in the following words: "In modern conditions, when the volume of knowledge a man needs tends sharply and rapidly to increase, it is no longer possible to rely mainly on the assimilation of a definite sum of facts. It is important to habituate the young person in the ability to augment his knowledge independently, and to find his bearings in the torrent of scientific and political information."[3]

In the present epoch there has been an appreciable change in opinions as to whether children and adolescents are able to understand this or that subject at a certain age. A number of elementary maths courses, therefore, have been transferred from senior grades to the beginners' classes, while several advanced courses of mathematics have been transferred from higher schools to secondary schools. In the near future there are plans to introduce universal eleven-year education starting from the age of six.[4]

Institutions of higher learning and technical schools cannot, of course, produce ready-made formulas or solutions to all the problems which the production, science and technology of the future will present to young specialists. Nevertheless, they have as their objective the task of developing in young people creative thought, initiative, zeal in search of correct solutions and the ability to make proper use of scientific information in the process of integration and differentiation of knowledge. This is especially important for those engaged in management. Lenin used to say that "management necessarily implies competency, that a knowledge of all the conditions of production down to the last detail and of the latest technology of your branch of production is required; you must have had a certain *scientific training*"[5] [Italics mine—V. K.]. Apart from this, practice shows that social, scientific and technological progress in the USSR requires specialists who are prepared to actively participate in social activities for the common good.

In the current five-year plan period (1976-1980), institutions of higher learning and secondary schools in the Soviet Union have trained nearly 10 million specialists, including those for new and fast-growing branches of the national economy.

The success of the current reforms and modernisations in public education depends to a great extent on the improvement of the methods of teaching, thus ensuring a high quality of knowledge. In this connection, research has broadened in the field of active, evolving methods of teaching and the optimum use of modern technology in the classroom. The CPSU Central Committee and the USSR Council of Ministers have commissioned the Academy of Pedagogical Sciences to investigate more deeply and

fully the principles of polytechnical teaching in the light of the present-day level of scientific and technological progress and to determine more exactly how the principles of polytechnical education can be applied to teaching the fundamentals of the sciences. Special attention has been given to the significance and topicality of scholarly works on the educational role of the collective and on the shaping of public opinion. The Soviet system of education and pedagogical science proceed from the principle of organically combining respect for the students and the demands put upon them, with the aim of bringing up the new generation on principles of collectivism and friendship among peoples.

Among the problems linked with the economics and organisation of public education, the imminent improvement in the scientific fundamentals of education management and a wider use of economic and mathematical methods and computers are of particular significance. Compared with the recent past, there has been a considerable expansion in research connected with predicting the evolution of centres of education in the near and distant future, and several types of experimental educational institutions have been established to analyse various possibilities.

It is more difficult to bring up and educate the younger generation today than it was in the past. The demands which science, production and culture will make on future workers are growing as are the moral requirements of Soviet society. Professors and teachers must also make every effort to improve their knowledge to meet these new high requirements.

The continued improvement of the system of education and the perfection of academic education in Soviet secondary schools and institutions of higher learning under the impact of the scientific and technological revolution is a natural phenomenon of our age. And at the same time it is an effective means of rapidly advancing scientific knowledge, technology, production, culture and society as a whole.

NOTES

[1] An Interdepartmental Methodological Council has recently been set up under the USSR Ministry of Education, and commissions for the coordination and organisation of professional guidance have been established under the local Soviets.

[2] *Kommunist*, No. 9, 1978, p. 31.

[3] *25th Congress of the CPSU. Documents and Resolutions*, Moscow, 1976, p. 136.

[4] *Narodnoye obrazovaniye*, No. 5, 1979, p. 4.

[5] V. I. Lenin, *Collected Works*, Moscow, Vol. 30, p. 428.

The Concept of Personality and the Aesthetic Ideal in Soviet Literature

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The essence of man, the meaning of his life, the relations between man and society—that is the problem of problems of contemporary philosophical, sociological, and ideological discussions now running their violent and contradictory course. It would be difficult to list even the principal trends in social thought that are mounting an assault, from different points, on this rampart, on the taking of which hangs the solution of the other tasks of social theory and practice.

Thus, the latest trends in psychoanalysis preach primordial irrationality, spontaneity, and ensuing practical unknowability of man. The Frankfurt school largely relies on the thesis that the basically good man is dehumanised by the technical civilisation. Existentialists insist that man is, on the contrary, independent of society, creating himself from a blueprint of his own. Personalists of religious persuasion regard religion as the only means of the salvation of man and mankind. Pragmatists are looking for the solution of all problems in technocratic leadership. And so on and so forth. It is easy to understand the confusion among philosophers belonging to these trends: at a time when the world is changing so rapidly, when the scientific and technological revolution is unfolding so swiftly, and there is the global ecological threat, they form various schools which, contradicting each other, are attempting to reveal something stable in a phenomenon that eludes their grasp and keeps growing more and more complicated—man and the community of men.

But, whatever the differences, there is a feature that unites them all. There is practically not a single school in modern

Western philosophy that would not take issue with Marxism or attempt to adapt it, in a truncated or distorted form, to its own postulates. The Marxist-Leninist conception of man often proves to be the pivotal point for many philosophical and ideological controversies.

This paper will deal with some fundamental theses of Marxism that are at present becoming more topical than ever.

* * *

In Lenin's words, Karl Marx was far from being a utopian dreamer, and he "treated the question of communism in the same way as a naturalist would treat the question of the development of, say, a new biological variety".[1] On more occasions than one Marx formulated his conception of the meaning and goal of social movement. "The development of human energy... is an end in itself"—this fundamental proposition formulated in *Capital* constitutes essentially the core of its author's humanist conception.

Even in his younger years, Marx was firmly convinced in this. Already in 1844 he wrote: "We see the politico-economic *wealth* and politico-economic *poverty* being replaced by the *rich man* and rich *human* requirements. A *rich* man is at the same time a man who is *in need of* all the totality of human manifestations of life, a man in whom his own realisation is an innermost necessity, a *need*."[2]

This conviction was aphoristically expressed in *The German Ideology:* "anyone in whom there is a potential Raphael should be able to develop without hindrance".[3]

The views of the founders of Marxism on the nature of the genuinely "rich man", that is, one needing the entire fulness of the manifestations of life, views expressed in numerous works, letters, judgements of art, notes on books, etc., may form a classical anthology of humanist ideology. On this occasion, however, in our principled polemics with the technocrats, the advocates of the scientific and technological revolution as an end in itself, we would like to emphasise that Marx and Engels' humanist views were expressed in connection with their analysis of economic categories, first and foremost. These views are not utopian, they are the result of a sober and all-sided analysis of the development of social production. Thus, dealing with the problem of working time and free time arising from growing productivity of labour, Marx wrote in his 1857-1858 manuscripts: "Free development of individualities takes place, so that there is no curtailing of the necessary working time for getting surplus labour but rather a general reduction of the society's necessary time to a

minimum, facilitated under these conditions by artistic, scientific, etc., development of individuals thanks to the time that has been freed for all and the means created for the purpose."[4] And, further: "Saving working time is equivalent to increasing free time, that is, the time needed for that full development of the individual which in its turn has a reverse effect on the production force of labour as the greatest productive force. From the point of view of the immediate process of production, saving working time may be regarded as production of *fixed capital,* man himself being that fixed capital."[5]

The definition, "the *development of the richness of human nature as an end in itself*", formulated by Marx in connection with his critical analysis of D. Ricardo's views on economics,[6] is an example of a truly scientific formula.

The development of human forces as an end in itself; the rich man needing the entire fulness of the human manifestations of life; the development of the richness of human nature as an end in itself—these and other fundamental theses by Marx formulating the goal and meaning of social development were reinforced and developed by Lenin, who put forward the state goal "of ensuring *full* well-being and free, *allround* development for *all* the members of society".[7]

The Marxist-Leninist conception of man has become part and parcel of the life of our society of developed socialism and is reflected in the Constitution of the USSR (Art. 20), which says: "In accordance with the communist ideal—'The free development of each is the condition of the free development of all', the state pursues the aim of giving citizens more and more real opportunities to apply their creative energies, abilities, and talents, and to develop their personalities in every way." This article of the Constitution, based on *The Communist Manifesto,* emphasises the meaning of our humanist aspirations and, moreover, in full agreement with the materialist basis of our world-outlook, defines the material conditions facilitating the attainment of this goal.

What are, then, the "real opportunities" of which the Constitution speaks and how are they to be extended?

* * *

"There is no need for any great penetration," wrote Marx and Engels in *The Holy Family,* "to see from the teaching of materialism of the original goodness and equal intellectual endowment of men, the omnipotence of experience, habit and education, and the influence of environment on man, the great significance of industry, the justification of enjoyment, etc., how necessarily materialism is connected with communism and social-

ism. If man draws all his knowledge, sensation, etc., from the world of the senses and the experience gained in it, then what has to be done is to arrange the empirical world in such a way that man experiences and becomes accustomed to what is truly human in it and that he becomes aware of himself as man."[8] Then follows the aphoristically clear-cut definition that has become a classic one in Marxism, which designates the noble goal (the genuinely human content of personality) and, moreover, singles out Marxism among the doctrines regarding man as an individual free from social conditions. These are the words: "If man is shaped by environment, his environment must be made human. If man is social by nature, he will develop his true nature only in society, and the power of his nature must be measured not by the power of the separate individual but by the power of society."[9]

In the present-day struggle of ideologies, Marxism opposes the objective, genuinely scientific approach to the false and speculative content of the slogans of "human rights" and "freedom of personality". For instance, bourgeois individualism, the product of the capitalist mode of production, is treated by existentialists as man's eternal quality. It is alleged that the personality is capable of self-realisation only despite society, in a state of complete isolation and solitude; the whole of humanity is viewed as a party of one-man units. Theories like these, with their nice-looking front ("the individual's sovereign rights") are extremely useful for the capitalist order, for, in one form or another, they assert the eternal nature and immutability of the state of things existing under capitalism and the resultant loneliness, individualism, and isolation of men, whose interests are supposedly always at variance. Conceptions asserting the asocial nature of personality are essentially not apolitical: by asking the question, "Who profits by it?", we can discover their ultimate ideological significance.

Marxism, on the contrary, pointing out both the goal (the development of human power as an end in itself) and the practical scientifically substantiated ways of its attainment, proceeds from the indissoluble dialectical connection between man and the circumstances of his being: on the one hand, man is the product of social conditions; on the other, the development of social relations is a development and realisation of man's essential power. Marx and Engels wrote: "*all* human aspirations and actions without exception have *social* significance..."[10]

Let us recall the formula in *Capital* which is a concentrated expression of the dialectics of the relation between the development of society's productive forces and the possibilities of human personality: "In fact, the realm of freedom actually begins only where labour which is determined by necessity and mundane considerations ceases; thus in the very nature of things it lies

beyond the sphere of actual material production. Just as the savage must wrestle with Nature to satisfy his wants, to maintain and reproduce life, so must civilised man, and he must do so in all social formations and under all possible modes of production. With his development this realm of physical necessity expands as a result of his wants; but, at the same time, the forces of production which satisfy these wants also increase. Freedom in this field can only consist in socialised man, the associated producers, rationally regulating their interchange with Nature, bringing it under their common control, instead of being ruled by it as by the blind forces of Nature; and achieving this with the least expenditure of energy and under conditions most favourable to, and worthy of, their human nature. But it nonetheless still remains a realm of necessity. Beyond it begins that development of human energy which is an end in itself, the true realm of freedom, which however, can blossom forth only with this realm of necessity as its basis. The shortening of the working day is its basic prerequisite."[11]

The shortening of the working day as the result of rapid development of the forces of production is that link which firmly binds together the goal, the means, and the possibilities of the personality's free allround development, as well as the intensive development of industry and science as the material basis ensuring this flourishing of essential human power at a high stage of the social evolution. Engels wrote that owing to the industrial revolution there will be a possibility under communism "of producing not only enough for the plentiful consumption of all members of society and for an abundant reserve fund, but also of leaving each individual sufficient leisure so that what is really worth preserving in historically inherited culture—science, art, forms of intercourse—may not only be preserved but converted from a monopoly of the ruling class into the common property of the whole of society, and may be further developed."[12]

A most important element of the Marxist-Leninist teaching on the dialectics of the shaping of human personality in the replacement of one social formation by another is the idea that the capitalist mode of production, having destroyed the character integrity inherent in the earlier historical epochs, creates instead the universal and all-sided nature of man's relations with the world, which is a premise for the emergence of the new, harmoniously developed personality, rich and universal, under the conditions of the socialism that is to come.

The novelty of Marx and Engels' formulation of the question, as compared to their great forerunners, lies in their view that the full development of man's power is capable of affording man enjoyment and highest satisfaction not only in the sphere of

abstract thinking (Hegel) but also in communication with the real object world, in the sphere of well-developed human emotions, for full-blooded being implies the need for allround development. The founders of scientific socialism (as distinct from Kant, for instance) showed that man may enjoy not only art but practically any kind of labour activity, for any labour, if it is free and creative, offers man an opportunity for self-realisation, for revealing his essence and inner interests.

The noble democratic spirit of this concept is particularly in tune with the 20th century—the age of triumphant socialist revolutions and irresistable national liberation movements aimed at eliminating colonialism, the age of eradicating inequality in men's rights.

Soviet literature, whose democratic spirit is its basic quality, has evoked such a world-wide response precisely for the reason that the humanist Marxist-Leninist concept of personality inherent in it (the concept of the "*rich* man... *needing* the entire fulness of human manifestations of life" embodied in the aesthetic ideal of its creators) is in keeping with the progress attained by mankind in its development and the goals which it pursues.

* * *

And so, "anyone in whom there is a potential Raphael should be able to develop without hindrance"—that is the social significance of the Marxist-Leninist concept of personality. This is a highly humanist concept not only with regard to the individual, to every man—it is also rational with regard to all, for the positive talent realised by the individual becomes a common property, whether it be the talent of an organiser, teacher, writer, scholar, or mechanic (and we bear in mind that the power of man's nature must be measured "by the power of society").

An example from the philosophically serious (and for this reason probably less known) book by Mark Twain, *Captain Stormfield's Travelling with a Reformer,* will show the great importance of the opportunity for every individual to reveal the basic traits of his character. During one of his space voyages the captain lands in a country where people are not what they were in their lifetime on earth but appear in that capacity in which they might have lived out their lives had their destinies been shaped ideally—in accordance with their inner potential. Passing from hall to hall, Stormfield comes on a council of the greatest generals of all times, but he does not see a single military leader that would be familiar to him from history among those sitting behind a long solid table. When he asks who the greatest of them all is, the one

sitting at the head of the table, the traveller hears quite an unfamiliar name and the comment that in his life-time on earth he was a cobbler...

That is the way things are in a fantastic parable. However, for a real-life son of a cobbler, fur-dresser Zhukov to become an outstanding military leader, Marshal of the Soviet Union who won many historical battles, for the universal premises for the realisation of the human personality to emerge, events of epoch-making significance had to take place, including the greatest of them all—the October Socialist Revolution of 1917 in Russia.

"The philosophers have only *interpreted* the world, in various ways; the point, however, is to *change* it",[13] wrote Karl Marx in his famous *Theses on Feuerbach.* The Bolshevik Party led by Lenin made a great stride from interpreting the world to changing it, and that stride marks the qualitative difference between the new philosophy and new morality as compared to the previous world-outlook. That also comprises the qualitative specific features of the aesthetic ideal of Soviet literature, the ideal of active transformation of the world in the name of the happiness of man and mankind.

Works written after the October Revolution of 1917 by the authors in the young country evoked the greatest response in the entire world, and it is not by chance that they were acclaimed as a new word in mankind's artistic development. The Soviet authors' ideas and feelings were genuine, they coincided with intentions and deeds of the people fighting for their life and freedom.

A distinctive feature of the aesthetic ideal of Soviet literature is its active attitude to life.

This attitude includes not only a clear realisation of the noble views on man's potential, the development of which constitutes the goal of the socialist order, but also a personal readiness to take an active part in the attainment of the social ideals of the country.

The writers' active attitude is directly linked with the Marxist-Leninist world view, but it would be an oversimplified explanation of the specific features of Soviet literature if one were to forget the fact that the whole of our history, the entire practice of social transformation with which the life of Soviet literature is bound up, have proved the need for and justifiability of transforming society.

The active protest against the First World War was humanist in nature; the struggle for driving away foreign invaders both in the Civil War and the Great Patriotic War of 1941-1945 was also highly moral. The purposeful struggle for peace in the postwar years was just, too, as was the purposeful activity in healing the wounds of our land and in improving the living standards of the Soviet people.

Active participation in social life from the very origin of the Soviet state is one of the most important sources of the specificity of the writer's position in Soviet literature that determines its essential quality. An apparent consequence of such active attitude towards real life is, for instance, the writers' close attention to the images of the people that are just as actively participating in the communist transformation. The protagonists that are the carriers of active moral strength, striving for a better life not so much for themselves as for others, have not been invented by Soviet writers, and this is borne out, first and foremost, by the heroic history of the Soviet Union.

The Marxist thesis on the need to constantly perfect the reality, to take a practical part in the struggle for transforming the circumstances of life into genuinely human ones, will never become obsolete. One of the most significant and determining features of Soviet literature, its active attitude to life, will never be on the wane.

* * *

There are many aspects to the problem of the writer's social involvement, for not a single element of poetics is indifferent to the author's world-view positions. This is true of the choice of the hero, the writer's aesthetic ideal in all its manifestations, the fundamentally new strata of reality embraced by artistic creation, as well as practically all the other significant elements of creative work, and all of them merit special consideration. I shall consider only one such problem—the one involving the adherence of Soviet literature to the Marxist-Leninist concept of personality, that highly humanist and profoundly democratic concept which concerns the personality of every man.

The founders of scientific socialism, as has been pointed out above, referred to the development of the richness of human nature and of human power as an end in itself.[14]

The generous development of all human potentialities, according to Marx and Engels, becomes possible only with the liquidation of the private ownership system. The works of the founders of scientific socialism contain a profound analysis of private ownership limiting the wide range of human emotions and perceptions to the sense of possession and impoverishing the spiritual world of man alienated from all the richness of the world by one relation only—mine or not mine. "Private ownership has made us so stupid and one-sided that any object appears to he *ours* only when we possess it, that is, when it exists for us as capital or when we have it in immediate possession, when we eat it, drink it, wear it

on our body, live in it, etc., in short, when we *consume* it... All physical and spiritual senses are replaced by a simple alienation of *all* these senses—the sense of *possession.*" The conclusion is quite logical: "Elimination of private ownership therefore signifies complete *emancipation* of all human emotions and properties."[15]

Just as a hungry man plagued by misfortunes cares little for the beauty of the world around him, so does a man who sees it in terms of—how much?

That is the real alienation of man from the world of genuinely human values, spiritual and intellectual values, which forms the basis of the way of life, the way of thinking and feeling, aggressively asserted by the modern so-called consumer society.

Indoctrination in the spirit of consumerism is largely the result of goal-directed policy of the bourgeois establishment deflecting the social forces that might otherwise be directed at social protest towards the pursuit of ever greater material wealth, of comfort as the goal of life.

Here is an apparently insignificant but actually extremely symptomatic fact indicating the scope of propaganda effort directed at developing consumer attitudes: more than 1,500 advertisements of various commodities and services are intended to reach the average American through the mass media daily, while the serious spiritual values are not mentioned at all. Thousands of millions of dollars are spent on advertising in the USA every year; essentially, this kind of assault on man's conception of the meaning and purpose of life is nothing but defence of the ideals of the capitalist order. Man the consumer with a given set of standard tastes, ideals, and habits becomes a convenient object for direct or indirect manipulation from the point of view of defending the values of the ruling class that are presented as the values of the entire society. Man's prestige is in this case determined not by his own value, the value of his personality, but by his capital, his movable and immovable property. Works of culture, art, and literature peddling the convictions and emotional states of that same type are commodities that the conformist has to buy. The number of different types of "hedonism" in this sphere is rather considerable, but their essence is the same: the meaning of life is in consuming, in enjoying impulses from *without* and not from developing man's *inner* properly human resources. The ideological significance of such neutralisation of the higher interests of the masses, including social ones, is quite apparent.

In this world context the genuinely human and really humanist orientation of Soviet literature and the world literature of socialist realism in general with its aesthetic ideal of *realisation of the personality's inner forces, of man's entire inner potential,* stands out

quite clearly. In accordance with the best traditions of world culture and the Marxist-Leninist concept of personality based on the achievements of progressive philosophical thought, Soviet literature proceeds on the assumption of man's ability to reveal a great spiritual, intellectual, and physical potential. The aesthetic ideal of Soviet literature is based on the conviction, tested many times by the most cruel social practical experiences, that man possesses enormous inner force capable of revealing itself; it is precisely this noble view of man's potential that determines its attitude towards life in general. The rich man revealing the force of his essence—that is the active position of Soviet authors reflected in the characters and situations of their works.

The point is not that Soviet writers are called upon to select, out of the infinite variety of life, only those characters and situations that are in keeping with their noble ideal (the art of socialist realism is alien to canons): the point is rather that a Soviet writer assesses everything in the world, both good and bad, *from the positions of humanist concepts of man's potential.* It is the highest aesthetic ideal as the measure of all things that determined the contempt with which Maxim Gorky depicted Klim Samgin or Sholokhov's sincere regret about the pernicious delusions that fell to the lot of Grigori Melekhov, a man of rich inner nature sincerely aspiring for justice; it also determined the admiration and sorrow which imbued Fadeyev's tale of the fine lives and untimely death of the Young Guard underground organisation in the war.

The entire history of Soviet literature (and that can be illustrated by scores of examples) is the history of its continual struggle for the rich man in the full sense of the word, against concepts of consumerism leaving man one right only—the right to fear the movement of irrational forces in himself and the world at large.

Soviet writers actively assert the Marxist-Leninist concept of personality; this is manifested in their profoundly humanist conviction that, to attain complete happiness, man must realise his inner potential, and in the readiness of Soviet literature to do everything in its power to make the circumstances of life genuinely human.

* * *

Without detailing the view that the aesthetic ideal of Soviet literature is a moving and developing concept (with the basic principles preserving their continuity), let me recall that at all periods of its historical existence Soviet literature has actively

asserted the concept of allround development of man—a socially sensitive man capable of deep emotions, serious thinking, and energetic action, man as he must be with his inner essential forces in their full bloom.

The classics of Marxism-Leninism often spoke of the unity of word and action in men who set the goal of revolutionary transformation of the world. On more occasions than one Lenin criticised the gap between the avowed principles, on the one hand, and the real practice of men's behaviour in bourgeois society, on the other. At the 3rd Congress of the Russian Young Communist League he said: "Without work and without struggle, book knowledge of communism obtained from communist pamphlets and works is absolutely worthless, for it would continue the old separation of theory and practice, the old rift which was the most pernicious feature of the old, bourgeois society." [16]

That was Lenin's conviction already in his young years. At the very outset of his revolutionary career he wrote: "...by what criteria are we to judge the *real* 'thoughts and feelings' of *real* individuals? Naturally, there can be only one such criterion—the *actions* of these individuals. And since we are dealing only with social 'thoughts and feelings', one should add: the *social actions* of individuals, i.e., *social facts.*" [17]

That remained Lenin's conviction throughout his life. In 1909, for instance, he insisted: "Without understanding their deeds, one cannot understand people either, unless it be... outwardly." [18]

This thesis of Lenin has a direct bearing on the Marxist concept of personality, the personality that will only be able to realise itself and reveal its inner content through revealing its inner forces in action and not through mere consumption or reflection.

This moral conviction of the need for unity of word and deed was quite clearly expressed in the Report of the CPSU Central Committee to the 25th Congress of the CPSU: "nothing adds so much to the stature of the individual as a constructive attitude to life and a conscious approach to one's duty to society, when matching words and deeds becomes a rule of daily behaviour." [19]

It would be absurd and ridiculous to assume that Soviet literature is only supposed to picture those characters for whom word and deed are inseparable. Certainly not. Its task is that of reproducing life in the diversity of its manifestations, in typical situations. In doing so, however, Soviet writers retain their high aesthetic ideal which presupposes maximal ethical requirements as regards the characters and situations depicted and the author's clearly defined and uncompromising attitude towards the personages and situations of his literary work.

In this case the role played by literature in the present-day ideological struggle proves to be inseparably and organically linked with the artistic specificity of literature. The point is that the absense of the author's integral view of the hero portrayed, vagueness of moral criteria results in fuzzy and vague artistic images, whereas the nature of artistic creation requires that images should be integral and given clear individual expression even if the personalities are contradictory. They must have a logic of behaviour of their own, as well as their own dominant characteristic feature. This is only possible when the author's position is quite clear and holds together the heterogeneous character traits of the hero, otherwise we shall be faced with a vague cloud of disjoint human qualities—the image will not take shape.

Thus the author's definite attitude is an important condition of the image's artistic integrity and value. Let us recall Soviet classics—the characters of Fadeyev's *Rout* and Tvardovsky's *Vassily Terkin,* the shepherd Tanabai from Aitmatov's *Goodbye, Gulsary!* and Eduardas Meželaitis' *Man.* The creative styles, the genres, the range of characters and situations differ, but the moral criterion remains the same—an unshakable conviction that word and deed should be one, that man's essence is tested by his deeds, and that man reveals his ultimate essence only through his actions. That is what shows the true nature of his rich emotions and inner convictions. In short, in depicting the entire fulness of man's manifestations, writers judge man by his deeds first and foremost, and that approach results from social practice.

The literature of socialist realism is innovative literature. The aesthetic ideal of its creators originates in those already existing real men who are capable of fine feeling, deep thought, and energetic action, who see the world as it actually is and intend to make it what it can and must be. Beginning with Maxim Gorky and Vladimir Mayakovsky, Soviet writers have asserted being as action. The upswing of the novel about the country's reconstruction and also about the human soul at the end of the 1920s and beginning of the 1930s (the work of Leonov, Shaginyan, Sholokhov, Katayev, Ehrenburg, Malyshkin, Ostrovsky, Makarenko, Ketlinskaya, Krymov) is seen now, after the passage of decades, as the direct forerunner of the heroic literature of the war years and about the war years in which man's ability to fulfil his word was sometimes borne out *at the cost of his life.* The aesthetic ideal of Soviet literature and, following it, the world literature of socialist realism, proceeds from the premise that morality is a practical category, and the meaning of morality is in man's realisation of himself through a kind and principled deed.

The aesthetic ideal of Soviet literature has fully absorbed the Marxist-Leninist concept of personality; it has crystallised in the struggle of our people for the new society, and is based on those real human qualities that will prevail in the future. That is why Soviet literature appears as an important positive force in the world of today where it reflects both our reality and our humanist and optimistic views of the nature of man.

NOTES

1 V. I. Lenin, *Collected Works,* Moscow, Vol. 25, p. 458.
2 K. Marx, F. Engels, *Werke,* Additional Volume, Part 1, p. 544.
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Developing Countries: New Research

The Asian and African Countries: Specific Features of Development

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Recent history clearly shows that the countries of Asia and Africa have been developing according to the general socio-economic laws revealed by Marxist-Leninist science; that for all their specifics, the Eastern countries have been developing, in the main, like the Western countries, with due regard, of course, to concrete historical periods concerned. The problem of specificity, however, continues to be of importance. Below we shall try to define some of the features of development which, in our view, are more characteristic of the Eastern countries. We shall take India as a basis for our analysis, for her history reflects, to a certain extent, the basic laws of the evolution of the former colonial world.

Having been under British domination for nearly two centuries, India came under the influence of all the three stages of development of British capitalism: primary capitalist accumulation, industrial capitalism, finance capital. In India herself a capitalist economic structure came into being, and it constituted a symbiosis of foreign and domestic capitalism. It was contradictory to the highest degree, for it consisted of two opposed parts—the capitalism of the oppressing nation, and that of the oppressed nation.

India, like other colonies, was never a passive victim tormented by foreign invaders. Her outward oppression was objectively countered by the laws and tendencies of the class struggle, behind which stood forces within the Indian economy itself. As the Indian economy (or the economy of any other colonial country for that

matter) moved along the road of capitalist development, to the same extent there emerged contemporary class contradictions.

At the first stages of their domination in India, the British, as long as they broke up the archaic Indian society (i.e., the community, Asian feudal despotism of a highly centralised type or separate state feudal-despotic formations), were engaging in a progressive undertaking in a limited sense; they did so despite all their ruthlessness (about which Karl Marx rightly wrote), for they were an involuntary tool of history. Britain can be credited for this historically limited progressive role in spite of the enormous, predominantly destructive consequences of its policy.

Once the economic laws of India's development had led to the creation of a local machine industry, a national bourgeoisie and a proletariat (in short, after the creation of some conditions for the country's independent capitalist development), British domination became totally regressive and reactionary. Britain's economic policy centred on braking the free industrial development of India so as to retain its economic domination, its monopoly of power, of modern equipment, science and technology.

The main economic contradictions of India just before she achieved independence were approximately as follows:

— the objective tendencies of development of the country's productive forces came into conflict with imperialism's colonial monopoly in the economic and political spheres (this monopoly tried to strangle the objective tendencies);

— the importation of finance capital from the metropolitan country, the progressive social consequences of the "transplantation" of capitalism into the colony being insignificant;

— the mass expropriation of the peasantry and the handicraftsmen, and the extremely slow process of their proletarianisation; hence the impoverishment of the non-proletarian strata;

— the stratification of the peasantry due to deep penetration of commodity-money relations, but with slow development of capitalist agriculture; hence the excessive inflation of commercial-usurious capital, connected with a pre-capitalist sharecropping system or with the one moving towards capitalism;

— the predominance of enormous landed estates and the use of very small land holdings by peasants;

— the domination of usurers and buyers-up in relations inside the village and between village and town; enormous accumulation of commercial-usurious capital and lack of effective means of converting it into industrial capital.

All these factors led to the formation of a colonial-feudal economy pervaded by commodity-money relations (with the preservation of large enclaves of natural-patriarchal economy); it

was the economy of mostly low forms of capitalism which had to go a very long way towards colonial capitalism.

The Indian village was under the rule of the landlord and commercial-usurious capital, and the peasants, reduced to poverty, stuck to their tiny holdings stubbornly. Hence the possibility of exploiting the peasants on a pre-capitalist technical basis; they sold the product of their labour as a commodity, and not their labour power itself. In normal conditions of capitalist development, as soon as the ruination of the countryside reaches a high degree, a considerable section of the peasantry is compelled to part with their land and sell not the product of their labour, but their labour power, i.e., they become proletarians. At the same time, the merchants, usurers and landlords set about organising agriculture on a capitalist basis, functioning and accumulating not on the commodity or money market, but in the sphere of agricultural production, which they transform on an industrial-capitalist basis, on the basis of wage labour. But in India this process did not take place on a scale similar to that in Europe.

The peasants, becoming ruined under the influence of three forces (British imperialism, national industrial and commercial-usurious capital, and the landlords), failed to find a market to sell their labour power. There was a lack of conformity between the extent to which the peasants and handicraftsmen were ruined, and the degree to which commercial-usurious capital was converted into industrial capital, and the landlords into agricultural capitalists. This too was due primarily to the subordinated status of the country.

Thus, the conversion of money into capital in agriculture took place mostly without an extensive organisation of capitalist mechanised agriculture based on wage labour. This was one of the most important distinctive features of colonial domination, which distorted the normal evolution of capitalism in the countryside.

Hence it follows that the level of industrial development of the colony was determined, first, by the degree to which the bourgeoisie of the oppressing nation quickly profited from the extraction of surplus product produced by the labour of the oppressed nation; second, by the strength of the nationwide resistance to the colonial policy and by the pressure of internal capitalist tendencies; third, by the nature and form of the struggle with other imperialist powers contending for domination over the given colony.

It should be emphasised that the economy of colonial India, like that of many other colonial and semi-colonial countries, cannot be considered as a feudal one in the period after the First World War; nor can we agree with attempts to present colonial India and similar countries as established bourgeois societies.

Let us look at one more aspect of the evolution of India as a classical colony. The ways whereby the class of industrial bourgeoisie took shape there, like in many other dependent countries, differed largely from the same process in the independent capitalist countries of Europe. In the latter countries the process of formation of the bourgeoisie consisted in the fact that "the merchant establishes direct sway over production", or "the producer becomes merchant and capitalist".[1] That was a radical, or rather the normal means of transition to capitalism.

In India the process of formation of the class of national industrial bourgeoisie was seriously distorted by the economic and political domination of foreign capitalism. The industrial bourgeoisie took shape in this way:

— the trading compradore-capitalist became industrial capitalist, as a rule without stopping to perform his functions as a compradore;

— the merchant, buyer-up, usurer acquired shares and became shareholders in British and local industrial companies;

— the landlord became a partner in industrial entrepreneurship without ending his feudal or semi-feudal exploitation of the peasantry.

The conclusions from that comparison suggest themselves. Political and economic dependence creates *colonial* capitalism. It is also capitalism, but in a peculiar form. It is governed by the same laws as "normal" capitalism, but they manifest themselves in specific ways.

Thus, whereas in the West the industrial bourgeoisie emerged from among producers, proprietors, master craftsmen and apprentices in capitalist manufactories, from among heads of handicraft workers' shops and merchants' guilds, and finally became entrepreneurs, in India the bulk of the industrial bourgeoisie *always* retained its ties with the far more backward forms of land tenure that had feudal or semi-feudal traits.

It follows from this that the colonial bourgeoisie, unlike the bourgeoisie in France in the epoch of the Revolution of 1789 and a number of other European countries, did not and could not favour a radical solution of the agrarian problem in the interests of the people. In this respect it is understandable why the bourgeoisie feared the peasant revolution and why it always sought to gain control of the peasant movement and put it on the road of "non-violence".

This feature regarding the historical origin of the Indian bourgeoisie accounts largely for its attitude towards British imperialism in India. Indian merchants, usurers, landlords and compradores became agents of British capital and shareholders in British companies—industrial, commercial, banking, railway, in-

surance, etc. This is why they had very strong ties with British industrial and finance capital and were eager to retain their class prosperity under the aegis of the foreign colonialists.

These ties did not mean, of course, that there were no contradictions and conflicts between them, that their interests were identical. But any conflicts that arose between them were usually due to the Indian bourgeoisie's claims to a greater share in the exploitation of the home market and rarely went beyond the bounds of bourgeois opposition.

With a critical political situation and a sharp confrontation of classes in India, with British imperialism itself in a crisis, as was the case in 1947, the threat of a revolution and violent elimination of British rule by the masses compelled the British colonialists to hand over power in India to a bloc of the bourgeoisie and the middle strata.

The new national leadership, in which Jawaharlal Nehru played an outstanding role from the very beginning, faced a series of tasks that had to be resolved successively and interrelatedly: conversion of sovereignty into a political reality, reorganisation and consolidation of the state machinery on a national basis, establishment of a new administrative system, formation of a new economic policy, formation of an apparatus for regulating and planning the economy. The agrarian problem and the tasks of industrialisation of the country loomed large. To reduce massive unemployment and involve millions of people in a technical reconstruction of the national economy was a major task. The goal was to overcome the country's century-old backwardness. Broadly speaking, it was a question of forming a new national machinery for effecting a radical reorganisation and modernisation of the socio-economic structure of India.

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Sometimes the creation of the political and economic machinery required for achieving truly historic advances is understood as the summing up of the concrete tasks facing society and the establishing of their proper sequence. However, historical experience constantly reminds us that in the sum total and order of priority of tasks there are determining factors, the main one being proper calculation of the alignment of class or political forces, and consideration for the aspirations of the people.

In the traditional pre-colonial society of the now liberated countries, there took shape over many centuries a comparatively stable machinery for the reproduction of conservative social forces, ranging from the village commune and feudal landlords to a

centralised military-administrative apparatus of Oriental despotism, or state formations of the same type. This machinery was seriously damaged; it was deformed, but has been largely preserved. To conserve backwardness and survivals of archaic structures is a key organic function of colonialism.

To investigate the machinery whereby conservative elements are reproduced is a major task for sociologists studying post-colonial society. An understanding of its structure helps to bring out the reasons why the social basis of conservatism persists in surviving, and makes us realise that ultra-left tactics are futile and incapable of offering a constructive alternative to that structure. Researchers who hasten to point, in the context of political sovereignty, to the rapid disintegration of communal ties and other patronising, patriarchal systems which maintain a relatively high degree of social stagnation are now more cautious and make a comprehensive assessment of the changes that have really taken place in the newly liberated countries.

In our view, it is a mistake to think that the working man or a destitute person in an Afro-Asian society is fully susceptible to revolutionary propaganda. In fact the mind of the ordinary man in a traditional society is filled with simple but tenacious preconceptions about the meaning of his life and standards of behaviour. Mahatma Gandhi had a profound understanding of, and was extremely sensitive to, the ideals of ordinary people.

To be sure, left- and right-wing extremists can for a time stir and unite a certain section of the more oppressed and humiliated masses around high-sounding and utopian slogans of universal justice, brotherhood and happiness. Seen against the class-political background, this is no more than an emotional outburst on a fideist platform, which is opposed to conscious revolutionism but adequate for those pre-revolutionary movements which Lenin classified, with reference to Asia, under "old Chinese rebellions".

A comparative analysis of the ways of life in different countries is useful, but it can become a fruitless contemplation if one disregards the ways and means by which the societies concerned reached their present levels, and if one neglects the setbacks suffered on this road. Clarification of this complex of problems will obviously not automatically provide the historically backward countries with the machinery that would enable them to catch up with the advanced countries. A new socio-economic machinery, especially its structural, institutional part, is ultimately created only as a result of the victory of the forces of social progress over the forces of reaction, imperialism, and conservatism, i.e., in the course of the class struggle.

But the study of the experience of societies which proved to be at a higher stage of social development makes it possible to

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shorten the period of transformations and reduce the social costs of their implementation. Way back in 1867, Marx, pointing to the need for the ruling classes of continental Europe and the United States of America to study British factory legislation, put forward a fundamental idea: "One nation can and should learn from others. And even when a society has got upon the right track for the discovery of the natural laws of its movement—and it is the ultimate aim of this work to lay bare the economic law of motion of modern society—it can neither clear by bold leaps, nor remove by legal enactments, the obstacles offered by the successive phases of its normal development. But it can shorten and lessen the birth-pangs." [2]

In the light of this idea we understand more clearly such a seemingly unusual phenomenon of contemporary life in many newly liberated countries as the mass generation of lower forms of capitalist production in industry, agriculture and the service sphere. In the developed countries of Western Europe and North America this type of economy—small workshops (manufactories) or non-mechanised family farms—was a historical stage passed at the beginning of the 19th century, or at any rate in the middle of that century. In sovereign India and many other countries of Asia and Africa, the development of small-scale entrepreneurship stemmed from their gradual embarkation upon industrialisation, from the impact of the "green revolution" and agrarian reforms. Inadequate development of social division of labour, of socialisation of production, of cooperative forms of entrepreneurship and exchange enabled private commercial-industrial capital to establish over that sphere its own control, which was extremely rigorous at that.

In the newly free countries, taking the capitalist path of development, small businessmen of town and country, who are most closely connected with the traditional spheres of production, are so far unable, like their remote historical ancestors from the "third estate" in Europe, to offer a programme of consistent revolutionary transformations. It should be admitted, though, that they are getting more and more involved in political struggles, so much so that in recent years they have been supporting left or right radicalism. More often than not they come under the influence of religious-communal, national-separatist and other movements which are designed, as the political leaders of the petty-bourgeoisie believe, to protect it from government regulation as well as from competition on the part of foreign monopolies or from big commercial-industrial capital at home.

Spontaneously repeating the phases of capitalist development which the West passed long ago, certain sections of the bourgeoisie

do not actively seek to "shorten and lessen the birth-pangs" of bourgeois society.

Let us look at yet another aspect of this question. None of the religions practised in the East—Islam, Buddhism and above all Hinduism—has undergone radical bourgeois reformation. This means that in the new historical situation when the most acute social conflicts are brought about by deep intervention of industrial and monopoly capital, traditional pre-capitalist, communalist, religious consciousness comes out as a natural reaction of the small-proprietor strata to new phenomena. It should also be borne in mind that in a number of Afro-Asian countries a purely secular ideology, including anti-imperialist nationalism, ordinarily cannot, with the speed required by history, replace the traditionally communalist, clan, caste, estate, tribal, semi-feudal, religious-fanatic ideology as the day-to-day philosophy of tens of millions of small owners who want to become "masters" and businessmen. Hence their strong adherence to the tribal, caste, and religious-ethical standards.

It is noteworthy that in colonial countries, including India, the formation of capitalism did not cause sharp ideological conflicts between the internal forces of reaction and progress, as was the case in Europe. The maturing of the all-class and simultaneously national ideology of the bourgeoisie of the oppressed nation was hampered by the inability of its most educated and prominent representatives to work out a complex of scientific concepts and abstract notions necessary for interpreting the social being of their peoples in the new situation.

Take, for example, such an eminent figure as Jawaharlal Nehru. More than ten years have passed since his death. Yet to this day, rereading what he said and wrote, we feel how great was the burden of the task he undertook—to combine things that were difficult to combine: the ancient fideism of India with the scientific-rationalist thought of Europe, while emphasising the epochal significance of the theory and practice of Marx and Lenin. The reader will feel the inner coincidence of the reflections of Marx and Nehru if we reproduce extracts from Marx's work in which he clearly formulated his demand upon the optimal man of transitional society. Marx said that this man "does not strive to remain something conclusively established; he is in an absolute movement of formation". The appearance of such a personality in the period of formation of a new society is entirely necessary because "the ancient world, which is really more sublime than the contemporary one in everything we seek to find a consummate image—complete form and pre-set limitation. It gives satisfaction from a restricted point of view, while the present state of the

world gives no satisfaction: where it appears self-satisfied, it is *vulgar*."[3] Here Marx means a society making the transition to capitalism.

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The founders of Marxism repeatedly noted that the great thinkers, revolutionaries, scientists and artists who created the ideological superstructure of bourgeois society, its culture, far from seeking profit, disapproved the vulgarity, complacency and narrow-mindedness of the bourgeois. However, to make European capitalism spontaneous and irreversible, to make it gain sway over the colossal feudal periphery, it required radical changes in the spiritual life of society, in moral and ethical standards; it required not only a total transformation of the mode of production and exchange, but also the creation of cultural values which transcended the limited bourgeois order and subsequently became part of the spiritual world of socialism.

Among these changes we shall point at least to the following: the emergence of a new spiritual perception most fully embodied in the great artistic creations of the Renaissance; religious transformation: the appearance of a form of religion that was most fitting for a society of commodity-producers—a form of religion which was "Christianity with its *cultus* of abstract man, more especially in its bourgeois developments, Protestantism, Deism, etc.";[4] the formation of a sum total of anti-dogmatic abstractions connected with cosmological, geographical and anatomical discoveries, and with the achievements of the exact and natural sciences; the predominance of rationalism and accentuation on the materialist trend in the philosophy of the Enlightenment; the emergence of bourgeois classical political economy; recognition by historical science of class contradictions and conflicts; consolidation of applied sciences and their further specialisation with reference to the particular requirements of production, communication, transport, the army, navy, and also to the consumer requirements of the propertied classes and the Church; the construction and perfection of machines and systems of machines, perfection of technology and the search for new sources of energy for the purpose of production and extended reproduction of relative surplus value; the formation of a class of world bourgeoisie, of an international working class and of a stratum of engineers and technicians having a knowledge of industrial technology and capable of producing relative surplus value.

These comprehensive advances are given here in approximately the same historico-genetic sequence in which they were made on an all-European scale. But in Britain this sequence was more than

once violated or was manifested in an incomplete form. As to the Afro-Asian world, even in Japan, China, India and some Arab countries, where from the middle, and especially the end, of the 19th century the use of imported factory equipment and mechanised transport was quite successfully mastered, the advances which historically preceded this, especially in the sphere of ideology, were postponed, and if they were accomplished, their sequence was different and, as a rule, they were incomprehensive and therefore inadequate. That is why bourgeois ideology as a system of concepts and norms did not take shape in a complete form in any Afro-Asian country, including Japan.

The extremely complex interaction of scientific progress with the economic, cultural and ideological life of society that Europe saw in the 16th-19th centuries remained little known for a long time to even the most enlightened representatives of the Afro-Asian elite. They rightly regarded the achievements of European science and technology primarily as military and competitive superiority over foreign oppressors. In intellectual life this superiority of the Europeans could be counterposed only to the cultural and ethical values of the "Golden Age" of the Orient, which was now creatively weak and devoid of dynamism and perspective.

It is interesting that one of the greatest minds in India in the late 18th and the early 19th century, Ram Mohan Roy, was, according to Nehru, above all a religious reformer. He used his colossal intellectual power to "discover the sources of the religion and culture of the West".[5] This religious-reformatory trend found expression in the intellectual quest of Tilak and Gandhi, the leaders who were particularly persistent in searching for an approach to the mass consciousness of their countrymen in the period of their political awakening and their struggle against colonial domination.

This question arises: can religious-reformatory activity be regarded as revolutionary in the modern and particularly the contemporary epoch? Marxism-Leninism has never given a simple abstract-negative answer to this question. Reformation in the Western Europe of modern times gave rise to the "heretic", revolutionary-religious views of Thomas Münzer and other leaders of the plebeian-peasant masses. But religious ideas could have become revolutionary under two conditions only: first, if they had been adopted by the truly revolutionary forces of the society of those days; second, if these forces had had a possibility of turning to a secular class-based world outlook capable of gripping the minds of the masses (such a world outlook was non-existent as yet).

If we apply these criteria to Gandhism (a most popular reformatory trend of the contemporary epoch), then we have to admit that despite its sincere anti-imperialism, anti-colonialism and anti-racism, it almost completely lacks many other features of social radicalism so characteristic of the plebeian masses and the "third estate" in modern Europe. In this connection one need only recall the characteristics of Gandhi's personality and views given by Nehru.[6]

As we know, Gandhi harboured a cautious attitude towards modern industry, technology, science and art. His world outlook contributed little, and only indirectly, to the moulding of the coherent bourgeois personality. Yet the historic significance of Gandhism to India was enormous, since its philosophical, ethical and political views provided food for thought for several generations of Indian thinkers, in the course of the genesis of the individual, who, to repeat Marx, "does not strive to remain something conclusively established; he is in an absolute movement of formation". We believe it is precisely this function of Gandhism that Nehru fixed in his undoubtedly loyal devotion to the personality of Gandhi, and repeatedly emphasised dynamism of the latter's approach to Indian reality.

Having awakened in the "absolute movement of formation", and having passed the first dynamic stage of the anti-imperialist struggle, the Afro-Asian then found himself in a labyrinth of complex, highly contradictory, historically concrete, class, national and political issues. And here the magic thread of Oriental ethics broke; its social and class neutrality, equally acceptable to both the haves and the have-nots, turned into a moralisation absolutely futile in the new conditions of the new sovereign country.

Mahatma Gandhi, like none of his followers, was deeply aware of the collapse of the socio-economic aspects of his world outlook in the new, bourgeois society of India, now a sovereign state and full of social contradictions. His assassination was a fatal retribution for the great, though inconsistent, attempt to offer an ideological transition from the former state of incomplete moulding of the bourgeois personality to the absolute movement of formation of bourgeois society.

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Adherence to a doctrine does not yet imply skill and ability to translate it into reality. This is indirectly testified by the setbacks of progressives in India and other newly free countries. Yet they have been accumulating a tremendous amount of experience in revolutionary work among the masses, in guiding their struggle

and constructive labour. Today in many newly liberated countries there are massive forces oriented towards the theory and practice of non-capitalist and subsequent socialist development, towards the principles of productive labour and constructive economic management.

This experience shows, besides everything else, that operating in the socialist world is the law that stipulates the priority development of the formerly backward countries and regions, so that they might be brought up to the level of the advanced nations. Marxist researchers have never given cut-and-dried recipes for the reconstruction of socio-economic systems in other countries. This is uncharacteristic of the adherents of scientific socialism and contradicts their historico-materialistic and dialectical views, and conflicts with the methods accepted in socialist society. Nor are we for the other extreme—indifference towards the search by progressives everywhere for optimal solutions to the complicated problems of the developing countries. That is why we are always willing to share the trying but significant experience of development in the Soviet Union; we bring out its successful universal and partial aspects, and we do not hide its failures.

Way back in 1920 some Asian revolutionaries tried to identify the national liberation struggle in Asia with the international working-class movement, above all with Russia's Great October Socialist Revolution. If only they were right! Moreover, none other than the initiator of the communist movement in India, M. N. Roy, who certainly had a sound knowledge of the revolutionary situation of those days, asserted that the landless peasants of India, who numbered more than a hundred million, constituted the agricultural proletariat who were prepared for a socialist revolution. On the basis of this thesis he hypothesised that the destiny of the revolutionary movement in Europe depended entirely on the progress of the revolution in the East.[7]

Lenin disputed that thesis.[8] Seen in the historical perspective, Lenin's idea contained three postulates: first, there is a need for a firm and flexible alliance with the broadest democratic movement at the given moment; second, the Oriental-centrist concepts are groundless; third, what is particularly important for our theme, the "transfer" of landless and the poorest sections of the population to the class of the proletariat was a mistake.

Lenin flatly rejected Roy's proposition to include the landless population in the proletarian class. In Lenin's view, it was only the industrial workers who constituted the proletariat. Those who are familiar with Lenin's studies of the socio-class structure of Russia will find this approach perfectly logical, for Lenin always distinguished among the Russian working people the non-proletarian, or at any rate the semi- and pre-proletarian strata. It

is on this analysis that today's Marxist scholars in Asia and Africa base themselves when studying the class structure of society, especially that of the countryside.

More than a half-century has passed since Lenin's polemics with Roy and, understandably, major changes have since been taking place in the social structure of the newly liberated countries, especially after their achievement of political sovereignty. And it is not only the new quantities and proportions of class elements that matter, but also the new quality of the social groups themselves, though they are still designated by the old sociological terms. This aspect of the question is extremely important, and the interested reader will easily add the appropriate concrete ideas to these socio-economic reflections.

* * *

The experience of the Afro-Asian nations once again confirms the correctness of Lenin's thesis on the need for the proletariat and all working people to go through the severe school of struggle for democracy as an indispensable condition for the success of the struggle for the socialist reorganisation of society. Needless to say, the struggle for state-political sovereignty contained quite a few elements of such a school of democracy effort, but they were often obscured by the national goals of the movement, and by the relentless demands of illegal and particularly armed resistance to the colonialists. Only freedom, democracy, state sovereignty, independence make it possible to bring out to a maximum degree the true interests of the separate classes and strata, especially the working ones, and, what is most important, to bring them home to the working people. This process is not simple and straightforward, if only because awakening class consciousness is at first painfully refracted through the prism of the traditional philosophical attitude with all its preconceptions, narrow group pretensions, superstitions and mysticism. To overcome this relic of century-old inertia at the first stage of class awakening is an indispensable requisite for promoting democratic consciousness and forming an appropriate progressive organisation.

The study of the socio-economic structure and its mechanism at the various stages of society and in the various subdivisions, from the family to the national system, makes it possible to single out from the variegated conglomeration of slogans, demands and claims those long-term aspirations which reflect the basic interests of the main classes and strata. This approach provides a scientific basis for a programme of reforms in the immediate future.

Socio-economic analysis shows the essence of those phenomena which today are disquieting public opinion in the newly liberated countries and over which political struggles are raging. Let us take, for example, the problem of prices, specifically, the prices of grain in the Eastern countries, where the food situation has become extremely acute. Price regulation is connected primarily with the curbing of speculation and the fixing of stable purchasing and retail prices. This is a perfectly just demand, and it enjoyed nationwide support everywhere. Its enforcement will promptly produce a tangible effect, and make things easier for tens of millions of working men. Nevertheless, the strictest regulation of prices will by itself fail to solve the food problem, for it will not ensure an expansion of production of food (some landowners will even curtail production); nor will it bring down the cost prices of grain. The solution lies in a radical social and technological revolution in agriculture; consequently, it is necessary to change property relations, improve the productive forces and raise agricultural standards.

As experience has shown, black-market pressure on the processes of price formation can best be removed by enlisting the democratic forces.

The experience of many developing countries has shown that the long-term progressive potentialities of the most energetic economic measures can remain unrevealed and, what is worse, become compromised if these measures are carried out in a bureaucratic manner, without reliance on the masses, without active participation and control of the democratic organisations at all levels. Otherwise expansion of the sphere of radical reforms will be accompanied by a corresponding expansion of the sphere of corruption, i.e., "ordinary" entrepreneurial capitalism will give way to an even more parasitic, bureaucratic capitalism. A danger of this kind arose in the Soviet state, too, at the dawn of its life, when it had a mixed economy, and it forced the Communist Party and the Soviet Government to take emergency measures to remove it.

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All liberated countries, especially the large and densely populated ones, have to tackle the complex problems of socio-economic development which confront them during their transition to free, independent development.

The first major problem, which arises nearly as soon as political independence is achieved, is that the new government searches for new ways of development, for new policies in all

spheres of life. And although the productive forces of the country concerned continue to develop on the former basis, the working people increasingly protest against the old relations of production, which hamper the development of the country.

The new ruling class inevitably comes up against a number of primary problems that must necessarily be solved. The foremost question is whether to adopt a foreign policy that opposes imperialism, or to make a compromise with it, thereby subjecting the country to the danger of neocolonialism for the sake of the doubtful benefits which it promises every newly free country. To the credit of the national liberation movement be it said that the majority of newly liberated countries have taken an anti-colonialist, anti-imperialist and peaceable stand, and have joined the non-alignment movement.

Then there are the problems of economic policy: of industrial development, industrialisation, formation of a state sector, curbing of feudalism, enforcement of an agrarian reform, cooperation with the socialist world, attitude towards foreign aid, towards foreign capital, towards private capital and enterprise, problems of social policy, etc.

These are roughly the economic problems confronting the young national states in the first years of their existence. Each state tackles these problems in its own way, depending on what kind of state it is—socialist, national-democratic, bourgeois-democratic, bourgeois-landlord, feudal (semi-feudal), and depending on its socio-class essence and its social goals.

The developing countries differ in their social systems and their aims, but today they are united by a common and just struggle for a new international economic order.

NOTES

[1] K. Marx, *Capital,* Vol. 3, Moscow, 1971, p. 334.

[2] Ibid., Vol. 1, Moscow, 1969, p. 20.

[3] K. Marx, *Grundrisse der Kritik der politischen Ökonomie (Rohentwurf) 1857-1858,* Berlin, 1953, pp. 387-388.

[4] K. Marx, *Capital,* Vol. 1, p. 83.

[5] Jawaharlal Nehru, *The Discovery of India,* Bombay, 1961, p. 333.

[6] Jawaharlal Nehru, *An Autobiography,* London, 1941, p. 510.

[7] *Bulletin of the Second Congress of the Communist International,* No. 1, July 27, 1920 (in Russian).

[8] Ibidem.

Interstructural Relations in Developing Countries' Economies

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Developing economies are usually regarded as heterogeneous systems composed of a number (between five and seven, depending on local conditions) of socio-economic structures. And inasmuch as in a multistructural economy each structure has its own system of production relations and superstructural phenomena and its own reproduction-process laws, these laws for the entire developing economy should, apparently, represent the sum total of those for each of the structures.

These structures are not isolated in watertight compartments. They react on each other, altering each other's laws of reproduction. But the impact is not always the same. In a class society the ruling class (or coalition of classes), in furtherance of its own aims, imposes its production relations on other structures. The dominant structure subordinates the others, though as a rule, not directly but through intermediate structures. Hence, in an evolutional class society the various structures are part of a system of hierarchic subordination and are ultimately integrated in the dominant structure. This is done by the latter appropriating part of the net product of other structures and using it to strengthen its own position. This naturally entails a re-patterning of the entire socio-economic system.

There is also another method: the dominant structure restricts, or even eliminates, superstructural phenomena that do not accord with its interests. The result is a change in the development of each structure, with the lower one subject to the influence not only of the dominant but of all other, higher structures. To take

an example: the laws of reproduction in the lowest, semi-natural structure can be influenced not only by the capitalist, but also by the feudal and small-commodity structures. In this way the economy's production pattern is shaped by the changed and interconnected reproduction laws of the various structures.

Practically all Soviet researchers accept the multistructural character of developing economies. But there is a controversy over the nature and degree of influence this has on socio-economic conditions and economic growth, and, consequently, on the interaction of the various structures. There is another controversial point: how long is multistructuralism likely to last? These questions are the subject of this article.

In the past the colonies were integrated in an "empire-colony" system, with the state-monopoly economy of the metropolitan country acting as the supreme structure and performing integrational functions. And integration was achieved by a combination of extra-economic and economic measures, depending on the colony's development level, the metropolitan country's socio-economic structure, and diverse historical factors. Interstructural integration was the basis of colonial exploitation. Through the fiscal mechanism, world economic contacts, distortion of value proportions, etc., the metropolitan country appropriated not only the colony's surplus product, but very often also part of the necessary product. Inasmuch as the product thus appropriated was used for non-productive purposes (maintenance of administrative, coercive and other institutions) or to extend reproduction within the dominant structure in the metropolitan country, reproduction in the lower structures came very near to simple reproduction. Although extra-economic coercion and foreign competition ultimately led to the disintegration of these lower structures, they, nevertheless, obstructed the rise of a capitalist structure in the colony and the assertion of a new mode of production.

The victory of the national liberation movement and the achievement of political sovereignty demolish the whole "empire-colony" system. This has a number of important consequences. First, elimination of colonial rule puts an end to uncompensated appropriation of part of the net product in the form of taxes, imposts, etc., and minimises (especially in the bigger countries) the use of other extra-economic methods of exploitation which stipulated the privileges enjoyed by capital investments and goods from the metropolitan country. More, the rise of national states makes it possible to use extra-economic coercion to eliminate or transform the foreign structure and restrict foreign competition on the domestic market.

Under pressure by the state, and the need to operate under a national signboard, foreign companies form mixed concerns and

are thus drawn into the reproduction cycle of local capital in money form. And import-replacement industries involve foreign companies in a uniform reproduction cycle of capital in material form as well. As a result the independence of foreign capital is eroded.

Second, the national state restricts the import of goods likely to compete with local output, and the influx of foreign capital into the whole or part of the economy, implements measures to build up the national economy, encourages local enterprise, etc. All this narrows economic methods of colonial exploitation. The old integrational system of the "empire-colony" formula is thus transformed into an autonomous part of the world capitalist economy. This definitely changes the nature of relations between ex-colonies and the world capitalist economy.

The scientific and technological revolution, which is accompanied by a declining demand for the primary products of developing countries, on the one hand, and their import-replacement strategy introduced in the 1950s and 1960s, on the other, resulted in a smaller share of their gross product reaching the world market. Obviously, all other things being equal, this was bound to weaken the impact of the capitalist world economy on internal processes in the developing countries.

Third, elimination of colonial status enabled them to exploit intra-imperialist contradictions. Simple abolition of the preferences enjoyed by the former colonial powers was enough to aggravate competition between the imperialist monopolies. In their drive for raw materials or new markets these monopolies were prepared to do business with the developing countries on terms more profitable to the latter.

Lastly, the process of re-patterning economic relations was expedited by broader economic contacts of the developing countries with the socialist community. Usually attention focuses on only one aspect, namely, the monopolies adapting themselves to the terms offered by the socialist countries. But of no less importance, in my opinion, is another consideration: the existence of two socio-economic systems meant that developing countries could opt for the socialist orientation, and compelled the imperialist countries to stimulate capitalist development in the newly independent states and do everything to convert them into a reserve of world capitalism. That explains the rise and rapid growth of foreign economic aid.

One of the differences between economic aid and the export of capital is that in an inflation setting the former does not increase real value for the donor country, but extends the reproduction of capitalist relations in the recipient country.

These changes in international economic relations indicate that the re-patterning of international economic relations following the collapse of the colonial system has made for more equality without, however, eliminating the subordinate, dependent position of the developing countries vis-à-vis the world capitalist economy. It has also altered the relation between internal and external factors in their economic growth.

It should be noted, however, that internal and external factors play a different role in different groups of countries. Studies by Soviet and foreign scholars suggest that there is a wide difference in the development patterns of small countries (with populations below 30 million) and the bigger countries (with populations above that figure). Both are on a comparable level of development (in per capita income) but follow different patterns.

First of all, in the bigger countries a considerably lesser share of GNP depends on foreign economic factors (aid, loans, investment). Industrial and kindred sectors of the economy are at a higher level, as is also per capita consumption of manufactured goods. Lastly, the national economy of the bigger countries has an incomparably bigger inertial mass, and this makes for slower, but more permanent change. In short, internal factors here play a much stronger role than external ones.

The continents differ from each other in size and population of their countries. In Africa and South America two countries account for one-fourth and one-half respectively of the continental population while in Asia ten large non-socialist countries account for more than 90 per cent. It can, therefore, be said, with certain reservations, that the impact of internal factors is more characteristic of Asia than of Africa. Conversely, external factors are especially important for Africa and less important for Asian developing countries.

What internal factors influence interstructural relations in independent developing countries?

With the abolition of the "empire-colony" system, state-monopoly capitalism becomes a kind of external factor vis-à-vis the former colony. And once it sheds its imposed capitalist shell, there remain pre-capitalist relations both in absolute and relative indicators. The dominant mode of production is represented not by the capitalist structure of the metropolitan country, but by the local capitalist structure, which assumes system-forming and integrating functions.

The integrating potential of the capitalist structure is weaker than the capitalist formation itself, for whereas this formation represents a fully developed mode of production, the capitalist structure exists in conditions in which the new capitalist formation is only taking shape and has not eliminated earlier modes of

production. That is why, the capitalist structure could not ensure the necessary degree of integration. This was further aggravated both by the low level, compared with the metropolitan country, of socio-economic, organisational and technical development and the predominance of lower forms of capitalist enterprise. Besides, the conversion of a former colony into an autonomous part of the world capitalist economy has also weakened the influence of such bourgeois superstructural institutions as ideology, culture, laws, traditions, etc.

The disintegration of interstructural ties was further aggravated by the re-patterning of the economy and its components. Following political independence, most of the developing countries introduced anti-feudal measures such as restriction or abolition of feudal land tenure and imposts, abolition of the so-called native states (principalities, sultanates, kingdoms) in Burma, India, Indonesia, the Yemen, Malaysia, Pakistan, and several other countries. These and other measures not only eliminated one of the main economic structures, but also reduced the range of extra-economic coercion.

To this should be added the disappearance of extra-economic coercion that boosted small-scale enterprise, eroded the foundations of simple reproduction, facilitated the growth of commodity exchange—in short, accelerated the formation of a small-commodity structure. In most ex-colonies it is being extended at the expense of the feudal and subsistence economy and is becoming the dominant structure in terms of employment and gross product.

One should distinguish between the small-commodity structure in Western Europe and North America at a time when capitalism was asserting itself, and the small-commodity structure now taking shape in the developing countries. In the former case it was the main source of capitalist development from "below", whereas in the latter case the growth of modern capitalism out of small-commodity production is extremely limited. For, with the scientific and technological revolution, the transition from small-commodity to capitalist production is hampered by high investment, technological, organisational and other barriers.

There has been, as mentioned above, the transformation of a foreign-controlled economic structure into an integral part of the local reproduction process and, to some extent, of the capitalist structure. On the one hand, this facilitated expansion of the latter and its higher social and economic development. On the other hand, however, continued foreign exploitation of the natural resources and population of the developing countries, although in other forms, has inhibited the socio-economic transformation of their economies.

Thus, political independence was followed by very substantial changes in the economic structure of the developing countries. First, in most of them the number of structures was reduced by eliminating the feudal and, in some countries, also the foreign structure. Second, interstructural relations changed: the two polar structures, the state-monopoly of the former metropolitan country and feudal, exert less influence, while intermediate structures, particularly small-commodity production, play a much bigger role. All these changes weakened the hierarchical system of subordination and, consequently, intensified disintegration processes.

Inasmuch as intrastructural contacts have always been stronger than interstructural, the weaker influence of the dominant structure and of the hierarchy system made it possible for each structure to develop on the basis of its intrinsic laws. The predominance of the lower structures, with their simple reproduction and largely non-commodity nature of economic ties, low rate of accumulation, etc., accentuated the pre-capitalist laws of the reproduction process. This found expression in the growth of non-commodity production, decline of the cash economy and a consequent decline in the rate of accumulation, also in the flow of material and financial resources from one structure to another, the relative weakening of foreign economic ties, etc.

The erosion of interstructural ties and lesser exploitation of the lower structures by the dominant one can either improve the reproduction potential of the lower structures, or increase non-productive consumption by the traditional elite, this depending on the nature of the economic system and the policy of the ruling class. But in either case this erosion will limit and restrain the growth of the higher structure.

Logically, the disintegration of interstructural contacts should have led to stagnation and, in present-day conditions, to the economic downfall of society. Overcoming isolation in the development of each structure thus became a matter of life and death for the given society. In fact, the opportunities and methods of overcoming this disintegration will largely determine the socio-economic progress of the developing countries. In this context we can single out three basic variants of re-establishing interstructural contacts and transforming a multistructural economy.

The first variant applies to countries with a low level of socio-economic development (Nepal, the Yemen Arab Republic, etc.). The difficulty of tapping natural resources, and in some cases also political factors, made chiefly for extra-economic methods of colonial exploitation. This worsened conditions for reproduction, destroyed the lower structures and prevented the rise of new modes of production, so that in the colonial years the local capitalist structure was not practically shaped.

De facto or de jure independence put an end to the economic extra-coercion applied by the former metropolitan countries. The abolition of direct foreign exploitation resulted (as in all newly independent countries) in better reproduction conditions for all economic structures, on the one hand, and opportunities to develop each of them in accordance with the intrinsic laws, on the other. But it also eroded interaction of the various structures. In the absence of a local capitalist structure, disintegration could be prevented and interstructural ties retained, only by intensified extra-economic coercion in the form of taxes, levies, obligatory deliveries, in some cases even forced labour, imposed by the state. These measures make it possible to re-establish interaction of the different structures but, of course, extra-economic coercion alone cannot overcome multistructuralism and open the way to a new socio-economic formation.

In fact, overcoming multistructuralism in this groups of countries has proved an extremely contradictory process. With capitalist relations either non-existent or at a rudimentary stage, power was taken by the traditional elite. And inasmuch as social and economic modernisation could undermine its positions, it tried, wherever possible, to prevent any radical social and economic reforms. Hence, in these countries such reforms have been timid and frail, with the result that multistructuralism continues.

However, in these countries, too, fiscal requirements, balance-of-payments deficits, external factors, the need to boost production of certain goods, etc., combined to produce a form of state capitalism. A national bourgeoisie began to take shape and capitalist production relations have been taking hold, gradually, but steadily.

Lastly, the demand for new types of raw materials or the drive for new markets—and in some cases also strategic considerations—resulted in an inflow of foreign capital to this group of countries. Their low level of socio-economic development, however, hampers the integration of foreign enterprise in the system of national reproduction, and it has acted as an independent economic structure.

In sum, what we have in this, first group of countries is not the elimination of multistructuralism, but rather its extension, deceleration of socio-economic change, and intertwining of capitalist and pre-capitalist exploitation. This makes for a still wider disparity in social and economic relations. What we have is not the breakdown of the existing multistructural system, but rather the emergence of diverse intermediary forms. Characteristically, most of them do not represent stepping stones to a new mode of production, but

reflect different degrees of disintegration of the old modes of production.

It can thus be envisaged that in this, first group of countries, multistructuralism will persist for the foreseeable future. But the operation of structural reproduction laws will be increasingly restricted, both by the extension and intensification of extra-economic coercion and the rise and development of new economic relations.

The second group of countries began with a high (for developing countries) level of market and capitalist relations. Towards the close of the colonial period economic coercion already became the prevalent method. This accelerated the spread of commodity-money relations, the growth of local capitalism and the rise of a national capitalist structure. Consequently, in this group, the bourgeoisie (acting on its own or in alliance with other forces) came to power.

The weakening positions of the capitalist structure in relation to the pre-capitalist ones, and the disintegration of interstructural contacts after independence, threatened both the political and economic positions of the national bourgeoisie. As a class it had a vital stake not only in reviving these contacts, but, more important, in re-patterning them on the basis of economic interaction. That was the only way of ensuring a normal extended reproduction process.

Accordingly, a complex of measures was introduced to re-establish interstructural contacts. Relying on the positions already won, a strong state capitalism, extra-economic coercion and, last but not least, generous support by the world capitalist system, the national bourgeoisie not only arrested the disintegration of interstructural contacts but also made the lower structures more subservient to the capitalist one.

In these second group countries there was not merely a revival of interstructural contacts, but also a marked disintegration of the lower structures. First, the measures taken to eliminate feudal relations, stimulate local capitalist enterprise and protect it against foreign competition; the measures, also, to organise broad cooperation with foreign capital and enlist its support and assistance, significantly accelerated capitalist development here. A characteristic feature of this process was involvement in capitalist enterprise of the elite of the lower structures, the feudal and semi-feudal landowners, representatives of the traditional types of capital, etc. This should not be taken to mean that we are dealing here with intrepreneurs of a purely capitalist type, for in one or another degree they combine capitalist and pre-capitalist methods of exploitation. Nonetheless, this intertwining of the two, with the

capitalist trend gaining ground, has accelerated the disintegration of traditional contacts in the lower structures.

Second, industry, which grows at a much faster rate than other branches of the economy, is the basis for the emergence of the capitalist structure in developing countries. It contributes a bigger share to the gross national product which, theoretically, should lead to concentration of a growing part of the population in industry. That, however, has not been the case. For, to begin with, the new industries are based on imported modern technology and therefore require much less manual labour. Hence, even a high rate of industrial growth powered by wide use of imported machinery does not produce a marked (absolute or relative) accretion of employment. The situation is further aggravated by the higher birth-rate throughout the Third World since the late 1940s, so that now there is a bigger share of the able-bodied population.

Then there is this factor: modern industry in the newly independent countries spells ruin for traditional handicrafts, with a resultant increase in unemployment. The same goes for the introduction, begun in the late 1960s, of new technology in transport construction and agriculture. In short, there is a constantly increasing supply of labour and a constantly declining demand for it.

That being the situation, the mass of the increased population remains in the lower structures. The result has been a steady oversaturation of such traditional spheres of employment as agriculture, the handicrafts, etc., which leads to mass pauperisation and drastic deterioration of reproduction. The end result is a sort of levelling out of reproduction conditions in the lower structures. On the one hand, the small-commodity producer, with no secure market and no secure property, is forced either to reduce his market operations or supplement his income by selling his labour power (or that of other members of the family). On the other hand, the patriarchal peasant, weighed down by the same economic factors, is forced to sell part of his necessary product or his labour power. With reproduction conditions changed, traditional intrastructural contacts in the lower pre-capitalist structures begin to weaken, and are gradually "levelled out", with several lower structures merged into a single one.

This is characteristic, above all, of such countries or large economic regions, as India, Bangladesh, Sri Lanka, Egypt, Indonesia (Java), etc. In all these regions development along extensive lines (i.e., by using more labour) is no longer possible. The oil-exporting countries (Iran, for example), or countries with large foreign investments (Singapore) represent a special case: capitalism is nurtured by large financial injections and this results

in a relatively fast erosion and elimination of multistructuralism. In countries like Thailand and Malaysia, where exploitation of natural resources, particularly the land, can be expanded by extensive methods, multistructuralism might continue for the foreseeable future. Though the processes at work here and in the countries of the first group are similar in form, they differ in substance. In the first group countries multistructuralism persists, while in the second group its reproduction is only a transient phase in the assertion of capitalism as the dominant economic structure.

In many of the second group countries the tendency is towards re-patterning of the entire social and economic system. Gradually it evolves from a multistructural to a bi-structural. One sector includes diverse forms of the capitalist economy, though all of them employ pre-capitalist methods to some degree. The other, traditional sector, is composed of farms that combine the subsistence part of personal consumption and productive consumption and are forced to sell part of their necessary product and seek employment, if in some cases only temporary. This sector includes also a mass of lumpen-proletariat, paupers and also partially or fully unemployed.

The share of the capitalist sector in GNP will steadily increase in the foreseeable future. That is due to its growing share in the international division of labour, the growth of the internal division of social labour, production of intermediate products and also the need to satisfy the requirements of rapidly increasing populations. But since the development of this sector rests on relatively modern technology, its share in overall employment will remain small.

As for the other, traditional sector it will apparently retain only slight contact with the modern economy. With growing pauperisation its place in the system of social reproduction will be determined by the demand, inevitably limited, for goods produced by the capitalist sector (chiefly bare essentials) and its role as a purveyor of cheap labour power. But it will hold top place in terms of employment.

So far the process of economic re-patterning is only a tendency, though in some countries or comparatively big economic regions this tendency stands out in bold relief. However, the process will gain momentum with the growth of population and exhaustion of relatively accessible natural resources.

The third variant of transforming a multistructural economy is characteristic of countries which in the colonial period held an intermediate place in social and economic development. There was a certain growth of market relations, the beginnings of a national capitalist structure, and of the classes of bourgeois society. This

made for sharper social division of labour and interstructural economic integration.

With political independence, the national capitalist structure should have become the dominant one in these countries and should have advanced interstructural integration. It proved too weak for that, with the result that continued disintegration led to the destruction of the productive forces and to the decline in the incomes of groups connected with modern (by local standards) forms of production. That is why extensive extra-economic coercion was necessary, but it could prove effective only if accompanied by broad socio-economic transformations designed to eliminate the more backward types of social relations, carry out socialisation of property, etc.

Overcoming the breakdown of interstructural contacts and ensuring normal reproduction in the higher structure was dependent, in the final analysis, on organising modern large-scale production. In this group of countries this could be done only by the state. That explains the massive scale of state intervention in the economy (organisation of state enterprises, cooperatives, etc.).

The exceptional role of the state in the reproduction process, on the one hand, the advent to power of strata associated with more or less modern production (but not with bourgeois relations), on the other hand, contributed to the rise of a new kind of state, namely, the socialist-oriented state. (The choice of socialist orientation is determined by many objective and subjective factors, both external and internal. We mention only one of the more important internal factors.)

The distinguishing feature of these countries is the transformation of the multistructural economy chiefly by extra-economic methods. First, by liquidating the feudal structure through reforms. But unlike countries advancing along the capitalist path, former feudal property does not degenerate into small-commodity production, but evolves into cooperatives founded with state assistance. The result has been to limit both the small-commodity and semi-subsistence structures. Inasmuch as the organisation and management of the cooperatives (financing, equipment, marketing, etc.) is promoted by the state, the cooperative system is closely linked with the state sector.

Second, nationalisation of foreign and big and medium national capital sharply reduced expansion opportunities for the capitalist structure. The new big and medium enterprises were started by the state, or with the participation of foreign or national capital (mixed companies). On the other hand, the agricultural, handicrafts, services, marketing and other cooperatives limited the growth of capitalism from below. The capitalist structure continues to exist in small industry, trade, motor transport, the services, etc.,

but its expansion is kept within bounds by the growth of the state and cooperative sectors. Hence, the concentration of the main economic levers—credit and banking, foreign and a large part of internal wholesale trade, big and medium industry and construction—in the hands of the state prevents the private capitalist sector from becoming the dominant structure. True, the facts show that back-tracking should not be precluded, but the capitalist structure can only become a transient factor in the advance to the new social system.

And so in socialist-oriented countries the social and economic system undergoes radical change: there is no feudal structure and no strong capitalist structure. The cooperatives transform the small-commodity and semi-subsistence structures. The state-capitalist structure, and the cooperative structure closely linked with it, dominate the economy. There are still survivals of the small-commodity and private-capitalist structures, but their growth is effectively restricted. Since all these structures are connected with the market, there emerge interstructural economic relations in this group of countries. In the long run, with the continued transformation of the social system, requisites could be created for the final elimination of multistructuralism.

In the years since political independence, the law of uneven development has intensified the socio-economic differentiation of the newly liberated countries. One expression of this is the heterogeneity of structural changes in the different groups of countries. In the socialist-oriented countries the tendency is clearly towards elimination of multistructuralism and the development of interconnections based mainly on economic laws. This should make it possible more fully to utilise the material, financial and human resources for economic growth. In countries rapidly advancing along the capitalist path, the multistructural economy is being converted into a bi-structural one. As a result they could approach, in key indicators, countries with a medium level of capitalist development. But the pauperisation of huge masses of the population concentrated in the traditional sector is bound to accentuate social tensions and create a situation in which the continued development of capitalism would be curbed, or the country would undergo sharp social change. In other words, the elimination of multistructuralism does not, in itself, open the way to the development of capitalism.

PROBLEMS
OF WAR AND PEACE

The Key Problem of Our Time

OLEG BYKOV

Consistent and creative implementation of the Soviet policy of peace, detente and disarmament, set out in the Peace Programme approved by the 24th and 25th CPSU Congresses, have yielded appreciable results in world affairs. "Broadly speaking, our main accomplishment," Leonid Brezhnev emphasised earlier this year, "is that we have succeeded in breaking the tragic cycle: world war—brief spell of peace—world war again. We Soviet people and our friends, the peoples of the fraternal socialist countries, all those who have struggled and continue to struggle for peace, detente, peaceful coexistence of states with different social systems, are rightfully proud of this historic result." [1]

Throughout the centuries war has laid an indelible imprint on social development. But in our time mankind is faced with a war danger that has no parallel in history. For the danger has now acquired truly global dimensions: new weapons and new methods of warfare have made the whole world a potential battlefield. A third world war, if it is not averted, would bring incalculable suffering, take a colossal toll of human life, and destroy the main centres of world industry and culture.

Nor is this situation due solely to the emergence and development of nuclear weapons. The revolution in warfare came at a time of deep-going changes in the internal development of many countries and in their relations with each other. We are living in a world of intensive revolutionary change, of mounting struggle for social and national liberation; a world in which the socialist community is gaining in strength while the general crisis of capitalism continues to aggravate, and the historic competition between the socialist and capitalist systems is gaining momentum.

More contradictory combinations of rivalry and partnership are being formed within the capitalist camp itself. The situation is further aggravated by Beijing's hegemonistic policy. To this should be added the growing antagonism between the leading capitalist and developing countries, the socio-economic and political differentiation among excolonial countries and, at the same time, their mounting prestige in world affairs.

A military potential of unprecedented destructive force is being built up at a time of profound change in the world economy. The scientific and technological revolution offers fresh opportunities for wider and more effective international division of labour, equal and mutually advantageous cooperation. But that is being blocked by the exacerbating contradictions and crisis developments in the capitalist economy and by the egoistic propensities of the monopolies. The imperative need, therefore, is to restructure international economic relations on an equal and mutually advantageous foundation. For the pressing problems are many: an adequate food supply for the world's population, energy and raw materials—for its industry, protection of the environment, development of the resources of the World Ocean, conquest of outer space, etc.

All these problems acquire special urgency now that the imperialist forces, and especially the reactionary and bellicose elements in the USA and the Chinese hegemonists working hand in glove with them, are seeking to turn the competition between the two world systems from its present course of peaceful coexistence and detente into hostile confrontation. In furtherance of their selfish interests, they are recklessly gambling with the destinies of the human race.

The danger hovering over the world is of a magnitude unknown to history. But never before have the forces capable of preventing another world war been so strong. They are represented by the socialist countries, the international working class, the national liberation movement, by everyone who wants a world at peace. They are working indefatigably to block the path of the imperialist aggressors and all claimants to world hegemony. Realistically-minded capitalist statesmen can not but be aware of the fact that there is no acceptable alternative to peaceful coexistence.

The horrendous dimensions of the threatening catastrophe largely account for the worldwide concern to prevent it. The problem of war and peace is today one of the most pressing and complicated ones; it is without exaggeration the key problem of our time.

In its approach to it, socialism's foreign policy expresses both class and general democratic interests or, in effect, the universal

interest. As Lenin once remarked: "Democracy is most clearly manifested in the fundamental question of war and peace."[2]

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The appearance of nuclear-missile weapons signified an unprecedented qualitative leap in the material means of warfare. This was followed by a thorough revision of strategy and tactics, with such factors as time and space acquiring an altogether new meaning.

The devastating power of thermonuclear weapons requires no description here. Suffice it to say that one thermonuclear charge can cause more destruction than all the explosives used in the Second World War, and, in fact, in the whole history of warfare. The destructive potential of nuclear weapons, multiplied by their massive use, is greatly increased by their means of delivery—ballistic missiles. They have a practically unlimited range, are highly manoeuvrable, virtually invulnerable, have a high speed and altitude, high accuracy in reaching their target, and can carry a nuclear charge of great power. In combination, this makes it possible to deal surprise strikes on a large number of targets. These weapons have erased the customary distinction between front and rear.

War between the main mutually-opposed socio-economic and political forces could not be contained within a definite area, the traditional theatre of military operations. There would always be an attempt to extend the conflict far beyond the area in which it began. And since there is no effective defence against nuclear attack, its victims are bound to be not only, and not so much, the armed forces, but the entire population. Nor would the targets be only military. They would include the industrial, political and cultural centres, agriculture, transport of many countries, for the whole planet might well be involved in the conflict.

Casualties, even at the early stages of the nuclear war, would be counted in hundreds of millions, and most of them non-combatants. Millions more would be the victims of lethal radiation or die of disease or hunger. The destruction of material values would be beyond calculation. Vast areas would be turned into radiation-contaminated wasteland.

This apocalyptic picture cannot by itself, however, preclude the possibility of such a war. The menace of a universal nuclear conflict is endemic in the very policy of the aggressive forces bent on aggravating the confrontation of the two systems. That is why they are inventing and manufacturing more lethal weapons.

Imperialism wants to halt social progress by violent means. Twice it plunged mankind into global cataclysms. Immediately after the Second World War it banked on the use of the new weapons. In the early postwar years the USA had a monopoly of the nuclear weapon and its foreign policy directors urged its maximum use to give America domination over the world, and create a Pax Americana. The more bellicose political and military leaders frankly called for an attack on the Soviet Union to revise the results of the Second World War in favour of imperialism and use the "ultimate weapon" to wipe out socialism.

This was attended by a political, ideological and economic offensive. There was founded the North-Atlantic alliance—the most aggressive military machine known to history—directed against the Soviet Union and socialism in general. The imperialists imposed an economic blockade on the USSR and the other socialist countries, hoping in this way to frustrate their postwar rehabilitation. Then came the cold war, fraught with the danger of developing into a worldwide conflict. Indeed, there was the serious danger of a new world war in which, the imperialists felt, they could use their mass destruction weapon with impunity.

But these monstrous plans came up against insurmountable barriers. Imperialism's chances of resolving its differences with socialism by force declined significantly.

The most important factor in weakening, and ultimately eliminating, the menace of another world war was the changed correlation of forces in favour of socialism. And here the decisive factor was the social, economic, political, ideological and other non-military advantages of socialism, which strengthened its international position and authority. Of first-rate importance, too, was the enhanced defence capacity of the USSR and other members of the socialist community, who thirty years ago founded the Warsaw Treaty Organisation to defend their gains against imperialist encroachments.

It became vital for the Soviet Union and its socialist allies to produce, within a short time, weapons capable of neutralising the military might of a potential aggressor. With a well-organised economic base, with all the technological achievements at its disposal, and relying on the dedicated effort of its scientists, engineers, and workers, the Soviet Union was able to devise and produce nuclear-missile weapons in no way inferior to America's. Elimination of the US nuclear monopoly, and hence also of its strategic invulnerability, coupled with the increased defence capacity of the USSR and its allies, greatly strengthened socialism and all the forces of peace as a decisive factor in preventing a worldwide military conflict.

Changes in the balance of military strength, combined with the steady strengthening of socialism's world positions, produced an entirely new strategic situation. It was no longer possible to deliver a first nuclear strike and not expect immediate retaliation. Regardless of structural differences in the strategic forces of the two sides, there developed a rough equality that precluded the decisive superiority of one side. The credit for that must go to the socialist countries which, relying on the superiority of their social system, were able to counter the imperialist challenge in technology and thus halt the dangerous drift to war. Military equality between the USSR and the USA—and more especially their strategic parity—laid the basis for limiting armaments and advancing towards disarmament. Leonid Brezhnev has said: "We are not seeking military superiority over the West, we do not need it. All we need is reliable security. And the security of both sides will no doubt be greater with the arms race curbed, war preparations curtailed and the political climate of international intercourse made healthier."[3]

But strategic equality does not suit the bellicose groupings in the imperialist camp. Their policy has always been oriented on the use of armed might in many different forms, from threats to employ it to outright armed intervention. Their reaction to strategic equality has been to try to drag the world back to the time when imperialism had at least some advantage over socialism. And to achieve that they are straining the economic and technological potential of industrially developed capitalist countries, to whip up the arms drive, in an attempt to gain strategic superiority over socialism.

In 1978, the USA together with its allies increased its armaments programme. In May 1978, at its meeting in Washington, the NATO Council approved an additional long-range arms-building programme. At its Brussels session in December 1979, it decided, under US pressure, to deploy new US nuclear systems in Western Europe. At about the same time, President Carter announced a five-year programme designed to further increase America's war preparations. Military expenditure for 1981 was set at $157 billion, or nearly $20 billion more than the Administration had asked for in 1980. Military expenditure (cleared of inflation) is to grow by 4.6 per cent a year.

The five-year programme centres on expanding and improving America's strategic arsenal. Production is to begin this year of the cruise missiles. Carter has declared that America needs the mobile intercontinental MX missile, capable of reaching many targets in the Soviet Union. Work is also in progress on a new Trident submarine missile while the first missiles of this series with a range of more than 4,000 miles are being deployed.

The five-year programme envisages also expansion of America's conventional forces, including larger continents in NATO countries and the Pacific. Then there is the Rapid Deployment Force for use in areas that do not come under NATO. In sum, US imperialism is making its drive for domination in all the continents and all the oceans its official and permanent policy.

It should be noted, however, that attempts to change the global strategic balance are doomed to failure. Leaps in the arms drive can for a time destabilise the equilibrium and give one side certain advantages in one or another sector of the military confrontation. But they certainly cannot cancel out the all-important fact that elimination of America's nuclear monopoly and strategic invulnerability have radically changed the overall world situation. And if the strategic balance is violated by one side, the other can nullify any advantages so gained by building up its own might. The net result would be a new equilibrium again, but at a lower level of mutual security and a higher strategic level involving greater expenditure. This would be to the advantage of the military-industrial complex and to the disadvantage of the overwhelming majority of the world's population.

* * *

Levelling out strategic capabilities greatly hampers imperialism's aggressive policy. Global strategic equilibrium is not, and certainly cannot be, the ultimate and most reasonable pattern of relations between states belonging to the opposite systems, called upon to preserve and consolidate peace. Such an equilibrium, now a reality, is subjected to the destabilising influence of a number of factors, including its own, inherent destabilising elements.

For strategic equilibrium is dynamic, not static. Stockpiles of mass-destruction weapons are constantly increased and the weapons themselves improved. Scientific and technological progress offers many new opportunities for designing more sophisticated nuclear missiles.

Then there are important structural differences in the armed forces and armaments of the two sides, and they are bound to create objective difficulties in maintaining a stable strategic equilibrium. Furthermore, they are aggravated by imperialist attempts to exploit technological progress to gain advantages over the other side. Nor is it merely a matter of modernising existing armaments, but rather of creating entirely new systems.

Especially dangerous in this context are technological breakthroughs that lead to fundamentally new types of mass-destruction weapons. If and when that happens the other side would have to

redress the balance by producing new weapons of its own. The strategic equilibrium would have to be reviewed anew.

Stabilising the strategic equilibrium at a definite level is by no means easy. But it becomes much more difficult and complex when the United States tries to gain unilateral advantages. Given goodwill on both sides, the nuclear arms drive could be curbed at a lower level. But if favourable opportunities are missed then the continued stockpiling and improvement of nuclear weapons makes the problem much more difficult, for the development of military technology is a more rapid process than that of holding back the arms race.

The instability of the strategic equilibrium leads to the formula: "action-counteraction". Deployment by one side of a new weapon system leads, as a rule, to retaliatory measures by the other: it produces similar or comparable systems to redress the balance.

The "action-counteraction" cycle is being accelerated by influential imperialist elements, particularly those connected with the military-industrial complex. They are naturally interested in continuing and accelerating the arms drive. They know that the other side will react to every "action", and they will then launch a "counteraction" at a higher level of the military confrontation.

That is what happened when the US produced its MIRVed missiles: the Soviet Union had to take the necessary measures to re-establish strategic equilibrium. Thereupon, allegedly as a "counteraction", the US launched its programme for a new generation of strategic weapons, the mobile intercontinental ballistic missile MX and the cruise missile.

It stands to reason that endless repetition of the "action-counteraction" cycle can only increase the already immense stockpile of lethal weapons and the vast amounts of money needed to produce them. It can also happen that some strategic imbalance might suddenly dangerously complicate the international situation.

Equality in strategic forces can in some measure keep the arms drive within a definite framework and introduce a modicum of stability in relations between states. But it would still leave ample room for military rivalry which, unless it is hamstrung, can become steadily more intensive and extend to more dangerous areas. This cannot but exert a negative influence on international cooperation in all fields, and on the promotion of universal security.

At the root of the present rivalry is imperialist policy, the motive force of the arms drive. The militarist course of the Chinese leadership is closely linked with it.

The arms drive, now proceeding at a rapid pace and covering a wide range, has its own inner momentum. Production of

weapons over a long period and on a large scale combined with the growing appetite of the huge military machine, exert a strong influence on the policy of capitalist powers.

This should not be taken to mean that the present strategic equilibrium is so fragile that it would break down at any moment under the pressure of destabilising factors. Not only can strategic equilibrium be maintained, but it can be strengthened in the interests of universal peace. Strategic equilibrium is not only the starting point for efforts to ward off the war danger, but also for extending detente, curbing the arms race and lowering the level of military confrontation, and we must not allow it to erode.

* * *

The changed nature of the war-and-peace problem calls for a new approach to its solution. The need everywhere, regardless of ideology and social system, is for concerted effort, on a common programme, to avert the catastrophe threatening mankind.

It cannot be said that views on the problem among leading circles in the capitalist countries remain unchanged. Nor could it be otherwise considering the continuing consolidation of the forces of social progress and the continuing threat of a nuclear conflict. The more far-seeing Western political leaders are coming to realise that, with the present balance of forces, the imperialists' attempts to achieve their aims by force can prove an extremely dangerous gamble. But the militarist faction has not abandoned its aggressive designs, and is searching about for forms and methods more adapted to the changing situation.

Up to the 1960s, US arms build-up was based on the strategy of "massive retaliation", thinly veiled aggressive concept based on the imperialist "deterrence" and "positions-of-strength" policies. Washington's political and military leaders reckoned that they had a significant military superiority over the Soviet Union, and from this followed the wholly erroneous conclusion that they could launch a nuclear attack on it and on its allies with minimum risk of a retaliatory strike.

The far-reaching changes in the strategic situation compelled Washington to abandon its "massive retaliation" strategy in favour of "flexible response". This called for a wider range of military action with direct or indirect use of nuclear and conventional weapons. But here, too, the chief element was America's assumed capability to unleash and wage total nuclear war, and this remains part of all the later modifications of the "flexible response" doctrine.

But neither strategic nor technical innovations can help imperialism to regain the capability of resolving the question of war and peace at its own discretion. For with the present correlation of forces, including the strategic equilibrium, military might becomes less and less suitable a means of resolving the differences between the two social systems.

With no reasonable alternative to peaceful coexistence, leaders of the capitalist countries more often find themselves obliged to admit that both the capitalist and socialist countries are interested in preventing a universal nuclear holocaust. But traditional militarist thinking persists, and is even being adapted to the new situation. It is preventing the development of realistic trends in the foreign policy of many Western countries. Doctrines and concepts now being worked out by the imperialists are still based on the assumption that they can launch and win a nuclear war.

The socialist approach to the problem of war and peace, of course, differs radically from the imperialists'. The grim reality of the imperialist-imposed military confrontation makes it necessary for the USSR and its allies to strengthen their defence capability. But this has never gone beyond the level absolutely necessary to ensure their security. The Warsaw Treaty Organisation possesses the defensive might needed to repel an attack, no matter what weapons the aggressor employs. An attack against the USSR and other members of the socialist community would bring immediate retribution.

The level and the structure of the Soviet Union's armed forces are determined by its strategic doctrine, which does not aim at military superiority. The Soviet Union has never threatened any country or group of countries. "Our strategic doctrine is of a purely defensive orientation," Leonid Brezhnev emphasised in a speech in Berlin on October 6, 1979.[4] That doctrine, of course, is inseparable from the Soviet Union's foreign policy, which rests on the class, ideological and political principles of socialist society, its peace orientation, and on a scientifically grounded understanding of world development.

Lenin's theory of war and peace has been creatively developed with the march of history. In this context, immense theoretical and political importance attaches to the conclusion drawn by the CPSU that world war can be averted. Interpretative analysis of social phenomena led our Party to conclude that resolute resistance to imperialist aggressive policy by world socialism, the international working-class movement, and all anti-imperialist and peace-loving forces can prevent the outbreak of another world war. These concepts, formulated by the CPSU on the key problem of our time, have met with a worldwide response. They have the support of the Communist and Workers' parties which in their collectively

drafted statements reaffirm our Party's conclusion that war is not a fatal inevitability.

The Chinese Maoist leadership has taken an entirely different view, contending that a world cataclysm is unavoidable. Their arguments are based entirely on their hegemonistic and frankly anti-Soviet policy. The logical evolution of social-chauvinism into official Chinese policy has made it plain that the desire to establish world hegemony by the use of force was from the very start part of Maoist ideology. The Chinese leaders' approach to the cardinal problem of war and peace should leave no doubt that they are working to provoke a universal, and primarily a Soviet-American, conflict in pursuance of their aim of world domination.

The Beijing leaders regard the Soviet Union and the socialist community as enemy No. 1, and the reactionary imperialist forces as their factual allies. It is only logical therefore that they should bring their anti-Soviet, anti-socialist policies closer to those of the most aggressive imperialist circles, and work hand in glove with them in heightening international tension, dragging the world back to the cold war and preparing for a hot war.

The Soviet Union has steadily overcome foreign militarist resistance and intrigue in its unremitting effort for a healthy international climate and an end to the war menace. The socialist countries' coordinated policy has been a decisive factor in the positive changes in world affairs, acceptance of the coexistence principles as a standard of relations between states with different social systems, and the change over from cold war to detente. This has produced real opportunities, and also the imperative need, for reciprocal efforts by the two systems to reduce the threat of a global nuclear conflict.

Multilateral and bilateral agreements and negotiations, particularly the extension of European cooperation, have helped to formulate and consolidate the principles and norms of mutually advantageous international relations. And in this respect the Helsinki Conference was of truly historic significance and its Final Act has proved a serious moral, political and legal obstacle to would-be instigators of military gambles.

The improvement in Soviet-American relations, upon which world peace largely depends, in the first half of the 1970s largely contributed to the prevention of a global armed conflict. USSR-US summit meetings culminated in the signing of documents setting out the principles of peaceful coexistence. These are clearly formulated in the Basic Principles of Mutual Relations Between the USSR and the USA. Their Agreement on Preventing Nuclear War commits them to work to preclude the risk of a military conflict, especially a nuclear one, between the USSR and the USA and also between each of these and other countries. Of great

importance, too, are the Treaty on the Limitation of Anti-Ballistic Missile Systems, SALT-I, and SALT-II, the latter signed in Vienna in June 1979, and other treaties and agreements—now being sabotaged by Washington—designed to restrain the arms race and lessen the danger of war.

The Soviet Union's relations with France, the Federal Republic of Germany, Britain, Italy, Japan, Canada and other capitalist countries have developed successfully on the basis of peaceful coexistence.

The policies of a number of neutral and non-aligned countries have been still another contributing factor to a healthier international climate. Last but not least, the aggressive forces have encountered energetic resistance from the masses, the peace movement and all peace-oriented public organisations and movements.

Detente presented fresh opportunities for active opposition to the war menace, helped to accentuate realistic trends in the policy of the capitalist countries, and promoted the objective prerequisites for banishing world war from the life of mankind.

But all these activities have met with serious resistance and difficulties caused by the double-dealing policies of capitalist governments strongly influenced by the military-industrial complexes, and at times also by the complicated intertwining of cold-war survivals and realistic trends. The zigzag course of the Western powers should be seen in the context of opposition to detente, internal political struggle and other transient factors.

* * *

The present international situation can best be described as paradoxical. For, on the one hand, there are more realistic opportunities for military detente, while on the other, the aggressive, militarist forces are intensifying the arms drive.

Mass-destruction weapons are being perfected by the introduction of the latest technological achievements and more of these weapons are being produced. More countries have joined the arms race. Many medium and small nations, including some in the developing world, are building up arms stockpiles.

All this has meant a heavier tax burden on the people. Unproductive military expenditure means so much less material benefits for the people and holds back solution of pressing problems. More important still, the frenzied arms race increases the threat of nuclear war.

It would be hard fully to estimate the damage caused to military detente by the continued attempts of the imperialist

militarists to alter the present balance of military forces in their favour. Yet the steady lowering of the level of military confrontation would tend to strengthen, not undermine, world peace and security and would be based on a carefully weighed balance of the interest of every nation. But how can this be achieved, if influential elements in the West challenge the principle that armaments limitation and reduction should begin from the present strategic equilibrium?

Measures taken so far to curb the arms drive show that given mutual efforts even the most difficult strategic and technical problems can be solved. To be sure, it will not be easy, but every type of weapon can be effectively limited and physically reduced on the basis of equality and reciprocity. There is the proof of experience that technological advances in weaponry likewise lend themselves to limitation.

In the late 1960s, on Soviet initiative, work was begun on limiting strategic arms. The USSR-US SALT-I agreements were followed by the signing of SALT-II which goes much further in its qualitative and quantitative clauses and is equally needed by the two countries, indeed by all countries. It is based on equality and equal security, and adequately reflects the USSR-US strategic parity. Consistent advance along this road of limiting strategic arms—if it were not undermined by the aggressive forces of imperialism—could have a most favourable influence on other negotiations relating to the more concrete aspects of military detente.

But this process has been brought to a halt by the Carter Administration which, motivated by political expediencies, has postponed ratification of SALT-II indefinitely.

The Soviet policy of bridling the arms race follows from a searching analysis of the correlation of forces, the political and strategic situation, the trends and prospects of its development, the material and technical means of waging war. Soviet policy takes into account the interests of each nation and the need to provide peace for all nations.

Materialisation of the principles adopted by the 24th and 25th CPSU Congresses is reflected in the Soviet Union's all-embracing and concrete programme of curbing and subsequently halting the arms race. This programme is designed to assure continued progress from what has already been achieved in limiting and reducing armaments. Its goal is steady and uninterrupted lowering of the military confrontation level, physical reduction and stage-by-stage elimination of the weapons of war.

The Soviet approach to the problem of military detente—and in this lies its constructive nature—opens up wide prospects for effective negotiation and agreement. The Soviet initiative could

lead to sustained and intensifying efforts in working out mutually acceptable measures to limit and reduce armaments. The programme does not give the Soviet Union and its allies unilateral advantages, and is so designed as to achieve agreements ensuring strict reciprocity without in any way impairing anyone's security.

The Soviet proposals start from the present global strategic equilibrium and are couched in a spirit of reasonable compromise. We believe that only mutual and equal concessions can serve as the basis for effective agreement to limit and eventually reduce existing armaments. Common efforts to end the arms race would do much to promote international security, which in our day can only be based on the interests of all the parties involved. That would benefit all the peoples, the whole of the human race.

* * *

No one is likely to deny that the promotion of universal peace is inseparable from European security. The situation in Europe has always been central to the situation in the world, and that is doubly so now. For concentrated in Europe are the main forces of the mutually-opposed military groupings and a huge arsenal of lethal weapons which is constantly being increased to even more dangerous dimensions.

Thanks to the persistent efforts of all who cherish peace, security and cooperation, we now have a solid foundation for peaceful relations. In this context special mention should be made of the Helsinki agreements, which cleared the way to eliminating the present military confrontation. It should be perfectly clear, however, that the roots of political detente in Europe will not survive unless there are practical steps towards military detente.

The Soviet Union and other members of the socialist community have put forth an integrated and effective programme for military detente in Europe. It envisages reduction of nuclear and conventional weapons and confidence-building measures.

In its effort to prevent a new spiral of the arms drive and reduce the weapon stocks in Europe, the USSR made a goodwill gesture by announcing a unilateral reduction of its medium-range nuclear missiles deployed in its Western regions, on condition that no additional medium-range nuclear missiles will be stationed in Western Europe. At the same time, the Soviet Union proposed immediate negotiations on reducing nuclear weapon systems in Europe.

In October 1979, in agreement with its allies, the Soviet Union decided on a unilateral withdrawal to the USSR of 20,000

servicemen, 1,000 tanks and other military hardware from the GDR. That decision has been carried out.

The Warsaw Treaty states have called on all states represented at Helsinki to pledge not to be the first to use nuclear or conventional weapons against each other. In other words, this would be tantamount to a non-aggression pact between the socialist and capitalist countries of Europe, the USA and Canada.

As for the Vienna talks on mutual reduction of armed forces and armaments in Central Europe, stalemated because of the attitude of the Western powers, the USSR and its allies are prepared to continue jointly to search for mutually acceptable decisions that do not impair the security of either side.

Military detente in Europe would do much to promote mutual confidence. The Warsaw Treaty states have suggested agreement on notification of military manoeuvres; limiting the participating forces to 40,000-50,000; timely notification not only of military exercises, but also of ground-force movements of more than 20,000 men. The socialist countries have made similar proposals on notification of major air exercises, naval manoeuvres, etc.

The proposals of the Soviet Union and its allies take due account of the real situation in Europe and open the way to agreed and fully realistic measures for military detente on the continent. For the first time there are favourable conditions for an end to the rigid military confrontation in Europe.

But an excellent chance has been missed. Events have taken a negative course: the December 1979 NATO session gave way to US pressure and decided to deploy about 600 new American medium-range missiles in several West European countries. The purpose of this escalation of the arms drive is to give the West unilateral advantages. It also introduces a qualitatively new element, namely, nuclear weapons capable of hitting targets on Soviet territory, in the established European balance between the Warsaw and NATO groupings. This will change the military-political situation on the continent, and could generate serious destabilising tendencies in Soviet-American strategic parity.

NATO has not responded to the constructive initiatives of the Soviet Union and its allies. In fact, its policy is the very opposite of reducing the present high levels of military confrontation. As for the concept of negotiating from higher NATO armaments levels, it need hardly be proved that this is totally unreal and unacceptable. For there can be no real progress to military detente by stockpiling more weapons. And it would be naive to think that NATO attempts to gain superiority will not be matched by measures to enhance the security of the USSR and other members of the socialist community.

The Soviet Union has consistently urged negotiations, but honest, equal negotiations based on the principle of equal security. It is such negotiations that the USSR proposed on medium-range nuclear missiles. But one cannot expect the Soviet Union to accept the NATO principle of negotiating from positions of strength.

No international developments, however complex, can compel the Soviet Union to divert from its central policy of consistent, persevering efforts for enduring peace, detente, and an end to the arms drive. This is the immutable and unswerving foreign policy strategy of the CPSU and the Soviet government. It is a powerful impetus to uniting the efforts of all who want to see the world free of the danger of a nuclear catastrophe. As Leonid Brezhnev told an election rally in Moscow: "To the 'doctrine' of military hysteria and frenzied arms race we oppose the doctrine of consistent struggle for peace and security on Earth." [5]

With the present line-up of world forces, detente is not only necessary, but feasible. To remove the menace of mass annihilation and unparalleled destruction there has to be a responsible and constructive approach by all nations and governments, and the political will to take long-overdue concrete measures to eliminate the material basis of the war danger. The reason and conscience of mankind imperatively dictate such an approach to the key problem of our time—the problem of war and peace.

NOTES

[1] *Pravda*, January 13, 1980.
[2] V. I. Lenin, *Collected Works*, Moscow, Vol. 30. p. 319.
[3] *Pravda*, January 16, 1979.
[4] Ibid., October 7, 1979.
[5] Ibid., February 23, 1980.

DISCUSSIONS

In Search of the Truth

MIKHAIL KHRAPCHENKO

From the Editors: Recently, the *Literaturnoye obozreniye* (Literary Review) conducted a survey of opinion on questions of philology. There were contributions from Soviet scholars of different generations representing higher educational establishments and research institutions, who stated their views on the science of philology, its perspectives of development, relations to other disciplines and the latest methods of philological research.
The article by Academician Mikhail Khrapchenko offered here concludes the debate.

Every field of knowledge needs, from time to time, a critical assessment of what has been done and a discussion of major scientific problems requiring investigation. These problems are, generally speaking, posed by the development of both society and science itself. The various branches of philology also periodically take stock of their achievements and define new goals. The positive significance of that is quite apparent.

The debate on problems of philology conducted by the *Literaturnoye obozreniye* appears from this point of view quite important and useful. Its goal was not that of summing up. The Editors proceeded from the fact that philological science is now going through a period of rapid advancement, becoming a pilot science for the humanities. One even often hears of a revolution in philology dating from the second half of the 20th century.

The debate attracted some eminent scholars and talented researchers of the middle generation who expressed quite a few interesting views, though at times rather controversial ones, concerning the vital problems of philology and the perspectives for its further growth.

It is to be regretted that linguists did not participate in the debate, although it did touch on some topics of general

philological import. The reason may have been that the discussion was sponsored by a literary critical journal which is not among the publications that linguists are accustomed to deal with. Whatever the reasons, the absence of contributions from linguists, with one exception, undoubtedly restricted the range of problems considered and of ideas expressed in the debate.

The problem of the word and text and of their philological study was among the principal questions discussed by the scholars. This topic was touched upon already in the opening contributions of Ya. Bilinkis, D. Likhachev, Yu. Lotman, who actually set the tone of the discussion. The question was not merely that of the importance of scientific study of the word and text but one of revival of lost traditions. "The question of the need 'to go back to philology'", said Likhachev, "is raised time and again." Bearing in mind the general tasks of the modern development of literary criticism and linguistics, many philologists, myself included, are guardedly skeptical about this sort of nostalgia. The aspirations and hopes of the adherents of "revival" are marked by a certain one-sidedness. At the same time the insistent desire to raise the standard of study of the word and text must in every way be encouraged. Successful growth of our science requires profound elaboration of the extremely diverse philological studies arising out of these problems.

One cannot but agree with Lotman when he says that "in the existing conditions 'lightweight philology' seems particularly undesirable—those works that one runs across at times, where what claims to be scientific analysis is actually a series of 'readings' of the text, sometimes not devoid of insight or interest but always subjective and 'taste-motivated', based on neither linguistic nor historical-cultural erudition".

Despite the essential significance of the new studies of the word and artistic text, it should be recognised that some of the most important problems of their general methodology and special methods are not yet sufficiently elaborated. Thus, Likhachev emphasises that "the philological understanding of the meaning of words is important"; at another place in his article he speaks of linguistic interpretation of the text. However, what is the philological approach to the word and the text, and what is their linguistic analysis? All that is not at all clear.

As far as linguistic studies are concerned, analysis of the word may be, and usually is, carried out on different planes—semantic, stylistic (the correlation between the word and language styles), and syntactic (the role and meaning of the word in a text). Studies are made in the history of words, in dialectical vocabulary as the component part of a dialect or subdialect compared with the standard language. Statistical analysis of vocabulary has gained

sufficient currency. All of this comes under the heading of linguistic analysis of the word, which makes the term patently ambiguous.

Linguistic analysis is applied in literary critical studies in a specific form, especially in the study of mediaeval literature, particularly when it is necessary to establish whether we are dealing with an original literary monument or a compilation. Linguistic analysis is also applied in cases where the literary monument has to be freed from later language features. It is also necessary in textological research.

This situation is quite different, however, in the study of the literature of the new times. In what form can the properly linguistic analysis of the word and text be applied here? At first sight, the sphere of its application is extensive enough here as well. Poetics and stylistics have developed in a fruitful way. Analysis of the word and text apparently forms the basis of serious research in this field. The study of individual literary works and of the writer's language in its unity and creative variety are of essential significance for literary criticism. However, the properly linguistic approach to the word and text can be of little help here, it seems. In literature, the word appears primarily in its poetic function, as a means of perfect realisation of the artistic image and the ideological and image structure of the work as a whole. With this in view, both critics and literary historians are called upon to study the language of creative works, the language of the writer, bringing out the great power of the word as well as its unused potential that often comes to light in the analysis of various literary works.

It does not at all mean that literary criticism or literary history can ignore the achievements of linguistic thought. On the contrary, I believe that it is possible to reveal the aesthetic significance of the word and its role in creating artistic values in a profoundly fruitful manner only through reliance on linguistic study of the language. However, reliance is one thing, while the properly linguistic analysis of the language of an artistic work is another. The latter cannot replace the study of verbal art.

The theme of "verbal art" has been treated during the discussion. It was the subject chosen by V. Fedorov and V. Kozhinov. Putting forward certain interesting ideas pertaining to this problem, Fedorov and Kozhinov concentrated on proving the differences between the material of an artistic work, the psychology of the protagonists, and the text, the word which reveal the object of creation. "Purely theoretically," writes Kozhinov, "we all realise in the final analysis that the word is merely the material of verbal *art*. However, when we turn to concrete manifestations of verbal art, we are extremely prone to

characterise the word rather than art, the material rather than artistic creation itself." And yet, while identification of the material of art with the artistic images is untenable, it is also unjustified to separate them from each other by hard and fast lines, it is unjustifiable to isolate the word from those creative generalisations which it is called upon to express with maximal persuasiveness. Verbal art does not exist and develop by itself, spontaneously, but only in its inseparable connection with the study of life in images. These aspects of the problem of "verbal art", just as many others, indubitably require thorough consideration.

In connection with the general character of the discussion which treated, first of all, the word and text theme, it is necessary to touch, if only very briefly, on the very broad spectrum of research constituting the content of Soviet philology and far surpassing the boundaries of the problems of word and text as such.

Soviet literary historians devote much of their creative energies to writing the history of the national literatures of the pre-revolutionary and Soviet periods. Voluminous histories of a number of literatures of the peoples of the USSR have been written and published; two-volume and one-volume joint monographs on the development of many national literatures have also appeared. A six-volume overview history of the Soviet multinational literature has been published, describing the formation and growth of more than sixty national socialist literatures of the Soviet Union. There have been intensive developments in the study of the riches of the folklore of the peoples of the USSR. The histories of a number of foreign literatures have also been published, including those of Britain, France, and Germany. Considerable results have been achieved in the study of the literatures of Asia, Africa, and Latin America. Soviet literary critics are discovering whole literary continents, as, for instance, the literatures of African countries that have recently freed themselves from colonial domination. These many-sided research activities of literary historians are summed up in the ten-volume history of world literature, of which five volumes have been completed. The main directions of modern literary critical research will be clearer if we add to all this the work on many theoretical problems, including those of socialist realism, the study of interconnections between literature and various fields of socialist culture, and preparation for publication of academic editions of works by the classics of our literature.

In linguistics, the word is the object of special study by such major branches of it as lexicology and lexicography. Apart from that, linguistic research follows many other important lines, such as the grammatical structure of various languages, their historical

development, historical-comparative studies, historical-typological study of languages, areal linguistics, dialectology (both historical and modern), compilation of dialectological atlases, etc. In these studies, linguists deal with language as one of the most striking creations of the human mind, not just with the word.

The history of a language is closely bound up with the history of the people and the development of culture. The study of these processes is of essential significance for understanding the growth of the national languages in our country, many of which had no writing systems before the revolution; it also plays an important role in elucidating the development of the national socialist cultures. Work on the problems of interaction between language and culture is prompted by the whole situation of cultural development in the multinational Soviet Union.

With a view to the extensive international tasks of linguistics, Soviet linguists work on a fifteen-volume encyclopaedic publication *The Languages of the Peoples of the World* intended to give, wherever possible, a scientific description and analysis of all the living and, moreover, dead languages no longer in use. Preparation of this work obviously requires a new approach to a number of theoretical problems, including classification of languages.

The problem of the structure of the philological science was among those touched upon in the debate. Is its subject-matter limited to those problems that are studied by literary criticism and linguistics, or are there special "purely" philological themes and questions? Apart from the general considerations on the need for "a return to philology" mentioned above, the view was also expressed that philology proper was not restricted to literary criticism and linguistics, having its own problem range and its own objects of research. M. Markov insists, for instance, that philology "has a *subject-matter* of its own, being a discipline of a higher and unifying level than linguistics and literary criticism. That subject-matter covers not just the word but the features of word usage common to both linguistics and literary criticism, as well as the particular laws of word usage in the contiguous arts. And that includes the historical, psychological, and all other aspects."

Undoubtedly, philological science embraces not just literary criticism and linguistics but also such disciplines as folklore studies, textology, and some other branches on the borderline between literary criticism and linguistics. Of this nature are, for instance, stylistics and poetics. V. Grigoryev had some refreshing things to say on the linguistic aspects of their development, although his views were somewhat controversial.

With respect to philology as a discipline of a higher level than linguistics and literary criticism, a discipline studying "word usage" that is the common concern of both these sciences, it

should be remarked that its subject-matter cannot be regarded as clearly specified. Markov's proposal concerning the study of laws of "word usage" in the contiguous arts seems to me to hold little promise. Even if this project is realised, it will not and cannot be purely philological, for the word and its use in the various arts are to a considerable extent subject to the laws of these arts.

Recently, Yu. Rozhdestvensky's book *Introduction to General Philology* (Moscow, 1979) came out. The author defines the subject-matter and content of this discipline in the following way: "General philology as the object of scientific study forms a particular branch of philology. It considers the correlations of the various modes and forms of language use in socio-linguistic practice, making inventories and describing spheres of communication, and the historical experiences of normative regulation of socio-linguistic practice." Proceeding from these general propositions, Rozhdestvensky studies the culture of speech before writing, the development of writing and formation of literature, the art of written speech, the specific features of written speech in printed form, and the problems of mass communication. I believe that the principles of singling out the problems indicated by the author as a separate discipline and the very advisability of such a move require further consideration. So far these principles have not been widely recognised among philologists.

Along with the structure of the philological science, the debate also touched upon its methods, although not to an extent that would appear desirable. Lotman put forward the following thesis: "As philology develops, it reveals its specificity, among other things, in that it utilises the methods of other sciences." This assertion was resolutely disputed by A. Chudakov. "I see the specificity of philological science," he said, "in something quite different, in its gradual liberation from the tutelage of other disciplines, in the realisation of its endogenous tasks and in finding its own methods for their solution, and in the future, in the construction of a language of its own not borrowed from any other discipline." Both of these views, in my opinion, tend to go to extremes.

The gist of the matter is not a speculative solution of the problem whether one should utilise the methods of contiguous sciences or get rid of the tutelage of the other disciplines. It is rather a question of looking for the most productive ways of solving new scientific problems, and that search may either confirm the effectiveness of the new methods, including the "borrowed" ones, or call in question the expediency of their application. It should by all means be borne in mind that the methodological basis of our studies is the Marxist-Leninist theory rejecting both the sluggish and dogmatic approach to any new

phenomena and problems and the sliding away from principled positions, theoretical slovenliness, and mere following the fashion.

For two or three decades already some philologists have insisted that only application of the natural-scientific, materialistic methods of cybernetics will enable philology to rise to a new and higher level. However, the achievements in the utilisation of these methods are fairly modest, as far as philology as a whole is concerned. Linguistics has been more successful in this respect. For instance, computers have been successfully used in the compilation of all sorts of dictionaries. These attainments have had little effect on literary criticism. Be that as it may, mathematical methods do not at present determine the ways and means of solving the most important problems of philology. It is difficult to say whether their share in philology will increase in the future. So far, they have not yielded the promised significant results. Chudakov cites convincing examples of purely mechanical transportation of various principles and categories of the natural sciences to philology, resulting in no enrichment of the latter.

The debate also touched on the question of structuralism in linguistics and literary criticism. "The attempts at consistent analysis of art, as a sign system," writes Bilinkis, "that have been undertaken within the last two decades have not produced any serious results." Grigoryev holds a different view, finding it necessary to distinguish between the concrete scientific discoveries of structuralism and the philosophical speculations. "I make bold to believe," he writes, "that philology as a whole is becoming structural (not structuralist), and that this merely results in strengthening its social, functional, and other hypostases, for, in particular, the relations between form, content (sense or meaning) and the function connecting them are thereby revealed." It should be noted that the concept of "structural" as applied to a whole field of knowledge is rather vague and in no way characterises the process of its development. The fact that the links between form, content, and function are revealed, does not as yet determine the progressive growth of Soviet philology and the totality of problems with which it is concerned.

Touching on the role of structuralism in philology, it should be admitted that its effect is not easily defined. The general methodological positions of structuralists have been unacceptable to Soviet philologists from the very beginning. At the same time structuralism advanced certain fruitful ideas in linguistics that have become common scientific currency, such as the idea of systemic nature of language. Structuralism has not gained wide currency in Soviet literary criticism, and the application of its principles has not yielded any noticeable results of general significance. Bilinkis is right in this respect, although it should be

pointed out that structuralism and semiotic interpretation of artistic phenomena are not the same.

At the present time, structuralism goes through a crisis resulting from a number of causes, primarily because the isolation of language and literature from reality, from social life has in the course of time brought out not only the one-sidedness but also the untenability of a number of theoretical propositions of structuralism.

The deepening and enrichment of the methodological principles of a certain field, the emergence of new ways and forms of research work go hand in hand with differentiation of science and formulation of new major scientific problems and tasks. This process of differentiation is also observed in philology, although it is not markedly rapid. It is difficult to dispute the positive nature of this phenomenon. Negating the process of differentiation would mean ignoring real facts, pretending that they do not exist.

Chudakov enthusiastically advocates the need for new scientific categories. In my view, he is on the whole quite right. But new scientific categories (productive ones, of course) cannot be simply invented. It is hardly feasible that a couple of research associates could get together and invent, within a stated period of time, a number of attractive scientific categories that would open up broad avenues for science. New productive scientific categories, a new conceptual apparatus appear either as a result of research already carried out, as a kind of summing up of their theoretical interpretation, or in the very course of major non-traditional scientific endeavour, as the necessary stage in their development. That is what makes the search for new ways in research work so important.

It is well known that language and literature are very complicated and extremely many-faceted phenomena. They may be, and are, studied on extremely different planes. The general Marxist-Leninist methodology of our studies assumes the many-sided character of philological research, far from excluding it; it assumes application of those productive modes of studying language and literature that emerge in the contiguous scientific disciplines and in the natural sciences.

Of great importance for literary criticism as well as for a number of other social sciences is a correct solution of the problem of the value principle in cognitive activity.

In his paper "Philology as Morality" M. Gasparov insists that genuine philology is alien to any evaluation criteria. From this point of view he opposes linguistics and the practice of literary criticism. He writes: "There is no evaluative approach in linguistics: the linguist distinguishes between declined and conjugated words, bookish words and those in common parlance,

archaic and dialectal words, but he does not distinguish between good and bad words. The literary critic, on the contrary, overtly or covertly strives to distinguish good words from bad and concentrates on the good ones."

To substantiate his views, Gasparov relies on tradition. "Philology," he goes on to say, "means 'love for the word'; the literary critic's love is more selective and partial. (It is not for nothing that classical philology warned: if you hold Aeschylus in higher esteem than Manilius, you are not a real philologist; that was what old man Housman told his students, and he was not just a classic philologist but a great English poet.) Both favourites and non-favourites suffer from partial love."

I believe that Gasparov is first of all wrong in saying that linguists do not distinguish between good and bad words. Not infrequently they do make such distinctions, particularly in compiling dictionaries and in the study of the norms of the literary language. We know that dictionaries do not include all words that are current in everyday speech; they do not include the so-called unprintable words and, apart from that, vulgarisms that have a wide currency among certain strata of the population. The norms of the literary language also distinguish between words belonging to its vocabulary and those that are undesirable or even impermissible in good literary speech. Thus, the evaluative approach exists in linguistics within certain limits.

However, even if it did not exist in linguistics, that is no reason why it should be inadmissible in literary criticism. Here the scholar faces not only the laws of development of language but also manifestations of the laws of art. To make the essence of the debate clearer, let me put it more categorically: without the evaluative approach to literature, literary criticism as a science would not have existed and does not exist.

The multitude of literary works that have been created during thousands of years cannot be even reviewed, let alone studied. The totality of literary phenomena of any given epoch is enormous and cannot therefore be the subject-matter of thorough investigation. Choice is necessary, and the choice is made by every individual researcher and by literary science as a whole.

Most frequently this choice is made on the basis of conviction or existing opinion concerning the value, artistic or historical, of the creative work of certain writers or separate literary productions. These existing opinions are often revised, but the value criterion remains. It also holds good for those writers and works that are regarded as having only historical and temporal significance. If we take into account that literary criticism is not restricted to the study of historical development of literary creation but also considers literary works as creations of verbal art

(and that is, in my view, the most correct position), it will be clear that the evaluative approach is the necessary condition for the effective being and growth of literary criticism rather than its weakness or drawback.

The evaluative approach is said to give rise to subjectivism. However, subjectivism is possible in all fields of knowledge where the scholar does not proceed from facts. The possibility of objective study arises precisely from a combination of historical analysis of literary phenomena, revealing their links with social reality, and the evaluative approach to them.

Paraphrasing the assertion of "old man Housman", one might say: "If you hold Manilius as high as Aeschylus, you will never become a real philologist and literary critic."

Touching on the problem of value criteria in literary criticism, there is also the question of the specific features of the "life" of literary works and the nature of artistic value. M. Girshman writes: "We all know that King Oedipus and Hamlet, embodied in the artistic word, long outlive their times. The explanations for that vary, however. One sometimes gets the impression that different civilisations simply choose these monuments as a kind of frame of reference in the succeeding schools of cultural values." The author does not agree with that, however. He goes on to say: "Another approach, the philological one, appears to me to be more correct and fruitful: there exists an objective necessity for the fact that Hamlet, Oedipus and other classical images of culture embody the links between times, nations, and epochs, which thus do not select an arbitrary frame of reference for comparison but realise thereby one of the most important laws of the development of life."

To Girshman it seems beyond question that, although the major artists of the past did not foresee all the problems of life posed by later generations and by our times, the very formulation of fundamental questions of human being in principle "permits us to discern and retain in the historically concrete and even topical the kernel of general human problems and just as general human paths of creative quest, not the ready-made answers".

Gasparov tries to substantiate quite different views. On the question of artistic values he writes: "The humanism of many centuries has spoken of the eternal values accumulated by the past, but for each epoch these eternal values were no more than the temporal values of the past epochs cut down to the size of the values of their own epoch... There are no eternal values, only temporal ones, so that one cannot grasp them directly (other than by deceiving oneself): one can do so only by overcoming the historical distance..." I have this comment to make on these theses: if there are no eternal *human* values (and that is what is under

discussion), there are, in fact, no links of continuity (in the cultural field, at any rate) between different epochs which create cultural values of their own, supposedly independently of their predecessors, values that only have a temporal and relative significance.

The idea of spiritual and cultural isolation of different epochs has been expressed on numerous occasions, and over the last few decades, too. But cultural-historical relativism in its various modifications contradicts numerous facts bearing evidence that continuity in the field of culture is no myth but a real process. Continuity has been defended with greatest conviction by major figures in the field of culture, by the men who appreciate only too well the significance and the meaning of the past creative experiences.

Gasparov believes that the content of literary artistic works is eroded and impoverished in the course of time; the gap between the artist's intention and the way he is understood by the subsequent generations is steadily increasing. "Books do not answer the questions that the writer posed for himself but rather those that we are capable of asking ourselves; and these are frequently quite different things."

Of course, the subsequent generations perceive the works of a major writer not quite in the same way as the author or his contemporaries understood them, and sometimes in quite a different way, but does that mean that the later generations, as a rule, give erroneous assessments of the creations of outstanding masters, simplifying them or modernising them in a way that leaves no trace of the master's original intent and attainment? Certainly not. The later generations are naturally not always right in their evaluation of the work of outstanding artists, too. Social, psychological, and other prejudices and delusions often have their effect here. Historical facts bear evidence, however, that significant artistic works that have stood the test of the ages reveal in the course of time a deeper content to readers of later generations than to contemporary ones. Time brings out the inner qualities and possibilities of works of art that for various reasons were not originally appreciated, it reveals their hidden potential. The force and range of the aesthetic impact of classical artistic works increases rather than diminishes, becoming more comprehensive.

In Gasparov's view, "only renunciation of one's self and dissolution in the exalted interlocutor" may help to comprehend the creation of an outstanding artist of the past. In other words, the views of the scholar himself, his ties with modern times only hinder his understanding of the artistic heritage. One has to become fully naturalised, as it were, in another epoch, submerging oneself in the world created by the master. Only then will the scholar attain the desirable. Unquestionably, getting any serious

research results is impossible without a thorough study and understanding of the times in which the artist grew up and developed, without profound penetration in his complex world of ideas and images. But it is just as unquestionable that bitter disappointment is in store for the scholar if he himself has no general ideas or clear concept about the "supertask" of his study. It is impossible to find anything of value unless you know what you are looking for. And it is the modern times, their progressive ideas and aspirations that determine the understanding of the basic goal of the study of literary phenomena of the past, an understanding of the scientific supertask. Mankind's subsequent social and spiritual experiences, including contemporary ones, show clearly which of the features of a major artist's work are eternal and which may be called transitory. The significance of the artistic values that they have created is revealed more fully in the light of the trends of world development.

The questions of correlation between philology and other sciences, its position in the system of scientific knowledge were touched upon during the discussion in their various aspects, not only in the debate on the inner structure of philology and its methods, but as a separate theme as well, a theme that is essential for the self-determination of philology at the present age of rapid development of the natural and technical sciences. Likhachev insists that philology performs a most important linking function with regard to other sciences. "The role of philology," he writes, "is precisely that of linking and therefore particularly important. It links historical study of sources with linguistics and literary criticism. It lends the study of text history a particularly broad aspect. It links up literary criticism and linguistics in the field of the study of the style of a work—the most complicated branch of literary criticism."

However, Likhachev sees the social significance of philology in other things as well. In his view, it is inseparable from the role of the word in the life of society. "The word is connected," he remarks, "with any form of being, with any cognition of being—the word or, to be more precise, combinations of words. It is therefore clear that philology forms the basis of the entire human culture, not just science or the sciences."

The warm spirit in which the major Soviet scholar substantiates the principles of philology and the importance of studies in this field are only to be welcomed, but it is hard to accept his concrete propositions concerning the linking function of our science, its role as the basis of all the other sciences. The word that is an instrument in any field of knowledge or scientific discipline is here confused with philology as a science. But these are apparently quite different things. Scientists of different specialities as well as

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other language bearers mostly have recourse to the word—without the mediation of philology. And that does not at all prevent them from attaining their goals. It does not follow, of course, that specialists in different spheres of knowledge do not need philology or that they do not draw useful conclusions from the studies of philologists. Let us recall, for instance, the popularity enjoyed by explanatory dictionaries, dictionaries of synonyms, and of other types, orthoepic and spelling reference books as well as many other scholarly works of linguists and literary critics. Still, philology is not and cannot be the basis of science as a whole.

Neither does philology constitute the basis of all human culture—for the same reasons as have just been discussed. In my view, it would be more correct to say that philology studies and generalises the development of very important fields of culture. Generalising the processes of their growth and actively facilitating them, Marxist-Leninist philology exerts a considerable influence on the spiritual life of society. That is where its social role is manifested, first of all. And this means quite a good deal.

The *cooperation* between philology and both the social and natural sciences must not be forgotten, either. Cooperation with the social sciences is expressed in many forms—in the study of problems of consciousness, ideology, historical development of social life, people's spiritual culture, national relations, etc. Cooperation with the natural sciences is now also on the agenda, particularly with the biological sciences. Especially urgent and acute are now questions of interdisciplinary study of man, his biological and social genesis, anatomy and physiology, social activity, spiritual life, and psychology. Indications are that such an interdisciplinary study following a comprehensive unified plan is near at hand. The elucidation of the highest forms of human creation, including language and literature, must occupy an important place in these studies. Philology is expected to make a sizable contribution here. Both its scientific potential and real achievements are widely revealed in its cooperation with other sciences.

For Soviet philology to continue attaining major new scientific results, one should not apparently restrict its problem range but rather extend it in accordance with the needs of life; one should not limit its line of development to well-trodden paths but tackle more boldly new problems and encourage scholarly quests in new directions. There are great numbers of highly qualified scientific workers active in Soviet philology, including both eminent and young scholars from all the constituent republics of the USSR. That is one of the main guarantees of its successful development.

CRITICAL STUDIES AND COMMENT

The Marxian Price of Production Theory in a Formalised Exposition

KONSTANTIN VALTUKH

The Marxist economic theory remains the focal point of intense ideological struggle, which centres, as ever, on the concept of surplus value and of the exploitation of the proletariat under capitalism.

For many decades, since the time of E. von Böhm-Bawerk, there have been attempts to refute this Marxian concept by alleging that there is a contradiction between Volume I and Volume III of *Capital:* Volume I formulates the law of the prices of commodities as being proportional to the labour embodied in them, while in Volume III—as gravitating to the prices of production, and the lack of coincidence of these two centres of prices fluctuations is fixed. Marx expressly showed, however, that the prices of production are nothing else but the transformation of commodities labour value, while average profit, which is included in the prices of production, is the transformed surplus value which is part of the total labour value of commodities. It is this idea of transformation that Marx's critics are trying to disprove. This theme is known in literature under the name of "transformation problem".

In the 1970s, a number of articles on this subject came from P. Samuelson.[1] One cannot fail to notice that the tone of the papers is very far from being academic: the author does not hide his strong feelings concerning the whole issue. Let us cite his following polemic outburst: "... 'the transformation algorithm' is precisely of the following form: 'Contemplate two alternative and discordant systems. Write down one. Now transform by taking an eraser and rubbing it out. Then fill in the other one. *Voilà*! You have completed your transformation algorithm.' By this technique

CORRIGENDA

p. 183 Expression 1 should read

$$Q_i = \sum_j a_{ij} Q_j + Y_i, \quad i = (1, \ldots, n)$$

p. 186 Expression 7 should read

$$Y_i^l = \sum_j l_j Q_j a_i^l$$

p. 190 The expression on the 11th line from the bottom should read

$$Y_i^s \equiv 0$$

p. 191 7th line from top should read

$$\sum_i \bar{p}_i Y_i^s > 0$$

p. 192 The expression on the 7th line from top should read

$$\frac{a_{ij}}{\alpha_{ij}}$$

p. 193 Expression 17 should read

$$\frac{L^s}{L^l} = \frac{bY^s}{bY^l} = m' \approx \frac{\bar{p}Y^s}{\bar{p}Y^l}$$

Зак. 6752

one can 'transform' from phlogiston to entropy; from Ptolemy to Copernicus; from Newton to Einstein; from Genesis to Darwin—and, from entropy to phlogiston..." [2] The question is put point-blank, without any diplomatic decorum the writer points out what he considers unacceptable: it is the notion of exploitation and hence the Marxian theory of value.

The reader who wants to form an objective judgement on the problem finds himself in a rather difficult situation. In his discussion Samuelson uses the technique of linear algebra, a branch of mathematics not employed in economic analysis at the time of Marx, which naturally enough affected his exposition in *Capital*.[3] It comes as no surprise that a century after the publication of *Capital* an economist should come up with a more developed mathematical formalism than that used by Marx. The logically substantiated conclusion would be that for a truly scientific discussion it is necessary to present the Marxian theory itself in terms of modern mathematical technique.

Samuelson, however, has adopted a different approach. What he actually does is either to ascribe to Marx statements which are totally incompatible with the Marxian theory or to leave out certain vital points of Marxian conception, the alleged absence of which gives occasion for criticism.

To provide a more visual exposition of his theory of the price of production as transformed labour value, Marx used first of all numerical sample presented in tabular form (see the beginning of Chapter IX of Volume III of *Capital*). He employed these illustrations successfully for the treatment of certain important aspects of the problem, for instance, deviation of the price of production from value in industries where the organic composition of capital does not coincide with its average composition in the economy as a whole. The tables also partially reflect how industries differ in the rate of turnover of advanced capital: the annually consumed part of constant capital "c" constitutes an unequal for various industries portion of its total advanced volume.[4] They, however, do not show how industries differ in the rate of turnover of variable capital (an aspect which in principle also could be reflected in form of numerical illustrations). Of fundamental importance is Marx's desire to present the difference between industries in terms of the rate of capital turnover.

We shall now cite Marx's own calculations, combining his tables into one (see Table on p. 181).

In this illustrating calculation advanced capitals and, hence, the production costs are represented in terms of their labour value. At the same time the prices of production which deviate from their value have been obtained. But advanced productive capital (both its constant and variable components) is formed in all indus-

The numerical example of transition from the labour values to the prices of production as cited in Chapter IX of Volume III of *Capital* by K. Marx

Capital	Rate of surplus value (%)	Surplus value	Rate of profit (%)	Used up part of constant capital c	Value of commodities	Cost-Price	Total rate of profit (%)	Price of production of commodities	Deviation of price from value
1. 80c+20v	100	20	20	50	90	70	22	92	+2
2. 70c+30v	100	30	30	51	111	81	22	103	−8
3. 60c+40v	100	40	40	51	131	91	22	113	−18
4. 85c+15v	100	15	15	40	70	55	22	77	+7
5. 95c+5v	100	5	5	10	20	15	22	37	+17
Total 390c+110v	100	110	22	202	422	312	22	422	0

Source: K. Marx, *Capital*, Vol. III, Moscow, 1971, pp. 154, 156, 157.

tries through the purchase of means of production and labour power. Since the prices of commodities gravitate towards the prices of production, advanced constant capital should be presented as the sum of the prices of production of corresponding means of production rather than in terms of value; advanced variable capital should be presented as the sum of the prices of production of consumer goods necessary for the reproduction of labour power, rather than in terms of value. The price of production is not the sum total of capitalist production costs (estimated in terms of value) and average profit. It is formed as the sum total of the production costs again estimated in terms of the prices of production and average profit. Such a calculation, however, cannot be presented in the form of a simple numerical illustration; it presupposes the solution of a system of equations (non-linear ones!) and, hence, the transition to a mathematical model of the phenomenon.

It should be noted that Marx himself viewed illustrative tables only as the initial stage of analysis. What is more, he unambiguously and repeatedly pointed to the same defect that was referred to above, and he began to make the necessary corrections in the same Chapter IX. He wrote in particular: "We had originally assumed that the cost-price of a commodity equalled the *value* of the commodities consumed in its production. But for the buyer the price of production of a specific commodity is his cost-price,

and may thus pass as cost-price into the prices of other commodities. Since the price of production may differ from the value of a commodity, it follows that the cost-price of a commodity containing this price of production of another commodity may also stand above or below that portion of its total value derived from the means of production consumed by it."[5] Bearing in mind the effect of the deviations of prices of production from values of the means of production as well as of means of the workers' consumption, K. Marx concluded: "Under capitalist production, the general law acts as the prevailing tendency only in a very complicated and approximate manner, as a never ascertainable average of ceaseless fluctuations."[6] That is how the equality of profits and surplus value under capitalism is realised: i.e., in a very approximate manner. The idea of their exact equality engendered by illustrative tables is only the first approximation of their actual relationship.

The next step in analysis is possible only if the formation of the price of production is given as a set of non-linear equations. Although Marx did not make this step, he came very close to it by posing the question of capitalist costs estimation in all industries in terms of the prices of production of commodities that form these costs.

Now let us consider the problem in this form.

Analysis is based on a technological-economic and socio-economic description of the properties of capitalism as a system of social production. Technologically, every industry is regarded as an averaged entity, i.e., one abstracts oneself from the specifics of individual capitals forming the industry. For a technological-economic description of the system one uses the concepts of production costs (in natural and monetary forms) and advanced capital (in the same two forms).

Let the economy be a closed system producing and consuming n kinds of goods (means of production and consumer goods). Let us designate them by indices i and j; $i,j=(1, ..., n)$. For the sake of simplification let us assume that each industry specialises in manufacturing one kind of goods; indices i, j will also designate particular industries. The volume of output of each industry will be designated by symbols Q_j (Q_i). Technologically, production expenditures in every industry represent productive consumption of means of production in nature and the expenditure of human labour (of labour time). Then we consider the results of production per year in a situation, when the volumes of production and of all kinds of expenditures are already given. In every industry the production period does not exceed one year, $Q_j>0$ for every j. There exists a certain proportionality in the economy as a whole: with due regard for the changes of

inventories, the volume of production in all industries is equal to the satisfied demand for all kinds of goods. The technological system in every industry is characterised by average coefficients of material and labour expenditures per unit of production: a_{ij}—coefficients of the direct i-kind means of production expenditures per unit of output j; l_j—coefficients of the direct labour expenditures per unit of output j. For our further analysis it is important to note that there are no other production expenditures: this is a technological fact.[7] More particularly, technologies expect nothing from the means of production except that they can be expediently utilised for the production of goods under given norms (coefficients) of input (these norms are, of course, dependent on the technological attributes of the means of production). The system of input-output coefficients a_{ij}, l_j adequately reflects this fact.

The system of coefficients a_{ij}, it will be observed, contains not only the norms of direct input of the objects of labour (raw and other materials, fuel, energy, etc.) per unit of output, but also the specific norms of the removal of the elements of fixed capital (i.e., their annual removal per unit of output).[8]

Strictly speaking, not all means of production are the results of human production: some of them are provided by nature (soil and climatic conditions in agriculture, mineral resources, etc.). At this stage of the analysis of price formation the existence of non-reproducible resources is ignored. Some considerations about their effect on the prices of production will be given below.

The time of circulation, and accordingly the capital in circulation, is conventionally assumed to be equal to 0.

The technological system in the economy on the whole is such that the output produced is sufficient not only for the renewal of means of production but also for non-productive consumption and also for an increase in the mass of the means of production employed. Let the system (square matrix) of coefficients a_{ij} be A $(A=\{a_{ij}\})$, the vector of gross output—Q $[Q=(Q_1, ..., Q_n)]$ and the vector of net product (i.e., gross output minus that part of it which goes to replace the means of production in all industries)—Y $[Y=(Y_1, ..., Y_n)]$. Then

$$Q_i=\sum_j a_{ij}Q_j+Y_i,\ i=(1, ..., n) \qquad (1)$$

(in vector-matrix notation: $Q=AQ+Y$). It is assumed that $Y\geqslant 0$, i.e., the components of vector Y are non-negative and at least some of them are strictly positive. Vector Y is nothing else but national income taken in nature. In principle it is perhaps not necessary that each kind of production be represented in the national income; some kinds may be produced only in quantities

sufficient to renew the means of production in the economy. In general, however, it is true that vector Y must contain positive components. Moreover, society can function normally only if there exists a wide range of products forming the national income and in sufficiently large quantities at that. First of all, there must be enough goods to satisfy the requirements of the population at a historically established necessary level. Under capitalism, a part of Y goes to accumulate means of production, and, under certain conditions, to increase consumption. All this makes definite social requirements to the technological system of production.

Matrix A is called productive, if there exists such a vector $Q>0$ (i.e., consisting of only strictly positive components) that $AQ \leqslant Q$ and, consequently, $Y \geqslant 0$. Matrix A will be called *sufficiently productive,* if the concordant vector Y meets the formulated social requirements. The very volume of Y at a given A is dependent on the amount of labour used in production. The fact that the economy really exists and at least maintains certain living standards for the members of society, which becomes traditional thanks to such maintenance, proves that real technological systems are based on sufficiently productive systems A. This is all the more true since, apart from the maintenance of a traditional living standard, production expands, which is on the whole inherent in capitalism over sufficient periods of time.

The productivity of technological systems expressed through matrix A owes its origin to the useful labour of the workers, without which the means of production cannot be transformed into the output necessary for society, but, on the contrary, under the influence of natural processes of an entropic character gradually lose their potential ability for such transformation.

The description of a technological system presupposes, apart from system of equation (1), the following equation:

$$lQ=L \tag{2}$$

where, $l=(l_1, \ldots, l_n)$ is the vector of coefficients of direct labour inputs in industries, L—the total amount of living labour used in the production of goods over the year; $L \leqslant L^{\max}$ where, $L^{\max}$ is the labour resources of society.

The production time in different industries varies (for example, the technological process of bread baking lasts several hours, while plant growing in temperate countries requires a year). In all industries, however, this time is strictly positive. Hence, all technologies require the advancement of the means of production and labour power as a pre-condition for obtaining output. Certain means of production are advanced for a number of consecutive acts of production. The rest of the means of production and the

labour power are advanced for every new act of production. Under capitalism, these technological needs are met by capital advances. The rate of removal and renewal of different components of advanced capital varies: some components are used up in a single act of production and, therefore, are renewed in nature after each act; others are replaced after a number of such acts, but at least once a year; the third group of components of advanced capital is replaced after a series of acts of production which lasts several years. These differences between the material components of advanced capital can be expressed through a system (matrix) of coefficients α_{ij}, describing the rate of renewal of component i in industry j (number of times per annum); there exist similar indicators for labour as well, which can be expressed as α_j^l. Coefficients α_{ij} and α_j^l are dependent on the specifics of a concrete industry j (particularly, on the time of production in it) as well as on the specifics of technological utilisation of appropriate resources.

Thus, apart from the matrices and vectors referred to above, use is also made of matrix $\alpha=\{\alpha_{ij}\}$ and vector $\alpha^l=(\alpha_1^l, \ldots, \alpha_n^l)$ for the technological and economic description of social production.

Note that Q_j and Y_j, respectively coefficients a_{ij}, l_j as well as coefficients α_{ij} and α_j^l, have natural units of measurement, and their translation into monetary units is possible through prices only.

To express the prices of production of ordinary goods we shall employ vector $\bar{p}=(\bar{p}_1, \ldots, \bar{p}_n)$. We shall also use vector $\bar{p}^l$ to denote price of labour power (which for the sake of simplification we shall assume to be the same for all industries), with

$$\bar{p}^l=\sum_i a_i^l \bar{p}_i \tag{3}$$

where, a_i^l is the real social norm of traditional personal consumption of goods i by the workers and their families (per unit of yearly labour power).[9] According to Marx's theory, the conditions of equivalency in the purchase/sale of labour are observed if the workers can buy with their wages ($\bar{p}^l$) the necessary and habitual set of commodities in quantities corresponding to vector $a^l=(a_j^l, \ldots, a_n^l)$.

By definition, prices of production are equal to capitalist costs plus average profit, the costs themselves being expressed in terms of the same prices of production. When formalised this definition is as follows:

$$\bar{p}_j=\sum_i a_{ij} \bar{p}_i + l_j \bar{p}^l + \frac{(C_j+V_j)}{Q_j} \cdot r, \quad j=(1, \ldots, n) \tag{4}$$

where, $C_j=\sum_i \frac{a_{ij} Q_j \bar{p}_i}{\alpha_{ij}}$ is advanced capital in industry j, embodied in the means of production (fixed capital); $V_j=\frac{l_j Q_j \bar{p}^l}{\alpha_j^l}$ is advanced capital in industry j embodied in the labour power (variable capital); r is the rate of profit which is the same for all industries (calculated per unit of advanced capital). Apart of (4) an additional condition defining r is necessary to determine vector $\bar{p}_j$. See (12) below.

Formula (4) implies, in keeping with the sense of expression (3), that coefficients l_j are determined in the following units of measurement: yearly labourers per unit of output.

The mathematical transformation of the system (1)-(2) demonstrates that there exist coefficients $b_j(b_i)$ of total labour input per unit of output, which are obtainable from the system of equations

$$b_j=\sum_i a_{ij} b_i+l_j, \qquad j=(1, \ldots, n) \tag{5}$$

and these coefficients are such that $lQ=L=bY$ is true.[10] (6)

The total labour coefficients constitute the first, and for the present analysis sufficient mathematical approximation to labour values.

Total labour input embodied in net product Y is equal to the whole amount of living labour expended on the annual production. This corresponds to the concept of national income in terms of labour.

The relationship between the Marxian theories of surplus value and of average profit can be shown by comparing the expressions (1), (3), (4) and (6) when socially comprehended.

Let vector $Y^l=(Y_1^l, \ldots, Y_n^l)$ denote the volume of net product necessary to maintain the traditional living standard of the workers. Let us further note that

$$Y_i^l=\sum l_j Q_j a_i^l \tag{7}$$

i.e., the components of vector Y^l represent the part of net product which in accordance with norms a_i^l the working class as a whole must acquire for consumption. In conditions in which the productivity of a technological system does not decline (which is the case of normal economic development considered in the given theory),

$$Y^l \leqslant Y$$

holds. In fact, it is impossible for Y^l to be systematically greater than Y: the personal consumption of workers cannot constantly exceed their net product, but it is just a stable consumption level

that determines the *traditional* standard of living represented by a_i^l.[11]

From this it follows in a general case:

$$Y=Y^l+Y^s, \tag{8}$$

where, Y^s is the vector of the part of net output above the necessary requirements of the working class. Vector Y^l is the mathematical description of the theoretical concept of *necessary product* taken on the scale of society as a whole; vector Y^s is a similar description of the concept of *surplus product.* One of the necessary conditions for the existence of capitalism lies in that $Y^s \geqslant 0$, i.e., at least some of the components of vector Y^s should be strictly positive. This, however, is not yet a sufficient condition.

Generally speaking, the division of Y into Y^l and Y^s, with both vectors containing positive components, existed prior to the era of capitalism (ever since the disintegration of primitive forms of production) and continues to exist after capitalism is replaced by socialism.[12] The existence of Y^s *per se* does not yet mean capitalism, nor exploitation. If social relations are based on public ownership of the means of production, the surplus product, although not used for personal consumption of the workers, remains their collective property (socialism). In this case there is no exploitation. If, however, the producers receive the necessary product, while the surplus product is appropriated by a special class which owns the means of production, then we are faced with relations of *exploitation.* Exploitation is *capitalist,* if the producers are deprived of the means of production and constitute a class of wage workers, while the owners of the means of production acquire these means (and labour power) with money which in this case plays the role of *capital.*

After multiplying both parts of equation (8) by the vector of total labour coefficients we obtain the following expression:

$$bY=bY^l+bY^s=L \tag{9}$$

of, which is the same: $L^l+L^s=L$.

Magnitude $bY^l=L^l$ mathematically describes the theoretical concept of *necessary labour* (on the scale of the economy as a whole), while $bY^s=L^s$ is the mathematical expression for *surplus labour.* The sum of necessary and surplus labour is equal to the total expended labour L.

Insofar as the matter turns on the capitalist economy which transforms all products into commodities, the labour embodied in them forms their value. Accordingly, surplus labour under capitalism creates *surplus value.*[13] On the scale of the economy as a

whole surplus value is the total value of surplus product. It is equal to bY^s.

At the same time the sum of profits obtained by the class of capitalists is nothing else but the sum of prices of the goods embodying surplus product on the scale of the economy as a whole. This holds for any system of prices, including prices of production $\bar{p}_j$.

Let us multiply both parts of equation (4) by the quantity of goods Q_j, simultaneously transforming $\bar{p}^l$ in accordance with (3):

$$Q_j\bar{p}_j = Q_j\sum_i a_{ij}\bar{p}_i + Q_j l_j \sum_i a_i^l \bar{p}_i + (C_j + V_j)\, r$$

and sum up all goods produced in terms of prices:

$$\sum_j Q_j\bar{p}_j = \sum_j Q_j \sum_i a_{ij}\bar{p}_i + \sum_j Q_j l_j \sum_i a_i^l \bar{p}_i + r\sum_j (C_j + V_j). \qquad (10)$$

Let us compare this expression with (1), representing the components of vector Y in accordance with (8) and multiplying both parts of (1) by the vector of prices of production

$$\sum_i Q_i\bar{p}_i = \sum_i \bar{p}_i \sum_j a_{ij}Q_j + \sum_i \bar{p}_i Y_i^l + \sum_i \bar{p}_i Y_i^s. \qquad (11)$$

Since $i, j=(1, \ldots, n)$, the following is true:

$$\sum_j Q_j\bar{p}_j = \sum_i Q_i\bar{p}_i;$$

$$\sum_j Q_j \sum_i a_{ij}\bar{p}_i = \sum_i \bar{p}_i \sum_j a_{ij}Q_j;$$

taking into account (7):

$$\sum_j Q_j l_j \sum_i a_i^l \bar{p}_i = \sum_i Y_i^l \bar{p}_i.$$

But then from (10) to (11) it follows:

$$r\sum_j (C_j + V_j) = \sum_i \bar{p}_i Y_i^s. \qquad (12)$$

The amount of profit on the scale of the economy as a whole is equal to the sum total of the prices of surplus product which embodies the surplus labour of the working class, i.e., embodies the amount of surplus value that the working class has produced in toto. It is this fact that underlies the notion of average profit as transformed surplus value and accordingly, of the price of production as the transformed value. Logical compatibility of the notion of exploitation of the proletarians with the notion of prices of production is expressed in the form of an exact mathematical formula: the sum of average profit quantities embodied in the sum of prices of production of commodities equals the sum of the prices of

production of commodities embodying the surplus labour of the working class.

The amount of surplus value in capitalist society is equal to the total value of surplus product. The amount of profit is the total price of the same surplus product. What is more, surplus product is the embodiment of surplus labour free from any other elements of value. This means that profit is nothing else but the form of surplus value.

Here the following objection can be raised. The notion of total resource expenditures per unit of net output is applicable not only to labour: there exist mathematically analogous total input coefficients for all kinds of consumed resources. It is also possible to calculate analogous total coefficients for all kinds of advanced capital (i.e., advanced capital in the economy as a whole per unit of net output in any individual industry). In all cases the following expression holds:

$$d_R Q = D_R Y, \qquad (13)$$

where, d_R is the vector of coefficients expressing direct expenditures or directly advanced resource R per unit of output; D_R is the vector of the corresponding total coefficients. Formula (6) is a particular case of (13) where R is labour resource. Why, then, it is this and only this resource that the notion of exploitation is applicable to?

The answer was in fact already given when it was shown that exploitation is a social phenomenon reflecting relations of ownership. But let us give a direct answer to the objection raised.

Although for all resources there exists an equality analogous to (13), it does not necessarily follow that they are replaced from net product Y. On the contrary, all types of material resources without exception are replaced with part of product $H=Q-Y$. This part constitutes the replacement fund for means of production consumed. Accordingly, for all *expenditures* of material resources R the following relation holds:

$$d_R Q = D_R Y = H_R \qquad (14)$$

In other words, these expenditures are embodied in H, not in Y, although in the final count they are made to obtain Y. In this case Y represents that part of Q which remains after the subtraction of the part which embodies expenditures of all kinds of material productive resources. It is for this reason that Y embodies solely and exclusively living social labour expenditures.

As for advanced capital, to the extent to which it is not expended it finds no embodiment in any element of output. To

the same extent, however, it remains embodied in its initial natural form. It therefore does not account for any special part of product. If part of net product Y is capitalised, i.e., transformed into advanced capital, the latter only increases in size. Thus the absence in the product of any part embodying advanced capital as such, i.e., that part of it which is not expended on the production of goods, is graphically demonstrated.

Thus, the capital embodied in the product is reimbursed to the class of capitalists in toto, while the labour embodied in the product is never fully reimbursed to the workers: total labour expenditures for the production of goods obtained by the workers for their personal consumption are less than the total amount of the working-class labour consumed in the economy; the remaining part of their labour is embodied in the goods obtained by the class of capitalists over and above the reimbursement of capital expenditures on production, and under the condition that they retain their possession of the unconsumed part of advanced capital. This kind of relations between the two classes is nothing else but exploitation.

Thus, the transformation of surplus value into average profit consists essentially in that, with a given labour productivity, profit is regulated by surplus value (surplus labour) through surplus product Y^s:

$$L^s \Rightarrow Y^s \Rightarrow \sum_i \bar{p}_i Y_i^s \Rightarrow r > 0.$$

From (12) two conclusions follow which help to specify the notion of average profit as transformed surplus value.

First, if surplus labour is identically equal to 0, then the average rate of profit r is identically equal to 0. Indeed, surplus labour $L^s = bY^s \equiv 0$, if and only if all components of vector Y^s without exception are equal to 0 (all $Y_i^s \equiv 0$), since the vector of total labour coefficients $b > 0$, i.e., all $b_i > 0$: we are discussing total labour expenditures for production which *cannot exist* without useful human labour.

But if all $Y_i^s = 0$, then the right-hand part of expression (12) is equal to 0. Since it is technologically impossible to obviate the advance of capital for production (i.e., $(C_j + V_j) > 0$ for all j), this means that $r \equiv 0$.

This demonstration shows that if surplus labour is identically equal to 0 (the surplus labour does not exist in society because of the absence of surplus product), then *surplus value is identically equal to 0 and with it profit is identically equal to 0.* By definition, however, capital can exist only on condition that (on the scale of society as a whole) profit is strictly greater than 0. In the case under discussion, therefore, there is no capitalist production and,

consequently, there is no prices of production of goods. In other words, this very problem no longer arises, if $Y^s \equiv 0$, i.e., $L^s \equiv 0$.

Second, if surplus labour is strictly greater than 0, then the average rate of profit r is strictly greater than 0. In fact, surplus labour $L^s = bY^s > 0$, if, and only if, at least some $Y_i^s > 0$. But then the right-hand part of (12)

$$\sum \bar{p}_i Y_i^s > 0,$$

and consequently in the left-hand part of it $r > 0$.

This demonstration shows that *profit cannot be equal to 0, i.e., it is an identically positive magnitude, if surplus value is identically greater than 0.* In these conditions capitalist production does exist and with it (given the additional condition of free competition) the prices of production. The very existence of prices of production implies $r > 0$, i.e., $r > 0$ is included in the notion of such prices by definition. This notion, therefore, is based on the notion of exploitation of the proletariat.

These two conclusions show that the existence (or identically positive quantity) of surplus labour and, correspondingly, of surplus value is the *necessary and sufficient condition* for the existence (or identically positive quantity) of capitalist profit which, under free competition, appears as average profit. And this means that average profit is transformed surplus value, while prices of production are, correspondingly, transformed labour values of commodities.

This transformation can, and in practice must, generate certain shifts in the proportions in which the sum of values of output Q (magnitude bQ) and the sum of prices of production (magnitude $\bar{p}Q$) are divided into the replacement fund and the national income, with the latter being divided into the shares of the working class and the class of capitalists. In other words, in a general case

$$bH : bY^l : bY^s \neq \bar{p}H : \bar{p}Y^l : \bar{p}Y^s, \qquad (15)$$

since in practice it is improbable that prices of production of various commodities can be proportional to their values. This becomes sufficiently clear from a comparison of expression (5) describing the formation of total labour coefficients and expression (4) describing the formation of prices of production. Of course, if advanced capital per unit of output (magnitude $\frac{C_j + V_j}{Q_j}$) in every industry is proportional to the direct labour coefficient l_j, then, as can easily be seen from (4), the prices of production calculated from (4) would be proportional to total

labour coefficients calculated from (5). However, the specifics of technology in industries, which are expressed in the specifics of correlation between C_j and V_j in advanced capital, make such proportionality practically excluded.

Comparing the above formulas (see p. 186) for C_j and V_j one can make sure that these specifics are determined by relations between ratios $\frac{\alpha_{ij}}{\alpha_{ij}}$ and $\frac{l_j}{\alpha_j^l}$, i.e., they depend on the technological structure of capitalist costs and the rate of turnover of various elements of capital, which in the final count determine the differences between industries as regards the organic composition of capital. Since the means of production used in different industries are specific and the duration of technological process is different, it is absolutely inconceivable that the following relation can hold:

$$\frac{C_j+V_j}{Q_j}=kl_j\bar{p}^l \text{ for all } j,$$

where, k is the coefficient of proportionality common to all industries. But once this is so, then in a general case there is no h such that $\bar{p}_i=hb_i$, i.e., there is no proportionality between prices of production and values of commodities.

That is exactly what Marx said, demonstrating that prices of production systematically and steadily deviate from corresponding values under the influence of the sectoral specifics of the organic composition of capital.

Expression (15) means that in a general case when estimating by prices of production and by values there is no exact coincidence first, between two estimations of the proportion of national income in the gross social product, and, second, between two estimations of the share of the classes in the national income. In particular,

$$\frac{L^s}{L^l}=\frac{bY^s}{bY^l}=m'\neq\frac{\bar{p}Y^s}{\bar{p}Y^l} \qquad (16)$$

i.e., the rate of surplus value m' finds no exact quantitative reflection in estimations obtained on the basis of prices of production. The reason is that the natural structures of Y^s and Y^l are not similar (suffice it to say that Y^s usually contains the means of production which are absent from Y^l; nor is similar the natural structure of personal consumption of the workers and capitalists), which, provided $\bar{p}_i\neq hb_i$, means: deviations of the prices of production of commodities from their values do not equally affect the total wages of the workers and the total profit of the capitalists.

This notwithstanding, the following approximate equality

$$\frac{L^s}{L^l}=\frac{bY^s}{bY^l}=m'\approx\frac{pY^s}{pY^l} \qquad (17)$$

must hold.

The point is that it is practically improbable that Y^s should only consist of goods whose prices of production deviate from values in one direction only (say, upwards), while Y^l should consist of goods, whose prices of production deviate from values in the other direction only (say, downwards).[14] In actual fact, both Y^s and Y^l in a general case contain goods whose prices of production deviate upwards, and goods whose prices of production deviate downwards from their values. Among industries producing consumer goods there are those with a higher organic composition of advanced capital than the average social, and those with a lower organic composition; the same is true of industries producing the means of production.[15] Hence, the deviations of prices of production from values are partially cancelled in both total magnitude $\bar{p}Y^s$ and total magnitude $\bar{p}Y^l$. Of course, such cancellation is in fact dissimilar for these magnitudes, but it does take place and thereby brings the estimation of profit closer to surplus value and the estimation of wages—closer to the value of the necessary product. Thus, the *approximate* correspondence expressed in (17) must hold. But *it is precisely such an approximate correspondence that represents Marx's own stand on this question,* which we have already shown above.

This basically brings to an end the present formalised exposition of the main propositions of the Marxian theory of price of production as transformed value.

Initially, the theory of prices of production was formulated under the premise that only reproducible resources of production are considered. The theory makes further progress when it takes account of the fact that non-reproducible natural resources are used in production. Marx made this step in his theory of rent. What is modified is the very notion of socially necessary labour expenditures for industries essentially using non-reproducible resources. These are expenditures made under certain *worst natural conditions* (specifically: the worst from among those necessary to satisfy the demand for corresponding commodities), but under given average *socially normal* reproducible conditions of production. The notion of price of production is modified accordingly. Without going into a detailed meaningful discussion of all these questions we shall only note the following: part of surplus value is now not included in the average profit on capital, but creates rent. First and foremost, this modifies expression (8) accordingly:

$$Y=Y^l+Y^{s_1}+Y^{s_2}, \qquad (18)$$

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where, vector Y^{s_1} denotes the part of net product which, as a result of distribution, becomes the property of the class of capitalists; Y^{s_2} denotes another part which goes to the landowners. This being so,

$$Y^{s_1} + Y^{s_2} = Y^s.$$

Involved in the process of evening out the rate of profit is now only part of surplus value, which amounts to bY^{s_1}. It remains true, however, that the profit of the capitalist class is nothing but transformed surplus value (although not in toto, but in part); another form of surplus value is represented by rent, since it is based on the labour value of product Y^{s_2}, namely the value bY^{s_2}.

* * *

The basic meaningful answer to the attempts to refute, with the aid of mathematical models, the Marxian theory of prices of production as transformed value consists in the above demonstration of its consistency with the help of similar mathematical formalisation. Now we have only to show some inaccuracies contained in Samuelson's critical articles.

Let us discuss his formula, which is supposedly called upon to describe the Marxian theory of exploitation:[16]

$$A_0(0)\ (1+s) = a_0(1+s)[I-a]^{-1},$$

where, $A_0\ (0)$ is the vector of the total embodied labour coefficients with the rate of exploitation being equal to 0; s is the rate of exploitation; a_0 is the direct embodied labour coefficients; I is the unity matrix; a is the matrix of the material input-output coefficients.

In a footnote Samuelson provides the following interpretation of this formula: "price of any good when the rate of surplus value is positive is equal to its embodied labour content multiplied by one-plus-the-rate-of-surplus-value."[17] What is here ascribed to Marx is the view that exploitation is a factor increasing total and direct labour expenditures per unit of output. The Marxian theory, however, states quite the contrary: any surplus value is, in a sense, relative surplus value, i.e., it is based on a reduction rather than on an increase of total labour expenditures per unit of output in comparison with the production system where surplus labour equals 0. This drop in total labour expenditures per unit of output (a rise in the productivity of social labour) makes it possible

for workers to spend on making the product necessary for their subsistence less time than their total labour time. That is the basis for our mathematical description of the notion of surplus value given above.

Citing (in his own version) Marx's tables illustrating the transformation of value into the price of production, Samuelson points out that the costs of production here are estimated on the basis of value, which is a shortcoming of the calculation.[18] He neglects, however, that this shortcoming was pointed out by Marx himself. Meantime, attempts to refute the Marxian theory centre on the demonstration of the fact that in estimating costs on the basis of the prices of production of appropriate goods, in a general case the ratio between the total profit and total wages is not equal to the ratio between surplus value and the value of the labour power engaged in production. An attempt is made to have the reader believe that Volume I and Volume III of *Capital* do not contradict each other, only provided these ratios are strictly equal (but since there is no equality between them, the contradiction is supposedly evident). According to Marx, however, there should be a very approximate equality between them. The mathematical description of this aspect of the transformation of value into the price of production has also been given above.

Samuelson criticises the Marxian theory of value, for it supposedly fails to take account of land-rent.[19] By the way, it was Marx who elaborated the theory of rent in every detail on the basis of the theory of value and with an appropriate modification of the notion of value. There are similar attacks on the Marxian theory in connection with the existence of interest on capital[20] and again in spite of the fact that this phenomenon was explained by Marx on the basis of the surplus-value theory.

It is quite relevant to use Samuelson's philippic quoted above as a model for the following conclusion. The criticism algorithm is precisely of the following form: Take a text which has to be refuted by all means. Now take an eraser and rub out everything in it that hinders your task. Then fill in another text totally inconsistent with the original. *Voilà*! You have completed your transformation, which makes it very easy to rout your opponent. By this technique one can easily transform from entropy to phlogiston; from Copernicus to Ptolemy; from Newton and Einstein to savages; from Darwin to Genesis, and reduce Marx to a logical level of an average bourgeois economist.

NOTES

[1] See, for instance, P. Samuelson, "Transformation from Marxian 'Values' to Competitive 'Prices': A Process of Rejection and Replacement", *Proceedings of the*

National Academy of Sciences, Sept. 1970, 67(1), pp. 423-425; "Understanding the Marxian Notion of Exploitation: A Summary of the So-Called Transformation Problem Between Marxian Values and Competitive Prices", *Journal of Economic Literature,* Vol. IX, No. 2, June 1971, pp. 399-431.

[2] *Journal of Economic Literature,* Vol. IX, No. 2, June 1971, p. 400.

[3] The first mathematical model of total labour expenditures was suggested by V. K. Dmitriev only after Marx's death.

[4] P. Samuelson omits this fact and instead of Marx's original tables gives his own simplified version of them (See *Journal of Economic Literature,* June 1971, p. 413).

[5] K. Marx, *Capital,* Vol. III, Moscow, 1971, pp. 164-165.

[6] Ibid., p. 161.

[7] Every technology represents a process of workers' activity utilising means of production to make goods. Since labour time and the means of production are consumed in this process they should be renewed for future production. The specificity of certain means of production is that they have to be renewed in nature after several acts of production (such means of production constitute the fixed capital). Most objects of labour have to be renewed in nature for every new act of production. Similarly, every new act of production requires new labour time. No other production expenditures exist. Their reimbursement is necessary and technologically sufficient for the systematic renewal of any technological process.

[8] The difference between the amortisation and removal of fixed capital is ignored at this stage of analysis.

[9] "The value of labour power is determined by the value of the necessities of life habitually required by the average labourer" (K. Marx, *Capital,* Vol. I, Moscow, 1969, p. 486).

[10] We omit the demonstration because it is well-known.

[11] Over a limited period of time national consumption can, generally speaking, exceed the net product, owing to conversion of a certain part of accumulated stocks to consumption. However, this possibility is limited above all by the natural form of stocks. Moreover, under capitalism stocks belong to the owner class and their utilisation to maintain the living standard of the workers is therefore socially excluded.

[12] "Surplus labour in general, as labour performed over and above the given requirements, must always remain. In the capitalist as well as in the slave system, etc., it merely assumes an antagonistic form..." (K. Marx, *Capital,* Vol. III, Moscow, 1969, p. 819).

[13] "This surplus labour appears as surplus value, and this surplus value exists as a surplus product" (K. Marx, *Capital,* Vol. III, Moscow, 1969, p. 819). Of course, the value of every commodity consists of the value transferred to it from the means of production and the value created by living labour in the course of its production, while surplus value constitutes only part of the latter. But on the scale of the closed economy as a whole it is possible to single out part of the goods (the replacement fund $H=Q-Y$), the total value of which is equal to the value transferred from all the means of production used up; part of the goods (the necessary product Y^l), the total value of which is equal to the value created by the necessary labour of all the workers; and, finally, part of the goods (the surplus product Y^s), the total value of which is equal to the surplus value created by all the workers.

[14] To avoid misunderstanding, let us make it clear what we mean when we speak of correspondence between prices and values. Strictly speaking, one can discuss the question of their equality only if precious metals, which themselves possess labour value, are used as money. This usually meets the conditions of pre-monopoly capitalism. Nevertheless, in a general case we can assume that the money in circulation is unchangeable for gold. Then we can only speak of proportionality of prices to the values of goods; but this is a generalisation which covers the case of metallic money (in this latter case proportionality is concretised as equality of the values of goods and the money paid for them). Accordingly, in a general case deviations of prices from values appear as a distortion of proportionality between prices and values.

Let us further note that if prices are proportional to values ($\tilde{p}_i=hb_i$), then (16), correspondingly (17), turns into an exact equation regardless of the difference between the structures of the vectors Y^s and Y^l.

[15] These two sets of industries overlap.

[16] *Journal of Economic Literature,* Vol. IX, No. 2, June 1971, p. 403.

[17] Ibidem.

[18] Ibid., p. 413, 421.

[19] Ibid., p. 404.

[20] Ibid., p. 405.

Atomic Power Industry: Ecological Problems

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As is known, the amount of energy consumed is an important indicator of society's industrial, economic and social development. In recent decades energy consumption has grown exponentially, doubling every 14 years. In 1975 the world figure reached 0.28 *Q* (one *Q* equals 0.25 by 10^{18} kilocalories—a unit frequently occurring in forecasting research which designates an amount of energy which is sufficient, for instance, to bring all the water of the Aral Sea to boiling point). According to forecasts, which take account of the declining growth of power consumption and other factors, this figure will have amounted up to 1 *Q* by the year 2000 and by 2050—up to 6 *Q*.[1]

Such a quantitative change, naturally, calls for a qualitatively new approach to the problem of energy generation. Until recently this problem could be viewed as an isolated techno-economical, whereas in our day the choice of an energy strategy calls for the use of the entire spectrum of systems analysis, which should embrace all the aspects of the problem: fuel reserves, the economy of the mode of power production, the level of society's technological development, the influence of the mode in question on the environment and population, etc. With such an integrated approach the choice of optimum energy strategy should be dictated by future situations rather than by the present one.

The many systems-analysis-based studies of the past few years unambiguously indicate that search for new energy sources has been developing into a crucial challenge of the day. This has two main reasons.

First, the organic fuel (coal, oil and natural gas) resources, which account for almost 95 per cent of the world fuel-energy balance, are dramatically dwindling. Forecasts put the reserves of this fuel at 40-400 *Q*. If the exponential consumption growth is to persist these resources (if they equal 40 *Q*) can be depleted in 50 years or (if the more optimistic estimate of 400 *Q* is found to be correct) in 100 years.

Second, in addition to its quantitative limitations, organic fuel has another serious disadvantage: its use adversely influences the biosphere.

Man's knowledge of the modes of power production would appear to suggest that, in addition to organic fuel, he could bring into play the power of rivers and the wind, tides of the seas and oceans, the internal heat of the Earth, atomic and solar energy. Regrettably, the findings which pertain to the utilisation of wind, geothermal, tidal and hydraulic energy show that these sources do not hold a great promise, their economically advantageous annual world potential resources totalling only a few *Q*.[2] It follows that they can perform only an auxiliary, if fairly significant, role in the world fuel-energy balance: they obviously fall short of being able to replace organic fuel.

Special mention should be made of the solar energy potential. The annual amount of solar heat received by the Earth equals a colossal amount—2,000 *Q*. Unfortunately, due to technical and scientific challenges, within the next few decades it is difficult to expect an extensive use of solar energy, although appropriate attempts were, and are being, made in many countries.

In our day the conversion of solar energy into electric, for example, is approximately 100 times as expensive as the generation of electricity by thermal or hydro-power stations.

Thus, the development of the atomic power industry remains a realistic avenue of satisfying man's increasing energy requirements. In the case of power production the nuclear fission of ^{235}U (the "fuel" of thermal reactors, which form the basis of the present-day atomic power industry) its resources are comparable to those of coal, oil and natural gas.[3] However, with the incipient introduction of fast reactors and the resulting involvement of ^{238}U in the burn-out cycle the resources of atomic power engineering will increase up to a value of several dozen thousand *Q*, which will be enough for the upkeep of civilisation for many centuries to come, even in the event of a substantial rise in energy requirements in the future.[4]

In terms of the cost price of electricity generated by atomic power stations the atomic power industry is already now fully competitive with electricity production based on organic fuel.[5] In other words, whether the atomic power industry will hold out or

be rejected depends above all on its environmental safety compared to other energy sources.

FUNDAMENTALS OF RADIATION PROTECTION

Like other areas of industrial endeavour, the use of fission of heavy nuclei in power production involves noxious factors which are potentially hazardous to man and the environment. Radioactive pollution is potential hazards number one.

All radioecological data indicate that man is the most radiation-sensitive element of the biosphere. Hence, protection of the population from irradiation over and above the permissible level represents the main task in ensuring the radiation safety of the biosphere.

How can this general concept of safety be defined? Early attempts to offer such a definition go back to 1902. In 1928 an International Commission on Radiological Protection (ICRP) was set up, which has published scientific recommendations for permissible radiation levels. Since then, as our knowledge of radiation effects on man increased, these recommendations were repeatedly made more detailed and specific. To date, the following results can be summarised.

The effect of radiation on the human body has been sufficiently studied for a span of cumulative doses ranging from thousands to hundreds of rems (rem is a medical roentgen-equivalent—the amount of any type of radiation equivalent in its biological effect on man to one roentgen of gamma-rays). As regards radiation doses below 100 rems, no radiobiological data on their harmful effect have been obtained so far. However, there is no proof to the contrary either. For this reason "maximum caution" is the guiding principle: for minor doses the "dose-effect" ratio is determined by simple linear extrapolation of known data obtained at doses of several hundred rems and more. In accordance with this extrapolation, the annual radiation dose of N rems provokes the development of a malignant tumour in the human body with an annual probability of 1.5×10^{-4}N and the development of negative hereditary phenomena with a probability of 0.4×10^{-4} N a year. However, such a concept[6] neglects possible threshold effects and, in actual fact, reflects the worst outcome. In accordance with this concept, no dose, not even at the level of the natural background and below, is safe. But with the natural radiation background (70-120 mrem/year) mankind lived and is living, making constant progress. Hence, it can be assumed, and with a high degree of credibility, that the natural background radiation dose is safe.

Relying on these data on the action of radiation and using a major safety factor, the ICRP has established the greatest permissible dose (GPD) of annual radiation equaling five rems for direct handlers of radioactive sources and the greatest dose (GD) of annual radiation equaling 0.5 rem for the population which lives close to atomic industry enterprises. The ICRP has expressly emphasised that if radiation doses at, say, an atomic power plant do not exceed the GPD, then the possibility of acute radiation injury for the personnel is ruled out, while hazards due to the emergence of genetic and remote somatic consequences become minimised. The values of threshold doses are chosen in such a way that the degree of hazard threatening the population due to the use of artificial radiation sources (for instance, the operation of an atomic power plant) is found to be not greater than that which results from calamities like floods, earthquakes, meteorite falls, etc.[7]

The ICRP recommendations have been adopted by the majority of the countries developing the atomic power industry, and make it possible to ensure a high degree of safety. Experts assume, however, that the rapid development of the atomic power industry requires a still more exact knowledge of radiation effects on the biosphere.

The atomic power industry thus poses before radioecology, radiobiology, radiation medicine and other branches of science a complex of problems which largely centre around the disclosure of a more exact quantitative "dose-effect" relationship. It is of particular importance to solve this task for minor doses (ranging from the natural background level to several dozen rems). Such a solution is necessary in optimising the effectiveness of protective systems in the running of atomic power plants. In other words, what level of development of the atomic power industry is safe and economically justified for mankind still remains an open question.

ATOMIC POWER PLANTS AND SAFETY PROBLEMS

The nuclear fuel cycle consists of the following components:

1) enterprises which mine and process uranium raw materials and enrich uranium and a plant which manufactures fuel elements;

2) an atomic power station;

3) a radiochemical plant which reprocesses waste fuel, and enterprises which process and store radioactive waste (this part of the cycle is customarily referred to as the closing stage of the nuclear burn-out cycle).

The radiation effect on the environment is possible in all enterprises of the cycle. However, ever since the atomic power industry came into being it has been found possible to create an effective system of protection from the radiation effect. The problem owes its solution to the fact that radioactive waste is small in volume and weight. For this reason the fundamental strategy of handling the radioactive substances in the nuclear burn-out cycle is based on strict control, which makes possible the practically complete elimination of their contact with the environment.

The minor dispersal of radioactive substances around the uranium mine grounds creates barely any additional radiation for the population distinguishable against the natural radioactivity background. Estimates show that the average annual dose of wholebody radiation for the people who live within 100 kilometres of the mine does not exceed 10^{-5} rem/year.

Nor does the functioning of enterprises processing uranium ore and of plants manufacturing fuel elements expose people to hazardous radiation: the majority of uranium compounds represent solid substances with comparatively easily trappable waste. The liquid waste is stored in settling tanks or special pools. This practically rules out their migration. The annual dose of irradiation of the people who live within 100 kilometres of these enterprises comprises only 4×10^{-7}-1.7×10^{-9} rem/year.

The greatest challenge to radiation safety begins with an atomic power plant. In its reactor the "nuclear combustion" of uranium fuel forms waste which represents products of fission of the nuclei of uranium or plutonium, and transuranium elements. They exhibit high specific and gross activity—billions of times greater than that of nuclear fuel before it is loaded into the reactor. True, when the reactor is shut down this activity abates over a period of several hours due to the disintegration of short-lived fission products. However, it remains at a sufficiently high level for thousands of years. This results from the presence in the waste of long-lived fission products (predominantly ^{90}Sr and ^{137}Cs) and transuranium elements (plutonium, americium and curium).

If a modern atomic power plant functions normally its radioactive waste is under complete control. Several protective barriers are raised in its possible way from the core to the environment. As a result, its emission into the environment is reduced to a minimum and is practically rendered harmless.

In the final count, solid, liquid and gaseous radioactive waste forms at the atomic power plant.

The population is irradiated basically due to gasaerosol pollution. The effect of liquid waste is much smaller because its dumping into the environment is permitted only if their radioactive substance content is within the bounds of permissible concentration established for drinking water.

The gaseous waste of an atomic power station normally contains radioactive noble gases, volatile radioactive substances and radioactive aerosols. Passing through several stages of cleaning, this waste is continually emitted into the environment through tall (100-150-metre) stacks. Such cleaning is so effective that gaseous product discharges leave the soil around the atomic power plant practically unpolluted. The rated dose of irradiation from these discharges per person near a plant with an electric rating of one hectowatt does not exceed 2×10^{-3} rem/year and is comparable to natural background fluctuations comprising 0.4 per cent of the maximum permissible radiation dose near an atomic power plant. Such a theoretical calculation is supported by factual data. Series of observations made, among other places, at the Kola, Novovoronezhskaya and other atomic power plants several years before their opening and after have shown that the radiation level in the rivers, air, open bodies of water and soil in the areas near the plants depends exclusively on global fallouts.

The more-than-20-year history of the atomic power industry thus indicates that the problem of radiation safety for atomic power plants in normal operating conditions has found a successful solution.

Today, however, one cannot be so positive about the safety of atomic power plants in the event of serious accidents with large amounts of radioactive substances escaping the plant. In a situation like this the radiation level near an atomic power plant can show a substantial rise. This calls for additional technical measures to prevent breakdowns and reduce the hazards of their consequences. Each operating reactor is provided with a practically failure-proof (with a three- fourfold margin) emergency protection system, quick-operating reserve cooling systems employed in the event of a sudden critical rise of temperature, protective devices to retain fragments of radioactive substances escaping the core, etc. In recent years the above facilities have been supplemented with systems of protecting atomic power plants from external impacts—the crash of airplanes on, or major earthquakes around such plants. With present systems of emergency protection a major breakdown at an atomic power station is an extremely unlikely event. If the numerical values of the probability of various breakdowns are to be obtained, the data on the reliability of units and assemblies accumulated in the course of their many-year functioning are employed. Such an analysis has shown that the probability of death of one individual living within 40 kilometres from an atomic power plant due to a breakdown in it equals 3×10^{-9} cases a year or several thousand times less than the

probability of death in a car accident, and hundreds of times less than the probability of death due to a lightning stroke.

The above estimates, however, hold only for atomic power plants with a light-water thermal reactors. This type of reactor is prevalent in the atomic power industry today and according to forecasts, will remain as such at least until the year 2000. Research into the safety of fast reactors, which are just coming into use, yields equally optimistic results. Regrettably, however, they are not yet reliable enough. Extensive studies are to be carried out in this field. But even the present level of our knowledge gives no grounds for assuming that atomic power plants with fast reactors will not be as safe as those with thermal reactors.

Theoretical calculations show that present-day atomic power plants are notable for high reliability. The experience of their operation, however, is not yet sufficient for experimental confirmation of the theoretical conclusions about the safety of atomic power stations in emergency situations. This is why great efforts in the Soviet Union and many other countries developing the atomic power industry are being made to confirm these conclusions experimentally and to maintain the necessary safety level of atomic power plants, especially in view of their large-scale construction.

ARE RADIOCHEMICAL PLANTS A SAFE UNDERTAKING?

Another source of radiation hazards presented by the nuclear burn-out cycle lies in radiochemical plants regenerating the fuel used up by atomic power plants.

To this day many countries have been practising the incomplete burn-out cycle of the atomic power industry: spent fuel is not reprocessed and is kept in the plant's storage. The storage technology is optimised and tested by the almost 25-year experience of operating atomic power plants. This, however, is a temporary situation. Far from being the result of any miscalculations or insurmountable obstacles to effecting the closing stage of the burn-out cycle, it is due to the specific features of the development of the atomic power industry as a whole. Calculations made, for instance, by experts from the International Atomic Energy Agency (IAEA) show that it is economically advantageous to build radiochemical plants with an annual capacity of 1,500 tons of depleted fuel and more. Modern atomic power plants, for example, those with light-water reactors of an electric rating of one hectowatt, annually turn out almost 30 tons of spent fuel. It follows that if one such radiochemical plant is to be completely loaded the atomic power industry is to have the electric rating of 50 hectowatts and more. At present practically all countries have much lower capacities. The United States (its atomic power

industry capacity is almost 50 hectowatts) alone has approached the level at which it becomes economically justified to put into commission the first radiochemical plant.

Nevertheless, a well-tried reject fuel regenerating technology has already been developed. This primarily applies to the fuel spent in light-water slow reactors. Several successfully operating low-yield radiochemical pilot plants which reprocess the fuel of such reactors have achieved a high technological level. This will very shortly make it possible to build and commission full-scale industrial plants with an annual capacity of 1,500 tons of fuel and more. And, although at this stage the degree of such plants' radiation effect on the biosphere can only be deduced from theoretical data, their credibility raises no particular doubts.

In a radiochemical plant that part of the depleted fuel which has not been "burned" in a reactor (uranium and plutonium) becomes chemically isolated and recycled for the manufacture of new fuel. Another part, which represents products of fission of uranium and transuranium elements, except Pu, now becomes direct production waste. This waste can be liquid, solid or gaseous. Solid and liquid waste exceed 99 per cent of the entire radioactive waste formed in the reactor; it is notable for high activity and has to be isolated from the biosphere.

Gaseous waste is cleaned by filtration, whereupon it is discharged into the atmosphere through tall stacks. Unlike the discharges of an atomic power station, the gaseous discharges of a radiochemical plant do not contain any short-lived isotopes (due to the sufficiently long hold-up of spent fuel before regeneration). Thus, as a result of their emission into the atmosphere, the doses of radiation of the people who live around the plant are much greater than around an atomic power station. However, the actual rated values of such doses, although large, remain smaller than the maximum permissible radiation doses (i.e., under 0.5 rem/year) and are at the level of the natural radiation background.

It should also be borne in mind that the number of radiochemical plants required by the atomic power industry will always be much smaller than the number of atomic power stations. For example, it has already been pointed out that one or two radiochemical plants could serve all currently functioning atomic power stations in the world. Moreover, unlike atomic power stations, radiochemical plants are not attached to the places of energy consumption. Hence, the substantial local hazard of a radiochemical plant to the environment and population can be "neutralised" (at least partially) by the choice of some sparsely populated and ecologically isolated location. Thus, there is no saying that the problem of extraction of tritium and krypton from

the discharges of radiochemical plants calls for immediate solution. However, it may do so in the future.

A far less definite situation prevails with regard to the handling of the highly-active liquid and solid waste of radiochemical plants. Although there are several alternative possibilities here none of them ensures so far a technically simple, economical and ecologically safe solution to the problem. This situation is due to the fact that until recently there was no need for the immediate development of a similar production process as was the case, for instance, with the safety of atomic power stations. The rapid headway of the atomic power industry currently observable in many countries gives pride of place to the problem of handling highly active waste. The intensive research of recent years warrants the following conclusion: there are no basic technical, economic or ecological difficulties as regards the development and introduction of a method of final removal of radioactive waste in this case either.

Finally, the problem of radiation safety of the atomic power industry has another aspect, namely the safety of conveyance of radioactive materials between different enterprises of the nuclear burn-out cycle which are frequently divided by fairly long distances, predominantly the conveyances of spent fuel from an atomic power station to the radiochemical plant and of its waste to the burial grounds.

By now highly reliable containers have been developed for the transportation of reject fuel from atomic power plants with light-water reactors. The possible doses of radiation of the people who live along such routes (within one kilometre off the route) coming from such containers are dozens of times smaller than in the area of an atomic power plant. Moreover, these containers retain their hermeticity even when different types of maximum possible accidents are simulated.[8]

According to theoretical calculations, the radiation hazards of the transportation of radioactive fuel are insignificant. The recorded incidents and accidents with the chance involvement of containers strengthen the confidence that the obtained conclusion is correct. However, the experience of handling containers is inadequate for saying that this statement is unambiguous. All atomic-power countries continue their intensive theoretical and experimental research in the appropriate field.

THE INFLUENCE OF ATOMIC AND THERMAL POWER PLANTS ON THE BIOSPHERE

It is impossible in one article to give a detailed comparison; for this purpose it is necessary to discuss all the stages of the fuel

cycles of atomic and thermal power plants. It is therefore more advisable to survey the results of a comparison of an atomic power station (APS) and a thermal power plant (TPP) because they (unlike other enterprises with both fuel cycles) are located in places of energy consumption, i.e., in populated areas. As an example the authors will discuss only coal-powered TPPs for they are in the lead in energy generation based ,on organic fuel.

Until recently it was assumed that the problem of biosphere pollution by radioactive substances was confined to the atomic power industry. However, recent research has disclosed that radioactive products also form part of the waste of thermal power plants working on organic fuel. The natural radioactive substances (^{226}Ra, ^{228}Rn, ^{232}Th, ^{216}Pb, ^{210}Po, ^{40}K) contained in coal, together with TPP ash are dispersed through the environment, bring about an additional irradiation of the people who live near TPPs. Calculations show that the dose of this irradiation is dozens of times larger than that which results from the discharges of an APS of a similar capacity. As a result, for these people the cancer hazard reaches 2.4×10^{-6} cases per man per year, while for the people who live near an APS this figure[9] equals 3.4×10^{-8}. Thus, the radiation hazard of an APS is 70 times lower than that of a TPP of an equal capacity, although it is fairly insignificant in either case. For instance, it is significantly less than the hazard of radiation carcinogenesis caused by the natural background.

TPPs pollute the environment by radioactive substances as well as by sulphur dioxide (SO_2). The anthropogenic share of the sulphur content of the atmosphere reaches 93 and 47 per cent in the Northern and Southern hemispheres respectively.[10]

Research performed in the United States indicates that the corrosion of metals resulting from the action of atmospheric SO_2 has caused one billion dollars' worth of damage while by the year 2000 due to a rise in SO_2 discharges this figure is likely to reach 25 billion.[11] But, what is most important, sulphur dioxide will exercise an adverse effect on living organisms. The presence of just a few parts of SO_2 in one million parts of air spells a grave danger to human life. Besides, in the absence of economically justified methods of SO_2 trapping its discharges, regrettably, continue to grow all over the world.

In recent times much attention has been attracted by the problem of "thermal" pollution of the biosphere. This requires a comparison of an APS and a TPP also in terms of their thermal impact on the environment. Here it is of utmost importance that in a TPP some 85 per cent of the waste heat goes into the water used for the cooling of the station and the rest 15 per cent into the atmosphere. In an APS all waste heat goes into the water. Moreover, while TPP efficiency equals 38 per cent, in modern

APSs (with thermal reactors) it is slightly lower—about 33 per cent. As a result, an APS emits into its cooling system almost 1.5-2 times more heat than a TPP of an equal electric rating. However, it is only a temporary advantage of TPPs. First, the programme for the development of the atomic power industry provides for an effective rise in the efficiency of APSs by the construction of atomic heat supply stations and atomic heat and power plants, i.e., by a broader use of the heat emitted by the APS reactor. Second, with time APSs with fast or high-temperature gas reactors, whose efficiency will exceed that of organic fuel-based thermal power plants, will become operational.

Thus, the above data make it sufficiently obvious that APSs as an energy source present smaller hazards to human health than TPPs. What is more, the introduction of APSs opens up broad vistas for improving the environment and preventing harmful effects on man.

The conclusion concerning the ecological advantages of atomic power stations over the thermal power plants also follows from a comparison of other elements of the nuclear burn-out cycle to those of power plants working on organic fuel. For example, a changeover from thermal power plants to atomic power stations (in the event of introduction of fast reactors) makes the areas of land, whose structure becomes upset in the process of fuel mining, dozens, if not hundreds, of times smaller per unit of generated energy. Further, the extensive development of the atomic power industry will open the way for reducing the volume of organic fuel transportation (especially oil transportation) which spell far greater environmental hazards than nuclear fuel conveyance. Thus, according to statistics, in 1970 oil escape to the sea reached 1,600 tons per hectowatt.[12] The degree of danger from such leakages can be inferred from at least the well-known data saying that one litre of oil is capable of striking out one million litres of water from the drinking balance.[13]

It would be in place to compare the hazards presented by radioactivity and chemicals for the biosphere. The biological effects of radioactivity have been the object of meticulous research since the turn of the century and are known much better than the effects of the majority of other factors which are pernicious for the environment. The contention that cancer and genetic impairments are specific consequences of radioactive emission represents a widespread delusion. In reality, they can be equally due to chemicals, including some products which are uncontrollably released in the burning of organic fuel, etc.

Finally, the rates of radiation safety are established with a sufficiently wider margin than the appropriate safety standards for chemical pollution of the environment.

The atomic power plants which are being designed and constructed in the Soviet Union are provided with a complete set of safe technical facilities that prevent environmental pollution by radioactive waste. The degree of radiation effect of enterprises with the nuclear burn-out cycle is very small; it is much smaller than the maximum permissible doses and the irradiation of man by the natural radiation background of the Earth.

NOTES

1 *IAEA Bulletin*, 1975, Vol. 17, No. 3, p. 5.
2 See *Yadernaya energetika i vneshnyaya sreda*, "Fizika" series, Moscow, 1977, No. 9.
3 A. P. Alexandrov, "Atomic and Thermonuclear Energy", *Vestnik AN SSSR*, 1975, No. 2, p. 27.
4 Ibid., p. 28.
5 See N. S. Khlopkin, "Soviet Nuclear Power Engineering", *Priroda*, 1977, No. 11.
6 See *Atomnaya energiya*, 1977, Vol. 43, Issue 5, p. 378.
7 See A. I. Yoyrysh, *Atomnaya energiya i mezhdunarodnaya pravovaya okhrana okruzhayushchey sredy*, "Gosudarstvo i pravo" series, Moscow, 1975, No. 12.
8 See *Atomnaya energiya*, Vol. 43, Issue 5, p. 378.
9 Ibid., Issue 3, p. 194.
10 Ibid., Issue 5, p. 374.
11 See *Yadernaya energetika i vneshnyaya sreda*, "Fizika" series, Moscow, 1977, No. 9.
12 *Atomnaya energiya*, Vol. 43, Issue 5, p. 378.
13 *Budushcheye nauki*, Moscow, 1974, Issue 7.

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SCIENTIFIC LIFE

GENERAL MEETING OF THE USSR ACADEMY OF SCIENCES

Results of the fundamental and applied researches conducted by Soviet scientists in 1979 were reviewed at a session of the annual general meeting of the USSR Academy of Sciences held in Moscow in March 1980.

In the presidium were: Alternate Member of the Politbureau and Secretary of the CC CPSU Academician B. Ponomaryov; Secretary of the CC CPSU M. Zimyanin; Deputy Chairman of the USSR Council of Ministers and Chairman of the USSR State Committee for Science and Technology, Academician G. Marchuk; Head of the Science and Educational Establishments Department of the CC CPSU, Corresponding Member of the USSR Academy of Sciences, S. Trapeznikov; and leading officials of the Academy.

The meeting was opened by Academician A. Alexandrov, President of the USSR Academy of Sciences.

A major form of our scientists' participation in and contribution to scientific and technological progress, he said, is the elaboration of comprehensive all-Union and regional development programmes. Among these programmes pride of place belongs to the programme "Siberia", involving dozens of large scientific collectives.

Touching on the scholars' achievements in the social sciences, Academician A. Alexandrov said that especially fruitful was the work in further studying Lenin's legacy. A number of fundamental works have been published on Lenin's contribution to the materialistic outlook.

In conclusion, Academician Alexandrov said that the aim of Soviet science is to achieve the harmonious development of the productive forces of our society and to advance world science to new heights. The Soviet scientists fully support the consistent policy line conducted by the Communist Party and the Soviet Government with a view to international detente.

Academician G. Skryabin, Chief Learned Secretary of the Presidium of the USSR Academy of Sciences, spoke about the Academy's activities in 1979. He said that the many thousands of scientists and associates of the Academy, in compliance with the decisions of the 25th CPSU Congress and subsequent plenums of the CC CPSU, had channeled their efforts, in a more purposeful way, to tackling the key problems of scientific and technical progress.

Last year the USSR Academy of Sciences, in collaboration with the USSR State Committee for Science and Technology, completed work on a comprehensive programme of scientific and technical progress up to the year 2000. This important section of the Academy's activity was supervised by the Scientific Council on problems of scientific, technical, social and economic forecasting, headed by Academician V. Kotelnikov. On the basis of conclusions and recommendations contained in the comprehensive programme, commissions have drawn up proposals and additions to the guidelines of the USSR's economic and social development and to the 1981-1985 plan, related to the advancement of science and technology and the organisation of production.

The USSR Academy of Sciences has been paying special attention to the investigation of the earth bowels with the help of super-deep drilling and the raising of the technical level of the chemical, oil-refining and petrochemical industries.

Soviet researchers' activities are of immense significance not only for the progress of human knowledge as a whole and the technical re-equipment of the leading technological branches. They are important because they also bring new information about the surrounding world to mankind. These activities are in line with the CC CPSU Resolution "On Further Improvement of Ideological and Politico-Educational Work", and are reflected in a number of new undertakings of the Academy. Among them is a decision to publish a new journal *Soviet Science* and a new yearbook *Soviet Science and Technology* in Russian and foreign languages.

The world scientific community has invariably shown great interest in the work of Soviet scientists. The Academy's cooperation with scientific organisations in the socialist countries has become more versatile and effective.

Last year the "Intercosmos" programme sponsored by the Academy was joined by Vietnam, which became the tenth participant in the joint space research conducted by the socialist countries. Last year preparations were held for international space flights with the participation of citizens of Cuba, Hungary, Mongolia, Rumania and Vietnam.

The Academy's exhibitions and displays held in socialist countries, as well as in Italy, Indonesia, Turkey, the USA, Finland, Japan and elsewhere have enjoyed great popularity. Dozens of Soviet scientists have been awarded by foreign countries and institutions, and elected honorary members of various scientific organisations and societies.

After discussing the report, an election for the presidency of the Academy was held. The outstanding Soviet scientist, Academician A. Alexandrov, was re-elected President. Then the Academy's Presidium was elected. Academicians V. Kotelnikov, E. Velikhov, V. Koptyug, A. Logunov, Yu. Ovchinnikov, B. Petrov, A. Sidorenko and P. Fedoseyev were elected Vice-Presidents. Academician G. Skryabin was elected Chief Learned Secretary of the Presidium of the USSR Academy of Sciences. Also elected to the Pres-

idium were 32 other members of the Academy.

Awards of the Academy were conferred at the general meeting. Karl Marx Gold Medals for outstanding achievements in the field of the social sciences were awarded to Professor K. Hager, member of the Politbureau and Secretary of the Socialist Unity Party of Germany, and Academician E. Zhukov (USSR). The highest award in the field of the natural sciences—the Lomonosov Gold Medal—was bestowed on Academician B. Szökefalvi-Nagy of the Hungarian Academy of Sciences, and Academician A. Oparin (USSR).

Those awarded read scientific papers: K. Hager—"Philosophy in the Ideological Struggle of Our Time"; E. Zhukov—"The Historicism of Marxism"; B. Szökefalvi-Nagy—"Brief Review of My Mathematical Work"; A. Oparin—"The Origin of Life".

Gold medals and awards named after outstanding scientists, as well as the Academy's medals for best works by young scientists and students of higher educational institutions were also bestowed.

THE INSTITUTE OF HISTORY, PHILOLOGY AND PHILOSOPHY OF THE SIBERIAN DIVISION OF THE USSR ACADEMY OF SCIENCES

The Institute of History, Philology and Philosophy was founded in 1967 as an independent research unit of the Siberian Division (SD) of the USSR Academy of Sciences. In the years since then the Institute (organised and headed by Academician Okladnikov) has become a leading Siberian centre and principal coordinator of researches in the humanities.

From its very inception the Institute oriented itself on the integrated approach to the problems facing archaeologists, historians, philosophers, sociologists and philologists. This facilitated the development of non-traditional methods of analysis of empirical material which, in turn, yielded significant results in various spheres of knowledge—from archaeology to philology.

The result of the first five years of the Institute's work and of the research institutions it coordinates within the Siberian Division, as well as of the research groups in Siberia's higher educational institutions was the publication in 1968-1969 of the five-volume *A History of Siberia. From Ancient Times up to the Present.* The publication was highly appraised by the academic community. The study of a broad range of problems and analysis of a wealth of documentary material made it possible to retrace the history of a major region of the country, beginning with the most ancient Paleolithic cultures of the Stone Age known to us and ending with the 1960s. In 1973, *A History of Siberia* was awarded a State Prize of the USSR.

The Institute's research staff took shape in the course of the work on this publication in which ethnographers, sociologists, philologists and scientists of other specialities collaborated with archaeologists and historians. Today the Institute's activities cover a wide spectrum of problems.

In its day-to-day research work the Institute follows the traditional

integrated approach to scientific problems, perfecting on this basis the varied forms of cooperation between scientists and subdivisions of the Institute.

Research is oriented principally on the laws governing the historical development of society and the transition from one socio-economic formation to another.

Archaeological field work has been carried out on vast territories of Siberia and the Far East (and also in Mongolia, jointly with Mongolian scientists), yielding new materials on various epochs in the history of Siberia—from the Paleolithic to the 18th century. A typological and comparative analysis of the data accumulated and their creative interpretation have thrown light on a number of the laws of development and interaction of the cultures of the peoples of Northern Asia, their interconnection with the cultures of the contiguous regions from Paleolithic times to the advent of the Bronze Age and the settlement of Russians in Siberia.

The data obtained by archaeologists offer rich material for ethnographic investigations and this makes for comprehensive joint work by archaeologists and ethnographers. The comparative analysis of the extensive archaeological material and findings made by the Institute's archaeologists and ethnographers and their interpretation of petroglyphs have made it possible to give a description of the life and various spheres of activity—from productive to spiritual—of the tribes and peoples of Siberia in different periods.[1]

An indication of the interest in the discoveries of Siberian archaeologists is, we believe, the translation and publication by foreign publishers of several works of the Institute's associates. Thus, in 1975, there was brought out in Japan the collection *The Archaeology of Northern and Eastern Asia* containing articles by A. Okladnikov, R. Vasilyevsky, A. Derevyanko, E. Derevyanko, V. Medvedev and A. Mazin. Also many other works have appeared abroad.[2]

The international recognition of the Siberian archaeological schools' investigations and of the scientific significance of its discoveries promoted the development of varied forms of cooperation with scholars and research staffs of some twenty countries. And the most effective form of this cooperation is their joint practical work.

A case in point were the Soviet-American archaeological excavations in Alaska and the Aleutian Islands. In 1975, five American scholars participated in joint field researches in Siberia pertaining to the Paleolithic and Neolithic periods in accordance with the implementation of a Soviet-American archaeological project.

Siberian archaeologists took part in expeditions in Mongolia, Korea and Cuba where they shared with foreign colleagues their experience of scientific methodology, search methods and principles of interpretation of material discovered. A vast amount of new data was obtained. Thus, during the Cuban expedition of 1978, carried out within the framework of scientific cooperation of Soviet and Cuban scholars on problems of the history of the earliest settlement of the American continent and the Caribbean, the group of archaeologists headed by Okladnikov discovered on the Ceboruco site a new, and judging by everything, the most

ancient monument of Cuban culture.

The Soviet-Mongolian historico-cultural expedition (led by Okladnikov and Natsagdorj), which began work in 1969, united scores of scholars of many institutes of the USSR Academy of Sciences and of the Mongolian Academy of Sciences. As a result of the field researches carried out on the territory of Mongolia over the years extensive material was collected which has become the basis of monographs on the ancient history of Mongolia, including those by A. Okladnikov and V. Zaporozhskaya on the petroglyphs of Mongolia, and by A. Okladnikov on the petroglyphs of Central Asia.

The creative contacts with foreign research institutes and with leading scientists are a source of rich information. The empirical basis of theoretical understanding of the historical process of the Paleolithic, Neolithic and Mesolithic periods, and of the era of metal in the Asian, European and American regions, is broadening. New prospects are appearing in analysing the laws of social development.

Archaeographic researches, begun in 1965 on the proposal of Academician Tikhomirov who gave Novosibirsk a unique collection of ancient books, led to the establishment there of the country's third major archaeographic centre. In the years since then new methods of archaeographic field work have been devised, research workers trained and 51 expeditions carried out over vast areas stretching from the Urals to the Lena River and from the Arctic to Kazakhstan. Thirteen hundred manuscripts and ancient books have been acquired, the oldest of which date back to the mid-15th century. Many findings have been described in scientific literature and some of them (for example, *Notes by Maxim Grek*) have been published as monographs. A whole layer of formerly unknown Ural-Siberian peasant literature of the 18th century has been brought to light, and several new collections of the works by Russian writers of the 12th-17th centuries have been found. More than 30 samples of the Russian printing press of the 16th century, including those of Russia's first-printer, Ivan Fedorov, have been saved. The book *The Archaeographic Discovery of Siberia* has been assessed by USSR national and international congresses as a major achievement of Soviet science. The Institute's archaeographers maintain close working ties with leading Slavonic scholars in the Soviet Union and abroad including Oxford and Tokyo.

Work is under way in the Institute to set up a Siberian open-air museum which will display archaeological, architectural, historical and ethnographic exhibits. Various regions of Siberia have already sent there fifteen unique monuments of 17th-19th-century Siberian wooden architecture, as well as various historico-ethnographic material relating to the economic activity and everyday life of the Siberians of that period.

Studies on a wide range of themes are carried out by the Institute's *history subdivisions.*

Historians studying Siberia of the pre-October 1917 period have written a series of works,[3] which reflect the results of their fundamental researches into the key aspects of Siberia's economic development over a more than three-hundred-year period. They researched the subject comprehensively, showing the development of the productive forces, the occupations and labour traditions of the region's population, the social and economic relations in towns, the class struggle, the growth of social consciousness and culture, and the maturing of the objective prerequisites of the bourgeois-democratic and socialist revolutions in Siberia. Such a comprehensive approach made it possible to show that the general laws of development are the same for Siberia and the USSR as a whole and reveal the decisive role of the popular masses in developing the Asian part of Russia. In these works their authors, drawing on extensive new, hitherto unknown sources, touch on questions not covered previously, in particular questions relating to the history of agriculture and agrarian relations, the development of the Siberian town, Russian culture, the history of Siberian political exile, the revolutionary movement of the working people of Siberia. Main attention is devoted to the principal driving forces of the historical process in the Siberian region—the working class and the peasantry. Studied and analysed are their socio-economic life, the formation of capitalist relations and production, the early forms of the class struggle of the working masses and the social, economic and political preconditions of the Great October Socialist Revolution.

Thoroughly analysed is the struggle of Siberia's working class and peasantry for Soviet government, the consolidation of the various forms of the alliance of the working class and the peasantry in establishing socialist social relations.

One of the main areas of research by the Institute's historians is that of the objective laws governing Siberia's social, economic and cultural transformations in socialist and communist construction. Among the fundamental themes being studied in recent years: "The main regularities of the industrial transformation of Siberia and the development of the Siberian contingent of the working class of the USSR in socialist and communist construction"; "A history of the peasantry of Soviet Siberia"; "A history of the Siberian culture and the intelligentsia in the period of socialist construction". Comprehensive monographs have been published (or are in print)[4] containing an in-depth analysis of the specific features of the development of socialist industry in Siberia and its contribution to the creation of the material and technical basis of socialism and communism; showing the changes in the social composition of the working class, the profound changes in its cultural and technical level and in its living conditions. Much attention is given in these monographs to the creative efforts of the workers to develop Siberia's natural resources, to their increased social and political activity and steadily growing role in all spheres of social life.

Among the studies of the history of Siberia's industry and working class the history of the region's electrification is dealt with at length. The results of one such study are generalised in a two-volume monograph by V. V. Alexeyev.[5] In it the author shows how Lenin's ideas of electrification were translated into reality, how the GOELRO plan for Siberia was fulfilled and its rich water and fuel resources further

developed. Shown too is the significance of electrification for the socialist reorganisation of the national economy and its socio-economic results. The development of the region's power engineering, and the growth of its cadres are traced throughout the entire Soviet period, thus giving the reader an integral idea of this major process.

Three subthemes can be singled out in the study of the history of Soviet Siberia's peasantry: the socio-economic development of the Siberian village in the years of the socialist reconstruction of the national economy (1926-1937); the formation of the class of collective farmers in the conditions of victorious socialism; historiography of the Siberian peasantry in the Soviet period.[6]

The theme concerned with the history of the culture and the intelligentsia of Siberia in the period of socialist construction covers the development of the principal branches of culture in the years of the October Revolution, the Civil War and in the early period of the rehabilitation of the national economy, the history of the Siberian intelligentsia in the years of the October Revolution and of socialist construction.[7]

Problems bearing on Siberia's present-day social and technico-economic structure, on perfecting social relations, shaping of the new man and on the development of the socialist way of life are high on the Institute's research agenda. Analysis of the formation of the region's modern social structure is tied in with a study of the effect of technico-economic factors on social and ecological processes. The attention of scholars is centred on the growing role of power engineering in Siberia, the social and economic consequences of the electrification and its effect on the environment in the conditions of developed socialism and the scientific and technological revolution. This comprehensive approach to the theme also provides for research into the cultural aspects of the activities of the peoples of Siberia and of individual social groups. A number of studies deal with national relations and the history of the development of Siberia's national areas.[8]

At present the history subdivisions are preparing two fundamental generalising works on the history of Siberia's working class and peasantry. These works will familiarise the reader with the development of these classes from their inception to our times, and recreate a scientifically-substantiated panorama of the formation and change of the two principal driving forces in Siberia's social and economic development.

The Institute's *philologists* are continuing research in the classical tradition of the world-renowned Russian school of the Ural-Altaic languages. Much has been done in experimental phonetics, and language dictionaries of the Siberian peoples have been compiled, including the Turkic, Mongolian and Tungus-Manchu.

Another area of research is "The general laws of the functioning and evolution of language". On the basis of an analysis of materials on the native and Russian languages spoken by the indigenous peoples of Siberia scientific recommendations have been drawn up containing exhaustive information on the language situation among the peoples of Siberia living in different climatic, cultural, economic and social conditions.[9]

These studies are of fundamental importance both for gaining an understanding of the evolution of the language and literature of the peoples of Siberia, and for ascertaining many features that are of importance when analysing the history of the culture of the peoples inhabiting the eastern part of the USSR and their interconnections with the cultures of the peoples of the adjoining territories.

The results of the above researches were discussed at the first all-Union conference on "The Sound Systems of the Languages of Siberia and of the Adjoining Regions" (Novosibirsk, 1979) which was attended by Mongolian scholars. The Institute's work is attracting the increasing interest of linguists in Mongolia as well as in Hungary and the GDR. Scientific data are regularly exchanged and joint studies are carried out of the different dialects on the territory of Mongolia.

The history of Russian literature in Siberia has been the theme of many important studies. They trace the development of the literary process in that region from the 17th century up to our times and show the contribution of Russian literature to the culture of Siberia. The results of these studies are set forth in *A History of Russian Literature in Siberia* (1979)[10] in two volumes. In this work its authors examine for the first time the literature in that part of the USSR in its historico-literary aspect as an element of the general Russian literary process. The works of Siberian writers are critically analysed in the context of their artistic method, creative individuality and specific genres.

The main attention of the *philosophy department* of the Institute of History, Philology and Philosophy is focused on spelling out the fundamental philosophical problems projected by the development of the natural and social sciences, the practice of communist construction and by the present-day ideological struggle. The themes of research are determined, first and foremost, by the methodological problems of modern natural science.

The principal line of research is analysis of contemporary scientific knowledge, in the context of its mathematisation and the Marxist interpretation of the development of science. Research is, therefore, oriented on accomplishing the tasks Lenin put before science in his day: to elaborate Marxist dialectics on the basis of modern natural science, and dialectico-materialist interpretation of scientific discoveries which constitute the foundation of the present world outlook.

In the sphere of methodology, problems of mathematising fundamental researches in the conditions of scientific integration are being scrutinised. Certain results have been achieved in the study of the logico-mathematical formalisation in the context of the general problem of reflecting reality through the language of science and an analysis has been made of the philosophical prerequisites of concrete natural science theories.

The existence in the Novosibirsk science centre of a number of mathematical schools of world standard ensures favourable conditions for doing logico-philosophical research and for using the results to work out the methodological problems of modern natural science.[11]

In the focus of attention of the Institute's *sociologists* are the processes under way in the social development of the peoples of Siberia, in particular the development of the indigenous peoples of the region and the Far East in the conditions of the social, economic and cultural impact of the construction of the Baikal-Amur Main Line and their social adaptation to a new way of life. The second area of sociological research is the workers' attitude to labour in the conditions of the big territorial-production complexes set up and their adaptation to these conditions and the social aspects of the professional orientation of the youth.

An effective factor making for the successful fulfilment of the complex tasks tackled by the Institute's research staff are the varied forms of coordination, of creative ties and cooperation with the research institutions of the USSR Academy of Sciences, its Siberian Division, regional research organisations and the higher educational institutions of Siberia and the Far East.

Extensive research is being done jointly with the Institute of the Social Sciences of the Buryat Branch of the Siberian Division; the Institute of Language, Literature and History of its Yakut Branch; the Institute of History, Archaeology and Ethnography of the Peoples of the Far East of the Far Eastern Research Centre of the USSR Academy of Sciences; the regional research institutions of the Tuva Autonomous Republic, the Khakass and Gorno-Altai Autonomous Regions of the RSFSR.

The Institute cooperates closely with the USSR Academy of Sciences' institutes of archaeology, ethnography, history of the USSR, the history of natural science and engineering, of Slavic and Balkan studies, philosophy, language and literature and with a number of its other major research institutions. All the Institute's principal areas of research are covered by this cooperation. The emphasis in this cooperation is on the effective elaboration of urgent scientific problems.

Along with training skilled personnel for its own needs (compared with 1970 the number of its doctors of science tripled and that of its candidates of science doubled) the Institute actively helps to train researchers and instructors for other scientific and higher educational institutions of Siberia. Thus, in the past few years it has graduated skilled personnel for 32 research institutes and higher educational institutions in 15 cities of Siberia and the Far East.

The Institute's international ties are also steadily expanding. It participates in research programmes within the framework of the USSR Academy of Sciences' agreements of scientific cooperation with the academies of sciences of Mongolia, Hungary and Cuba. Stable contacts have been established with research centres in Vietnam, the GDR, the Korean People's Democratic Republic, in Canada, the USA, Finland, France, Japan as well as with many scientists in other countries.

The Institute's international contacts were greatly furthered by the all-Union conference held in Novosibirsk in 1975 which discussed the correlation of the ancient cultures of the Pacific basin and adjoining territories and in which scholars from Canada, Hungary, Japan and the USA participated.

The research staff of the Institute cooperates fruitfully with the scientific institutions of Hungary within the framework of the Soviet-Hungarian Commission of Historians of which Okladnikov is co-chairman. Two Soviet-Hungarian scientific conferences were prepared and held in Siberia jointly with the institutes of ethnography, Slavic studies and Balkan studies of the USSR Academy of Sciences. In 1974, Novosibirsk, Irkutsk and Ulan Ude were the venue of a conference on the theme "The Rational Use and Preservation of the Natural Environment in the Conditions of the Scientific and Technological Revolution". The conference on the theme "The Participation of Hungarian Internationalists in the Struggle for the Establishment and Consolidation of Soviet Government in Siberia and in the Far East" (Novosibirsk, Irkutsk, Khabarovsk, 1976) was attended, besides associates of the Institute and their Hungarian colleagues, by young scholars of Siberia's higher educational institutions. The materials of this conference were published in Budapest in the Hungarian language and in Moscow in the Russian language.

At the conference on "Nature, Man, Progress" (Budapest, 1978) papers were read by Okladnikov, Alexeyev, Konopatsky and Lamin.

The Institute has lately been broadening the scope of its creative contacts with the scholars of Mongolia to include joint ethnographic and linguistic researches and the study of present-day social processes.

The creative contacts of the Institute of History, Philology and Philosophy with its foreign colleagues speak of the growing recognition of the work being done by the Siberian social scientists.

V. Lamin,
I. Polyakov

NOTES

[1] For more details, see A. Okladnikov's article "At the Dawn of History" in this issue.

[2] R. S. Wasiljevsky, "Problems of the Origin of Ancient Sea Hunters' Cultures in the Northern Pacific", *Maritime Adaptations of the Pacific*, Paris, 1975; A. P. Okladnikov, *Ancient Cultures of Siberia*, Tokyo, 1974; *Der Mensch Kam aus Sibirien*, Vienna-Munich-Zurich, 1974; A. P. Okladnikov, A. K. Konopatsky, "Hunters for Seal on the Baikal Lake in the Stone and Bronze Ages", *Folk*, Copenhagen, 1974-1975, Vol. 16-17; A. P. Okladnikov, W. S. Laughlin, A. P. Derevyanko, A. B. Harper, I. V. Asseiyev. "Early Siberians from Lake Baikal and Alaskian Population Affinities", *American Journal of Physical Anthropology*, 1976, Vol. 45, No. 33, etc.

[3] *Towns of Siberia (the Economy, Administration and Culture of the Siberian Towns in the Pre-Soviet Period)*, Novosibirsk, 1974 (the works cited in the article have been published in Novosibirsk unless otherwise indicated); L. M. Goryushkin, *The Siberian Peasantry at the Turn of the Century (end of the 19th-beginning of the 20th Century)*, 1967; Idem., *The Peasant Movement in Siberia in 1917* and *Agrarian Relations in Siberia in the Period of Imperialism*, 1976; N. N. Pokrovsky, *Anti-Feudal Protest of the Ural-Siberian Peasants—Old Believers in the 18th Century*, 1974; M. M. Gromyko, *Labour Traditions of the Russian Peasants of Siberia in the 18th-first half of the 19th century*, 1975; A. N. Kopylov, *Essays on the Cultural Life of Siberia in the 17th-Early 19th Century*, 1974; G. A. Bochanova, *The Manufactur-*

ing Industry in Western Siberia at the Turn of the 20th Century, 1978; T. S. Mamsik, *Escapes as a Social Phenomenon,* 1978 (all in Russian).

[4] A. S. Moskovsky, *The Formation and Development of the Working Class of Siberia in the Period of Socialist Construction (1921-1937),* 1968; Idem., *Industrial Development of Siberia in the Period of Socialist Construction (1921-1937). (A Historico-Economic Essay),* 1975; Idem., *Growth of the Cultural and Technical Standards of the Workers of Siberia (1920-1937),* 1978; Idem., *The Number and Composition of the Siberian Labour Force Under Developed Socialism,* 1977; M. M. Yefimkin, *The Sources and Forms of Replenishment of Workers in Western Siberia,* 1978; E. V. Vasilyevskaya, *Essays on the History of Television in Siberia,* 1978; I. I. Komogortsev, V. A. Lamin, V. M. Fedin, *The Formation of the Collective of Builders of the Baikal-Amur Main Line,* (in the press); V. V. Alexeyev, S. S. Bukin, *The Improvement of the Well-Being of the Workers in Siberia in the Conditions of Building the Developed Socialism* (in the press) (all in Russian).

[5] V. V. Alexeyev, *The Electrification of Siberia. A Historical Study,* Part I (1885-1950), 1973; Part II (1951-1970), 1976; V. V. Alexeyev, A. S. Bondarenko, *Power Engineering in the Kuzbas,* 1977 (all in Russian).

[6] N. Ya. Gushchin, *The Siberian Village on the Road to Socialism. The Socio-Economic Development of the Siberian Village in the Years of the Socialist Reconstruction of the National Economy (1926-1937),* 1973; *Historiography of the Peasantry of Soviet Siberia,* 1976; *Problems of the History of the Soviet Siberian Village,* 1977; V. I. Shishkin, *The Revolutionary Committees of Siberia in the Civil War Years,* 1978; N. Ya. Gushchin, Yu. V. Zhurov, L. I. Bokhenko, *The Alliance of the Working Class and Peasantry of Siberia in the Period of Socialist Construction,* 1978 (all in Russian).

[7] V. L. Soskin, *An Outline History of the Culture of Siberia in the Years of the Revolution and the Civil War,* 1965; Idem., *Cultural Life in Siberia in the Early Years of the New Economic Policy,* 1971; Idem., *Lenin, the Revolution, the Intelligentsia,* 1973; *The Working People of Siberia and Lenin. A Collection of Documents and Materials,* 1977; V. S. Poznansky, *Lenin and the Soviets in Siberia (1917-1918),* 1977 (all in Russian).

[8] See, for instance, Z. V. Gogolev, *Yakutia's Social and Economic Development (1917-1941),* 1972 (in Russian).

[9] B. V. Boldyrev, *The Category of Indirect Affiliation in the Tungus-Manchurian Languages,* Moscow, 1977; Ya. N. Popova, *The Phonetic Peculiarities of the Adverb in the Nenets Language,* 1978; L. M. Gorelova, *The Category of the Aspect in the Evenk Language,* 1978 (all in Russian).

[10] The series of works on this subject included the monographs: Yu. S. Postnov, *Russian Literature of Siberia in the First Half of the 19th Century,* 1970; E. K. Romodanovskaya, *Russian Literature of Siberia in the First Half of the 17th Century,* 1974; E. A. Kuklina, *The Free Poetry of Siberia,* 1977; collection of articles: *Russian and Soviet Literature of Siberia,* 1971; *Problems of Russian Literature of Siberia in the 17th-20th Centuries,* 1974; *Essays on Siberian Literature and Criticism (17th-20th Centuries),* 1974 (all in Russian).

[11] The many works by Siberian philosophers published in recent years include: V. V. Tselishchev, *Philosophical Problems of the Semantics of Possible Worlds,* 1977; Idem., *Notion of the Object in Modal Logic,* 1978; V. V. Petrov, *Notion of the Indication in the Language of Science,* 1977; Idem., *The Structure of Meaning: a Logical Analysis,* 1979; *Logic and Ontology,* Moscow, 1978; An. N. Kochergin, V. Z. Kogan, *Social Information, Society, the Individual,* 1978; V. N. Karpovich, *Terms in the Structure of Theory,* 1979; V. V. Tselishchev, A. V. Bessonov, *Two Interpretations of Logical Systems,* 1979 (all in Russian).

MODELLING OF WORLD ECONOMIC DEVELOPMENT

The ever growing attention paid by scientists to problems of the long-term interaction of the demographic, ecological, economic, and socio-political processes on a global scale is a characteristic feature of the present development of science. Since the early 1970s the methods of mathematical modelling and computing technology have been widely employed for systems research into these complex problems.

Investigations in the field of global modelling have attracted the attention of the economic bodies of the United Nations which are working out recommendations on world development strategy, international economic cooperation and environmental protection, in accord with UN General Assembly resolutions. On instructions of the UN Secretariat, a team of American economists headed by W. Leontief has elaborated a special mathematical model to define the major indices of the world economy for the 1970-2000 period in a regional aspect. The principal results of the calculations on this model are contained in the UN report *The Future of the World Economy,* (New York, 1977).

UN experts have reached optimistic conclusions about the possibilities of the development of the world economy, based on an analysis of the available amount of mineral resources, the food potential, and the conditions of environmental protection. The Leontief model has been transmitted to the Centre for Development Planning, Projections and Policies under the UN Secretariat, where it is used in preparing various documents on world development prospects. In 1976, the Centre approached the Institute of Economics and Organisation of Industrial Production of the Siberian Division of the USSR Academy of Sciences with a proposal to cooperate in researches on global modelling. The proposal was accepted, as it was in the interests of both sides.

The initial task of the Institute boiled down to elaborating improved modifications of a model of the world economy and their experimental testing on the basis of the initial information provided by the UN Centre. The first stage of investigations was completed in 1977-1979.

The Leontief model represents a system of equations which, fed with initial information, determines major indices of the future world economy. However, behind the outward logical simplicity of the model stands an enormous amount of preliminary work done by experts in order to formulate a multitude of particular hypotheses. For instance, the value of about 1,200 special coefficients characterising the structure of world trade in all regions and groups of goods, will have to be prognosticated for the year 2000. It seems evident that there should be a great many such structures (during 20-30 years considerable changes may take place in the export specialisation of regions and conditions of interchangeability between produced and imported goods), and the variants of these structures will inevitably differ in their efficiency for various regions of the world. However, the Leontief model does not have any inner mechanism of a comparative evaluation of the possible variants of world development: the problem

of search and selection of the best variants remains outside its framework.

At the initial stages of analysing the long-term development of the world economy, when the mass of initial information was accumulated and processed to provide reasonable results, the use of the balance-type model appeared to be expedient. At later stages when more attention was paid to searching for new ways of development and a comparative analysis of the efficiency of some or other alternatives, the application of optimisation-type models, in our view, provided more tangible results.

The Institute of Economics and Organisation of Industrial Production uses precisely this approach to modelling the world economy. The conditions of the Leontief model are transformed in such a way as to considerably broaden the sphere of selecting decisions. As a result the need arises for the mathematical formalisation of the criteria of the optimum development of regions and the principles of distribution between regions of the benefits derived from international economic cooperation.

We divide the problem of selecting the optimum strategies of world development into two stages, as it were. The first boils down to defining the multitude of the so-called efficient variants possessing an important distinction: they cannot be improved in the interests of some one region (or a group of regions), without worsening the position of another region. The second stage is selection among efficient variants, that is, finding acceptable compromises between the interests of various regions. This should be accompanied by the drawing closer together of the levels of satisfying the material and intellectual requirements of the peoples in advanced and developing countries. An important role here is played by the international economic mechanism.

The Institute of Economics and Organisation of Industrial Production has evolved and applies two types of models which are distinguished by the methods of searching for and comparing efficient variants.

The *model of global optimisation* includes the conditional general criterion of the optimality of the world economy, summarising regional criteria and correlations between the latter (the common criterion should not necessarily be the only one and have fixed parameters). The main purpose of this model is to simulate the possibilities and consequences of the implementation of the various versions of drawing closer together the regional development levels (the living standards of the regions' population).

Then (outside the framework of the given model) questions should be studied of the feasibility of this or that variant under the operating international economic mechanism and the methods of changing this mechanism for implementing this or that variant.

Selection from among a set of more efficient variants with the use of the *model of optimum economic interaction* is conducted in a different manner. This model represents a combination of the task of vector optimisation (with regional criteria of optimality) with the conditions of the international economic mechanism (including the principles of regulation of balances of payments, the price-formation policy in the world market, etc.). The model includes a formalised description of a definite international economic mechanism and makes it possible to calculate such variants of development which prove to be the best for each region, given the established mechanism. Purposefully changing some elements of this mechanism, one can obtain changes in the proportions of the world economy.

In 1977-1978, research associates of the Institute of Economics and Organisation of Industrial Production made overall calculations of the development prospects of the world economy up to the year 2000. The world was divided into four zones: North America, other advanced countries, Latin America, and Asia and Africa. Five production sectors were singled out in each zone: agriculture, the mining industry, heavy industry, services, and also a special type of activity—the destruction of pollutants.

Experimental calculations were conducted in several stages. First, a series of preliminary variants was obtained in order to study the compatibility of various hypotheses about the development limits of the primary branches of production (agriculture and the mining industry). As a result, the most promising hypothesis has been chosen. Then six basic variants were calculated up to the year 2000: two on the global optimisation model and four on the model of economic interaction. These variants differed in the ways of estimating expenditures for interregional transportation and the values of trade balances.

The chief purpose of the experiments was to study the impact exerted by changes in the various conditions and parameters of the model on decisions. The comparison was made with the main variant obtained on the Leontief model.

By the overall indices of the development of the world economy (the gross national product and the volume of non-productive consumption) the calculated variants surpass the similar indices of the Leontief model by 1.5 to 4 per cent. Such slight deviations can be explained by the narrowness of the sphere of admissible solutions given by the mass of initial information. However, by the regional structure of production, and especially by the structure of international trade, these variants differ in a more pronounced manner from the indices of the Leontief model, which allows the drawing of a number of conclusions about the influence of various factors on the trends of growth in world regions, and first and foremost, about the possibilities of bringing their economic development levels closer together. On the basis of the main variants, a parametric analysis of the tasks of individual regions has been conducted, which made it possible to ascertain the lower limits of the growth of primary branches necessary to ensure the adequate lines of the economic development of newly independent countries.

In 1978, experiments with more complicated modifications of the models of global optimisation and economic interaction were carried out. They took into account the interchangeability of the production factors and structures of consumption, the higher production costs in primary branches as the available natural resources become exhausted, and the conditions of fixing one or several prices in

world exchanges at a non-equilibrium level.

It would be appropriate to note that the striving for an exact forecast of a distant future is not regarded as the chief aim of model experiments. It is more important to ascertain the stable dynamic and structural characteristics of the processes under investigation and the conditions of the emergence of typical critical situations, check on the results of implementing the various hypotheses of development (taking due account of the indeterminacy of the future), and comprehend the possible strategic measures following from this. In order to use the models in this way it is necessary to carry on a fruitful dialogue between the researcher and the model programmed by a computer.

The results of the first stage of investigation on the enlarged models of the world economy (A. G. Granberg, A. G. Rubinstein, *Some Lines in Development of the United Nations Global Input-Output Model,* Preprint, Novosibirsk, 1979) were reported to the Centre for Development Planning, Projections and Policies under the UN Secretariat and have been approved by it.

At present calculations are being made at the institute on detailed models of the world economy, including 15 regions of the world: North America, Latin America (average income), Latin America (low income), Western Europe (high income), Western Europe (average income), the USSR, European socialist countries, Asia (countries with centralised planning), Asia (high income), Asia (average and low income), the Middle East (oil-producing countries), Desert Africa, Tropical Africa, Africa (average income), Oceania. Three groups of correlations are included in each regional block: equations for the production and distribution of 22 types of goods (19 transportable and three non-transportable); nine equations for macro-indices (the gross national product, state expenditures, balance of payments, employment, etc.); nine equations for various types of investments and fixed assets (this block also includes an equation for foreign assets). The equations connecting the volume of consumption and employment, as well as restriction of the general investment level are new, as compared with the Leontief model. To reflect interregional ties our model includes a transport block, which differs essentially from the Leontief model and takes into account taxes and subsidies for the export and import of various types of goods (tariff policy). Under the various regimes of the model's work, individual equations can be added or excluded.

It is assumed that on the basis of research into the models of the world economy the UN Centre and the Institute of Economics and Organisation of Industrial Production will compile a joint report.

More problems could be named which will command special attention. Among them, checking on the feasibility of the aims of world development advanced by the UN bodies and the modification of these aims, particularly the aim of the accelerated overcoming of the backwardness of developing countries. The second problem is connected with a restructuring of international economic relations. The developing countries have advanced a course of action aimed at establishing a "new international economic order". It is necessary to study how these proposals can influence world development. Apart from the problems named, of great importance are researches in the field of consequences of the growth in the cost of mining raw materials and the possibilities of increasing agricultural production, hypotheses of the proliferation of new technologies, interaction between the economy and the environment, etc.

The aims of researches into the models of the world economy are not confined to global problems only. Models of this type are needed in order to more profoundly substantiate the efficient development of the USSR's foreign economic ties as a major component of its long-term economic plans.

A. Granberg,
A. Rubinstein

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Congresses • Conferences • Symposiums

A FORUM OF EUROPEAN SCIENTISTS

A scientific forum was held in Hamburg from February 18 to March 3, 1980. It was attended by more than 400 scientists from 35 countries-participants in the Conference on Security and Cooperation in Europe, among them prominent scholars, heads of national academies of sciences and national research centres and Nobel Prize winners. The representative Soviet delegation was led by Academician N. Blokhin, President of the USSR Academy of Medical Sciences, and included, among others, Academician Ye. Velikhov, Vice-President of the USSR Academy of Sciences, Academicians A. Dorodnitsyn and M. Styrikovich, A. Sozinov, Vice-President of the All-Union Lenin Academy of Agricultural Sciences, Corresponding Member of the USSR Academy of Sciences A. Khokhlov, and B. Runov, D.Sc. (Agr.).

The forum was held in implementation of one of the provisions of the Final Act signed in Helsinki by the heads of states and governments of 33 European countries, the USA and Canada, which, among other things, recommended holding "a Scientific Forum in the form of a meeting of leading personalities in science from the participating States to discuss interrelated problems of common interest concerning current and future development in science, and to promote the expansion of contacts, communications and the exchange of information between scientific institutions and among scientists ".

The forum discussed specific and topical issues. In the field of the exact and natural sciences—research, particularly fundamental, in the field of alternative energy resources and in the field of food production. In the medical sciences—current trends in medical research, particularly fundamental investigations in the field of cardiovascular, cancer and virus diseases with due account of the effect of the changing environment on man. In the social sciences and humanities—comparative studies of social, economic and cultural phenomena, with emphasis on the problems of environment and urbanisation.

The forum adopted a joint document. The participants came to the agreed conclusion that since the signing of the Final Act there has been a considerable expansion of international cooperation in research, training of scientific personnel and exchange of information. It was noted however that the present state of international scientific cooperation still calls for improvement which can be achieved on a bilateral and multilateral basis, on a governmental and non-governmental level, through international programmes and projects as well as by facilitating research and broader professional contacts and visits. That, the forum noted, can be achieved only by strictly observing all the principles and relevant provisions of the Final Act.

Scientists from Europe, the USA and Canada recommended exploring the possibilities of convening a new Scientific Forum at a suitable time, depending on the development of science and scientific cooperation between the participant states in the Helsinki Conference.

STRUCTURAL CHANGES IN THE ECONOMY, AND THE EVOLUTION OF POLITICAL SYSTEMS

An international scientific conference on "Social Progress and Ideological-Political Struggles in Asia" was held in Moscow in November 1979. It was organised by the Working Group "Socio-Political and Ideological Problems in Asian Countries", set up within the framework of the problem commission for multilateral cooperation of the socialist countries' academies of sciences, "The Economy and Policy of the Developing Countries".

The conference was attended by representatives of academies of sciences, universities and other research institutions in Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Poland and the Soviet Union—some fifty persons in all. The discussion centred on questions concerning the relationships between political and economic processes in the developing countries of Asia.

It was pointed out that in the 1950s and the early 1960s a lack of conformity between the economic basis of society and the political institutions of power was observed in the majority of Eastern countries. In some countries, parliamentary forms borrowed from the bourgeois states of Europe and North America were introduced on inadequately prepared soil. In others, economic and social development was accelerating at an unprecedented pace, but the evolution of political structures was sometimes artificially restrained.

In the first case the state claimed to provide "national" leadership but actually met the aspirations of a comparatively small (though the most active, patriotic-minded and educated) section which lacked a social base fitting for their aspirations. Yet this section of society was inclined to ignore the existing tendencies and aspirations of the traditionalist masses. As N. Simonia (USSR) noted in his report, this situation was bound sooner or later to lead to a structural crisis of societies which had taken the path of capitalist modernisation of that type. But he believes structural crises to be characteristic of the second group of countries as well. There the nation-

al-patriotic forces were unable for many years to act as the vanguard or to take and keep the initiative for long, whereas economic transformations (though carried out by the ruling circles within the framework of neocolonialist strategy) were inevitably leading to changes.

In both cases structural crises are due to the deep-rooted discrepancy between society itself and the state as an official body. This reflects the law, revealed by Lenin, of uneven economic and political development of capitalism, which in the East of today probably manifests itself with even greater intensity as a result of the accelerated historical progress of mankind. In the 1970s, these structural crises were particularly widespread and the dominant tendency in Asia was to bring the economic basis into relative conformity with the political institutions. The outward expression of this phenomenon was serious political instability and a multitude of coups d'état armed and bloodless. This relative conformity between the basis and the superstructure in the present transition period of Asian society does not at all mean that progressive forces are coming to power automatically. The initiators of the coups often proved to be traditionalist and reactionary elements.

One of the major issues discussed at the conference was the problem of non-capitalist development. The speakers emphasised that there is no uniform "model" for transition to socialism bypassing the capitalist stage. The revolutionary practice of oppressed peoples in the period following the Great October Socialist Revolution of 1917 in Russia shows that there are quite a few specific historical types of non-capitalist development. The experience of the people's revolution in Mongolia, for example, confirmed the vital significance of the internationalist alliance of the Mongolian people with the working class of the Soviet Union.

Another type of non-capitalist development that differs in its socio-political form was demonstrated in Soviet Central Asia, where the social revolution of the backward and oppressed peoples was accomplished within the framework of a centralised proletarian state led by a communist vanguard. The experience of transition of the formerly backward peoples in Central Asia to socialism, bypassing the capitalist stage, made a valuable contribution to the theory of non-capitalist development. The popular system there was set up on the basis of maximum consideration for local ethnic and national conditions.

The efficacy of Marxist-Leninist teachings on the non-capitalist road of development was once again confirmed by the events in Vietnam and Laos, where the revolutionary process was headed by the working class in alliance with the peasantry under the leadership of Marxist-Leninist forces.

In all these historical types of non-capitalist development it was the proletarian-internationalist strategy that was the decisive subjective factor for the growth of the democratic into a socialist revolution.

The complex process of profound revolutionary regeneration in Asia and Africa has brought about in our time a multi-faceted socio-political movement. It attracts broad masses of workers, peasants, the non-proletarian strata of the

working people, and also certain middle and intermediate social groups. As Vladimir Li (USSR) pointed out in his speech, in the East the vast non-proletarian sections of working people are a potential ally of the working class and the peasantry. Since the small producers are not exploiters of other people's labour, they are capable, owing to their objective socio-economic conditions, of breaking with their traditional bourgeois mentality and becoming an active factor in bypassing the capitalist phase of development. It is on these strata in a number of Asian and African countries that the revolutionary worker-peasant alliance, led by a political organisation of the Marxist-Leninist type, seeks to rely to a maximum degree in the struggle to secure the non-capitalist road. This socio-class type of leadership ensures speedy passage of the general democratic stages of non-capitalist development and consistent transition to revolutionary reforms of the socialist type.

However, many different variants of development are possible, depending on the concrete economic, ethno-psychological, political and other conditions in the country concerned. At any rate, as was emphasised in the paper of Vladimir Li and in the speeches by other participants in the conference, the transition of the formerly oppressed and backward nations to socialism, bypassing capitalism, was not a swift political act (as left extremists and Maoists often assert), but a whole historical period in social development entailing radical changes in the entire structure of society.

The conference also examined the reasons why traditional (including religious) attitudes have such a strong influence on the present political development of the Asian countries. The main papers on this subject were submitted by L. Polonskaya (USSR) and I. Kovarž (Czechoslovakia). They noted that there is a tendency among some Western scholars to isolate religion from the processes of socio-economic and political development, and the study of religious beliefs from the other social sciences. This is reflected to some extent in the wide use of the term "phenomenology of religion" in the West. Polonskaya and Kovarž showed why this was a wrong approach. They spoke up for a comprehensive study of the problem (together with other social sciences). By taking into account numerous factors, such as the fast rate of industrial modernisation accompanied by a high proportion of traditional economic structures, the backward social structure, and the desire to get rid of dependence on the imperialist powers, enabled the speakers to explain many of the reasons why the 1970s saw a livening up of a variety of religious ideological trends in the Eastern countries.

As was indicated at the conference, in a number of Moslem countries Islam is used as a means of national protest against the adverse consequences of Westernisation, and as a basis for national consolidation and resistance to imperialism. The implantation of capitalist relations in a country where traditional attitudes (including religious beliefs) are very strong often leads to a revolutionary upheaval, also arrayed in religious form. On the other hand, the present attempts to identify religion with socialism reflect the

crisis of bourgeois ideals in the mass consciousness. These "religious socialisms" are the result of the reaction of the petty-bourgeois strata, of their endeavour to combine the incompatible—capitalist relations with social equality. History has proved such theories to be utopian: they inevitably degenerate, which results either in the triumph of scientific socialism, or in the continued march of the country concerned along the capitalist road for a certain time.

The conference also looked at the impact of foreign capital on the evolution of the social structure in developing countries; this question was dealt with by, among others, O. Pishev of Bulgaria. I. Wessel of the German Democratic Republic examined the role of political leadership in Asian society today.

The conference has promoted closer cooperation and scientific contacts between Orientalists of the socialist countries.

A. Petrov

THE DIALECTICS OF LANGUAGE DEVELOPMENT

In January 1980 an all-Union conference was held in Moscow on "The Dialectics of Language Development"; it was organised by the Theory of Soviet Linguistics Scientific Council of the USSR Academy of Sciences and the Institute of Linguistics of the Academy. The conference was attended by about 350 linguists from scientific institutions of Moscow, Leningrad, of the Academies of Sciences of the Union republics, branches of the USSR Academy of Sciences, from 19 universities of this country, a number of pedagogical institutes, as well as by scholars from Hungary, the GDR, and Poland.

The conference discussed three main problems:

1. Language as a developing system. The correlation of qualitative and quantitative changes in language. Change and development in language.
2. The specificity of the forms and rate of development of various language levels.
3. The correlation of external and internal stimuli in language development.

The introductory paper on philosophical problems of the dialectics of language development was presented by V. Yartseva, Corresponding Member of the USSR Academy of Sciences, M. Gukhman, A. Ufimtseva and G. Kolshansky. It formulated the general methodological principles and principal tasks of the study of the historical development of language. In particular, the paper included the following theses: Marxist linguistics proceeds from the premise that causality embraces language phenomena in precisely the same way as in all the other phenomena of reality and consciousness; language development is the result of the struggle of internal contradictions inherent in language in its actual existence as society's speech activity; internal contradictions displayed in the historical development of language may stem from various causes of intralinguistic and extralinguistic nature.

The formation and development of new language patterns were considered in the paper presented by A. Melnichuk, Corresponding Member of the Ukrainian Academy of Sciences. Soviet linguists have given a convincing substantiation of the idea that the stability of the language system, its constant communicative effectiveness are rooted in uneven rate and intensity of development of its various levels and separate patterns of the same level. These specific features of the development of the language system are conditioned by the qualitative and quantitative differences between its various levels and the patterns of these levels.

The paper by F. Filin, Corresponding Member of the USSR Academy of Sciences, dealt with a number of problems involved in external and internal language contradictions. This paper was discussed by a number of linguists, in particular by Prof. Dr. R. Eckert (the GDR), who pointed out the existence of contradictory tendencies in the development of language and of various aspects of language. He cited an example from the complicated and in part contradictory mutual interaction between Old Russian spoken language and Old Church Slavonic.

The development of language is manifested definitely and unambiguously in changes conditioned by the extension and growing complexity of its social functions. It is essential to draw a distinction between functional and structural development of language. Problems of distinguishing between language change and language development raised by Gukhman were the theme of several other speakers, including Prof. Dr. G. Feudel (the GDR). He noted that not all development is in the line of ascent, the more so that not all parts of the system develop in the same manner. There are certain divergent tendencies of development at different language levels. The language-society dialectical unity has as its principal motive force the growing needs and status of the society's language system.

The criterion of language progress should be looked for in the dependence of language on the development of the life of society. Delimitation of language change and language development is the necessary condition for an adequate solution of the problem of progress. Rate of language change was the subject of close attention by the participants of the conference. It was suggested that rate of language change should be interpreted as the correlation between the speed of change and the overall volume of the language continuum.

In the discussion of "Specific Forms and Rates of Development of Different Language Levels" the view was expressed of language as a developing two-level system; it was suggested that a universal model representing language as a developing two-level system should be constructed on the basis of J. Rozwadowski's theory. This model, suggested by V. Martynov, includes a generative phonology and a generative semiology reflecting the historical development of language.

The correlation of the development of the morphological and syntactic levels of language was discussed in the paper by Vyacheslav Ivanov; in it three types of processes were analysed which resulted in the transformation of syntactic combinations into words characterised by formal cohesion, with examples from the history of languages of various types. The development of complex mor-

phological structures (as for instance in Tibeto-Chinese languages) may result in their complete destruction and replacement by analytical constructions, whose subsequent development may lead to an increase in compounding and incorporation phenomena and, later, to affixation. Each of the stages of this cyclic development is characterised by specific relations between the syntactic and morphological levels. The study of relations between each of these levels in the history of various languages will form the foundation for constructing a more complete evolutionary theory needed by both syntax and morphology. During the debate around Ivanov's paper Prof. L. Dezsö (Hungary) pointed out, among other things, the need for taking into account the cyclic nature of re-coding for typological studies.

The theme "Specific Forms and Rates of Development of Different Language Levels" also served as the framework for analysing the diachronic aspects of interaction between language levels, the dynamics of language change, problems of the uneven nature of phonetic changes, as well as quantitative changes in lexical microsystems and qualitative development of vocabulary. Apart from that, there were reports on certain specific features of the development of lexico-semantic subsystems of language, reconstruction of systems phenomena, correlation of historical changes at different language levels, history of language and comparative grammar, as well as the specificity of forms and rates of phonetic development as a criterion for genealogical classification.

N. Gadjiyeva's paper on "External and Internal Causes of Language Changes" fell within the problem "Correlation of External and Internal Stimuli in Language Development". Some linguists abroad believe that external causes of language change cannot constitute an object of linguistic science; the opposite viewpoint is also current—the one that represents all linguistic change as conditioned by extralinguistic factors. A serious drawback of many diachronic studies was an attempt to explain language evolution as caused by one isolated factor. This one-sided approach is objected to by a number of linguists both in the Soviet Union and abroad. In Soviet linguistics, Marxist-Leninist teaching serves as the basis for substantiating the need for studying language and its laws of development as closely linked with the history of society. The most powerful external factor causing language change is the progress of human society. Many changes in language structure are mostly due to the action of various internal factors. Internal and external factors of language change, often intricately interwoven, have an aggregate effect on the general process tending towards the perfection of language.

During the discussion of the correlation between external and internal stimuli in language development it was suggested that the theory of evolutionary development of language should be singled out as a special linguistic discipline along with a new branch of linguistics—the typology of language communities. Genetic and areal types of language communities and their development were considered. Attention was drawn to uneven development of links in the language and morphological systems in the ethnolinguistic aspect.

Both emotive and cognitive factors were taken into account in the consideration of external and internal causes of semantic change, as well as the role of constant (phraseological) and cultural-historical context. In the analysis of external factors of language development, examples were drawn from the dynamics of the lexico-semantic system of language.

N. Fedoseyeva

CHRONICLE

* Paris was the venue of the *13th General Assembly of the International Social Science Council (ISSC) and the 4th General Conference of National Social Science Councils and Analogous Bodies.* They were attended by a Soviet delegation which included Academician Yu. Bromley, Director of the Institute of Ethnography of the USSR Academy of Sciences; V. Vinogradov, Corresponding Member of the USSR AS, Vice-President of the ISSC, Director of the Institute for Scientific Information on Social Sciences of the USSR AS; and I. Evgrafov, Deputy Head of the International Organisations Division of the External Relations Department of the USSR AS.

* The USSR Academy of Sciences has instituted the *Frederick Engels Prize* to be awarded to Soviet scholars once in three years for outstanding works in philosophy and social theory.

* An *All-Union Association of Oriental Studies* has been established under the Social Sciences Section of the Presidium of the USSR AS with an aim of propagating knowledge about peoples and countries of the East, the achievements of Orientology in the USSR and abroad, and representing the Soviet Orientalists in the International Union of Oriental and Asian Studies and in other international scientific societies engaged in Oriental research.

Academician Ye. Primakov was elected Chairman of the Association.

* A *Soviet Committee for the Study and Propagation of Slav Cultures* has been established under the History Division of the USSR AS. It will represent Soviet scholars in the International Association for the Study and Propagation of Slav Cultures (IASPSC) and coordinate the latter's activities in the Soviet Union.

D. Markov, Corresponding Member of the USSR AS, is the Committee's Chairman.

* The *5th Congress of Philosophers of the GDR on "Dialectics of Historical Process in the Epoch of the Transition from Capitalism to Socialism"* marking the 30th anniversary of the German Democratic Republic was held in Berlin. Attending the congress were scholars from Bulgaria, Czechoslovakia, Finland, the FRG, Greece, Hungary, Italy, Mexico, Poland, the USSR, Vietnam and West Berlin.

This review covers the events of November 1979-January 1980.

The main paper was delivered by E. Hahn, Corresponding Member of the GDR AS. Soviet scholars M. Iovchuk, Corresponding Member of the USSR AS, and Professor I. Narsky presented papers on "Marxist-Leninist Philosophical Heritage and Ideological Pluralism" and "The Subject and Structure of Dialectical Logic" respectively. The participants heard with interest a speech by K. Hager, Member of the Political Bureau and Secretary of the CC SUPG.

All in all, about 100 papers were presented.

* Fifty scholars from Belgium, Canada, the FRG, the GDR, Sweden, the USA and the USSR took part in the *international conference on "Epistemological and Social Problems Facing Science in the Beginning of the 19th century"* sponsored by the Institute for Didactic of Mathematics of the Bielefeld University, and held in Bielefeld, FRG.

Soviet participants delivered the following papers: "Natural Science in Europe in the Beginning of the 19th Century" (Academician B. Kedrov) and "Social and Psychological Basis of Maxwell's Electrodynamics" (V. Kartsev).

* A *Soviet-Finnish Colloquium on "Intentional Logics and Logical Analysis of Natural Language"* was held at the Institute of Philosophy of the USSR AS in Moscow.

The Soviet participants submitted 10 papers: "Some Aspects of Reification Paradoxes" (D. Bochvar); "New Definitions of Modal Operators Through Tense Operators" (V. Smirnov); "On Intentional Principles of Aristotle" (Z. Mikeladze); "Modal Logic as the Theory of Probability" (L. Esakia); "Normalisation of Inference and Elimination Cut in Modal Logics" (O. Serebrennikov); "Interpolation Theorems for Modal Logics" (L. Maximova); "Entailment and Semantics of Generalised State Descriptions" (Ye. Voishvillo); "Consistent Extensions of System E, Not Being Subsystems of Classical Logic" (Ye. Sidorenko); "Many-Valued Logics as Fragments of Formalised Semantics (V. Finn, O. Anshakov, R. Grigolia), and "Factor-Semantics and Classes of Many-Valued Logic Systems" (A. Karpenko).

Finnish scholars submitted 11 papers, including "Is Alethic Modal Logic Possible?" (J. Hintikka); "Diachronic and Synchronic Modalities" (G. von Wright); "Dynamic Logic" (K. Segerberg), and "Remarks on the Logic of Perception" (I. Niiniluotto).

* The *90th birth anniversary of Jawaharlal Nehru, an outstanding state and political figure, the first Prime Minister of independent India,* was widely marked by the Soviet and Indian people.

In Moscow, the jubilee scientific conference was opened by N. Goldin, Minister of the USSR, President of the Soviet-Indian Friendship Society. Papers were read by Soviet scholars of India; G. Kotovsky—"The Legacy of Nehru and the Development of India Today"; E. Komarov—"The Historic Role of Nehru in the Struggle for National Liberation of India and Consolidation of Its Independence"; A. Litman—"Jawaharlal Nehru, Thinker and Humanitarian", and T. Hayder of the Hindustani samaj—"Jawaharlal Nehru as a Progressive Force of Contemporary India". Attending the conference was I. Gudjral, Ambassador of India to the Soviet Union.

In New Delhi, nearly 300 prominent scholars, political and public figures from the capital and states, as well as leaders of all major national political parties, took part in the jubilee conference. It was opened by K. P. S. Menon, President of the Indo-Soviet Cultural Society. The participants discussed three main topics: the Legacy of Nehru and Economic Problems, the Legacy of Nehru and Foreign Policy Problems, the Legacy of Nehru and Socialist Perspective for India. Soviet scholars submitted papers on the first (G. Kotovsky), on the second (V. Stanis) and on the third topic (F. Yuryev).

* Historians and sociologists from Czechoslovakia, France, the FRG, Hungary, Poland, the USSR and Yugoslavia took part in *the international scientific conference "Social Structures of the East European countries in the Transitional Period from Feudalism to Capitalism"* in Budapest.

The participants reviewed general theoretical aspects of the problem and the results of the historical studies of the past decade. The Soviet historian V. Dyakov presented a paper "Theoretical Aspects of the Study of East European Social Structures of the 19th Century".

* A *symposium "National-Socialist Foreign Policy in International Research"* sponsored by the Federal Centre for Political Education was held in Cologne. It was attended by more than 50 scholars from Austria, Britain, the FRG, Poland, Switzerland and the USSR. Ten papers were read, including the paper "Foreign Policy of Germany Under the Fascist Dictatorship in 1933-1945: Soviet Appraisal" by the Soviet historian O. Rzheshevsky.

* Paris was the venue of the *meeting of Soviet and French Byzantine scholars.* The Soviet participants read the following papers: "On the Typology of Byzantine Culture" (Z. Udaltsova, Corresponding Member of the USSR AS); "The Byzantine Provinces in the East in the 11th Century" (V. Arutyunova); "Specific Features of the Byzantine Feudalism in the 8th-11th Centuries" (K. Osipova); "The Ancient Armenian World Atlas (the 7th Century)" (S. Yeremyan); "The Thondrakian Movement in Armenia and Byzantium (R. Bartikyan); "The Balkan Peoples in the Byzantine Empire's Ethnic and Political Structure in the 9th-12th Centuries" (G. Litavrin); "Tradition and Innovation in the Development of the Byzantine Novel" (A. Alexidze) and "Prospects for Synthesis: Byzantine Empiricism and Theory of Literature" (S. Averintsev).

Soviet scholars who were unable to attend the meeting submitted summaries of their papers: "On the Displacement of Towns in Byzantium in the 7th-9th Centuries" (I. Medvedev); "The Byzantine Town of the 10th-12th Centuries" (R. Nasledova) and "The Archives of Athos and the Comparative Study of Handwritings of Scribes in Greek Manuscript Books and Documents" (B. Fonkich).

The French Byzantine scholars presented 20 papers.

* The participants in the *scientific symposium "Methodological Problems of Research into History of Socialist*

Countries" in Bratislava, Czechoslovakia, heard and discussed 14 papers, including two papers by Soviet researchers: "Methodological Problems of the Study of the Initial Stage in the Formation of the World Socialist System" (V. Volkov) and "Ideological Confrontation Over the Shaping of the Socialist Countries' Foreign Policy" (I. Peters).

* An *international scientific conference on the history of industrial enterprises* was held in Moscow under the auspices of the Institute of History of the USSR of the USSR AS. It was attended by more than 100 scholars from Bulgaria, Czechoslovakia, the GDR, Hungary, Poland and the USSR.

The participants listened to and discussed over 40 papers and communications on the following subjects: the results of research into the history of industrial enterprises of the socialist community countries in 1972-1979; the main stages and problems of historiography of enterprises of the socialist community countries; and the coverage of major problems in literature on the history of enterprises of the socialist community countries.

* The academic circles of the Soviet Union, the GDR and Hungary celebrated the *birth centenary of Academician Jenö Varga (1879-1964),* a prominent scholar and figure of the international communist movement.

In Moscow, a jubilee scientific session, held jointly by the Institute of the World Economy and International Relations of the USSR AS and the Soviet-Hungarian Friendship Society, was opened by P. Fedoseyev, Vice-President of the USSR AS, President of the Soviet-Hungarian Friendship Society. The main report on Varga's life and work and on the tasks facing the scholars specialising in international affairs was made by Academician N. Inozemtsev, Director of the Institute of the World Economy and International Relations. The participants were addressed by G. Pintér, Hungarian Chargé d'Affaires in the USSR, and heard nearly 15 papers. Among the speakers were K. Falusné Sikra, Corresponding Member of the Hungarian Academy of Sciences, I. Mihalik, a leading Hungarian economist, Academician Ye. Primakov, Director of the Institute of Oriental Studies of the USSR AS, A. Mileikovsky, Corresponding Member of the USSR AS, and other prominent Soviet economists and historians.

A jubilee session in Budapest was attended by Soviet scholars V. Lyubimova, D.Sc. (Econ.), and Ya. Pevzner, D.Sc. (Econ.), who shared their recollections about their work with Varga in the Institute of the World Economy and World Politics in the 1930s-1940s, and about his contribution to the training of specialists.

In Leipzig, at the jubilee session sponsored by the Karl Marx University, the Soviet scholar V. Shenayev, D.Sc.(Econ.), read a paper on "J. Varga and the Theory of Money".

* At the *42nd Session of the International Statistical Institute* in Manila E. Malinvaut of France was elected the Institute's President.

During the session 25 plenary and 57 panel sessions were held. The participants concentrated on the following problems: ways and means of improving statistical research; the use of statistical data in

social and economic decision-making; the development of unique experimental methods (statistical appraisals, modelling, non-parametrical measurements, indirect calculations, etc.) and their application in the new fields of science; plans for reorganisation of the Institute's activities with a view to promoting international statistics; the need for the wider use of computers and broader utilisation of the experience accumulated by the Soviet Union and other CMEA member states.

More than 400 representatives from 75 countries, including Bulgaria, Czechoslovakia, the GDR, Hungary, Poland and the USSR, attended the session. The Soviet Union was represented by T. Ryabushkin, Corresponding Member of the USSR AS, Director of the Institute for Sociological Studies, and Professor V. Simchera, D.Sc.(Econ), who delivered a report "Evolutional-Simulative Methods and Their Application in Modern Statistics".

The next 43rd session of the Institute is to be held in Buenos Aires, in 1981.

* Scholars from Bangladesh, India, Iraq, Kuwait, Malaysia, Nepal, Sweden, Sri Lanka, Thailand, the United Kingdom, the USA and the USSR took part in the *international seminar "Science, Technology and Society in Developing Countries"* sponsored by the Nehru Centre, the Indian National Science Academy and the Tata Institute of Social Sciences in Bombay.

The seminar held to commemorate the 90th birth anniversary of Jawaharlal Nehru was opened by President of India S. Reddy. Participants heard 25 papers; the main paper "Scientific Temper and Public Policy" was delivered by the Indian scholar B. Udgaonkar. M. Volkov and I. Yegorov of the Soviet Union submitted the papers "International Aspects of the Developing Countries' Collaboration in Science and Technology" and "The Major Conditions for the Uses of Science and Technology for Development", respectively.

* A *conference of the International Agrarian Group of the Problem Commission for International Cooperation of Socialist Countries' Academies of Sciences on "The Study of Modern Capitalism"* in Moscow was attended by 23 scholars from Bulgaria, the GDR, Hungary, Poland and the Soviet Union.

Participants heard and discussed 11 papers, including three by Soviet scholars: "World Food Problem: Its Essence and Methodology of Its Analysis" (V. Morozov), "The World's Food Situation" (V. Martynov) and "On the Nature of the Food Problem in the Developing Countries Under Neocolonialism" (V. Rastyannikov). Within the framework of the conference, debates were held on the urgent problems of capitalist agriculture at the turn of the 1980s.

* More than 40 scholars took part in the *Finnish-Soviet symposium on economics* in Tampere sponsored by the Department of Economics of the University of Tampere.

The Finnish side was represented by experts from colleges, research centres and economic organisations; the Soviet side—by researchers from the Central Economic-Mathematical Institute and the Institute of Economics of the USSR AS.

Soviet participants submitted the following papers: "Problems of

Measuring and Managing Technological Change" (D. Lvov); "Information Systems Required by Economic-Mathematical Research" (M. Kogolovsky); "Material and Financial Balance Models for Enterprise-Industry-Region System" (A. Stavchikov); "Principles of the Investment Policy in the USSR" (L. Braginsky); "Problems of Personnel Management in Scientific Organisations in the USSR" (L. Semyonov); "The Role of Five-Year Plans in the Control of Economic Associations" (V. Starodubrovsky); "The Use of Normative Indicators in Economic Planning and Control" (V. Perlamutrov, N. Makhrov); "Centralised Planning and Decentralisation: Some Experiments with a Simulation Model" (G. Krupenina, I. Magarik, S. Movshovich, Yu. Ovsienko, E. Olevskaya, N. Pavlov).

Finnish scholars read the papers: "On the Application of Differential Games to Optimal Decentralised Stabilisation" (R. Hämäläinen); "On Incentives and Control of Organisations" (B. Holmström); "Research on Profitability of Finnish Industries" (T. Airaksinen); "Taxation and the Behaviour of the Firm" (J. Ylä-Liedenpohja); "Input-Output Methodology and Industrial Planning" (O. Forssell); "Regional Policy and Industrial Structure" (P. Okko); and "A Multiregional Computational Model for Population, Labour Force and Employment" (A. Kamppinen).

* An *All-Union scientific conference "Theoretical and Methodological Aspects of the Efficiency of the Social Reproduction Under Socialism (Criteria, Indices and Mechanism)* was held in Moscow under the auspices of the Institute of Economics of the USSR AS and the Scientific Council of the USSR AS on the problem "Economic Laws of the Development of Socialism and of Its Growing Over to Communism". Some 600 scholars attended.

E. Kapustin, Corresponding Member of the USSR AS, Director of the Institute of Economics, made an introductory speech and the following papers were read: "Decisions of the CPSU and the Government to Improve Planning and the Mechanism of National Economy as a Comprehensive Programme for Allround Raising of the Efficiency of Social Production" (A. Bachurin, Deputy Chairman of the USSR State Planning Committee); "Methodological Principles of Economic Efficiency Measurement" (Corresponding Member of the USSR AS G. Sorokin); "Problems of Economic Efficiency Theory" (Academician T. Khachaturov); "Theoretical Problems of the Socio-Economic Efficiency of Social Production and Reproduction" (V. Cherkovets); "Problems of Controlling the Socio-Economic Efficiency of Scientific and Technological Progress" (Corresponding Member of the USSR AS L. Gatovsky); "Problems of Regional Efficiency" (Academician N. Nekrasov); "Efficiency of Production and Specifics of Its Measurement as Applied to the Agro-Industrial Complex of the National Economy" (Academician V. Tikhonov of the Lenin All-Union Academy of Agricultural Sciences); and "Economic Levers for Raising Production Efficiency" (M. Atlas). Academician L. Kantorovich, Nobel Prize laureate, also spoke at the conference.

Then the work of the conference proceeded in four panels dealing with "General Problems of the Theory and Methodology of Socio-Economic Efficiency of Socialist Reproduction", "Factors and Ways of Raising the Efficiency of Socialist Reproduction", "Problems of the Efficiency of Industries and Spheres of the National Economy" and "Economic Mechanism and the Raising of Economic Efficiency of Social Reproduction". Nearly 100 papers and communications were heard and discussed at the panel sessions.

* An *All-Union scientific symposium on "The Comprehensive Forecasting of Scientific and Technological Development"* in Moscow was sponsored by the Central Economic-Mathematical Institute of the USSR AS, the Scientific Council of the USSR AS on the Integrated Problem "Optimum Planning and the Management of the National Economy" and the Scientific Council of the USSR AS and the USSR State Committee for Science and Technology on problems of scientific, technological and socio-economic forecasting. Some 400 scholars and experts attended.

The participants heard and discussed the papers "Problems of the Long-Term Development of the National Economy and the Tasks of Accelerating Scientific and Technological Progress" (V. Kossov), "The Complex Forecasting of Scientific and Technological Progress" (A. Anchishkin, Corresponding Member of the USSR AS); "Methodological Problems of Forecasting the Development of a Fuel-Energy Complex" (A. Makarov); "Methodological Problems of Scientific and Technological Forecasting in Industries" (A. Varshavsky) and "Problems of Forecasting Scientific and Technological Progress in the Engineering Industry" (N. Chukhchin).

* Taking part in the *meeting of the Pugwash Workshop on the Current Crisis of Nuclear Forces in Europe* held in Geneva were scholars and experts from 19 countries, with Bulgaria, the GDR, Poland and the USSR among them. They discussed the dangerous international situation resulting from the NATO decision to deploy new US medium-range missiles in Western Europe.

The Soviet participants Academician M. Markov, Chairman of the Soviet Pugwash Committee, V. Falin, a prominent public figure, Professor M. Milstein, and V. Pavlichenko, Executive Secretary of the Soviet Pugwash Committee, presented the Soviet position and stressed the importance of continued efforts to bring the arms race to a halt and to ease international tension.

In a statement, released after the meeting, the Executive Committee of International Pugwash Movement of Scientists emphasised the imperative need for a speedy resumption of bilateral and multilateral negotiations to curb the arms race and avert a nuclear confrontation in the world.

* An *international symposium "Definition and Measurement of Detente—East and West Standpoints"* in Zurich was sponsored by the International Institute for Peace (Vienna) and the Research Centre of Political Science of the University of Zurich. It was attended by researchers from Austria, Bulgaria, Canada, Czechoslovakia, the FRG, the GDR, Hungary, Poland, Romania, Sweden, Switzerland, the

USA, the USSR, West Berlin, and a representative from the UN Institute for Training and Research (UNITAR).

Participants heard and discussed two main papers: "Detente: Definition and Dimensions" (Yu. Pankov, USSR) and "The Measurement of Detente—an Uncommitted Approach" (D. Frei and D. Ruloff, Switzerland).

* Scholars from Austria, Belgium, Colombia, Czechoslovakia, Denmark, Finland, France, the FRG, the GDR, Hungary, Luxemburg, Norway, Poland, Romania, Sweden, the USA, the USSR, West Berlin and also representatives of UNESCO took part in the *symposium "Teaching and Research of Disarmament in Higher Education"* in Vienna, which was sponsored by the International Institute for Peace (Vienna) and Internationales Institut für den Frieden (Tampere, Finland).

G. Fuchs, President of the International Institute for Peace delivered an introductory speech. Then Ya. Zasursky of the USSR and H. Wiberg of Sweden submitted two main papers: "Struggle for Peace and Disarmament and the Role of Training Journalists, Their Instruction and Education for Peace and Disarmament" and "Disarmament: Some Problems" respectively. The final document worked out by the participants is to be presented to the World Congress on Disarmament and Education to be convened by UNESCO in Paris.

* A *round-table meeting of the International Political Science Association on Non-Alignment Problems and a special session on political science in the developing countries* were held in Calcutta under the auspices of the Indian Political Science Association. Taking part in it were about 40 scholars from Bangladesh, Brazil, Canada, Egypt, Great Britain, India, Nepal, Nigeria, Poland, Sri Lanka, the USA, the USSR, and Yugoslavia.

Discussion on the first theme showed that politologists appreciate and support the non-alignment movement as a whole and the results of the 6th Conference of the Heads of Non-Aligned States (Havana, September 1979) in particular, despite some differences in defining the non-alignment idea and assessing the interrelations of non-aligned countries and their relations with other states. As most participants in the discussion of the second theme emphasised, politologists in the developing countries should consider it their prime task to free their political sciences from the domination of Western politological concepts and work out more adequate theoretico-methodological principles of research on the basis of their own experience and that of Marxist political science.

William Smirnov, a Soviet scholar, read a paper "Political Science in the Developing Countries (Problems and Prospects)".

* The *5th British-Soviet round-table meeting* was held in London in accordance with an agreement reached at the summit Soviet-British talks in Moscow in February 1975. The conference was attended by representatives of scientific, political and business quarters.

The Soviet and the British delegations were headed by Academician N. Inozemtsev, Director of the Institute of the World Economy and International Relations of the

USSR AS, and D. Watt, Director of the Royal Institute of International Affairs, respectively. The participants discussed urgent international problems, including European security and military detente, the situation in the Middle East, South-East Asia and Africa. Focal in the discussion were the international economic situation, the energy problem and prospects of East-West relations. The state of Soviet-British relations was given much attention. The conference proceeded in a constructive and business-like manner.

* A *Soviet-West German colloquium on "Detente, Arms Control and Cooperation in Europe"* was held at the International Institute for Politics and Economics ("Haus Rissen") in Hamburg. The Soviet delegation was made up of N. Polyanov (head of the delegation), V. Shenayev and D. Proektor. The host delegation numbered over 50 participants, with G. Merzyn as its head.

In two days of debates the following problems were discussed: political relations in Europe; USSR-FRG cooperation and its prospects; development and trends of economic relations between the USSR and the FRG; possibilities of cooperation in power engineering; the interdependence of political and military detente in Europe; from SALT-2 to SALT-3; the Vienna negotiations on the reduction of the land forces and armaments in Central Europe and their prospects.

* Osaka, Japan, was the venue of the *5th Soviet-Japanese symposium on Asian security problems.* These meetings are held in accordance with an agreement between the USSR Academy of Sciences and the Association of Soviet Societies' of Friendship with Foreign Countries, on the one hand, and the Japanese Association of Cultural Relations with Foreign Countries, on the other. The sponsoring organisation of the Soviet side is the Institute of Oriental Studies of the USSR AS. This symposium was organised by the *Sankei Simbun,* one of Japan's most influential newspapers.

The Soviet delegation of five scholars was headed by G. Kim, Corresponding Member of the USSR Academy of Sciences, Deputy Director of the Institute of Oriental Studies. The Japanese 16-member delegation was lead by Professor H. Kato of Keio University, Tokyo.

The Soviet scholars read the following papers: "The Situation in the Asian-Pacific Region After the Signing of the Japan-China Treaty of Peace and Friendship" (G. Kim); "Soviet-Japanese Cooperation as a Peace Factor in Asia" (I. Latyshev); "The Soviet-Japanese Trade and Economic Relations" (P. Dolgorukov) and "The Moulding of Public Opinion About Japan in the USSR, and About the USSR in Japan" (S. Verbitsky). The Japanese scholars submitted papers: "The Situation in Asia After the Signing of the Japan-China Treaty of Peace and Friendship" (S. Eto); "Stability in South-East Asia and the Role of Soviet-Japanese Relations" (T. Nishihara); "For a Stable Development of Japanese-Soviet Economic Cooperation" (H. Niwa) and "The Moulding of Public Opinion in the USSR and Japan on Japanese-Soviet Relations" (H. Teratani).

* Sociologists from nearly 30 countries, including Czechos-

lovakia, the GDR, Hungary, Poland and the USSR, took part in the *international seminar "The Child and the Family in Changing Society"* in Helsinki sponsored by the Committee on Family Research of the International Sociological Association. Soviet participants M. Pankratova and A. Kharchev submitted a paper "Family as a Factor in Personality Formation Under Socialism".

* A *scientific coordinating conference of lawyers of socialist countries on human rights in modern society* was held in Moscow at the Institute of the State and Law of the USSR AS. Attending it were about 100 scholars from Bulgaria, Czechoslovakia, the GDR, Hungary, Mongolia, Poland, the USSR and Vietnam.

Focal at the conference were problems of the development of the Marxist-Leninist conception of human rights and the legal status of the individual under socialism; the material conditionality of human rights, their class essence; the linkage between rights and personal freedom, on the one hand, and the freedom and rights of peoples, classes, nations and other social entities, on the other; the specific features of the present ideological struggle around human rights in the international arena; the possibilities for expansion of interstate collaboration to guarantee fundamental freedoms and more efficiently protect human rights on a genuine democratic basis.

The main papers were delivered by Corresponding Member of the USSR AS V. Chkhikvadze and Professor Nguyen Ngoc Minh of Vietnam.

* A *symposium on problems of the theory of jurisprudence,* namely the components of lawmaking process and their impact on the social efficiency of law in socialist society, was held in Berlin by the Institute of the Theory of State and Law of the GDR Academy of Sciences. Scholars from Bulgaria, Czechoslovakia, the GDR, Hungary, Poland and the USSR took part.

The main paper on the tasks facing jurisprudence in investigating the problems of lawmaking was read by Professor Dr. St. Supranowitz, Deputy Minister of Justice of the GDR. Soviet scholars submitted the following papers: "On the Tasks and Methodology of Investigating Social Factors in Legislative Work in the Constituent Republics" (S. Polenina); "Analysis of Social Requirements and Lawmaking Process" (N. Koldayeva); "Major Components of Socialist Law Development. Methodological Problems" (O. Gavrilov) and "Problems of the Efficiency of Legal Regulation" (V. Nikitinsky).

* An *annual conference of the Soviet Association of International Law* in Moscow was attended by 600 scholars, including guests from Bulgaria, Czechoslovakia, the GDR, Hungary, Poland and Romania.

They heard and discussed the papers: "The Council for Mutual Economic Assistance—the Subject of International Law" by E. Usenko; "Development of the Charter Rules of the Council for Mutual Economic Assistance" by M. Kudryashev; "The Standard-Making Activity of the Council for Mutual Economic Assistance" by I. Lukashuk; "On the Work of the Human Rights Committee" by A. Movchan and "On the Work of the Association's Executive Committee for 1979" by Corresponding

Member of the USSR AS G. Tunkin, Chairman of the Association.

* A *Soviet-American symposium of jurists on the theme "Social Aspects of Lawmaking"* was held in Moscow at the Institute of the State and Law of the USSR AS.

The Soviet delegation delivered these papers: "The Constitution of the USSR and Subsequent Perfection of Soviet Legislation" (I. Samoshchenko, Deputy Minister of Justice of the USSR); "The Questions of Planning of Lawmaking Activity" (A. Pigolkin); "The Lawmaking's Cognition" (Corresponding Member of the USSR AS D. Kerimov); "The Role of Judicial Practice in Lawmaking" (S. Bratus); "The New Legislation About the Supreme Court of the USSR, Procurator's Office and Bar in the USSR" (V. Savitsky); "The Problems of Criminalisation in Criminal Legislation" (A. Yakovlev); "Public Opinion and Lawmaking" (R. Safarov); "Protection of Private Life of Soviet Citizens in the Conditions of the Scientific and Technological Revolution" (A. Vengerov); "Problems of Lawmaking and the Judicial Procedures as Applied to the Federation and Its Constituent Parts" (A. Vasilyev).

The American side submitted the following papers: "The Fair Use of Exemption to the Copyright Act of 1976: A Study of Public Participation in Lawmaking" (P. Maggs); "The Indirect Educational Effects of the Judicial Process" (M. Galanter); "Recent Public Concern with Over-Professionalism in the Courts and Research Developments to Implement this Concern" (S. Krislow); "US Courts of Appeals in the Federal Judicial System" (W. Howard); "The Supreme Court's Ideology of Industry" (R. Cover); "On the Presumption of Innocence in the Legal Systems of the USA and the USSR" (G. Fletcher).

* The participants in the *scientific conference "Law and the Battle of Ideas in the Present World (Critical Analysis of the Modern Bourgeois Concepts of Law)"* held in Moscow at the Institute of the State and Law of the USSR AS heard the following papers: "The Constitution of the USSR and Ideological Struggle" (Corresponding Member of the USSR AS V. Kudryavtsev); "Critical Analysis of the Main Trends in the Modern Bourgeois Philosophy of Law"(Corresponding Member of the USSR AS D. Kerimov and V. Nersesyants); "The Critique of the Main Trends in the Modern Bourgeois Sociology of Law" (V. Kazimirchuk, S. Bobotov) and "The Socialist Conception of Human Rights and the Critique of Bourgeois Theories" (Corresponding Member of the USSR AS V. Chkhikvadze).

All in all, 27 communications were submitted.

* The *120th birth anniversary of Anton Chekhov,* the great Russian writer, was widely observed by the Soviet public. The Gorky Institute of World Literature of the USSR AS and the Union of Writers of the USSR sponsored *a scientific conference "Chekhov's Literary Heritage and Our Day"* which was opened by G. Berdnikov, Corresponding Member of the USSR AS. The following papers were submitted: "Chekhov and Gorky" (B. Byalik), "Chekhov's Humanistic Traditions in the Culture of Developed Socialism" (A. Iezuitov), "Chekhov's Poetics. Investiga-

tional Problems" (E. Polotskaya), "Chekhov's Literary Heritage and the World Literary Process of the 20th Century" (D. Zatonsky), "Innovation of Chekhov the Playwright" (Z. Paperny), "Chekhov and Modern Film Art" (V. Baskakov) and "Chekhov and Literature of the Peoples of the USSR" (R. Yusufov).

Conferences, meetings and exhibitions to commemorate the great writer were organised in many places connected with his life and art.

* Scholars from Czechoslovakia, the GDR, Hungary and the USSR took part in the *conference "Social Progress and Literatures of Asia, Africa and Latin America"* in Leipzig which was sponsored by Karl Marx University.

The work of the conference proceeded in plenary sessions and three panels—"The Worldwide Significance, Interaction and Mutual Influence of Literatures of Asia, Africa and Latin America", "The Dialectics of the National and the International in Literatures of Asia, Africa and Latin America" and "The Evolution of Realism in Literatures of Asia, Africa and Latin America".

Soviet scholars submitted papers: "Evolution of the Realistic Method in Literatures of Tropical Africa" (I. Nikiforova); "The Specific Features of the Development of Socialist Realism in Vietnamese Literature" (N. Nikulin); and "Revolutionary Processes in the 20th Century and the Specifics of Realism in the Contemporary Latin American Novel" (V. Zemskov).

* A *colloquium "Social Functions and the Structure of Language Communication"* was held in Magdeburg under the auspices of the Central Institute of Linguistics of the GDR Academy of Sciences. Attending it were some 100 linguists from Austria, Czechoslovakia, France, the FRG, the GDR, Poland, Sweden, the USSR and Vietnam.

Soviet participants read the following papers: "The Problem of the System's Pressure and the Social Pressure on the Language Structure (from the Standpoint of the Functional Development of Language" (Yu. Desheriev); "Discussion of Language Barriers in Federal Germany and the Language Norm" (A. Domashnev); "Methodological Problems of Investigating Language Communication" (E. Tarasov) and "The Effect of Extra-Linguistic Context on the Semantic Structure of the Utterance" (A. Shahnarovich). More than 30 papers were presented and discussed at the conference.

* Linguists from Bulgaria, Czechoslovakia, the GDR, Poland, the USSR and Yugoslavia attended a regular *meeting of the Commission for Compiling an All-Slavic Linguistic Atlas* in Smolenice, Czechoslovakia, sponsored by the Slovak Academy of Sciences and the L. Štur Philological Institute.

At plenary sessions, in the word-building and phonetico-phonological panels, and in the subcommission for generalising transcription, the participants discussed a wide range of problems connected with compiling the atlas.

* An *All-Union scientific conference "Theoretical Problems of the Investigation of Far Eastern Literatures"* was held in Leningrad. It was organised by the Institute of Oriental Studies of the USSR AS in cooperation with its Leningrad Division and the Leningrad University's Eastern Department. More than 60 scholars from the Oriental studies centres and higher educational establishments of Moscow, Leningrad, Vladivostok, Chita and Elista took part in its proceedings.

They heard and discussed 25 papers on Mongolian, Chinese, Japanese, Thai and other literatures of the region, dealing with the major literary problems from antiquity to our day, the folklore sources of literary art, the problems of poetics, the science of style, the interrelation and interaction of national literatures.

* Dushanbe, the capital of Tajikistan, was the venue of the *All-Union Conference on the General Questions of Dialectology and History of Language,* sponsored by the Division of Literature and Language of the USSR AS, the Scientific Council of the USSR AS for Dialectology and History of Language and the Institute of Language and Literature of the Tajik Academy of Sciences. Ninety linguists attended.

Eighty-six papers were heard and discussed at the plenary session and in panels: "Problems of Historical Dialectology"; "Linguistic Geography, Areal Linguistics and Synchronic and Diachronic Aspects of Language Contacts" and "The Role of Ancient Written Sources in Elaboration of the History of Language".

* An *international conference "Psychodiagnostics and Its Current Problems"* in Bratislava was attended by more than 150 psychologists from Bulgaria, Czechoslovakia, the GDR, Hungary, Poland and the USSR.

Participants discussed methodological problems of the elaboration and application of psychodiagnostical methods, as well as problems of psychodiagnostics at school, in economic and clinical practice. Soviet scholars submitted the following papers: "The Present Development and Problems of Psychodiagnostics in the USSR" (N. Tarabrina); "The Role of Psychodiagnostics in Vocational Training" (E. Borisova); "Psychological Aspects of Diagnosing the Style of Management of Workers' Collective" (A. Zhuravlyov); "Professional Psychodiagnostics and the Modelling of a Leader's Personality" (B. Kossov); "Psychophysiological Approach to the Diagnostics of Intellectual Abilities" (M. Akimova) and others.

* Over 150 scholars took part in the *first All-Union seminar of young psychologists "Methodological Problems of Psychology Today"* in Obninsk, the USSR. It was organised by the Presidium of the USSR Academy of Sciences, the Central Committee of the Young Communist League, the Central Council of Methodological Seminars Under the USSR AS Presidium, the Institute of Psychology of the USSR AS and the Society of Psychologists of the USSR.

The seminar was chaired by B. Lomov, Corresponding Member of the USSR AS, Director of the Institute of Psychology. More than 20 papers were read by Soviet scholars at the plenary sessions. Besides, the work of the seminar proceeded in the panels "The Present Problems of Engineering Psychology", "Cognitive Processes", "Problems of Differential Psychophysiology and Neuro-psychology", "Current Methodological Problems of Psychology" and

"Problems of Child and Pedagogical Psychology".

* Attending the *symposium "Exploitation and Dependency in the Transition Period from the Primitive Communal System to Class Society"* held in Leipzig were nearly 60 scholars. It was sponsored by the Ethnographical Association of the Historical Society of the GDR.

About 20 papers were submitted to the symposium, including those by Soviet researchers: "Natural and Artificial Changes in Social Relations Within Colonial Society" (N. Girenko); "Exploitation and Dependency in African Societies: Variants of Formation" (L. Kubbel); "Petroglyphs of Siberia and the North-Western Coast of America as a Source of the History of Hunters and Gatherers: On the Way to Class Society" (E. Okladnikova); "Some Problems in Studying Early Exploitation Forms" (A. Pershits).

* The *First Congress of the World Social Prospects Study Association* founded on the initiative of the International Institute of Social Studies (Geneva) was held in Dakar, Senegal. Attending the congress were nearly 200 scholars and political figures from many countries of the world, including Poland, Romania and the USSR. Particularly representative were African delegations.

The work of the congress proceeded mainly in panels dealing with specific problems: basic needs, rural development, employment policy, solidarity contracts. The Soviet side was represented by V. Balmashnov, an associate of the Institute of the International Working-Class Movement of the USSR AS. Submitted to the congress were also a paper on the international policies in the field of employment by T. Timofeyev, Corresponding Member of the USSR AS, Director of the Institute of the International Working-Class Movement, and a paper on social orientation of the non-capitalist development countries by An. Gromyko, Director of the Institute of Africa of the USSR AS.

* A *special meeting of the Council of the International Association for the Study of the Cultures of Central Asia* was held in Paris. It was attended by representatives of Afghanistan, China, India, Iraq, Great Britain, Mongolia, Pakistan, and the USSR.

A Soviet proposal to amend the Association's Statutes in order to strengthen the democratic principles of its activity was unanimously adopted. A Documentation and Information Centre of the Association, as provided for by the Statutes, is to be established in Moscow on a permanent basis. M. Asimov, President of the Tajik Academy of Sciences, Corresponding Member of the USSR AS, was unanimously elected President of the IASCCA.

* A *meeting of Arabists of the USSR and the GDR on the theme "Countries of Socialist Orientation in the Arab Region: Results and Prospects of Development"* was held in Moscow.

The introductory speech was made by Academician E. Primakov, Director of the Institute of Oriental Studies of the USSR AS. German scholars delivered the following papers: "Some Aspects of Economic Cooperation of the CMEA member states and the Arab countries of socialist orientation" (G. Hübner); "On the Role of the Public Sector and the Shaping of Its Structure in the Conditions of Socialist Orientation (Study Case of North African Arab Countries)" (M. Voigt); "Development Trends of the Working Class in Countries of Socialist Orientation" (H. Müller); "The Essential Aspects of Educational Policies in Countries of Socialist Orientation" (R. Baumann) and "On the Political and Ideological Orientation of the National Front of the People's Democratic Republic of Yemen" (A. Börner).

The Soviet Arabists submitted 19 papers, including "The Consolidation and Evolution of Revolutionary Democratic Regimes in the Arab World" (G. Mirsky); "Particular Features of Political Development in Arab Countries with Progressive Regimes" (A. Kiva); "Some Aspects of the Socio-Political Development of Algeria" (R. Landa); "Specific Features of the Socio-Political Development of Syria in the 1970s" (E. Pir-Budagova); "On Social Changes in Southern Yemen's Society in the 1970s" (E. Golubovskaya).

The meeting was attended by nearly 50 specialists.

* Taking part in the *Japanese-Soviet symposium "Changes in the Social Structure of Contemporary Japan"* held in the Ritsumeikan University, Kyoto, were historians, economists, sociologists and literary critics of both countries. The Soviet delegation was headed by G. Kim, Corresponding Member of the USSR AS, Deputy Director of the Institute of Oriental Studies; the Japanese delegation was led by Professor Y. Goto.

At the plenary session the following papers were delivered: "On the Socio-Class Structure of the Countries of Contemporary Capitalism" (G. Kim); "Japanese Imperialism Before and After the War" (Y. Goto) and "Periodisation of Post-War Japan's History" (S. Shiota). Then the work of the symposium proceeded in three panels dealing with the class structure of Japanese society, law and sociology in Japan, and Japanese literature and culture.

In panels, Soviet scholars submitted the following papers: "The Bourgeoisie in the Structure of Japanese Society" (M. Sutyagina); "The Working Class in the Social Structure of Post-War Japan" (P. Topekha); "The Topical Problems of the Study of the Mechanism of Constitutional Regulation in Post-War Japan" (V. Baturenko); "Aspects of the Shaping of the Post-War Foreign Policy of Japan" (S. Verbitsky); "On the Changes in the State System of Post-War Japan" (I. Latyshev); and "The Loneliness of Man in the Post-War Society of Japan" (N. Chegodar). Submitted by Japanese participants were the papers: "Changes in the Structure of the Japanese Working Class" (K. Kanaguchi); "Living Conditions of Japanese Workers" (T. Sakayori); "Changes in the Economic Structure of Post-War Japan" (T. Takauchi); "The Development of the Structure of Japanese Law in the 1960s" (K. Ikuta); "The Structure of Personal Power and Its Crisis" (H. Fukui); "The Supreme Court" (H. Wada) and "Changes in Social Consciousness in Post-War Japan" (N. Nishikawa).

About 120 scholars, including guests from the GDR and Poland, took part in the symposium.

BOOK REVIEWS

Развитой социализм, М., Политиздат, 1978, 432 стр.

Developed Socialism, Moscow, Politizdat Publishers, 1978, 432 pp.

The successful construction of developed socialist society, the substantiation of the ways and forms of its gradual turning into communist society require a constant and thorough elaboration of theoretical questions. The book under review, prepared by the Institute of Marxism-Leninism under the Central Committee of the CPSU, is in line with these requirements.

The monograph shows the enormous contribution to the theory of developed socialism made by the documents of the CPSU and reports and speeches by L. I. Brezhnev connected with the adoption of the new Constitution of the USSR and the 60th anniversary of the Great October Socialist Revolution. An important step has been made in creating the necessary theoretical and methodological base for an allround investigation of the key problems of modern Soviet society.

The authors of the book examine a wide range of problems of theory and practice of developed socialist society. Of great interest is the opening chapter, "Marxism-Leninism—the Theoretical Foundation of Building Communism". The overall experience of creating a new society in the fraternal countries and its theoretical generalisation make it possible to specify the characteristic of the general laws of socialist construction, and to more fully disclose the historic role of socialism in the modern world and its powerful impact on international events.

The authors dwell at length on the dialectics of the general and the particular in the construction of socialism and the harmonious combination of the international and the national. The book justly notes that it would be wrong to draw a sharp borderline between the national and the international, and moreover, to oppose one to the other. The common, international, comes out as a unity of the multifarious. Existing socialism is uniform in its nature and multifarious in the concrete forms of its manifestations, and this multiformity, far from undermining this uniformity, consolidates it.

A comprehensive approach to studying the problems of developed socialism allowed the authors to profoundly analyse its material, economic, political and cultural aspects. The work discloses the essence and laws of building the material and technical base of communism taken as an integral system, analyses the economy of developed socialism and examines methods of improving the mechanism of socio-economic planning and management.

In the conditions of developed socialism the significance of the subjective factor is constantly growing. The 25th Congress of the CPSU advanced a theoretical premise about the objective law of the drawing of the socialist countries closer together. At the same time, the role of the policies of the ruling parties, their ability to safeguard unity and coordinate their efforts to solve common tasks are increasing. The authors succeeded in elaborating these theses which summarise the experience of building socialism.

The problems of the subjective factor, the role of the Party and the popular masses as subjects of the construction of socialism and communism are discussed at length in the chapter devoted to the Party under developed socialism. The book points out that at present the volume of social knowledge required by the people building a new life is growing unprecedentedly.

The book will undoubtedly attract the attention of those who are interested in the theoretical problems of developed socialism.

A. Kosichev

Т. С. ХАЧАТУРОВ. *Интенсификация и эффективность в условиях развитого социализма.* М., изд-во «Наука», 1978, 352 стр.

T. S. KHACHATUROV, *Intensification and Efficiency Under Developed Socialism*, Moscow, Nauka Publishers, 1978, 352 pp.

Academician T. Khachaturov devotes his new monograph to the timely questions of the theory of socialist reproduction in the conditions of the developing scientific and technological revolution and the new content of the production relations of mature socialism. The author does not confine himself to simply examining theoretical aspects of the problem but thoroughly analyses concrete ways and means of improving the economic mechanism under the intensive development of production, taking into account the socio-economic evaluation of the efficiency of the utilisation of the country's natural resources.

The author poses a number of important problems, particularly, the differentiation of the social product and its component parts by branches of social production; the establishment of rational proportions of social reproduction, depending on the aims of development, its rate and level; the expansion of the sphere and definition of the boundaries of applying commodity-money relations under socialism; the determination of

ways of the further intensification of the economy, etc. Arguing with noted Soviet and foreign economists—representatives of different scientific schools—the author gives a basically new characteristic to these problems of economic theory and outlines methods for their practical solution.

The main section of the book discusses the trends and directions of improving the system of planning and economic forecasting. The author notes that the material base of the plans of economic growth in the conditions of intensified social production should be provided by scientific and technical achievements, whose implementation has already been experimentally defined. The base of forecasting, with a variant evaluation of the development trends of production, can be provided by alternative solutions of applied scientific research; the constant increase of the proportion of the intensive factors of economic growth due to the further industrialisation of the economy and a relative deficit of the economic resources should become an important feature of economic development. Planning decisions should objectively take into account the range of social requirements by the scope and order of their satisfaction and their coordination with the possibilities of production as far as its quantitative, qualitative and time aspects are concerned.

In analysing the variants of planning decisions aimed at satisfying social and individual, production and non-production requirements, the socio-economic criteria of economic efficiency should serve as guidelines.

Theoretically substantiating the method of reduced expenditures which takes into account the effect of the growth of labour productivity with an increase in its fixed assets per worker, the author criticises the "marginal social utility theory", and some other concepts because they do not provide an objective evaluation of the efficiency of economic solutions.

Along with the mechanism of reduced expenditures, Academician Khachaturov suggests the following methods for substantiating the calculation of absolute and comparative efficiency: the method of evaluating the efficiency of social production (growth of the national income) by taking account of complete economic expenditures—on the basis of the finished product and advanced assets; the method of the direct definition of social labour expenditures by branches, enterprises and individual types of goods, on the basis of calculating the expended means of production, as well as the necessary and surplus product; the mechanism of the economic evaluation of utilising natural resources, proceeding from the difference in incomes earned from those resources as compared with the worst of them (which are currently being used).

The monograph provides a thorough, generalised theoretical substantiation of the author's earlier proposals and new ones bearing on the topical problems of the theory of efficiency in the light of modern conceptions of the economy of mature socialism.

Academician Khachaturov is correct in making solution of the task of raising production efficiency and its intensification dependent on the economic problems of ecology. An increase in the scope of socio-economic tasks at the present development stage aggravates the problem of the relative scarcity of natural resources. In this connection the role of planning becomes more important in creating objective conditions for the improvement of the structure of production, and consequently, the replacement of deficit raw materials, energy resources, etc., and the more rational utilisation of raw material resources with the increasing growth rates of production. The monograph gives an economic classification of natural resources by type and amount, defines requirements in them and discloses their role in the economy of developed socialism.

Modern bourgeois analyses of the scientific and technological revolution devote considerable attention to the economic problems of ecology. Western economists see the only way out in curbing the growth of the population and industrial production and in establishing strict control over the pollution level of the environment as the sine qua non for the life of the future generations. Arguing with these economists about the development prospects of production in the conditions of the growing deficit of natural resources, Khachaturov notes that it is only the mechanism of planning inherent in socialism that is capable of rationally solving the problem of the rational utilisation of natural resources in the interests of the national economy. The long-term plans and forecasts of economic development compiled in the socialist countries, he writes, are aimed at scientifically determining development prospects on the basis of the rational use of the available labour and material resources. The utilisation of all factors of economic growth—labour, the means of production and the natural resources—is the principal object of planning in the socialist countries.

The monograph reaches an important practical conclusion: the progress of the socialist economy calls for greater efficiency and intensification of production. The intensive way of development is ensured by the advancement of science and technology, and improvement in workers' skill, which make it possible to more efficiently utilise economic resources. Apart from that, full use of the advantages of the planning system of socialism opens broad vistas for raising efficiency by including the untapped inner resources in the production process.

The monograph enables the reader to better understand the essence of the structural changes taking place in the economy of developed socialism, to learn more about the laws and distinctive features of the modern processes of social production and to evaluate the possibility of their effective use in the interests of further improvement in Soviet economic planning and management.

A. Bulkin

Ю. С. ШИРЯЕВ. *Социалистическая интеграция и международное разделение труда.* М., издво «Экономика», 1978, 216 стр.

Yu. S. SHIRYAEV, *Socialist Integration and International Division of Labour,* Moscow, Ekonomika Publishers, 1978, 216 pp.

This work contains a political and economic analysis of the operation of the laws of socialism in the sphere of the international economic relations of the socialist countries at the present stage of the socialist international division of labour and the economic integration of the CMEA member states.

The author proceeds from the basic methodological premise that the development level of cooperation and the character of the operation of economic laws in international socialist relations are determined by the progress in the system of world socialism and all elements of its economic basis, i.e., the economic complexes of countries, the economic mechanisms of the management of social production, and the degree of the socialisation of production on a national and international scale.

Much attention is paid to an analysis of the basic processes taking place in the sphere of the material production of socialist countries. This is necessary for revealing the essence of the present stage in the development of the international economic relations of the CMEA member countries: the formation of the CMEA regional market, the mutual influence of the planned development of the economic complex of each country and the system of the planned international socialist division of labour, the impact of external conditions on the progress of cooperation between the CMEA member states, and its connections with the international division of labour.

The author points out that the development of the productive forces and their internationalisation on the basis of the division of labour results in the solution of many key economic development problems, which becomes possible only through pooling of the efforts of various socialist countries. These objective trends made it necessary for the socialist countries to elaborate a plan of multilateral integration measures and long-term programmes of cooperation, the allround development of specialisation and cooperation of production.

Summarising new trends in the international division of labour, Shiryaev notes the growing role of the external economic factor in the economic development of each country, the comprehensive character of economic cooperation and the intensification of long-term mutual external economic ties and, finally, the development of multilateral distinctive features of integration processes.

All these characteristics of the present economic cooperation of the CMEA member states reflect the economic aspect of their drawing closer together and the evening out of their economic development levels.

The key problems of socialist economic integration are discussed in the book in the light of defining the place of this process in the international socialist division of labour and international economic relations.

The development of the economic complexes of the socialist countries and their being drawn into integration process create a situation in which a significant proportion of the economy of these countries is shaped and maintained on the basis of international cooperation. The author emphasises the special, planned character of the interrelationships between economic complexes, which alters the role of the market and foreign trade in the relations between the CMEA member states.

Shiryaev notes a historical character of the correlation of the integration process with the laws of the allround drawing of the socialist countries closer together. He justly believes that the economic foundation for closer ties between the socialist countries is provided by the deepening division of labour between them. Socialist economic integration substantially facilitates this process.

In this connection the monograph poses the question of combining the national sovereignty and independence of the socialist states with the internationalisation of their economic life. Elaborating the premise formulated in the Comprehensive Programme for socialist economic integration, namely, that integration does not at all lead to the loss of national sovereignty, the author shows that within the framework of planned cooperation there are considerable reserves for an expansion of ties between national economic complexes, without the need to create any supranational bodies to manage this international process. He stresses that each country, irrespective of its size, resources and industrial potential, takes part in coordinating the principal questions of the economic policy of the entire socialist community on the basis of full equality, and can exert influence on solving an ever wider range of problems of international economic life.

The monograph singles out a number of problems whose scientific elaboration is of great practical significance for a further improvement of the mechanism of economic cooperation between the CMEA member states.

The author raises a question about the different levels of interaction between the economic complexes in connection with the problems of managing the integration processes. Emphasising the priority character of managing international economic relations on a macro-level, at which the strategy of integration and its main trends are determined, the author notes the significance of the development of the integration process at a micro-level. Hence the decisive role of the joint planning activity of the socialist states in the development of the integration process. Planned connections have a multitude of forms in which they are being implemented and which serve the aims of the coordinated economic policy of socialist states. In view of this, the book discusses the elaboration of long-term cooperation programmes and a plan of multilateral integration undertakings.

The monograph analyses in depth the experience in applying cost accounting methods in external economic activities of the CMEA member states. In particular, the fixing of prices of export and import goods, as well as the use of the indices of the uniform financial result, etc.

The monograph also touches on the problem of combining multila-

teral and bilateral ties between the CMEA member countries and the objective necessity of developing their multilateral relations as a form inherent in the integration process.

The concluding chapter discusses the development prospects of socialist economic integration and factors determining the objective need for its further expansion and consolidation.

The monograph under review is a comprehensive investigation of complicated and insufficiently studied problems of the development of an important sphere of the socialist economy and makes a substantial contribution to this field of Marxist economic science.

V. Shastitko

"PHILOSOPHICAL HERITAGE" IN 80 VOLUMES (Survey)

The idea of bringing out a series of the classics of world philosophy originated in our country some twenty years ago. The author of these lines was delegated to handle the organisational side of the matter, and, in particular, to enlist the collaboration of experts. It was in a conversation with one of them, the late Academician N. Konrad, that the title of the series, "Philosophical Heritage" was coined. A long-range plan envisaging 50 volumes was drawn up.

To many at the time the plan seemed unfeasible: could competent specialists be found to ensure the appropriate level and scale of the publication? Would there be a demand for such books?

However, publication was started. The books of the planned series began to appear under the emblem of the Institute of Philosophy, USSR Academy of Sciences. The first book, *Ancient Indian Philosophy,* was brought out in 1963 by Mysl Publishers. And sixteen years later the 80th (!) volume—the works of Nicholas of Cusa—was published, thus far transcending the original plan.

The appearance of the 80 volumes of "Philosophical Heritage" is a notable event in the spiritual life of the Soviet Union. The circulation figures bear this out. *Ancient Indian Philosophy* was printed in 6,000 copies. Subsequently the circulation began to grow, running into tens and hundreds of thousands of copies. The works of Aristotle saw the record figure of 220,000 copies. What country can boast of the publication of the classics of philosophy on such a scale?

The book of another ancient author, Diogenes Laërtius, *Lives and Opinions of Famous Philosophers* (200,000 copies) is no longer available.

Why such a success? Because in no science is its history included so directly as a subject of study as in philosophy. This is explained above all by the character of philosophical knowledge which is always oriented towards the world as a whole and which formulates the general principles of knowledge and behaviour.

It is particularly important to know the history of philosophy at first hand, especially considering the many legends that have accumulated on this score and which are sometimes uncritically reproduced even in special literature.

The series includes major works of antiquity, the Middle Ages, modern and contemporary times on the cardinal problems of gnoseology, logic, ethics, aesthetics, sociology—in short, everything valuable that has been inherited from past epochs.

As is generally known, German classical philosophy was the theoretical source of dialectical and historical materialism. The series published the first collected works of Kant (7 volumes) in the USSR. Since the Soviet reader had already received the collected works of Hegel (14 volumes), "Philosophical Heritage" printed those of the great dialectician's works that did not appear in the collected works—his two-volume edition *Writings of Different Years* (two printings in a total of 68,000 copies) and his *Philosophy of Religion* (175,000 copies). Feuerbach's *History of Philosophy* in three volumes saw two editions (75,000 copies). Next to be published are Fichte and Schelling.

Considerable attention is paid to the materialistic tradition. Besides Feuerbach, the series includes the works of Hobbes, Bayle, Gassendi, Holbach, Helvetius, Lamaettrie, Deschamps, Priestley, Toland and others. Special mention should be made of the Deschamps one-volume edition. The Benedictine monk Léger-Mary Deschamps, a contemporary of the Encyclopaedists, was little known as a philosopher in his lifetime. He was regarded as an opponent of the ideals of the Enlightenment and after his death was forgotten. Deschamps' principal work *La vérité ou le vrai système* was considered to have been lost and was discovered only in the 1860s. Thanks to the research of Soviet scholars this work was published in part in Russian in 1930 in Baku. In 1939 a French edition (also incomplete) and in 1967 a more complete Polish edition appeared. Deschamps is now published in the "Philosophical Heritage" series, thus removing a "blank spot" in the history of philosophy. Deschamps, we learn, criticised the Enlighteners from radical positions, held materialistic convictions, combining them with the ideas of historicism and dialectics.

How many "blank spots" still exist! Take our compatriot N. Fyodorov, for example. What do we know about him? That he was admired by Dostoyevsky and Tolstoy who both particularly valued his ethical teachings, that he was the teacher of Tsiolkovsky and largely determined his interest in space navigation. And what have we read of Fyodorov? Practically nothing. He was not printed in Soviet times until recently. Prior to the Great October Socialist Revolution of 1917 two volumes of his works were published posthumously under the title *Philosophy of the Common Cause.* The first volume was brought out in 480 (!) copies. It is not suprising that many legends formed around his name, distorting his teachings. In recent years his ideas were critically appraised and the spontaneous materialistic basis of his views, clearly seen behind the welter of theological terminology and Christian symbolics, emphasised. Hitherto unpublished writings, recently discovered, will be included in the third volume of his *Philosophy of the Common Cause.* The publication of Fyodorov's works will undoubtedly

be a notable contribution to "Philosophical Heritage".

In general, I think the series should pay greater attention to the writings of Russia's men of learning. Of the 80 volumes published, only six are devoted to Russian philosophers (Lavrov, Tkachev, enlighteners of the early 19th century) and two—to the Ukrainian philosopher, Skovoroda.

It is also important that the publication be brought nearer to modern times. To date only one book *Progressive Thinkers of Latin America of the 19th-early 20th Century* goes beyond the last century. Needless to say, the publication of the works of other thinkers of this period would be in place. "Philosophical Heritage" also includes *An Anthology of World Philosophy* in four volumes, chronologically covering a time span up to the 1860s. I think that an additional volume paving the way to our times would enrich it.

The scholarly level of the edition may be said to be a high one. Each volume is supplied with an introductory article and comprehensive commentaries. That translations adequately convey the original text is the general opinion.

The "Philosophical Heritage" series enjoys a wide readership—teachers, students, scientific workers, engineers, doctors. The philosophical tradition is a great spiritual force and today it is serving the cause of communist education on an ever wider scale.

A. Gulyga

История дипломатии. Том V. Книга вторая. Под редакцией А. А. Громыко, И. Н. Земскова, В. А. Зорина, В. С. Семенова, С. Л. Тихвинского, М., Политиздат, 1979, 766 стр.

A History of Diplomacy, Vol. 5, Book 2, Edited by A. A. Gromyko, I. N. Zemskov, V. A. Zorin, V. S. Semyonov, S. L. Tikhvinsky, Moscow, Politizdat Publishers, 1979, 766 pp.

The 1960s and 1970s were marked by a new stage in international relations, one in which the groundwork was laid for fundamentally recasting these relations and during which the world political trends that were maturing in the previous decades found concrete expression. It is from this viewpoint that the international events of the two decades are scrutinised in Book 2, Volume 5, of *A History of Diplomacy,* which completes this fundamental work by Soviet historians and brings the account of events in world diplomacy practically up to the present.

The monograph retraces the logical transition in the development of international relations from the stage of tension and confrontation in the 1960s to that of the normalisation and allround development of cooperation that began on the threshold of the next decade whose predominant tendency became the shift from the long cold war to relaxation of international tension.

In this closing volume the authors have set out to identify the basic tendencies in this process, to show them in correlation with the basic laws of world development in conditions of the third stage of capitalism's general crisis and in the concrete context of international practice.

Speaking of the international activities of the states of the socialist community in the 1970s the authors note that they were of a two-fold nature. On the one hand, the socialist countries actively championed launching a struggle for relaxation of international tension while, on the other, their foreign policy was aimed at strengthening the internal unity and cohesion of the socialist community. Analysing the development of socialist international relations in the 1960s and 1970s, the authors underscore that they were characterised by the steady drawing closer together of the socialist countries, which process manifests itself as a general law of development. Particular attention is paid in the book to the work of such major bodies of coordination of the foreign-policy and socio-economic activities of the socialist community as the Warsaw Treaty Organisation and the Council for Mutual Economic Assistance. The basic principle of socialism's foreign policy and diplomacy, we read in the monograph, is socialist internationalism: it is precisely thanks to their unity, solidarity and mutual support that the socialist countries succeeded in the two decades under review in accomplishing such important foreign-policy tasks as strengthening socialism's international positions. Along with an analysis of general development trends in socialist international relations, the monograph contains brief essays on the foreign policy and diplomacy of the socialist countries in the subsequent period.

The work exposes the splitting policy of the Peking leaders who have openly opposed themselves to the socialist camp and who are pursuing a nationalistic, anti-socialist course, one hostile to the cause of peace. An in-depth analysis of China's foreign policy and diplomacy is contained on the pages dealing with the PRC's policy towards India, Vietnam, Southeast Asian countries, the developing countries as a whole and towards the industrialised capitalist states. Surveyed, too, is the evolution of Soviet-Chinese relations, including the Soviet Union's efforts to restore good-neighbourly relations between the two countries.

The book contains extensive material treating of the foreign policy of the developing countries of Asia, Africa and Latin America. Separately explored is such an important factor of the diplomacy of the newly free states as the non-alignment movement, and all the stages of its inception and development—from the Belgrade Conference of 1961, when the movement was launched up, to the conferences of the non-aligned countries in 1978 and 1979. When speaking of the essence and significance of the movement the authors do not overlook the profound class differentiation between its participants, resulting in aggravation of the contradictions between the advocates of a progressive policy and those of concessions to the imperialists. But they underline that the movement as a whole preserves its anti-imperialist character and that on many international issues the socialist and non-aligned countries take a common stand.

A key feature of the diplomatic struggle for peaceful coexistence and relaxation of tension is the Soviet Union's relations with the leading Western countries, the

evolution of these relations from confrontation to constructive talks and detente. The authors show the growing importance that the bilateral relations of the USSR with the major capitalist countries, the development of contacts between heads of states and leaders of foreign policy began to play in Soviet policy in the 1960s-1970s. Soviet-French relations particularly benefited. The cooperation between the two countries has become, in the words of Leonid Brezhnev, "a major factor of international life" (L. I. Brezhnev, *Following Lenin's Course,* Vol. 3, Moscow, 1972, p. 440, in Russian).

Soviet diplomacy had to overcome quite a few difficulties on the way to normalising relations with the FRG. The Moscow Treaty of August 1970 became a sound basis for developing positive tendencies in the relations between the two countries and for personal contacts between their leaders. Discussing the evolution of the relations between the USSR and the FRG during the 1970s the authors note that, considering the general favourable tendency, these relations nevertheless developed at a slow pace owing to a certain inconsistency on the part of the West-German side.

A special chapter deals with the diplomatic efforts to complete the peaceful settlement in Europe, these efforts culminating in the Conference on Security and Cooperation in Europe. The Final Act, signed in Helsinki by all the Conference participants, confirmed the system of principles of peaceful coexistence which must underlie the relations between the participating states in the sphere of economics, science and technology, and the environment and in the humanitarian fields. "The development of international relations in Europe", we read in the monograph, "in the direction of settling the problems of her security rose to a qualitatively higher stage."

Soviet-American relations, the importance of which was underscored by Lenin (V. I. Lenin, *Collected Works,* Vol. 30, Moscow, pp. 38, 365) were of paramount significance in the process of detente. As a result of the meetings between Soviet and American leaders in 1972 and 1973 the relations were given a powerful impetus. Such basic bilateral documents were signed as the Basic Principles of Mutual Relations Between the USSR and the USA, the Treaty Between the USSR and the USA on the Limitation of Anti-Ballistic Missile Systems and the Interim Agreement Between the USSR and the USA on Certain Measures with Respect to the Limitation of Strategic Offensive Arms. At the meeting between Leonid Brezhnev and US President Gerald Ford in Vladivostok in 1974 the intention of the two countries to conclude a second strategic arms limitation agreement (SALT-2) was confirmed.

However, in the mid-1970s along with positive tendencies a number of negative factors counteracting detente became apparent in US foreign policy. Analysing these factors the authors note that they are rooted in the growing influence of the military-industrial complex, of American rightists, the reactionary trade unions and Zionist organisations, as well as in the attempts of the Carter Administration to divert the attention of the American public from acute social and internal political problems by artificially inflating foreign policy issues out of proportion.

The readers' attention is drawn to the fact that the changes in the foreign policy course of the USA notwithstanding, the Soviet Government has shown and continues to show proper restraint.

The struggle of Soviet diplomacy to resolve the most crucial and complex of world problems, that of disarmament, is discussed in a special chapter. The authors examine the efforts of the Soviet Union in the United Nations, including those made at the special General Assembly session on disarmament, and the difficulties encountered during the Vienna multilateral talks on the reduction of armaments in Central Europe.

Here it is pertinent to note the exceptional importance of the Soviet proposal on disarmament made already after the last volume of *A History of Diplomacy* had appeared. It was put forward by Leonid Brezhnev in his speech in Berlin on October 6, 1979, and spelled out in his answer to questions put by a *Pravda* correspondent on November 6, 1979.

There is a chapter devoted to the Soviet Union's efforts in the United Nations to safeguard peace and international security.

Against the background of the events connected with the heroic struggle of the Vietnamese and other peoples of Indochina against the American imperialists, the forces of internal counter-revolution and the hegemonistic policy of Beijing, which in 1979 took the form of an open aggression against the Socialist Republic of Vietnam, the authors show the moral and material support the USSR rendered the peoples of Vietnam, Laos and Kampuchea, which played an important role in the successes of the forces of peace and socialism in Indochina.

The diplomatic history of the Middle East crisis, the relations between the Great Powers, the Arab countries and Israel, and the struggle of the USSR for a just and peaceful settlement in the Middle East are dealt with in a separate chapter.

The monograph explores such a complicated question in world politics as international relations and diplomacy in the Far East. The authors scrutinise the contradictions that have surfaced in that region and lay bare the real aims underlying the Far Eastern policy of such states as Japan, the USA, South Korea and China.

The complete publication of *A History of Diplomacy*—the fruit of many years' research by Soviet scholars, an integral study of diplomatic history, beginning with the diplomacy of the slave-owning states of the East, Greece and Rome and ending with the world events of today—is a unique edition, and one which may be said to be without equal in Soviet and foreign historical literature. The high scholarly level of the work, its vast source and historiographical base, its description and analysis of many new, hitherto unexplored events—all this ranks *A History of Diplomacy* among the best contemporary publications on international relations. The last volume fittingly completes the fundamental edition, makes a new contribution to Marxist science on the history of world politics and diplomacy today, including to studies in socialist foreign policy and the qualitatively new international relations of socialism.

V. Popov

EKO JOURNAL

Ten years ago the first issue of the journal *EKO* (*Economy and Organisation of Industrial Production*) came off the press. The journal is published by the Siberian Division of the USSR Academy of Sciences. More than 2,000 authors have contributed to it and its circulation has increased from an initial 8,500 to 60,000 copies.

The *EKO* was born in the atmosphere of the 1965 economic reform, in the conditions of the rapid development of sociology and economico-mathematical methods, when economic experiments in industry and general problems of management were commanding ever increasing attention. The Editors are still striving for the principal aims and adhering to the basic trends which they announced in 1970 in the first issue of the journal. Among them are the improvement of the economic mechanism, the territorial organisation of production and proper evaluation of the state and possibilities of the development of this or that sector.

How does the Soviet economy function and what is necessary to make it most efficient? The *EKO* examines various aspects of economic initiative and probes into cases of excessive administration by mere injunction. It upholds the stability of plans and standards and advocates the need to have clear-cut prospects and responsibility of planners and those who are in charge of plan fulfilment. As is known, the socialist economy now has every opportunity for a balanced dynamic growth and a harmonious coordination of the interests of individuals, enterprises and the whole of society. It is appropriate to recall the words of L. I. Brezhnev reported in the newspaper *Pravda* on November 28, 1979: "...Whatever field of work we take, we see enormous possibilities everywhere, enormous reserves for a successful advance. But to be able to utilise them properly we must raise the level of management in the broadest sense of the word..."

Articles published in the *EKO* are distinguished by a deep concern about raising the efficiency of the economic mechanism, a profound analysis of a broad range of economic phenomena, and substantiated proposals leading to improvements. Among the topics discussed are questions of the development of socialist emulation, cost accounting and the increasing role of the economic levers and stimuli, economic agreements and direct long-term economic ties, creation, commissioning and mastering of new machinery and technologies and the popularisation of group forms of labour organisation.

The territorial aspects of production claim considerable space in the journal, as well as problems of the industrial development of lands to the east of the Urals (the Baikal-Amur Railway construction, the Far North, Tyumen, Altai, Chita Region, Krasnoyarsk Territory). Of considerable importance, in our opinion, are the materials on the West-Siberian oil-and-gas extracting complex, and "round-table" discussions of relevant problems. They show various views on the problem and the dynamics of socio-economic development.

These discussions on economic subjects and the ways and means of improving the socialist economy are conducted on a high scientific level. The journal not only points to shortcomings, but also tries to outline ways of rectifying the situation, thus making its own contribution to the improvement of the economy.

Looking through the *EKO* file for the past decade one cannot but notice the broad geographic scope and wide variety of the materials published. The journal describes the advanced experience of the country's best enterprises, the problems of the timber and oil industries, ferrous metallurgy, mechanical engineering, etc., economic experiments and their results. It makes a special reference to the need of tackling any current economic task from positions of the ultimate economic effect.

For the past decade the journal has served as a bridge between science and practical activity. It has done much to popularise the great economic potential of the Siberian Division of the USSR Academy of Sciences and has displayed great interest in raising the economic efficiency of the Soviet national economy.

V. Novikov

К. Н. БРУТЕНЦ. *Освободившиеся страны в 70-е годы.* М., Политиздат, 1979, 158 стр.

K. N. BRUTENTS, *The Newly Free Countries in the 1970s,* Moscow, Politizdat Publishers, 1979, 158 pp.

A distinguishing feature of our time is the increasing role of the developing countries in world affairs. Hence the vital need to study the general laws governing the evolution of the young independent states, and the pattern of their relationships with the surrounding world. It is these laws that are analysed in this book.

The author rightly notes that the 1970s were a very important and eventful period in the life of the young independent countries. That period saw clear symptoms of the crisis of neocolonialism as it existed in the 1950s and 1960s. The crisis was brought about by major changes in the alignment of forces on the international arena and by an expansion of the liberated countries' struggle for complete independence. "Under the impact of social demarcation and the experience of struggle on the world arena," the author says, "the anti-imperialist activity of the popular masses in developing countries has been increasingly acquiring a class colouring; so have the aggravating contradictions between the forces expressing the interests of the masses and those circles which are willing to take a compromising stand towards imperialism or even pose as its ally."

In this connection the book presents an interesting analysis of the main tendencies of the economic, social and political development of the newly free countries oriented towards socialism. It shows the dialectic of the relationships between political power and the socio-economic basis of these states, and the acute confrontation of the forces following different paths of development.

The complex and contradictory nature of the socio-political processes taking place in the young independent states does not, however, alter the main tendencies and laws that determine the general trend of their development. The changes transforming these countries are of a democratic nature, the author notes. But the logic of the anti-imperialist and aggravating class struggle in the developing countries prompts patriots and democrats in the developing countries once again to turn to the problem of the path to be taken by their countries, to see their countries free from the bounds of capitalism, and oriented towards the socialist perspective.

The imperialists seek to hamper the democratic process and are searching for new ways and means of retaining their control over key sectors of the economy and over the policy of the young independent countries. It is convincingly shown in the book that the "reorientation and modernisation" of neocolonialist policy, despite the euphonious slogans with which it is camouflaged, ultimately leads to the implantation and consolidation of capitalist relations in the newly free countries and to their integration in the capitalist world economy, controlled by international monopoly capital. The idea is to intensify the technico-economic dependence of the developing nations on the imperialist states, on foreign monopoly capital, to create a system perpetuating this dependence.

The political and economic cooperation between the Soviet Union, other countries of the socialist community and the developing nations has a totally different pattern. The book shows that the cornerstone of this cooperation is identity of interests in the struggle for peace and peaceful coexistence, against imperialism and colonialism, and the Soviet Union's principled support for the efforts of the developing countries to consolidate their sovereignty and build an independent economy, for their right to use their national resources as they wish and freely choose their paths of development.

The development of the young independent states has been taking place against a background of confrontation between various political and socio-economic tendencies. The peoples and progressive forces of these countries have to fight hard to overcome backwardness and switch to a progressive path of development; they have to repel continuous attacks and expose the endless manoeuvres of imperialism and reaction. Judging from the main tendencies of the 1970s, the author notes, the coming period will be marked by a further aggravation of the struggle for genuine social progress in the young states.

Devoted to one of the most complex and urgent problems of world development, the book is useful to all who are interested in the destinies of the peoples of Asia, Africa and Latin America.

A. Maslennikov

Советская историко-правовая наука. Очерки становления и развития. М., изд-во «Наука», 1978, 352 стр.

Soviet Historico-Legal Science. Emergence and Development, Moscow, Nauka Publishers, 1978, 352 pp.

In recent years scholars have displayed greater interest in the history of Soviet legal science. It had, of course, been dealt with before, but mostly in a cursory manner—in historiographic chapters of works written on other subjects, or at the most—in reviews published in collections or journals. In the 1970s, special monographs began to appear, examining the history of various branches of legal science, while Nauka Publishers started to print a series of books "The History of Legal Science" prepared by the Institute of State and Law, USSR Academy of Sciences. The work under review is in this series.

The authors and editors are right, it seems to us, in emphasising the close connections of the history of the state and law with the general historical science. The selection of the works under study was determined by their character and the range of problems they examined, but not by the professional affiliation of their authors. This is important since Soviet historians have recently devoted much attention to historico-legal problems. The book pays tribute to such outstanding scholars of history as B. Grekov, L. Cherepnin, S. Skazkin, E. Tarle and N. Lukin, who made a great contribution to the elaboration of the historico-legal problems of general history.

In selecting the material the editors had to single out what was really valuable and represented a definite step forward in historico-legal literature. This task has been successfully fulfilled. The authors studied not only monographs and other exhaustive works, but articles, papers and communications, rightly maintaining that the latter three could contribute as much to the development of science as any voluminous publication.

The structure of the book is well-balanced and rational. The monograph consists of three parts devoted to researches in the field of the history of the state and law in pre-Soviet times, the history of the Soviet state and law and the general history of the state and law. Inside, the material is arranged in three periods (1917-1936, 1937-1959 and 1960-1977). Separate chapters, each dealing with one of the periods mentioned, tackle basic historico-legal problems. Following this plan the authors managed to collect an enormous amount of material and disclose the degree of the elaboration of individual questions. The study of material grouped by definite periods is expedient because such periodisation makes it possible to see general laws in the development of historico-legal science and sum up certain results.

The monograph cites many facts which demonstrate the progress of Soviet historico-legal science, and describes the great practical and educational significance of scientific literature and textbooks on the history of the state and law. The monograph shows the considerable successes scored by Soviet historico-legal science during the period of more than 60 years. However, works on the history of the science speak not only of its obvious

achievements, but also of problems, unresolved or insufficiently elaborated, which should command the attention of scholars engaged in research into the history of the state and law. In this respect, too, the monograph under review can play a positive role.

The history of the state and law is a component part of the history of human society, and a most important part, at that. This determines the general historic significance of historico-legal works. The book under review is of interest not only to historians of law, but also to experts on Russian and Soviet history and the history of foreign countries. And it should be borne in mind that many of these scholars and experts have now been working in the sphere of the history of the state and law. Sometimes, it is practically impossible to separate their works from those by experts in the history of legal science. But this is not necessary, for it is only the joint efforts of representatives of related sciences that can produce tangible results in our time.

O. Zhidkov,
O. Chistyakov

А. В. ЧИЧЕРИН. *Очерки по истории русского литературного стиля.* М., изд-во «Художественная литература», 1977, 445 стр.

A. V. CHICHERIN, *Essays on the History of the Russian Literary Style,* Moscow, Khudozhestvennaya literatura Publishers, 1977, 445 pp.

A. Chicherin's new book is related to his previous works (*Idea and Style. On the Nature of the Poetic Word,* Moscow, 1968; *The Rhythm of the Image,* Moscow, 1973). Their common feature is the researcher's interest for the ideological content and meaningfulness of artistic form. However, in his earlier works the author formulated a number of original and profound observations on the image form characteristic of individual artists, while here he makes an attempt to present in a historical perspective a group of authors, their creative individuality forming the subject-matter of analysis in the book under review. The spectrum of materials considered is extremely broad—from the sources of Russian literature (ancient times, the 18th century) to its greatest attainments in the 19th century (Pushkin, Lermontov, Tyutchev, Dostoyevsky, Turgenev, Tolstoy—this list is far from complete).

The author calls his book *Essays.* This definition of the genre is in our view quite justified, because in establishing the specific features of the poetic work of a given artist, Chicherin outlines only some of his creative contacts with previous and subsequent literature.

The book displays the author's usual attention for detail in the artistic text and his ability to reveal the content of minutest elements of the verbal texture of a work. Particularly remarkable are chapters on the prose of Gogol, Tolstoy, Dostoyevsky, and the poetry of Lermontov, Baratynsky, and Nekrasov. It is important to note that in turning to authors whom he has long been fond of (Tolstoy, Dostoyevsky) and, while remaining true to his former interpretation of their work, the scholar, far from merely repeating his old views, draws on new materials and looks for new aspects of observation (take, for instance, his search for creative parallels, echoes, dialogues, arguments, direct and indirect inheritance, etc.). In the chapter on Tolstoy the author does not merely demonstrate a certain number of verbal-image components—he also grasps the nature of their cohesion that is specific for the artist, being the only one that can express his attitudes to reality. Complex syntactic forms, in the author's view, while retaining in *The Death of Ivan Ilyich* their former meaning of combining the incompatible, or the heterogeneous, or the simultaneous but different, acquire also the new tragic meaning of denouncing the lie that is behind every step made and every word said by the characters of the story.

The author succeeds in showing the creative echoes and parallels both within Russian literature and between authors of different countries (Pushkin—Mérimée, Pushkin—Stendhal). This extremely fruitful quest for artistic contacts is most active at the level of separate images and not of kindred aesthetic laws.

On the whole, the *Essays* produce an impression of a study in the stylistic cross-section of the creativity of Russian prosaists and poets that is rich in material and in meaningful and very original observations. That is precisely the aspect of the artist's image that is congenial to Chicherin and lends a still greater significance to his work. The work under review, in my opinion, greatly contributes to a genuinely scientific study of literary styles.

V. Eidinova

Ф. М. БЕРЕЗИН. *История русского языкознания.* М., изд-во «Высшая школа», 1979, 224 стр.

F. M. BEREZIN, *A History of Russian Linguistics,* Moscow, Vysshaya shkola Publishers, 1979, 224 pp.

The author of the book under review set himself the goal of Marxist-Leninist analysis of the main stages in the history of Russian linguistics from the 16th century up to the October Revolution of 1917, and of outlining the struggle of ideas concerning such most important issues of linguistic theory as the problem of language as the object and subject-matter of linguistics, nature of language and its definitions, and the structure of linguistics as a science. The focus of the book is on problems of general and comparative linguistics and the development of Russian grammatical thought. Berezin takes into account both the inner logic of the development of linguistics itself, the continuity of ideas manifested in their interweaving and negation, and its links with other sciences, philosophy, logic and psychology, in particular, as well as the influence of West European

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linguistic theories, and social and cultural-historical factors.

The book consists of ten chapters. The first chapter, "The Origins of Russian Grammatical Thought", considers the grammatical works of the 16th-18th centuries. The author shows that originally they bore traces of the influence of the Graeco-Latin grammatical tradition. Old Russian scholars were primarily concerned with Old Church Slavonic, although most of them distinguished it from living speech. The second half of the 17th century sees the formation of the national Russian language and its recording in writing. Old Church Slavonic is strongly affected by the spoken language. All of these factors made for lack of cohesion in vocabulary and grammatical structure causing an urgent need for working out rigorous literary standards and for grammatical research. That was, in Berezin's view, the cause for the shift in focus in early 18th-century manuals on grammar from the description of Old Church Slavonic structure to orthography, which plays a most important role in the formation of the standard language.

The chapter "M. V. Lomonosov and the Grammatical Tradition of the Second Half of the 18th Century" emphasises the unity of the philosophical and linguistic views of the great Russian scientist, combination of inductive and deductive methods of study in his work, his materialist interpretation of the relations of language, thinking, and reality, and of the role of language in the development of society. The author expounds in detail Lomonosov's ideas on comparative-historical linguistics, describing his efforts in standardising the Russian language and in creating the first scientific grammar of Russian.

The chapter "The Ideas of Universal Grammar in the First Half of the 19th Century" discusses grammatical works written under the influence of *Grammaire de Port-Royal* and later that of K. Becker. Berezin correctly points out the following features of these grammars: conception of language as a system of signs, distinction between language and speech, and application of the deductive method to the analysis of language. In the 1820s and 1830s there was a tendency to adapt philosophical grammar to the goals and tasks of school education, that is, to use it for practical purposes (N. Grech), and in the 1830s through 1850s an attempt was made to renovate it along the lines of Becker's system. The factual material cited by the author and his analysis of it reflect a whole epoch, and a very remarkable one, in the history of Russian grammar.

The chapter "Comparative-Historical Studies in the First Half of the 19th Century" traces the formation of the principle of historicism, describing the introduction of Russian scholars to Sanskrit (G. Lebedev, F. Adelung), accumulation of historical facts (N. Rumyantsev's circle, the Archaeographic Expedition), and the significance of A. Vostokov's works on Old Church Slavonic, paleography, and lexicography. It also offers characteristics of all the most significant works on the historical study of Russian.

The chapter "Grammatical Doctrines of the First Half of the 19th Century" deals with the *Russian Grammar Compiled by the Russian Academy* (1802) and the grammatical works of N. Grech, A. Vostokov, V. Belinsky, G. Pavsky, I. Davydov, F. Buslayev. Two types of grammars became established by the beginning of the 19th century, empirical (philological) and philosophical. Each of them had their own fortes and foibles. Berezin shows the way in which these two types of grammar were integrated, the bias being now towards empiricism (Vostokov, Pavsky), now towards logicism (Grech, Belinsky, Davydov). In Buslayev's work, historicism is added to this mixture. All of this is traced in detail in the teachings on parts of speech and their grammatical categories, and the sentence and its structure.

The chapter "The Grammatical Systems of K. Aksakov and N. Nekrasov" considers the place and role of these two outstanding personalities in the history of Russian linguistics.

The chapter "The Main Problems of General Linguistics at the End of the 19th Century" elucidates the general theoretical views of A. Potebnya, F. Fortunatov, M. Pokrovsky, I. Baudouin de Courtenay, and N. Kruszewski. The author concentrates here on such problems as the essence of language, interconnections between language and thinking and the contiguous problem of the word concept, the individual and the social in language, language as a system, statics and dynamics.

The chapter "Comparative-Historical and Typological Studies in the Late 19th Century" treats of the works of A. Potebnya, A. Popov, F. Korsh, F. Fortunatov, I. Baudouin de Courtenay, V. Bogoroditsky.

The last quarter of the 19th century was the period of intense study of the historical laws of development of the grammatical structure of Indo-European and Slavic languages. The underlying idea of all of Potebnya's work was to show the connection between language and thought in their historical development. Berezin outlines Potebnya's view of the formation and development of parts of speech and, respectively, parts of the sentence, the whole picture being a background for revealing the historical laws of transformation of the sentence itself from nominal to verbal structure. Potebnya's ideas were later developed in the works of Popov and Korsh.

The monograph contains a detailed account of Bogoroditsky's views of the nature of the Proto-Indo-European language and the possibility of its reconstruction, as well as the history of the formation of parts of speech; emphasis is laid on the scholar's desire to combine historicism with synchronic studies. In speaking of Fortunatov, the author shows the significance of his works on Indo-European phonetics and accentology.

In addition to comparative-historical syntax, typological study of languages begins late in the 19th century, which attempted to establish common and distinctive features both in related and unrelated languages. The pioneer of this approach in Russia was Baudouin de Courtenay, who laid the foundations of the phonetic and morphological typology of Indo-European, Finno-Ugric, Uralo-Altaic, and Semitic languages. He was also one of the first to draw attention to the problem of language communities.

The chapter "The Grammatical Views of A. Potebnya and F. For-

tunatov" shows the origin and essence of the new grammatical theories propounded by these outstanding scholars. Buslayev's grammatical system was in many respects contradictory owing to his desire to integrate the logico-grammatical and historical approaches. The book therefore contains a detailed exposition of Potebnya's critique of Buslayev's views of the basic grammatical categories. Potebnya himself constantly endeavoured to explain language phenomena without recourse to external factors. Berezin shows this quite clearly by drawing examples from Potebnya's teaching of grammatical form, grammatical category, parts of speech, parts of the sentence, and the sentence.

In the 1880s and 1890s Fortunatov founded the formal school in Russian grammar. The direction of Potebnya's studies was from meaning to form, while Fortunatov followed the opposite path, from form to meaning. While distinguishing the basic and formal elements in the word, he never considered the problem of their interrelation. Thus the starting points of Potebnya's and Fortunatov's ystems were different and even diametrically opposed in their nature. Berezin reveals this through his analysis of Fortunatov's teaching on grammatical form, grammatical word-classes, and the phrase (word-combination).

The chapter "Linguistics in the Early 20th Century" considers the linguistic views of A. Shakhmatov, A. Peshkovsky, D. Kudryavsky, V. Bogoroditsky, and the early works of L. Shcherba.

The most outstanding scholar in turn-of-the-century Russian linguistics was, unquestionably, Shakhmatov. It is quite justified, therefore, that he figures most prominently in this chapter. The author offers an allround exposition of Shakhmatov's views of the formation of East Slavic languages and its close links with the history of the people, also of his teaching on the sentence and parts of speech, and subject-matter of syntax and morphology. In treating the grammatical theory of Peshkovsky, Berezin shows the influence of the views of Potebnya, Fortunatov, and Shakhmatov on it. The book under review discusses in particular detail the concepts of word form, phrase, grammatical category, the teaching on parts of speech, and the sentence with predicativity as its principal distinctive feature.

The book contains an interesting analysis of general linguistic and grammatical views of Kudryavsky, who took an active part in St.Petersburg Marxist circles. His works put particularly great emphasis on the social nature of language.

Taken as a whole, Berezin's book is a systematic and the most complete exposition of the history of Russian linguistics available.

S. Smirnov

В. В. ИВАНОВ. *Чет и нечет: асимметрия мозга и знаковых систем.* М., изд-во «Советское радио», 1978, 185 стр.

V. V. IVANOV, *Odds and Evens: Asymmetry of the Brain and of Sign Systems,* Moscow, Sovetskoye radio Publishers, 1978, 185 pp.

Vyacheslav Ivanov's monograph consists of three chapters, name and subject indexes, and bibliography. The study embraces a wide range of problems involved in the construction of modern cybernetic devices modelling brain functions, and also presents some new data, obtained in clinical and experimental practice, on the correlation between the two cerebral hemispheres playing different roles in man's verbal behaviour. The author considers the binary symbolic classification in primitive societies, binary cultural codes, and asymmetry in sign systems from a semiotic point of view. There is also a discussion, in terms of the theory of dialogue, of the use of code elements which are defined with reference to speech communication in the code itself (the language) as well as of problems of memory of culture, human creative memory, and information storage.

The first chapter, "Right and Left", offers a detailed treatment of the differences between the functions of the two cerebral hemispheres that have a bearing on verbal behaviour. Of the two hemispheres the dominant left one, writes the author, "analyses (parses) and synthesises (generates) sentences, using all of the grammatical information and only that (relatively small) part of the information about the meaning of words which is adjacent to grammar". It is the left hemisphere that is the depository of grammatical information; it may therefore operate with words combining them in various ways. As demonstrated by clinical data, when the left hemisphere is affected, the loss of ability to generate grammatically well-formed sentences ensues; patients with this kind of aphasia use verbless sentences mostly (nominal or telegraphic style of speech), stringing nouns without expressing relations between them. This nominal style of speech is perceived as referring to the present, having concrete spatio-temporal localisation, which is emphasised by frequent repetition of the demonstrative pronoun "this". The author regards as feasible the hypothesis that from the purely linguistic point of view the nominal style of speech evinces characteristic features of meanings correlated with the right hemisphere handling orientation in actual time-space. The left hemisphere is involved in the construction of speech utterances and, in the author's view, is better at remembering schemata and structures than concrete phrases forming constructions. The right hemisphere, on the contrary, is better at remembering integral undifferentiated wholes, clichés. The author correlates the difference between the right and left hemispheres with the difference between grammatical rules for constructing utterances and vocabulary where utterances may be stored as integral undifferentiated units.

According to the author, man's memory is to a considerable extent determined by connecting links between the left hemisphere, in which words in their sound integument are stored, and the right one

as the main depository of visual images. It is pointed out that the left (or speech) hemisphere not so much remembers texts as re-creates them.

It would be interesting to establish, the author believes, to what extent the synonymic transformations of utterances now studied by lexical semantics may be correlated with information being passed from one hemisphere (e.g., the right one) to the other (the left one) and vice versa. The assumption that it is the right hemisphere that is responsible for combining logically disparate objects in one complex is borne out by the following experimental data. In electroconvulsant shock temporarily "switching off" the left hemisphere, the patient explains the meaning of a word by enumerating all the elements of such a complex; thus the word "water" produces the complex "summer", "bathe", "competitions", "swimming", "hot".

The development from complex thinking to logical conceptual one is described by the author as development from the right cerebral hemisphere type of thinking to the left cerebral hemisphere type. When the left hemisphere is switched off by an electroconvulsant shock, the patient loses the ability to understand abstract terms (like "health", "malice", "the good", "joy"), an understanding of terms for concrete objects being fully retained.

In the section "From Gesture to Word" the author points out that gesture language, in particular the language of indicative gestures, and hieroglyphic writing, which has an affinity with hieroglyphic gestures, both belong to the domain of the right hemisphere. This is confirmed by the clinical fact that Japanese patients losing the ability to understand the Japanese syllabic alphabet through affection of the left hemisphere retain the ability to use hieroglyphs. Summing up, the author writes that "the right, non-dominant, hemisphere is in its basic functions the hemisphere of integral ('topologically linked') units. It therefore operates with integral visual and spatial images, objects, hieroglyphs, gestures, musical melodies, ritualised phrases and names of things undifferentiated into units ('letters') in the hemisphere itself. However, each integral image of the right hemisphere may be correlated with its representation in the form of a sequence of discrete symbols in the left hemisphere."

The second chapter, "Twins", considers the binary nature of the basic codes of human culture (ritual, model of the world) and the semiotic significance of the odd and even (paired and unpaired) in primitive art and primitive society. The primary feature of all early human cultures, the author holds, was the symbolisation of the collective's binary social division (based on the opposition of the male and female principles) in such a way that each of the two halves of the tribe was linked with one of the series of polar binary symbols, of which the most important were the left and right hands. Tertiary divisions in the history of cultures begin to assume cardinal significance later than binary ones or quaternary divisions based on the latter. Trisymbolic structure is characteristic of the central image of many traditions, the world tree, in which three parts are distinguished—top, middle, and roots.

The author compares and shows the isomorphism of (a) binary models of distinctive features in modern linguistics which are built to study the most general abstract meanings correlated with the left hemisphere; (b) classificatory systems based on the "favourable vs unfavourable" binary opposition of phenomena of the external world, on which rituals, ritual behaviour, and mythology in elementary societies are founded; (c) modern cybernetic models describing the simplest forms of the behaviour of automata assessing transmitted signals either as favourable (gain S=0) or unfavourable (loss S=1).

Chapter Three, "Dialogue", expounds the theory of dialogue from the point of view of the bipartite structure of the brain, and studies the specific features of the communication act in human society, between man and machine, and man and extra-terrestrial intelligence. The starting point in the description of verbal communication in any human language is the subject of speech—*homo loquens*. The author concentrates on the so-called "shifters", or "egocentric words", serving to localise utterances on the spatio-temporal plane. Each speaker having command of a given natural language must also have the skill for changing shifters depending on the role of the participants in the act of communication, its circumstances, time, and place. These skills (of using pronouns and other shifters correctly) are assimilated by the child latest of all, and they are the first to go when a disease causes speech disorder or disintegration. The author assumes that these shifters are linked with the functioning of the left cerebral hemisphere. Clinical data show that in electroconvulsant shock switching off the right hemisphere the patients' speech abounds in shifters, in particular first person pronouns. Contrariwise, the gesture of pointing at one's own body historically preceding pronouns is correlated with the right hemisphere. Shifters of the personal pronoun type are characteristic of a relatively late stage in the development of the natural language. Besides, they constitute the specific feature of the natural language distinguishing it from all artificial languages of science (in particular, the language of mathematical logic) and machine languages.

In conclusion (the section "Instead of an Epilogue") the author writes that the neuropsychologists' discovery of the differences between the functions of the cerebral hemispheres enable one to link the results of physiological research with the data of other sciences of man, linguistics in particular. "The speech (dominant) hemisphere, whose descriptions of the world are expressed in oral language, is correlated with its counterpart, the right hemisphere perceiving integral images". From the point of view of biological evolution, computers are a continuation of the functions of the young and dominant left cerebral hemisphere. The author believes that comparison of computers with the left hemisphere facilitates understanding of certain features of the right hemisphere. At the same time it makes one wonder about those properties of the right hemisphere, the modelling of which promises a revolution in cybernetic theory and in the practice of designing computers.

Z. Volotskaya

BIBLIOGRAPHY

BOOKS PUT OUT BY THE SIBERIAN BRANCH OF NAUKA PUBLISHERS

From the Editors: *Below is an annotated list of books on social sciences, published in Russian in Novosibirsk in 1978-first half of 1979 by the Siberian branch of Nauka Publishers.*

History. Historical Sciences. Sociology

V. T. Agalakov. *The Soviets of Siberia (1917-1918),* 1978, 255 pp.

This book deals with the formation of the Soviets on the eve of the proletarian revolution and the turning of them into a state mechanism in the east of the country.

Archaeology and Ethnography of Mongolia, 1978, 222 pp.

The collection opens a series of publications on the basis of materials collected over many years by archaeologists and ethnographers. It includes articles on problems of the history and the cultural history of the Mongolian people and peoples of neighbouring territories, from the Paleolithic to our day.

A. N. Batalov, *The Struggle to Win the Army Over to the Side of the Bolsheviks in Siberia (1916-February 1918),* 1978, 285 pp.

Describing the multifarious actions of the Siberian Bolsheviks to mobilise the soldiers of local garrisons in the struggle for Soviet power, the author cites new data about the October Revolution in Siberia.

Cities of Siberia (Epoch of Feudalism and Capitalism), 1978, 335 pp.

The book includes archive materials and materials of field investigations and discusses questions of the social, economic, administrative, political and cultural history of Siberian cities. Much attention is devoted to the urban development, planning and architecture of Siberia.

Ancient Cultures of Altai and Western Siberia, 1978, 203 pp.

The articles in the collection cover the period from the Paleolithic to the 17th century and deal with the problems of the correlation of materials of West Siberian and neighbouring territories, questions of ancient history, primitive art, and new methods in archaeological investigations.

Ancient Cultures of the Angara Region, 1978, 239 pp.

The material cited sums up the archaeological research conducted over many years, first in the zone of the construction of the Bratsk hydroelectric power station, and then the Ust-Ilimsk hydroelectric power station. These materials are important for solving the problems of the genesis and evolution of the ancient cultures of the taiga regions along the Angara River. The common features of monuments in the middle reaches of the Angara and the cultures in the Lake Baikal area have been traced.

The Historiography of the Culture and Intelligentsia of Soviet Siberia, 1978, 349 pp.

The collection summarises the historical experience of the implementation of the cultural revolution in Siberia. Chronologically, the entire Soviet period—from the October Revolution to the epoch of developed socialism—is covered.

I. V. Konstantinov, *The Early Iron Age of Yakutia,* 1978, 128 pp.

The monograph deals with one of the least studied epochs of the ancient history of Yakutia. It investigates the material culture of the population and its ties with the tribes of neighbouring territories.

S. V. Kopylova, *Stone Masonry in Siberia (Late 17th-18th Centuries),* 1979, 355 pp.

The book discusses the main stages and distinctive features in the development of stone masonry, the organisation and techniques of production, the emergence of the trade of construction workers and their social status.

N. A. Minenko, *Russian Peasant Family in Western Siberia (the 18th-First Half of the 19th Century),* 1979, 350 pp.

The author examines the numerical strength and the structural and generation composition of the family, its main functions, family relations, including peasant law of succession.

I. A. Moletotov, *Siberian Territorial Committee—Sibkraikom (Party Building in Siberia in 1924-1930),* 1978, 366 pp.

The main accent is made on the formation of the Party organisation of the Siberian Territory, improvement of its structure, the growth of the body of workers in the territorial Party organisation and the ideological and organisational unity of Party ranks.

A. T. Moskalenko, *The Ideology and Activities of Christian Sects,* 1978, 415 pp.

The work discloses the social determinative character and the ideological roots of eschatological and chiliastic teachings, the class nature of religious doctrine, the structure of organisations and the methodology of studying small groups in Christian sectarianism, and the basic principles of scientific atheist work among believers.

A. P. Okladnikov, *The Upper Lena Burial Ground—Monument of the Ancient Culture of Siberian Peoples,* 1978, 288 pp.

The monograph describes one of the richest Neolithic burial grounds of Northern Asia, where materials have been found which throw light on the history of Baikal tribes for a period of several millennia (a Neolithic culture unknown earlier), data about the social structure and religious beliefs of the Neolithic Age, as well as the Early Bronze—Glazkovo period.

Monuments of History and Culture of Siberia, 1978, 184 pp.

The book gives a characteristic of the most diverse types of monuments, beginning with the distant past right up to our day. The material is grouped by sections: monuments of archaeology, revolution, military and labour feats, architecture and the arts.

M. I. Rizhsky, *The History of Translations of the Bible in Russia,* 1978, 208 pp.

The author examines the history of the Slavic and Russian translations of the Bible. He discloses the earthly, material interests and reasons that were centred around it, and gives a critical evaluation of the Slavic and Russian synodal editions of the Bible.

R. V. Ryvkina, *The Mode of Life of the Rural Population (Methods and Results of the Case Study of Siberia),* 1979, 352 pp.

The rural way of life is characterised by seven components: work in social production and personal household, everyday life and educational activities, public voluntary work, recreation and leisure, territorial mobility. The main types of the mode of life of the rural inhabitants are revealed and described in all the types of activity mentioned above.

Siberia in Ancient Times, 1979, 128 pp.

The collection contains articles by young specialists devoted to problems of archaeology of the territories from the Urals to the Pacific in the east, and from the taiga area of West Siberia to Soviet Central Asia in the south. The problems dealt with cover the period from the Paleolithic Age to the second millennium A. D., including the Bronze and Early Iron Age.

Siberia, Central and East Asia in Ancient Times. The Neolithic Age and the Epoch of Metal, 1978, 155 pp.

The collection is a continuation of the publication "Siberia, Central and East Asia in Ancient Times. The Paleolithic Age". The authors deal with the original features of the ancient cultures of Siberia and countries of the Far East, and their substantial contribution to world culture.

The Cooperation of Siberian Workers and Peasants Under Developed Socialism, 1978, 158 pp.

The book describes the influence of the alliance of workers and peasants on the technical re-equipment of state and collective farms, consolidation of their material and technical basis, development of agriculture and the turning of agricultural labour into a variety of industrial one.

Exile and Social and Political Life in Siberia (18th-Early 20th Centuries), 1978, 332 pp.

The collection describes the life and activity of the Decembrists and Polish exiles in Siberia, the connections of the political exiles with local public figures and representatives of the intelligentsia, the mode of life of the political exiles in the 1880s, the preparation and implementation of the 1900 reform of the Siberian exile, escapes of proletarian revolutionaries from detention and exile.

M. N. Khalbayev, *Industrial Development of the National Districts of Siberia. 1959-1970,* 1978, 256 pp.

The work describes industrial development, the growing efficiency of production, a rise in the

cultural and professional level of the working people, and intensification of the creative initiative and activity of the workers and engineers due to the Party's leadership in these spheres of life.

The School and Teaching in Siberia in the 1920s-1930s, 1978, 190 pp.

The articles in the collection deal with the organisation and guidance of the educational system, the material provision of school work, the training of the teaching staff, work on preparing curricula and teaching methods, etc. Besides articles there are reminiscences of teachers and educators of the time, which help us to better understand the work of Soviet school.

The Ethnography of the Peoples of Altai and Western Siberia, 1978, 222 pp.

The collection is devoted to the material and spiritual culture of the peoples inhabiting a vast territory from the Sayan to the Ural Mountains—the Tuvinians, Altaians, Baraba Tatars, Kets, Khanty-Mansi.

R. G. Yanovsky, *The Moulding of the Personality of a Scientist Under Developed Socialism,* 1979, 285 pp.

The author examines the influence of social, political and economic factors on the formation and development of the personality of a scientist and his creative activity.

Economics

Dynamic and Probability Optimisation of the Economy, 1978, 368 pp.

The collection contains the results of the latest investigations of the theoretical and methodological problems of the economic optimum and the use of optimisation models in planning the national economy and raising the efficiency of social production.

E. G. Egorov, *Problems of the Regional Economy (from the Example of the North-East of the USSR),* 1979, 286 pp.

The book analyses the timely questions of methodology and methods of defining the efficiency of the regional economy. It also analyses the concepts of efficiency of social production and discusses the methods of evaluating the effectiveness of capital investments in the development of new regions and the introduction of new technique.

The Fuel and Power Complex of Siberia. The State and Development Trends, 1978, 256 pp.

The book characterises the fuel and energy resources of Siberia, the improvement of their extraction and transportation, as well as the greater efficiency of the utilisation of resources in the country's economy.

A. D. Korobkin, N. B. Mironosetsky, *Optimisation of Planning Production at an Enterprise,* 1978, 336 pp.

The authors describe the complex of optimisation plans created in the "Sygma" automatic control system. The module structure of the complex makes it possible to apply a wide spectrum of optimisation methods, depending on concrete production conditions.

Yu. I. Maximov, *Meshed Models in Long-Term Planning of Sectoral Systems,* 1979, 143 pp.

The book discusses the problems of the utilisation of multilevel meshed models for long-term planning of the development of a complex of interdependent sectors of the region under study.

Modelling in Economic Research, 1978, 184 pp.

The collection contains mathematical results showing the possibilities of a concerted optimisation of models of individual economic objects at different levels; some classical optimisation tasks with additional conditions and new methods of an analysis of socio-economic information have also been examined.

V. K. Ozerov, *Rates and Proportions of Extended Socialist Reproduction in the USSR (an Analysis with the Use of Enlarged Dynamic Model of Intersectoral Balance),* 1978, 287 pp.

The author elaborates the theoretical and methodological questions of using enlarged dynamic models of reproduction in summary long-term economic planning. Great attention is paid to the problem of the real information backing to the model of a dynamic intersectoral balance.

A. I. Panchenko, *Intersectoral Complexes and Target-Oriented Development Programmes,* 1979, 253 pp.

A system has been drawn up on the basis of the quantitative criteria and a logical scheme, which includes 18 intersectoral complexes and defines their sectoral composition, internal and external connections and the aims and tasks of functioning. Results of experimental research are cited, connected with the elaboration of individual elements of the development programme of an intersectoral agrarian-industrial complex.

Development Problems of the North of the Buryat ASSR, 1979, 109 pp.

The monograph discusses the development problems of the regions situated in the construction zone of the Western section of the Baikal-Amur Railway. Requisites are elaborated of the formation of the North-Baikal territorial-industrial complex on the basis of a preliminary comprehensive evaluation of the natural resources and geographical conditions of this vast territory.

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OUR GLOSSARY

RELATIONS OF PRODUCTION (RP) are essential ties and relations in which people enter, irrespective of their will and consciousness, in the process of producing material wealth, its distribution, exchange and consumption. RP represent the social form of production by means of which people acquire natural objects. According to Marx, *"the relations of production in their totality constitute what* are called *the social relations, society,* and, specifically, a society at *a definite stage of historical development,* a society with a peculiar, distinctive character" (K. Marx, F. Engels, *Collected Works,* Moscow, 1977, Vol. 9, p. 212).

The substance of RP is determined by people's attitude to the means of production (articles and tools of labour employed in the process of material production)—whether they are in private or public ownership. It is the type of ownership of the means of production that conditions the method (inherent in a particular social system) of combining direct producers with means of production and the public form of appropriation of material and spiritual values. That very nature and method that effects this combination, Marx wrote, distinguish "the different economic epochs of the structure of society from one another" (K. Marx, *Capital,* Moscow, 1971, Vol. 2, pp. 36-37). On the type of ownership of the means of production hinges the content and concrete combination of general and partial economic interests of members of society, its social structure, the objective purpose of social production, the place and position of people in it. The RP, based on private ownership, are relations of domination and subjugation, exploitation of man by man. The historical forms of such RP are the slave-owning, feudal and capitalist ones. The RP, based on public, socialist ownership, represent the relations of comradely cooperation and mutual assistance between people free of exploitation.

The objective nature of RP is their common feature in all socio-economic formations. In the pre-communist modes of production RP are formed behind the producers' back and function spontaneously. The communist mode of production (and socialism is the first phase of scientific communism) has a fundamentally different type of functioning of the entire system

of RP, the type developing on a planned basis. For the first time in history society can foresee the results of joint actions and manage social production and at the same time improve its RP through the cognition of objective laws and tendencies, which fact characterises a qualitatively new stage of man's control of the nature's forces and social relations.

SOCIALIST EMULATION (SE) is a social relation under socialism that arises and develops on the basis of socialist property. It is an objective economic and social law that expresses the socialist character of labour free from exploitation, a new attitude to work, a driving force of the socialist society's development, a mass movement of working people for the greatest achievements in all spheres of activity, in the production of material and cultural wealth. Legislatively SE is formalised in the 1977 Constitution of the USSR (Articles 8 and 15) where it is defined as a basic factor of the growing of labour productivity, greater efficiency of production and quality of work.

Emulation, being a property of man's social nature, manifests itself during the cooperation of labour. Marx wrote on this score that "where social contact begets in most industries an emulation and a stimulation of the animal spirits that heighten the efficiency of each individual workman" (*Capital,* Vol. 1, p. 309) and that joint labour "excites emulation between individuals and raises their animal spirits" (Ibid., p. 311).

SE, based on the relations of comradely cooperation, mutual assistance and collectivism, differs basically from the rivalry typical of capitalist society. According to Lenin, competition is "a struggle of individual producers for a livelihood and for influence, for a place in the market" (V. I. Lenin, *Collected Works,* Moscow, Vol. 27, p. 207). Under capitalism, "competition means the incredibly brutal suppression of the enterprise, energy and bold initiative of the *mass* of the population, of its overwhelming majority, of ninety-nine out of every hundred toilers; it also means that competition is replaced by financial fraud, nepotism, servility on the upper rungs of the social ladder" (Ibid., Vol. 26, p. 404). As Lenin put it, "the abolition of competition as a struggle of producers that is connected only with the market does not at all mean the abolition of competition—on the contrary, the abolition of commodity production and capitalism makes it possible to organise competition in its human instead of its brutal forms" (Ibidem).

It was Lenin who defined the significance of emulation under socialism. He wrote: "Far from extinguishing competition, socialism, on the contrary, for the first time creates the opportunity for employing it on a really *wide* and on a really *mass* scale, for

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actually drawing the majority of working people into a field of labour in which they can display their abilities, develop the capacities, and reveal those talents, so abundant among the people whom capitalism crushed, suppressed and strangled in thousands and millions" (Ibid., Vol. 26, p. 404).

In the developed socialist society of the USSR, SE has become truly nationwide and covered all the spheres of labour. It is based on the community of economic interests of society as a whole, the collectives of working people and individual workers, society and the individual, and is closely related to the system of national economic planning. SE reflects the creative initiative of the working people in the process of compiling and fulfilling state plans for society's economic and social development, the effort of the working people to accelerate the rate of scientific and technological progress, to combine achievements of the scientific and technological revolution with the advantages of the socialist system.

Since the basic and invariable aim of SE is to secure the steady growth and improvement of social production, the improvement of the people's well-being, the concrete tasks it faces depend on the specific conditions of the country's development at its every stage. Today the main direction of SE is to mobilise the working people to raise labour productivity as much as possible, to secure the efficiency of social production, to reduce labour inputs, to rationally utilise and save raw and other material resources, improve the quality of products and the use of production assets and capital investments.

Being a comprehensive social phenomenon that covers a wide range of political, social, economic, moral and other aspects of society's life, SE is a powerful means of developing the productive forces and relations of production.

NET PRODUCT (NP) is the new value produced by workers of an enterprise (association), which includes wages and profit. According to the Marxist theory, NP *is created* by live labour alone, whereas congealed labour transfers its value to the goods produced. NP is a monetary indicator, to be determined by deducting from the gross output of a given enterprise (out of all expenditures involved in production and sale of goods) material expenditures on the raw materials, semi-manufactures, auxiliary materials, fuel, power, etc. (i.e., the labour of others materialised in these expenditures), which are used in the production process and are the result of the performance of other enterprises. NP of all branches of material production (industry, agriculture, transport, etc.) comprises the national income.

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